Re: Perpetually Perplexed

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From: Perplexed in Peoria (*jimmenegay_at_sbcglobal.net*)
Date: 01/26/05

Date: Wed, 26 Jan 2005 11:41:11 −0500 (EST)

"Guy Hoelzer" <hoelzer@unr.edu> wrote in message news:ct4l3k$1g9j$1@darwin.ediacara.org...
> in article csu4e5$29pg$1@darwin.ediacara.org, Perplexed in Peoria at
> jimmenegay@sbcglobal.net wrote on 1/22/05 10:01 AM:
> > I think that I understand that you want to talk about "grading" as a
> > smooth dependency of some aspect of the behavior on r. That is, we are
> > taking r to be the independent variable, and some aspect of the behavior
> > as dependent. OK. There are several metrics of the behavior that might
> > be "graded".
> >
> > a. [snip wrong metric]
> > b. The ratio b/c might depend on r. That is, in the case most favorable
> > for altruism, the ratio is lower for more distant relatives.
>
> I think you meant "higher".

Whoops! Yes, higher.

> > This might
> > happen in the kin recognition case if the donor refuses to help distant
> > relatives if the situation is one in which the costs are high and the
> > benefits are low, though the donor would help a close relative in the
> > same situation.
>
> Yes. This is consistent with what I meant. It should remind one of
> Haldane's famous statement about his willingness to be altruistic toward
> brothers vs. cousins.
> > c. [snip another wrong metric]

[snip analyses of the consequences and proper approach to handling
various forms of grading in the rule. Hoelzer agrees with these
analyses]

> > Again, the calculation can handle any grading, perfect or imperfect.
> > The important point is that each application of the rule involves
> > a comparison between two alleles, and hence between two situations −
> > only one of which could be the actual situation.
> >

> > Now, if we make the standard adaptationist assumptions:
> > a. Plenty of time for selection to work.
> > b. Alleles will eventually be generated by mutation that will
> > cause any particular grading that you might imagine, if
> > compatible with the biophysical constraints.
> > c. The environment is sufficiently stable that past adaptation
> > is indicative of current adaptation.
> > d. As a consequence of a, b, and c, evolution is complete and
> > the current situation is finally optimal.
> > well, if you accept those assumptions, then "perfect" grading
> > might well be a consequence of Hamilton.
>
> I agree. Would you agree that the outcome of the potentially graded version
> of the model is equivalent to an assumption of the ordinary Hamilton's Rule?
> That was my claim. I think you are making my argument more explicit for me.
> Thanks!

By "the ordinary Hamilton's rule", do you mean "rb>c" with r, b, and c being scalar quantities, and no summation or "mean field"ing taking place? But that rule is only applicable to a single instance of a behavior. It answers the question as to whether that specific behavior instance, with a single donor and recipient used to compute r, is "adaptive" − i.e. contributory to inclusive fitness.

So, with this clarification, I am afraid that I don't understand your question as to whether an outcome (using a non−scalar rule) is equivalent to an assumption. Are you asking whether the algorithm sketched for extending the scalar rule to the non−scalar case constitutes an implicit assumption made by the scalar rule? Well, in some sense, yes it does. But the algorithm does not depend on any particular grading, perfect or otherwise.

I suspect that you are probably claiming that there is some particular algorithm for computing the mean field value of r, b, c, or b/c which only yields correct results if the grading is perfect. If so, I would like to see you describe what you think this algorithm is. Because I don't think that ANY reasonable interpretation of the rule depends on any particular grading of b/c wrt r.

[snip]
> > I hope that the above explains why I claimed a "confusion of assumptions
> > and consequences". The rule does not assume perfect grading, but
> > perfect grading may be a consequence of the rule, if further adaptationist
> > assumptions are made.
>
> I suggested above that the consequences of relaxing the assumption of rigid
> behavioral effects (no contingent grading is possible; what we call
> Hamilton's Rule) is equivalent to revealing a cryptic assumption of
> Hamilton's Rule that grading is inflexibly perfect. What, if anything, is
> wrong with this thinking?

I'm afraid I can't answer that, because I have no idea what you mean. What are "rigid behavioral effects"? Are you referring to an assumption that b and c are the same for all instances of the behavior? You realize, I hope, that such an assumption is unnecessary for the derivation or use of the scalar single−instance rule that I mention above. And what do you mean by "no contingent grading is possible". Since this seems to be one of the assumptions which you wish to relax, I have to guess that this should be read as "no contingent grading is permitted". But I just got done showing that *any* contingent grading is permitted. So I remain perplexed.

I think that you need to exhibit some mean−field version of Hamilton's rule, where the prescription for computing the mean only works if grading is perfect. Only then will I understand what it is that you are driving at.

Or, perhaps you are using the word "assumption" differently than I do. For example, would you say that elliptical orbits for the planets are one of the assumptions of Newton's law of gravitation? If so, please change your usage so that it conforms to everyone else's. Or are you saying that Newton's law assumes that planets can be treated as point particles, with all the mass at the center. If that is the case, then your use of the word assumption is more forgiveable, though more properly you should say that many useages of Newton's law make that assumption.

My choice of this example was not a random one, however. I believe that Hamilton's rule internally justifies some of the assumptions that are commonly made in applying the rule, just as Newton's law internally provides the justification for treating planets as points.