

Re: Mathematics Is Not a Science

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From: John Edser (*edser_at_tpg.com.au*)

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Guy Hoelzer hoelzer@unr.edu wrote:—

> >>> *JE:—*

> >>> *Do you agree or disagree that it is not acceptable*
> >>> *for population genetics to be based on non epistatic*
> >>> *gene fitnesses via Fisher's dictate when not one single*
> >>> *non epistatic gene fitness has ever been documented*
> >>> *within nature?*

> >> *GH:— It is acceptable to make simplifying assumptions like this*
when
> >> *modeling, and there are very many examples where these models make*
> >> *accurate*
> >> *predictions despite their simplifying assumptions. Population*
genetic
> >> *models*
> >> *(single locus models) have also had great heuristic value, IMHO.*

> > *JE:—*

> > *If "not one single non epistatic gene fitness*
> > *has ever been documented within nature" yet*
> > *Fisher required them if they are to be "heritable"*
> > *do you agree that Hamilton's model must also*
> > *require them for his model to be valid?*

> *GH:—*

> *You misunderstand Fisher. The influences over the expression of any*
> *trait,*
> *including fitness, which is the ONLY trait that selection can act on*
> *directly, can be statistically (this is Fisher we are talking about*
after
> *all) decomposed into additive and non-additive components. His*
> *conclusions,*
> *and Hamilton's model, do not depend on the existence of individual*
genes
> *with perfectly additive effects on fitness.*

JE:–

EITHER epistatic information is heritable and therefore selectable, or it is not. Fisher stated it was not heritable. If Fisher wanted it both ways then his requirement would become arbitrary as well as just a dictate because not a single non epistatic gene fitness has ever been documented within nature. Inclusive fitness is a proposed fitness. To be heritable and therefore selectable, according to Fisher's dictate it must be non epistatic. Hamilton met Fisher's requirement. He fixed relatedness r^e to $e=1$. Of course the empirical fact remains: not one single non epistatic fitness has ever been documented within nature. For Hamilton's model to be a valid simplification e must minimally = 2 and not just 1. In this situation the best Hamilton's actor can do is forgo one normal reproduction costing 16 proxy reproductions making the rule inoperable.

>snip<

>> JE:–

>> *If Hamilton's gene produces organism
>> fitness altruism via selfish geneism
>> at just the one dependent level of selection and
>> not at any different independent level then
>> any gene that does so reduces that gene's
>> fitness via such an irrational act.*

> *If I understand you correctly, I disagree. As you know, I have given
> arguments supporting the multilevel selection framework. I haven't
> convinced you of the fallacy of the primacy of the individual organism
> position, and you haven't convinced me that it is reasonable either.*

JE:–

You missed my point. I am not discussing this issue. I simply made an IF THEN proposition. IF Hamilton's gene is selected at just the one level (note: I wrote *IF*) then it logically impossible for that gene to promote altruism because when does so it is selected against at just that one level. Ok?

Since you agree with "multilevel selection" you must agree that the gene level and organism level must be INDEPENDENT levels of selection within the rule if selection at one level is to be able to promote altruism at the other. If Hamilton's gene level is not independent to the Darwinian organism level then they become just the one, same DEPENDENT level such that no altruism can be

selected for within the rule. Ok?

>snip<

> >>> JE:–

> >>> *I have been requesting (for over 4 years) for
> >>> any professional Neo Darwinist that posts here
> >>> to provide what these models, e.g. Hamilton's
> >>> Rule, are simplified/oversimplified from. Nobody
> >>> will oblige. Do you agree that it is an act of
> >>> contempt for anybody to argue that a model
> >>> is a simplification/oversimplification but
> >>> fail to provide from what it was simplified/
> >>> oversimplified?*

> >> GH:–

> >> *I do not agree that it is "an act of contempt" because your
question
> >> presupposes something irrelevant to most of us (if I might be so
bold
> >> as to
> >> speak for the others). Everybody realizes that it is simplified
from
> >> the
> >> complexity of nature, but it was not derived as a model of an
> >> articulated
> >> theory that contested Darwinism.*

> > JE:–

> > *This represents the first response to this
> > question in over 4 years! I thank you for
> > your response. However, can't you see that
> > "the complexity of nature" is just
> > a dictate of something you believe in unless you
> > can provide a theory of what you are talking about?
> > I mean, for all I know you may be talking about
> > elves and hobgoblins as part of "the complexity
> > of nature".*

> GH:–

> *Yup. I have no problem with saying that we recognize nature is very
> complex
> without specifying the details of all that complexity.*

JE:–

While I respect all opinions, your view as just your own opinion remains sufficient. You are required to provide a general theory that explicitly removes elves, hobgoblins etc otherwise you are just dictating what nature is.

> GH:–

> *I am certain that*

> *neither Hamilton, nor his followers, would have imagined elves and*

> *hobgoblins in that black box, but they also allowed that it contains many*

> *things of which they were not aware.*

JE:–

The "elves and hobgoblins only represent arbitrary things. Such things must be excluded within any rational theory yet they are included within Neo Darwinian models, e.g. the diagnostic sign of c within Hamilton's Rule remains entirely arbitrary.

> GH:–

> *That still permits one to recognize*

> *that the kin selection model is a simplification of nature without being*

> *able to articulate the details of one's overarching theory of nature.*

JE:–

No it does not. You must provide the theory of nature from which the model was simplified/over simplified. Just indicating the model was obviously simplified from nature is meaningless because the term "nature" remains arbitrary unless a theory of nature is provided.

> GH:–

> *Theories are certainly simplifications of nature in the same sense that*

> *models are simplifications of theories, so from what theory of nature*

> *would*

> *you say that Darwin's model of natural selection was derived? Science*

> *just*

> *does not operate as Popper envisioned.*

JE:–

It does not matter if a refutable theory is some sort of simplification of nature because nature remains an arbitrary concept outside of any refutable theory of it.

> > *Darwin provided a refutable theory of nature.*

> > *I have outlined an empirical experiment to test*

> > *his theory of evolution by natural selection to*

> > *refutation. You have always refused to comment*

> > *on it except in passing. If I recall correctly your*

> > *comments were "interesting" and something like*

> > *"there may be some sort of difficulties".*

> > *You never ever elaborated. Unless anybody here or*

> > *elsewhere can come up with an alternative refutable theory*
> > *of evolution then we are stuck with Darwin's as*
> > *the only empirically valid theory that we have.*

> GH:–

> *I have also posted that IMHO Darwin's theory is NOT refutable. I did*
> *indeed*
> *find your experimental design interesting, but I never embraced it*
because
> *I*
> *don't think it would be as telling as you do. I do not agree that it*
> *could*
> *be used to refute Darwin's theory.*

JE:–

Then you prefer to just dictate that "Darwin's theory is NOT refutable"? I mean, if it is only a "IMHO" then why would you or anybody else here avoid debate on such a basic issue? Doesn't it seem strange to you that the experiment I have outlined has not been commented on except in a very brief way by yourself and O'Hara. Don't you think it is amazing that O'Hara's only criticism of it was that I had deleted all random events within the experimental population when such an event is not just impossible it is absurd? Why does Dr Moran continue to argue that random events can, on their own, produce valid evolution when such a view is oxymoronic? Why can't he see that my experiment can test his proposition to non verification? Why shouldn't I conclude that the Professionals that post here are evading the BASIC issue of the refutability of Darwinism compared to Neo Darwinism?

> > JE:–

> > *This being the case, Hamilton's non refutable model*
> > *must have been simplified/oversimplified from Darwin's*
> > *theory of nature unless elves an goblins*
> > *are allowed as valid complexities of nature. I mean,*
> > *it is most certainly true that Darwinism cannot*
> > *explain any of _them_.*

> GH:–

> *As I said, I do not see kin selection as a simplification of Darwin's*
> *theory; rather as an extension of it.*

JE:–

How can any view that only assumes zero gene fitness epistasis (when empirically it can be proven that all documented gene fitnesses are epistatic) be an extension and not just a simplification of a theory that does include gene fitness epistasis? Why isn't Hamilton's

"toy" model (to quote Felsenstein) a "theory" and not just a "model"? Why does Felsenstein insist that none of these models are testable but you insist that all of them are? Why will nobody here (including yourself) discuss the experiment I proposed to provide a refutation of Darwin's theory?

> >> *GH:*–

> >> *It was derived from Darwinism itself, I suppose, in the sense that it*

> >> *extended the theory of natural selection beyond its historical bounds.*

> >> *Therefore, there was no pre-existing complex theory that was simplified*

> >> *in*

> >> *the creation of the kin selection idea.*

> > *JE:*–

> > *Your comment "It was derived from Darwinism itself" belies*

> > *belief. Are you suggesting that Darwin never supplied a*

> > *valid theory of evolution by natural selection?*

> *GH:*–

> *No. I can't imagine what made you ask this.*

JE:–

I asked it because you implied that "Darwinism itself" is somehow separate from Darwin's theory of evolution by natural selection when it isn't. This being the case kin selection, and every other model that Neo Darwinists create must be derived from Darwinian theory. How are they so derived?

> >> *GH:*–

> >> *Your question just does not fit into the way science always works, or*

> >> *worked*

> >> *in this case.*

> > *JE:*–

> > *Quite obviously, I disagree. My view is*

> > *that you are attempting to evade the only*

> > *possible way Hamilton can be said to be*

> > *joined to Darwin as an oversimplification*

> > *of Darwin. If Hamilton is not joined to*

> > *Darwin then Hamilton is just an irrelevant*

> > *heuristic.*

> *GH:*–

> *An extension is not the same as a subset. I am arguing that Hamilton*

> *EXTENDED Darwin's theory by laying the conceptual groundwork for*

> *multilevel*
> *selection theory, which is the term I prefer to use for the extended*
> *theory.*

JE:–

Felsenstein, yourself, NAS, O'Hara etc cannot provide any _rationale_ as to how just two levels of selection could possibly work. All any of you do is provide simplified/over simplified mathematics that assumes as just a "fait accompli" that Hamilton's gene HAS passed the two levels of selection supposed to exist within just the one Darwinian body by Hamilton et al. OTOH I have provided a rationale that proves that this is only possible if a state of fitness mutualisation exists between independent multi levels. None of you even discriminate between dependent and independent multi–levels. It does not even occur to you or your colleagues that Hamilton's model requires his gene to now have TWO parents, each with their own independent fitness: Hamilton's parent gene and Darwin's parent body. Hamilton et al only force these two parents to contest allowing a supposed gene level to force a fitness altruistic act at the Darwinian organism level. No discussion passes as to if these proposed fitness levels were passed by Hamilton's gene in sequence or simultaneously. It isn't even acknowledged that a total selectee fitness does exist within Darwinian theory but not within Neo Darwinian theory. You have admitted that a total selectee fitness is required but have never attempted to provide one. This makes no sense to me. Without a total fitness concept no rationale exists for Hamilton's Rule. The reason why is easily seen when you examine Haldane's Pub rule. Why would Haldane agree to sacrifice himself for two brothers or eight cousins when if he had not so sacrificed himself, he may have lived to have reproduced a total higher than just one? Hamilton's Rule makes no more sense than Haldane's Pub Rule when the total fitness of the actor remains deleted. This total fitness is total Darwinian fitness. IMHO any rational person has to conclude that Neo Darwinistic models, (Hamilton's is my specific example) were over simplified from Darwinian theory via the deletion of Total Darwinian Fitness.

> *snip*<

> >>> *JE:–*
> >>> *Do you agree that it is invalid for any*
> >>> *simplified/oversimplified model to contest*

> >>> *the theory from which it was simplified/
> >>> oversimplified?*

> >> *GH:-
> >> If a model was designed to represent a particular theory in
simplified
> >> form,
> >> then I would agree with you. This is just not what most modeling
is
> >> about.*

> > *JE:_
> > What else can modelling be about? Science is about making
> > _empirical_ sense of the world via testable theories of
> > nature. Models can only help or hinder this process.*

> *GH:-
> Models can have either or both heuristic value and predictive value.*

*JE:-
Heuristics can do anything it wishes as long as
it is logically valid. This includes reversing
time. This is not so for any prediction of nature.*

> *GH:-
> You apparently recognize only heuristic value as part of science.*

*JE:-
Absolutely not. I recognise verification/non verification
OR refutation. I will never agree that verification/
non verification is sufficient for a valid theory of
nature. OTOH a model can be just a 100% heuristic
exercise or it may allow verification/non verification.
The interesting thing about Hamilton's Model is that
no verification/non verification even exists because
the diagnostic sign of c remains 100% arbitrary
On Fri 28/01/2005 I sent this to sbe:*

*"What people seem desperate to evade is
the fact that Hamilton's rule only
takes an _arbitrary_ fitness sample from the
donor's total fitness. The reason why all
Neo Darwinian fitnesses remain ongoing is because the
total fitness of the donar has been _artificially_
deleted. This is also the
reason why no defined time frame exists for
measuring fitness within the rule and why
the sign of c must remain arbitrary. The only
non arbitrary time frame that exists is the time
taken for one parent to complete reproducing
fertile forms into one population."*

>snip<

> GH:–

> *Lamarck's paradigm for adaptive evolution is a great example. Science is a process of learning, which is often accomplished by reaction to past (heuristically valuable) errors. Models have proven very useful in this regard.*

JE:–

Lamarck's view was a refutable hypothesis that was attached to Darwinism it was not a model of a heuristic exercise. The refutation of Lamarck allowed science to progress. A great debt is owed to him.

>> JE:–

>> *Obvious simplifications that mathematical models make such as random mating, infinite populations or the deletion of all epistasis including gene fitness epistasis are only made to help concentrate logic on a PART of a theory. No refutable theory of nature that I know can or could assume these things. If they did such a proposed theory of nature would be thrown out as laughable. I put to you and sbe reader's that the only valid use a model has is to help and not hinder a fuller and easier understanding of a testable theory of nature. If you divorce the model form its parent theory and employ it as a stand alone mechanism to interpret nature, then such an event is absurd.*

> GH:–

> *I disagree. It would only seem so if you completely swallow Popper's cartoonish view of science to the exclusion of other approaches.*

JE:–

I agree with Popper that refutation is an absolute essential for any valid theory within the sciences. I argue that such a view is just simple common sense. I disagree with him that induction remains invalid and that refutation is not itself, refutable. If you delete refutation then "anything goes" in the name of science, so it just becomes another a Post Modern exercise in futility.

>snip<

> >>> *JE:-*
> >>> *These models remain irrefutable so*
> >>> *that Empiricism within the sciences has*
> >>> *"not been done badly" it has become emasculated.*
> >>> *All that can be empirically done with*
> >>> *models per se is verification or non verification.*
> >>> *Hamilton's Rule which is just a 100% relative*
> >>> *proposition cannot even measure what it claims*
> >>> *to be able to measure i.e. cannot provide*
> >>> *a verification let alone a refutation.*

> >> *GH:-*
> >> *Hamilton's Rule does not claim to be able to measure anything, so*
your
> >> *comments here just don't make any sense.*

> > *JE:-*
> > *Yes, it cannot measure ANYTHING*
> > *Do you agree that the rule was misused to*
> > *measure when organism fitness altruism can*
> > *evolve within nature after group selection failed*
> > *to be able to do so over 50 years ago?*

> *GH:-*
> *Group selection is far from refuted, ..*

JE:-
But I did not claim it was refuted, I
only claimed it was not verified. All
the time verification/non verification
is confused with refutation within
Neo Darwinistic reasoning.

> *GH:-*
> *and the*
> *phrase "measured when" makes*
> *no sense to me here.*

JE:-
In the sciences you measure things.
You do so to say when things can
or cannot happen via a predictive
theory. So, what made no
sense: the measure by Hamilton of
rb, the measure of c or the measure
of their comparison by simple
subtraction or his conclusion as
to when his gene can spread?

> *snip* <

> > > *GH:—*

> > > *I agree with you, however, that models are not very useful for
> > > refutation.
> > > Surprisingly, a model is a kind of hypothesis, yet you argued above
> > > that
> > > hypothesis formation (e.g., model building) CAN itself result in
> > > refutation.
> > > You seem to have contradicted yourself.*

> > *JE:—*

> > *You misunderstood me. I argued that a hypothesis
> > represents a refutable part of theory where a
> > refutation of the hypothesis does _not_ refute
> > the theory, just that part of it. Testing my
> > shoe size does not refute that I exist. e.g
> > I refuted that my shoe size was a size 11
> > only because size 7 actually fits.
> > Any hypothesis and therefore any model
> > (if it is to be regarded as a hypothesis)
> > must be attached to a refutable theory.
> > It is pointless arguing that the elves
> > at the bottom of my garden take
> > a size 6 shoe if no elves exist. In
> > the same way a model must be attached
> > to its parent theory and provide empirical
> > results in its own right.*

> > *GH:—*

> > *OK, here is one of the weaknesses in Popper's paradigm. Just because
> > your
> > foot fits size 7 and not size 11 cannot refute your theory because it
> > is
> > an examination of only one instance.*

JE:—

If my foot can only fit just the one size then all other sizes are refuted by just the one instance of that shoe fitting. Popper was very clear. One refutation event is definitive. OTOH if my foot can fit all sizes then every shoe size is validly verified but none are refutable, i.e. it was just a pointless exercise.

> > *GH:—*

> > *The theory is not refuted until it has
> > been shown that there cannot ever be an instance in which the
> > prediction
> > would hold. This is not something that can ever be accomplished
> > empirically.*

JE:-

Do you mean "prediction" to mean "prohibited prediction" within: "until it has been shown that there cannot ever be an instance in which the prediction would hold" ?

The theory stands refuted when its anti-thesis is verified. Refutation is based on just the one verification of a 100% _prohibited_ event which is not the verification of all possible events that the theory predicts.

Regards,

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