

Underestimating 'r'

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- *From:* Tim Tyler <tim@xxxxxxxxxxxxx>
 - *Date:* Sat, 1 Oct 2005 14:38:59 -0400 (EDT)
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Criticisms of Hamilton's thinking in this group are common – and rarely seem to be received very well, so it's with some hesitation that I post on a related subject.

One of the fairer criticisms of Hamilton's thinking I've seen here is the idea that "r" is being consistently under estimated.

It's common to calculate "r" by using a truncated family tree – and ignore relationships between great grandparents as being of low relevance.

Such truncated trees tend to give lower values for relatedness than using a full tree would give.

How much lower is a question difficult question. If calculating relatedness using hamming distnaces, the figure depends to some extent on the size of the units being compared – and how close a match is needed before two units are described as being related.

Also, the figures may be significantly different for groups of organisms like cheetahs (an inbred group) and mice (an outbred one).

If "r" between organisms in a group or species is *actually* higher than is commonly belived, that might contribute to group/species–level selection – the extent of the power of which is still the subject of some controversy and debate.

Hamilton's rule talks about the circumstances under which a trait will spread through a population – but it doesn't itself consider the possibility of populations competing with one another – and the possibilty of high level selection trumping the effects of low–level selection.

So – is "r" higher than convention would dictate; and if so – how much higher? Evidence I've previously posted relating to the frequency of SNPs (and other polymorphisms) suggests to me that it is higher – and significantly so – perhaps enough to make me 70% related to my mother – rather than the 50% convention dictates – and enough to make individuals quite a bit more

Underestimating 'r'

than 0% related to other "unrelated" members of the population.

If so, what's the practical effect of this? As far as I can tell, the effect would be pretty limited. It ought to make individuals behave somewhat altruistically to other members of their species. However there are a raft of other theories that predict this sort of thing (e.g. reciprocal altruism) – so the effect may be hard to tease out. It wouldn't make *much* difference to how relatives are treated – since their relative relatednesses would remain pretty much the same.

Any comments about all this? What's your personal estimate of "r" between, say, randomly-selected humans? If r /is/ being frequently underestimated, what empirical test would throw the most light on the issue?

Jim Tyler <http://timtyler.org/> tim@xxxxxxxxxxx Remove lock to reply.

• Follow-Ups:

- ◆ **Re: Underestimating 'r'**
◇ From: name_and_address_supplied
- ◆ **Re: Underestimating 'r'**
◇ From: Catherine Woodgold
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- ◆ **Re: Underestimating 'r'**
◇ From: jimmenegay
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◇ *From:* Jim McGinn

◆ ***Re: Underestimating 'r'***

◇ *From:* Catherine Woodgold

◆ ***Re: Underestimating 'r'***

◇ *From:* Guy Hoelzer

◆ ***Re: Underestimating 'r'***

◇ *From:* Catherine Woodgold

◆ ***Re: Underestimating 'r'***

◇ *From:* g

◆ ***Re: Underestimating 'r'***

◇ *From:* Jim McGinn

◆ ***Re: Underestimating 'r'***

◇ *From:* Joe Felsenstein

◆ ***Re: Underestimating 'r'***

◇ *From:* Perplexed in Peoria

- Prev by Date: ***Re: Paper: Contingent movement and cooperation evolve under generalized reciprocity***
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- Previous by thread: ***Species evolve, but what do the rest of us do?***
- Next by thread: ***Re: Underestimating 'r'***
- Index(es):
 - ◆ ***Date***
 - ◆ ***Thread***