

Re: Underestimating 'r'

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- *From:* jimmenegay@xxxxxxxxxxxxxx
 - *Date:* Mon, 17 Oct 2005 00:32:12 -0400 (EDT)
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Catherine Woodgold wrote:

> "Perplexed in Peoria" (jimmenegay@xxxxxxxxxxxxxx) writes:
>> "Catherine Woodgold" <an588@xxxxxxxxxxxxxxxxxxxxxx> wrote in message
[news:diq3mu\\$1irv\\$1@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:diq3mu$1irv$1@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)
>>> ... It turns out that if the rate of A
>>> in the population is high, then the best strategy
>>> for the Aa organism if it wants to promote the
>>> rate of A may be to commit suicide (or to
>>> stay alive only if by doing so it can cause
>>> a lot of harm to its relatives!)
>>
>> But there is no reason why an Aa organism would
>> 'want' to promote the rate of A. It has an
>> equal 'interest' in promoting the rate of a.
> ...
>> However, even people like me who LIKE teleological
>> language become somewhat nervous about the use of
>> 'want' and 'interests' in a case like this.
>
> Maybe some people "want" to use teleological language
> at certain times, and other people "want" to use it
> at other times. I happened to feel like using it
> right then, even though I figured somebody would
> probably object to it. How about just translating what I
> said into non-teleological language and assuming
> that's what I meant?

The trouble is that in a case like this, there is no unique translation. The teleological language is ambiguous as will be seen below.

>> In fact, if the frequency of A in the population
>> is high, the organism will be more interested in
>> promoting the success of the rarer allele a than
>> in promoting the success of the common allele A.
>
> I disagree with this statement. Can we make
> it more clearly stated and testable and then

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> test it?

Well, make it more clearly stated so we can model it, anyways.

- > Do you mean this: If A is common and a is rare, then
- > (averaged over many possible genes A and a) an organism
- > with Aa is more likely to behave in a way that promotes
- > the prevalence of a than it is to behave in a way that
- > promote the prevalence of A.

Nope. That is not what I meant. Though your interpretation is one possible interpretation. That is what I meant above by saying that the teleological language is ambiguous.

What I meant was that when an Aa individual encounters an aa individual, 'r' is slightly larger than it would be when an AA individual is encountered. Two reasons for this:

1. The Aa individual is more 'a-ish' than the general population, and less 'A-ish' than the general population. So, if you see his goal as making the rest of the population look more like himself, then his goal should be to increase 'a' in the population and decrease 'A'. In fact, if you use the regression definition of 'r', it is clear that you get a larger 'r' with aa as the recipient than with AA.
2. Since our focal individual has the rare gene 'a', it is likely that his relatives do too. Thus, an aa individual is more likely to be a relative than is an AA individual.

However, when you interpret it your way, then you are no longer just dealing with motive – you have to consider method and opportunity as well. And alibi. The rare gene 'a' is probably innocent of receiving favoritism in this population – if it did receive favoritism it probably would not be rare.

But I disagree with several points in your analysis:

- > I hereby argue that it's the other way around: if a is
- > rare, it's more likely to be a recent mutation and
- > to just behave in some random way. Since A is common,
- > it must have gotten common somehow so it's more
- > likely to behave in a way that promotes its own success.

Disagree. Most genes that become common do so without promoting themselves. They become common because they provide fitness to the organisms that carry them. (Hmmm. Does that count as self-promotion?).

- > A is more likely to have been tested in pairs with
- > other genes — that is, it's probably been

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- > paired with a lot of other genes in the
- > past, yet it's still common. So A may tend to cause some
- > behaviour in Aa that promotes A, while a might behave in a
- > way that promotes either A or a.

Well, it is likely that 'A' has some effect beneficial to the organisms that carry it. Whereas 'a' is possibly detrimental.

But it is extremely unlikely that either 'a' or 'A' would cause any kind of 'green beard' behavior. On the other hand, it is quite possible that some combination of genes in the total genome might cause altruism to individuals with a large 'r' with respect to the donor.

At the heart of our disagreement is your apparent assumption that the locus a/A has something to do with altruism. I was assuming that it is some arbitrary locus in the genome.

- **References:**

- ◆ **Underestimating 'r'**

- ◆ *From:* Tim Tyler

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