Alberto Acerbi (old website)

cognitive anthropology / cultural evolution / computational social science

Alberto Acerbi in cognitive anthropology, cultural evolution May 29, 2014December 31, 2014 823 Words

If we're all cultural darwinians what's the fuss about?

An important paper from Nicolas Claidière et al., "How Darwinian is cultural evolution? (http://rstb.royalsocietypublishing.org/content/369/1642/20130368.abstract)" appeared recently in Philosophical Transactions of Royal Society B.

Claidière and coauthors adopt a useful schema from the philosopher Peter Godfrey-Smith to distinguish "how darwinian" an explanatory framework can be considered. At the more general level, an explanation can be considered "populational" if considers "a system (such as culture) as a population of relatively autonomous items of different types with the frequencies of types changing over time" (Claidière et al. 2014). A second step is needed to qualify the explanation as "evolutionary", that is, the frequencies of those types at time *t* are a function of their frequencies at time *t-1*. All cultural evolution explanatory frameworks are both populational and evolutionary (I do not consider here vast amounts of socio-cultural anthropology).

Things get more interesting at the next two levels, i.e. the "selectional" and the "replicative". The former implies that the above types should exhibit variation, heritability, and fitness differences, while the latter adds a further constraint, that is that they should also replicate themselves. While only strict memeticists claim that cultural evolution is darwinian in all four senses, Claidière et al. argue that the correct explanatory framework for cultural evolution is not even the selectional one.

The dispute is about the fidelity of cultural transmission. For memeticists, the problem does not exist, as fidelity is sufficient to consider cultural transmission as a proper process of replication (as it is considered in biological evolution). For "standard" cultural evolutionists, rates of mutations of cultural items are higher than in genetic transmission, but it is still useful to consider in general the cultural success of an item as a result of selection among competing variants. According to Claidière et al. however this is, in the majority of cases, incorrect, as cultural traits do not propagate trough a process of copying (with more or less fidelity) but they are reconstructed each time. For example, I am trying here to report with high fidelity the cultural trait "How Darwinian is cultural evolution?", but I am certainly modifying it, making it shorter in respect to the original version, focusing on parts that *I* am particularly interested, misinterpreting and misunderstanding (my fault) what authors wanted *really* to transmit. Even worst, what *you*, reader, will recall of this post, will be even different (if anything). All this, for a transmission chain of two or three passages.

Claidière et al. reformulate and extend a concept that the anthropologist Dan Sperber proposes from a long time: cultural evolution forces are better thought in terms of attraction then in terms of selection. The various forces that transform cultural items during the reconstructive processes are not random, but they tend to act in a consistent, even when weak, direction, making cultural outputs converge toward particular "attractors". Sperber and colleagues generally focuses on cognitive forces. For example, some features of a story are easier to remember than others, and they will serve as attractors when the story is re-constructed. Eric Havelock (about which I read in Rubin, 1995) suggests that this is indeed a function of heroes and gods in epics and ballads that were orally transmitted. Heroes

and gods are "bags of attractors" (that's neither Havelock nor Rubin expression), as they have fixed and concrete features that are easy to image and to remember, which help narrators both to describe abstract concepts and to organise the narration in familiar sequences (Levi-Strauss often cited aphorism on animals "good to think with" should go in a similar direction).

While I am generally sympathetic with this proposal (as well as a Dan Sperber's fan), I think there are few points worth to discuss. The first concerns the notion of "attraction", and the fact that is often understood in different ways (and the effort of Claidière et al. to present a clear definition is certainly welcome), being sometimes equated to Boyd and Richerson's content bias (by me, for example). The second, more interesting, concerns the issue of reconstruction versus ~~replication~~ preservation. The question whether cultural propagation is better described as one or the other is an empirical one, and the answer varies for different cultural domains. Claidière et al. agree with that, but claims that "a large number" of cultural propagations are results of reconstructive processes. Perhaps. Without entering in technical details on how exactly copying fidelity should be considered (which are anyway useful), there should be a continuum between ideally pure individual innovation and virtually error-free copying (this continuum being wider than in the biological case), and, depending on the domain we consider, we may want to "move" in the Godfrey-Smith's schema. I'll try to write more on that soon.

[Much more interesting stuff below in the comments (https://acerbialberto.wordpress.com/2014/05/29/if-were-all-cultural-darwinians-whats-the-fuss-about/comment-page-1/#comment-1008). Thanks in particular to two of the authors of the paper discussed, Thom Scott-Phillips (http://thomscottphillips.wordpress.com) and Dan Sperber (http://www.dan.sperber.fr), and to Alex Mesoudi (https://sites.google.com/site/amesoudi2/) and Tim Tyler (http://on-memetics.blogspot.co.uk). Also, the discussion continues here (https://acerbialberto.wordpress.com/2014/06/17/what-is-and-what-is-not-cultural-attraction/).]

Tagged:
anthropology,
attraction,
content biases,
cultural evolution,
cultural transmission

19 thoughts on "If we're all cultural darwinians what's the fuss about?"

tmtyler says:
May 30, 2014 at 10:32 am
I was less impressed. Attraction-only dynamical systems are well known – e.g. gravitation. However, there are also dynamical systems with attraction and repulsion – e.g. electromagnetism.

Repulsive selective forces are well known – e.g. "divergent selection". The Sperber/Claidière classification of selection as a subset of attraction appears to fail on this simple technical point.

Reply
thomscottphillips says:
June 3, 2014 at 9:14 pm
Thanks Alberto for blogging about our paper, and for proving a useful summary. I'm obviously glad that you like the paper in general. But I'd like to reply to some of the points you make, if I may. Apologies in advance for the length of this comment.

With regards the source of attractors (what we call 'factors of attraction'), you say that "Sperber and colleagues generally focuses on cognitive forces". This is true historically – most of the examples used to illustrate the idea of cultural attraction have indeed been cognitive in nature (and the suggestions you list are further examples). But it has never been the case that the idea of cultural attraction is limited to or is only concerned with cognitive factors. Factors of attraction can in fact take many forms – cognitive, biological, physical, ecological, function (i.e. usage), and so on – and documentation of what factors play a role in any given case is, we argue,

critical to a proper explanation of why cultural traits take the form they do, and not some other form. We list some non-cognitive examples in the paper: one psycho-physical (the colour perception system, which influences the evolution of colour terms), and one ecological (the mutual support that exists between shamanism and the consumption of hallucinogenic substances).

On to your points of discussion. First: content biases. You say that attraction is "sometimes equated to Boyd and Richerson's content bias". It is true that this equation happens, but it's a mistake. There's an important ontological difference between content biases and attractors. Attractors are particular forms that cultural traits can take – ways to tie a knot, beliefs in supernatural beings, etc. Factors of attraction are, as I outlined above, the various phenomena (cognitive, ecological, biological, etc) that give rise to attractors. Attraction is the process by which cultural traits gravitate towards particular attractors, due to the influence of factors of attraction. Content biases may in some cases be relevant factors of attraction. As such, they do not correspond to attractors or attraction; they instead correspond to factors of attraction. But, and coming back to the point above, the thesis of cultural attraction does not and never has suggested that content biases are the main or only relevant factors of attraction. They may be important in particular cases, but it's certainly not the case that the content biases in existing models capture what the thesis of cultural attraction is pointing to.

Second: 'reproduction' vs 're-production'. You say that "the question whether cultural propagation is better described as one or the other is an empirical one, and the answer varies for different cultural domains". You also state that we agree, but I don't see why you say that. What we actually say is that *all* cultural propagation is re-production. It's just that in some cases this re-production is of sufficiently high fidelity that it looks like reproduction. In the paper we give several arguments why cultural propagation is always re-productive. Rather than repeat those points, here I'd just like to add another. Cultural propagation involves chains of mental representations (beliefs, intentions, desires, etc) and public productions (words, actions, writings, etc). Critically, these chains alternate between these mental and public forms (except perhaps in a few special and unusual cases). As such, there cannot be any bone fide reproduction, since at every step there is a translation from one medium to another. This is quite unlike the biological case, where DNA begets DNA. In culture, in contrast, mental representations beget public productions beget mental representations – and so reproduction (i.e. replication) is logically impossible. Instead, there is re-production at each step. The point we make in §3 of the paper is that this re-production typically involves both preservative and constructive aspects. But whatever the mix of these, what's happening is still re-production, and not reproduction.

Finally, let me address the question that forms the title of your post. In my view (and I believe that of my co-authors too), one of our main jobs as cultural evolutionsists is to explain why cultures take the forms that they do, and not some other forms. Just as the theory of natural selection provides the tools to explain why biological traits are the way they are, and not some other way, an *explanatory* theory of cultural evolution should provide the tools to explain why cultural traits are the way they are, and not some other way. The thesis of cultural attraction aims to do that, and that's why it's important. Specifically, the thesis allows us to specify the problem as being one of identifying which factors of attraction are relevant in any given case. (This is analogous to the situation in evolutionary biology where, ever since Darwin, a key explanatory task is to identify the selection pressures that are relevant in any given case.)

Reply

Alberto Acerbi says:
June 4, 2014 at 9:22 am
Hi Thom,

first of all thank you very much for taking the time to answer to my post! Your thoughtful reaction gives me the opportunity to qualify, and in a case to correct, my previous statements. As I wrote I was going to expand the last paragraph of the post, and I think that this would have shown that I mostly agree with your points, even though I have generally a different attitude towards the concept of "attraction". Anyway, here it is.

…With regards the source of attractors (what we call 'factors of attraction'), you say that "Sperber and colleagues generally focuses on cognitive forces"…

I fully agree with you, and I wrote indeed *generally*. Given the short space of a blog post, and the possibility of giving a single example, I preferred to conform to the "tradition", but it is clear to me that cognitive aspects are just a subset of possible factors of attraction.

…On to your points of discussion. First: content biases…

Again, I basically agree. I did not claim that the identification of content biases and attraction is correct (but 1. it happens, 2. I did it myself – now I think incorrectly, and 3. this confusion can legitimately be generated by the literature, more on the "standard" cultural evolution side than from "your" side, if you want).
Also, I explicitly acknowledged your effort in the paper to provide a definition, as well I appreciate now the clarity in the comment of your distinction between attraction/attractors/factors of attraction.

…Second: 'reproduction' vs 're-production'…

My fault. I guess I should have write "preservation" not "replication"? (I have now changed it in the text).

So I agree that culture is never replication, but I'd say that different cultural domains may be more or less preservative (I believe you agree on that), and that, for particularly preservative ones, we may want to "move" towards a selectionist framework (I believe you do not agree on that).

Let me extend this point. I think it is quite uncontroversial that in some domains cultural propagation is highly preservative. Take the case of names. I'd assume that error and innovation rates are low enough to make this a domain in which we can consider the success of a name as a result of selection between other competitors. Or consider the success of content in internet. If I want to transmit to my friends a content I am interested in, I will just "share" a link or similar, and this seems to me very preservative. Given that this form of cultural transmission is probably increasing in proportion (in respect, say, to face-to-face, orally based, interactions, in which "preservativity" of transmission is low), this seems to me an interesting domain.

More broadly – and this goes back to the problem with the definition of attraction – for the reasons above (i.e. cultural domains vary in their preservativity) I personally find more interesting a narrow definition, in respect to the one you propose in the paper, in which attraction is *alternative* to selection. If everything is attraction-based I think one loses some explicative power. As you say in the last paragraph of the comment the problem becomes identifying the "factors of attraction", but this is to me as saying that the problem becomes identifying the reasons why some traits are more successful than others, which we already knew.

If attraction is considered alternative to selection, and they are related to the preservativity of different domains, there is more naturally some empirical work to do. One can investigate different domains, see how preservative they are, and test, for example, if success in low-preservative domains (attraction framework) is caused by different factors than success in high-preservative domains (selection framework).

Reply

thomscottphillips says:
June 4, 2014 at 12:15 pm
Hi Alberto,

Thanks for the swift reply. It's good that we agree on many substantive points, in particular that factors of attraction can take many forms; that it is useful to distinguish attractors / attraction / factors of attraction; and that the balance of constructive and preservative aspects will vary in different cases. Your examples of preservation and construction are good ones. (And yes, I did suspect that at times in the original post when you referred to the reproduction (replication) / re-production distinction you actually meant to discuss the preservative / constructive distinction – but I had to take the post as written. It's good that once we get the terms clear, we agree on the substantive point here.)

The one point of disagreement we seem to have is not an empirical matter, but a semantic/conceptual one. You are not as keen as I/we are on a broad definition of attraction and attractors, in which selection becomes a special case of attraction. I see this as similar to conversations about the difference between sexual selection and natural selection. Sexual selection is of course a particular type of natural selection, but many biologists find it useful, for various reasons, to think of it as a different domain. This is fine, so long as one keeps in mind that both operate according to the same principles. The situation is similar with selection vs attraction. Yes, you can treat them differently if you wish (and there may be good reasons for doing so, depending on your question(s)), but we should not lose sight of the fact that in the end, selection is a type of attraction. (Incidentally, I am currently involved in a project along the lines you suggest i.e. one in which we compare the role of selection to other forms of attraction.)

Reply

Alex Mesoudi (@amesoudi) says:
June 4, 2014 at 4:20 pm
Hi Thom and Alberto

This is a valuable conversation, it's useful to clarify these issues as I think they are causing much confusion in the literature. To add my two cents, mainly directed at Thom:

Originally Dan Sperber defined 'attraction' as a process of transformation, primarily (although not necessarily, as you say above Thom) due to cognitive processes. To me this most closely resembles what Boyd & Richerson in their 1985 book called 'guided variation', where people copy a trait, possibly with low fidelity, and individually transform it in a direction prespecified by cognitive or perceptual biases. Colour terminology (Xu et al. 2013, Proc B) seems a good example of this, as well as more cognitive examples like Atran and Boyer's work, or recent stuff by Morin (which I think is great). There is nothing resembling selection in these specific cases, the change is due to individual cognition. This is fine, and perfectly consistent with standard cultural evolution theory.

The more recent definition of 'attraction' presented in this recent Phil Trans paper seems to have expanded to mean *any* kind of cultural change. So both the original Sperberian attraction (reconstruction / guided variation) plus more selection-like processes such as content bias, conformity or payoff-bias would all be counted as examples of the new, wider 'attraction'.

So I guess I my question for you Thom is: What now is the difference between the new cultural attraction, and what I and others (e.g. Boyd and Richerson, I presume) would simply call cultural evolution?

The way I see it, the two are equivalent. Cultural evolution, as B&R laid it out in 1985, incorporates both reconstructive cognitive biases (guided variation), plus all the other processes now included in attraction. Renaming cultural evolution as cultural attraction seems to me to cause unnecessary confusion, when basically we are all saying the same thing. Plus, Boyd & Richerson (and Cavalli-Sforza & Feldman in 1981, and many others since) have already constructed a formal mathematical framework incorporating all of these processes, and have applied this framework to many empirical cases, so why throw it all out and start again with an informal verbal framework?

Reply

Dan Sperber says:
June 5, 2014 at 8:54 pm
Thanks to Alberto for this post and to Thom and Alex for their comments. I would like here to address more particularly Alex's comment.

First, a historical point. I introduced the idea of cultural attraction in chapter 5 of my 1996 book _Explaining_Culture_. The last section of the chapter was entitled "Ecological and Psychological Factors of Attraction." What is substantially new in the 2014 Claidière, Scott-Phillips & Sperber article therefore is not the role given to ecological factors of attraction, nor is it the idea that selection is best viewed as a special case of attraction, nor is it the definition of attraction. All this was already there in the 1996 article. As you may check, there is no "original Sperberian attraction" to be contrasted to "new cultural attraction." What is genuinely new in the 2014 paper is the proposal to model cultural attraction in terms of evolutionary causal matrices.

Regarding the relationship of the attraction approach to Boyd, Henrich, and Richerson's approach to cultural evolution, let me make a couple of points.

No question, the BHR's contribution to the study of cultural evolution has been developed with a thoroughness, a formal sophistication, and a wealth of empirical support that is without par. The variety of phenomena they (and others cited by Alex, and Alex himself) have discussed is such that it would be surprising to find a type of cultural evolution mechanism about which they had had nothing of relevance to contribute. In particular their notions of 'guided variation' and of 'content biases' point, as Thom suggested in his comments, to important psychological factors of attraction. Does this mean that there is nothing really new or different in the attraction approach?

Alex asks: "What now is the difference between the new cultural attraction, and what I and others (e.g. Boyd and Richerson, I presume) would simply call cultural evolution?" What he suggests, with this rhetorical question, is that, no, there is no significant difference: ours is just a rewording of well-established ideas.

The issue, of course, is how best to describe the processes involved in cultural evolution, and whether there can be a unitary description of, if not of all the processes involved, at least of the most important ones. The dominant view is that cultural evolution is first and foremost evolution by cultural selection; and then, yes, you may have other types of processes also involved, including some attraction, if that is what you want to call it. Our claim, on the other hand, is that cases of cultural attraction that are not cases of selection are quite common and important, possibly more common and important than cases of selection proper, and that, nevertheless, a unitary description is possible once you realise that, formally, selection is a special case of attraction (another point, by the way, made in my 1996 chapter).

A piece of recent info might not be out of place here. As it happens, I just came back from a workgroup at the Santa Fe Institute organised by Dan Dennett specifically to discuss how to articulate the Boyd-Henrich-Richerson approach to the cultural attraction approach. Boyd, Henrich and Richerson were there, and on the attraction side were Claidière, Morin, and myself (I much regretted that Thom couldn't participate). We also had Peter Godfrey-Smith, Kim Sterelny, Sue Blackmore, and of course Dennett. Nobody adopted a dismissive stance to attraction. We agreed that there were differences in our two approaches, but the general feeling was that the differences were not, for the most part, unbridgeable. We discussed rather complementarities. Just as it was obvious to all that the whole field had been largely and quite positively defined by the work of Boyd and Richerson, there seemed to be a consensus that the attraction approach presented some novel ideas well worth at least exploring. There won't be proceeding of this informal workshop but there will be an overview by Dennett and the written comments we have all produced at the end of the conference will, I hope, be made public. Maybe stuff for more blogging in due time.

Reply

thomscottphillips says:
June 6, 2014 at 2:43 pm
It's great to see this conversation moving along. It will come as no surprise that I agree with Dan's responses to Alex's questions. In this comment I'd like to present a thought experiment about the development of evolutionary theory in biology, building on the analogy I mentioned in one of my earlier posts above. Doing so will, I hope, help to explain why I see the attraction perspective as especially important.

Suppose that, after the fact of biological evolution had been observed, the first formal frameworks used to model it had been models of sexual selection. Numerous models of various different aspects of sexual selection were developed. Then, some scientists suggested that, while this research was clearly interesting and useful, it did not capture everything that was explanatorily important about biological evolution. That is to say, there are cases of biological evolution that seem to be the product not of sexual selection, but of other processes. In fact, they suggested that the general process by which species evolve is natural selection, of which sexual selection is a special case. They acknowledged that, depending on your purposes, it can be useful to separate out natural and sexual selection, but they were keen to emphasise that when doing this we should not lose sight of the fact that sexual selection is at bottom a particular case of natural selection: the differential reproductive success of organisms interacting with their environment. In short, these scientists argued that to model natural selection as a variant of sexual selection seems to miss a lot that is explanatorily important about biological evolution.

I hope it is clear that I see the situation with cultural attraction and cultural selection as similar. Cultural attraction is to cultural evolution what natural selection is to biological evolution: a fully general theoretical framework that provides the conceptual tools to explain why evolution proceeds in the ways that it does. Similarly, cultural selection is analogous to sexual selection: a particular instance of natural selection, which may or may not be important in any given case. As we said in the article, the relative importance of cultural selection is an empirical matter that will vary from case to case – but whatever the answer, cultural selection remains a special case of cultural attraction.

Reply

Alex Mesoudi (@amesoudi) says:
June 9, 2014 at 3:00 pm
Thanks Thom and Dan for clarifying these issues. Blog comments certainly are a quicker way to do this than publishing a series of papers!

A quick point: in no way was I seeking to denigrate or dismiss work in the cultural attraction school; as I said in my post above I think there is great work being done in this school.

But I still fail to see a difference between cultural evolution and cultural attraction. In fact that's my main issue: that we all agree on everything, except terminology (i.e. what we call the different processes that we are all studying).

Thom in his last post says "Cultural attraction is to cultural evolution what natural selection is to biological evolution". Yet in the same sentence, it is said that cultural attraction is a fully general theoretical framework for explaining cultural evolution, and then that cultural selection is a special case of cultural attraction. This seems inconsistent.

To go back to the biological evolution analogy: biological evolution is the general framework within which multiple processes operate to cause changes in phenotypes over time: natural selection, sexual selection, mutation, migration, meiotic drive, etc.

By analogy, I would say that cultural evolution is the general framework within which multiple processes operate to cause changes in cultural traits over time: cultural selection (e.g. content bias), cultural mutation/innovation, migration, guided variation etc. These processes are broadly analogous to the list of biological processes listed in the previous paragraph (although their importance may differ, e.g. guided variation is more important in cultural evolution than meiotic drive is in biological evolution).

It seems to me that if 'cultural evolution' were replaced in the previous paragraph with 'cultural attraction' (i.e. "cultural attraction is the general framework…"), then that would yield an accurate description of cultural attraction.

So to rephrase Thom's sentence: "cultural attraction *is* cultural evolution; cultural selection is to cultural evolution/attraction what natural selection is to biological evolution".

Reply

tmtyler says:
June 10, 2014 at 11:17 pm
According to the model in the paper, "attraction" refers to an increase in relative type frequencies. "Evolution" is sometimes defined by population geneticists as being a change in relative gene frequencies. "Attraction" is a property of a pair of frequencies of types – whereas, in population genetics, "evolution" is a population property – generally measured across all genes. Since change is always an increase in frequency of one type over another a population undergoing some kind of "attraction" is undergoing "evolution", and a population undergoing "evolution" will exhibit "attraction" somewhere. In other words, these concepts delineate equivalent processes. Of course, the population genetics definition of "evolution" is a narrow one – and I for one do not endorse it.

However, I don't think we can use "attractor" and "attraction" to refer to an increase in relative type frequencies – as this paper does. Those words have quite different meanings, both in the dictionary and in dynamical systems theory. If evolutionists adopt the dynamical systems theory conception of "attractor" and "attraction" (which would be sensible), the claim that attraction is a subset of selection becomes unsupportable – it's more the other way around.

Reply

Alberto Acerbi says:
June 13, 2014 at 8:53 am
Again, in the first place, let me thank everybody for joining this conversation. It is my pleasure to host such interesting opinions on the blog, and I wish this exchange may help share and clarify our positions.

As I hope I already made clear, I am generally sympathetic (with distinctions) with Dan/Thom ideas, but, in the same time, I share Alex's terminological worries.

In particular, I agree with Alex that a *broad* concept of "cultural attraction" overlaps with the standard "cultural evolution" definition, and thus may be redundant.

If "cultural attraction" is defined as "the possibility that every item of every type at t may have some causal effect […] on the frequency of items of every type at t + 1" as in the paper we are commenting ("In order to model the process of cultural attraction…", p. 6), this is exactly the definition of the more general evolutionary framework in Godfrey-Smith schema. If this is not the definition, then I need to understand better what Dan/Thom intend with cultural attraction.

On the other side, as I already mentioned, I think that Dan/Thom make an excellent point stressing the importance of transformative processes in cultural evolution. In this case, while there may be, as Alex notices, a partial overlap with guided-variation, it is worth, in my opinion, to use a different terminology. Boyd and Richerson's cultural evolution is largely a selection-based business, with transformative processes being possible, but looking like the exception.

Under the general "cultural evolution" framework, different domains allow for different degrees of transmission fidelity, so that selection biases and transformative forces (or factors of attraction, in my preferred *narrow* version) act in different ways. As before, I think that is an empirical question to determine, for example, how faithful transmission is in a cultural domain, or how factors of (narrow) attraction and selection biases interact.

I'd like to summarise all the discussion and report the various positions in a further blog post, to not leave all this important ideas buried in the comments (or perhaps develop it in a proper paper, if you are interested?). Also, I am looking forward to the material from the Santa Fe workshop that Dan mentioned, which will certainly be an excellent reading!

Reply

Dan Sperber says:
June 13, 2014 at 10:50 am
Alex suggests that there is no difference other than terminological between 'cultural evolution' and 'cultural attraction' and Alberto seems to agree. There is, I believe, a simple and compelling reason why this cannot be so: drift. Surely, there is cultural drift just as there is genetic drift. In fact, drift is arguably even more important in the cultural case. In standard approaches, evolution is seen as involving selection and drift plus possibly other minor forces. The alternative we are proposing is that selection can be treated as a special case of attraction, and that evolution can be seen as attraction plus drift (other minor forces being subsumed under attraction). In the case of cultural evolution at least, we claim, doing so is truly beneficial. It is however quite controversial because, precisely, it is a substantial proposal, not a terminological one.

Reply

Alex Mesoudi (@amesoudi) says:
June 13, 2014 at 12:46 pm
Thanks Dan (and Tim and Alberto previously – it would certainly be useful to summarise these replies into a new post, Alberto)

Three quick points in response to Dan:

1. Drift has been unproblematically incorporated into cultural evolution work from the very beginning, notably in Cavalli-Sforza & Feldman's 1981 book, plus subsequent work in archaeology (e.g. Neiman 1995) and Alex Bentley and Alberto's work on popular culture (e.g. Acerbi & Bentley 2014).

2. You write "In standard approaches, evolution is seen as involving selection and drift plus possibly other minor forces" – as I wrote in an earlier post, I don't think this is fair (particularly the "possibly"), as transformative processes such as guided variation are clearly present in cultural evolution frameworks such as Boyd & Richerson's (1985), or the one in my book. As Alberto says, one could (possibly legitimately) argue that transformative/non-selective processes haven't received as much empirical attention from Boyd, Richerson and others (although I've studied them before, e.g. Mesoudi & Whiten 2004), but they are certainly present in the theory.

3. "The alternative we are proposing is that selection can be treated as a special case of attraction, and that evolution can be seen as attraction plus drift (other minor forces being subsumed under attraction)" I'm still not seeing exactly what cultural attraction is here, or what explanatory job it's doing. You subsume selection (and other minor forces) into attraction, and evolution is then attraction plus drift. Why not just subsume selection, guided variation/transformation, drift, migration, other minor forces etc. all into evolution?

Sorry to be picky, just trying my best to understand the different perspective!

Reply

Dan Sperber says:
June 13, 2014 at 1:51 pm
Thank Alex. We are getting closer (or so I hope).

You ask: "You subsume selection (and other minor forces) into attraction, and evolution is then attraction plus drift. Why not just subsume selection, guided variation/transformation, drift, migration, other minor forces etc. all into evolution?"

The main answer to your question is given in the way you formulate it yourself. Why? For the sake of generality: If any subset of the forces involved (possibly all except drift, in fact) fall under a single definition, and a definition, what is more, that goes together with a unitary way of modelling things, then not taking advantage of this partial unification would be missing a range of possible answer.

The second answer, which should be more controversial, but without which we probably wouldn't have gone this way is that we feel that the focus on selection has been, even if productive in many ways, rather misleading. A lot, a big lot of important cultural attraction is herero-attraction, i.e. not selection, or so we claim.

Many thanks to you Alex and to all, and let's indeed wait for Alberto's new post before possibly resuming the conversation.

Reply

tmtyler says:
June 14, 2014 at 12:35 am
It seems as though you could characterize a 'repellor' as any type whose relative frequency tends to decrease over time – and wind up with the exact same category of non-drift. If the "attraction" and "repulsion" characterizations are equally good, the proposed name seems to be a rather one-sided perspective.

Most other cultural evolution frameworks don't bother much with a "non-drift" category. Instead, they expand the role given to mutation – to include directed mutations of various kinds. Non-drift is a "dustbin" category – a mixture of disparate processes, including the production of types, their modification into other types and their destruction. I doubt it is a particularly helpful category.

Reply

Dan Sperber says:
June 14, 2014 at 11:07 am
To tmtyler:

1) Attraction as defined in the theory of cultural attraction can have positive or negative values (corresponding to the fact that the causal impact of items of a given type on the frequency of items of some other or identical given type at the next time step can be positive of negative). No need therefore to add a category or 'repulsion'.

2) There is no category of non-drift in the theory. Attraction is nowhere defined as non-drift. The claim is that attraction unifies in a sensible manner (at least for the case of cultural evolution) a variety of forces including selection and whatever are the cultural counterparts of mutation. (Given the absence of a serious genotype/phenotype distinction in the cultural case, and, moreover, the fact that strict copying is at most a marginal practice in cultural transmission, the notion of mutation is, to say the least, not well defined in the cultural case.) To this, in an earlier reply to Alex and Alberto, I have added the conjecture that attraction plus drift exhaust the forces involved in cultural evolution. If this turns out to be false and there are forces other than attraction and drift in cultural evolution, this would challenge neither the theory nor, obviously, the definition of attraction, (nor, for that matter, the point of my reply to Alex and Alberto's objection that, as we define attraction, it is equivalent to evolution; if there are in cultural evolution not only attraction and drift, but also other forces, then attraction can even less be taken to be a synonym of evolution.

Reply

tmtyler says:
June 19, 2014 at 10:11 am
A force which can take positive and negative values is normally called a 'force'. Attraction is normally defined as a force that makes things move towards each other. The idea that attraction can take positive and negative values makes little sense. Forces can take positive and negative values. Attraction is one of these kinds of force. Your concept appears to be in conflict with this normal usage of the word.

The conjecture that processes containing your 'attraction' are the same set of processes that contain forces other than drift appears to be true – based on some of the definitions presented so far. The modern definition of 'selection' is also a "dustbin" category in this sense – since it's defined in terms of non-random differential reproductive success – and includes all kinds of very different processes. However, this doesn't make it a good thing.

As for mutation not being "well defined" in the cultural case – things are only poorly defined until you define them. It is fairly simple to define mutation as a deviation from verbatim copying of heritable information. That definition applies pretty well to organic and cultural evolution. You can't have much of a theory of Darwinian cultural evolution without making use of the concept of 'mutation'. We need to define it, so we do that, and then it is "well defined".

Reply

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