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Darwinism and Organizational Ecology: A Reply to Reydon and Scholz

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Abstract

In an earlier article published in this journal I challenge Reydon and Scholz's (2009) claim that Organizational Ecology is a non-Darwinian program. In this reply to Reydon and Scholz's subsequent response, I clarify the difference between our two approaches denoted by an emphasis here on the careful application of core Darwinian principles and an insistence by Reydon and Scholz on direct biological analogies. On a substantive issue, they identify as being the principal problem for Organizational Ecology, namely, the inability to identify replicators and interactors "*of the right sort*" in the business domain; this is also shown to be easily addressed with reference to empirical studies of business populations.

Keywords

generalized Darwinism, interactor, Organizational Ecology, population, replicator

1. Introduction

Taking account of key advances in modern evolutionary theory, in my article titled, "Untangling the Conceptual issues in Reydon and Scholz's Critique of Organizational Ecology and Darwinian Populations" (2013), I acknowledge

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Reydon and Scholz's central argument regarding the questionable evolutionary nature of populations when conceived as sets and the problems this presents for evolutionary explanation where reproductively connected communities are required. I go on to demonstrate how Organizational Ecology could develop a complete Darwinian evolutionary program by incorporating the replicator–interactor distinction (Hull 1988). Besides the replication of routines that occurs between organizations, this tool enables conceptualization of the replication and transmission of routines and capabilities over organizational generations, for example, from parent to spin-off companies. Accordingly, it provides conceptualization of an inheritance mechanism. Reydon and Scholz remain unconvinced.

Reydon and Scholz (2009) persist with the view that Organizational Ecology is deeply incompatible with Darwinian thinking. They belabor the problem regarding conceptualization of organizational populations as sets, and despite their professed acknowledgment of the general nature of Darwin's theory (Reydon and Scholz 2009, 411), they strangely insist on direct biological analogies. With an inattentive dismissal of the replicator–interactor framework (which they incorrectly suggest is portrayed by me as constituting a Darwinian ontology), they question its relevance for the business domain wherein they are able to perceive neither an interactor nor generational links between organizations. Section 2 clarifies the key ways in which our approaches differ, Section 3 deals with the substantive issues around real-world examples, and Section 4 concludes the discussion.

2. General Principles versus Biological Analogy

The difference in our respective approaches revolves around the issue of biological analogy. This is clear in a sample of comments from Reydon and Scholz as follows:

> In biology, the term "evolution" has a very specific meaning (e.g., Futuyma 2005, 2ff.) and talk of "evolution" in Organizational Ecology, we argue, does not involve this precise meaning. (2009, 411)

> Organizational Ecologists cannot say to have identified entities that actually *evolve*, at least not in any way that even faintly resembles biological evolutionary processes. (forthcoming, 3)

> [T]he organizational "populations" studied in Organizational Ecology are insufficiently like the organismal populations studied in evolutionary biology to act as entities in evolutionary processes. (forthcoming, 4)

Following proponents of generalized Darwinism (Aldrich et al. 2008; Hodgson and Knudsen 2010), the approach here is emphatically *not* to seek direct biological analogies with phenomena in the social domain but instead to carefully apply the core explanatory principles of Darwinism to complex population systems that meet certain criteria. Note that this signifies a very different starting point and approach to that concerned with biological analogy, and it is important to distinguish between the two positions.

Analogies are used to illuminate and explain phenomena and processes in a one domain (target) on the basis of their similarity to phenomena and processes in another domain (base). If they are insufficiently similar, they are considered disanalogous. Reydon and Scholz see Organizational Ecology (target) and biological evolution (base) as *disanalogous* because, among other things, the entities and mechanisms of replication are very different. Proponents of generalized Darwinism *also* recognize these disanalogies, but it is argued that these differences at the level of detail do not undermine this approach because essentially analogical claims are different from generalizations (Hodgson and Knudsen 2010, 23).

Before he formalized the replicator–interactor framework, in an earlier paper where he explains his approach to the "units of selection" problem in biology, the philosopher David Hull (1981) illustrated what we mean by "generalization" in science. Reflecting on the approach adopted by geneticist Richard Lewontin (1970), he observed how the latter first characterizes the evolutionary process and then considers evidence for and against selection at various levels of organization. Hull then explained his own approach, which, by contrast, begins by focusing on the evolutionary process itself, investigating its *general* characteristics, and only then considering which entities have the requisite characteristics to function in the evolutionary process.[1]

Whereas analogy is about mapping knowledge from one domain to another, generalization resists any analytical bias and begins by observing complex mixes of different entities, processes, and systems of relations and striving to identify essential features held in common. In this way, scientists draw out general principles unconstrained by the detailed mechanisms of any one domain and then formulate these at fairly high levels of abstraction.

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1 Hull (2001, 21) "One reason why evolutionary biologists have been unable to discover universal regularities in the evolutionary process is that they are not comparing like with like. They are dividing up the organizational hierarchy inappropriately. The appropriate levels are not genes, organisms, and species as they are traditionally conceived, but replicators, interactors, and lineages."

In generalized Darwinism, the principles of variation, inheritance, and selection provide a meta-theoretical framework within which auxiliary theories, pertinent to phenomena in the domain of enquiry, supplement the analysis. As previously observed (forthcoming, 21), what defines this approach, as its authors stress, is "the claim of common abstract features in both the social and the biological world" and "a contention of a degree of *ontological communality*, at a high level of abstraction and not at the level of detail" (Hodgson and Knudsen 2010, 22).[2]

While Reydon and Scholz are correct to caution against an "evolutionary everything" mentality (forthcoming 6), they are decidedly incorrect to suggest that this characterizes the approach of generalized Darwinism, the architects of which have been consistently clear about required conditions and spheres of application (Hodgson and Knudsen 2008, 2010, 2012). Slavish adherence to biological analogy for elements of this generalized conceptual structure is simply not necessary nor is it helpful.

Correspondingly, it is important to stress here that the population-defining problem of central concern to Reydon and Scholz (regarding reproductive relatedness within populations), which was comprehensively addressed in my earlier paper via the replicator–interactor tool, *remains* a problem in biology too. Referred to as "the species problem" (de Queiroz 2005), it recognizes that contrary to the widely held view that defines populations as an interbreeding group reproductively isolated from other groups, reproduction occurs in a number of different ways in the natural world (i.e., sexual, asexual, parthenogenesis). Insufficient information around sexual dimorphism, polymorphism and other types of variation, as well as around "evolutionary intermediacy" (when populations are diverging to form new species) continue to complicate the issue so that species are not clearly delineated in evolutionary biology either. However, this has not stalled evolutionary theorizing in biology.

Indeed, it should be noted that because of the very different biological mechanisms of replication, generalization is required *within* biology as well. As Hull points out below (1988, 403):

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[2]Hodgson and Knudsen (2012, 609) elsewhere offer further clarification on this position, "In making the claim . . . that social evolution is Darwinian, we are interested in establishing principles and concepts of sufficient but not maximal generality. The principles and concepts must be sufficiently general to span the key common features of biological and social evolution, but they need not encompass any conceivable definition of evolutionary processes (and implied phenomena) in these domains."

> As it turns out, the amount of increased generality needed to accommodate the full range of biological phenomena turns out to be extensive enough to include social and conceptual evolution as well.

3. The Right Sort of Replicators and Interactors

Unshackled by the misguided call for direct biological analogies and acknowledging that organizational ecologists must similarly negotiate fuzzy boundaries between industrial forms,[3] this leads to the second challenge posed by Reydon and Scholz. That is, evidence that the business domain encompasses replicators and interactors "of the right sort" (forthcoming, 5).

> While we agree that routines might be seen as replicators, we believe that it is not with the replicators that the problem lies—it is with the interactors . . . the problem is that successful organizations (interactors) do not give rise to offspring organizations that closely resemble their "parents"—that is, that organizations do not "breed true" and, indeed, do not breed at all. There is no reason to think that routines are transmitted preferably to organizations of the same kind or set. (forthcoming, 7)

As they rightly point out, my earlier work did not elaborate on examples. Focused on a defense of Darwinian thinking for the social sciences and elucidation of the theoretical framework required for remedying Organizational Ecology (which included rejection of the definition of organizational populations as "sets"), this was a very conceptually orientated paper. The fact is that the business domain is replete with paradigmatic replicators and interactors in the form of routines and business organizations. Moreover, there is ample evidence of strong generational links between organizations and within populations.

Spin-off enterprises offer clear examples of firms giving rise to offspring firms that closely resemble their parents. Spin-offs can be created by existing firms creating new firms from one of its divisions or from breakaway groups starting up new businesses. Noted as prevalent new entrants in many high-tech industries, recent research on spin-offs in the hard disk drive industry highlights the importance of inherited know-how from the parent firm and

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[3]Although these forms must adhere to the requirement for "structural cohesion" of the interactor. Hull (1988, 408) defines the interactor as, "an entity that directly interacts as a cohesive whole with its environment in such a way that this interaction causes replication to be differential."

the impact of the level and quality of this on firm formulation and survival (Franco and Filson 2006).

Indeed, studies show that spin-offs are quite common in some industries with people leaving organizations equipped with routines they replicate to create new organizations of the same kind (Christensen 1993; Klepper 2001; Klepper and Sleeper 2005; Phillips 2002). It has also been demonstrated that people who create organizations in populations where they have had previous work experience do better than those from outside the industry with entrepreneurs replicating industry routines and capabilities in their start-up firms (Agarwal et al. 2004; Dahl and Sorenson 2013).

Franchises offer another example of firms giving rise to new firms that resemble the parent. First observed in motor vehicle dealerships and service station franchises, and now very common in the catering industry and typified by leading brands like McDonalds and Subway, franchised firms are characterized by the franchisees' strict adherence to the proven business formula. Studies show how the "copy exactly" practice contributes to the success and growth of the franchising network (Szulanski and Jensen 2008).

Finally, mergers and acquisitions can be seen as a form of "mating" and variety creation and another way in which routines are passed from one generation to another.[4]

By these various means, through successive rounds of selection acting upon the interacting business firms, proven problem-solving cognitive and behavioral routines are transmitted to the next generation of firms.

4. Conclusion

The view here is that with an insistence on direct biological analogies, Reydon and Scholz are applying a test that is really not appropriate. The real issue for social scientists in general and organizational ecologists in particular is whether Darwinian thinking can usefully advance understanding of organizational evolution. This has been convincingly demonstrated by multiple scholars across the natural and social sciences only a few of whom have been cited here. Together with empirical studies of organizational populations, the theoretical framework and conceptual apparatus discussed above reveal the integrity of business organizations as interactors and units of analysis in a Darwinian explanation. Integration of the replicator–interactor distinction into the current model will not only render Organizational Ecology a more complete Darwinian

[4]See the evolutionary account of Aldrich and Reuf (2006) for elaboration on some of the aforementioned studies and many other studies of organizational transformation.

program, but it will also offer researchers important insights about knowledge transmission within and among firms as well as the nature of the relationship of these firm-level activities to industry dynamics.

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