Darwin, Natural History, and Explanatory Breadth

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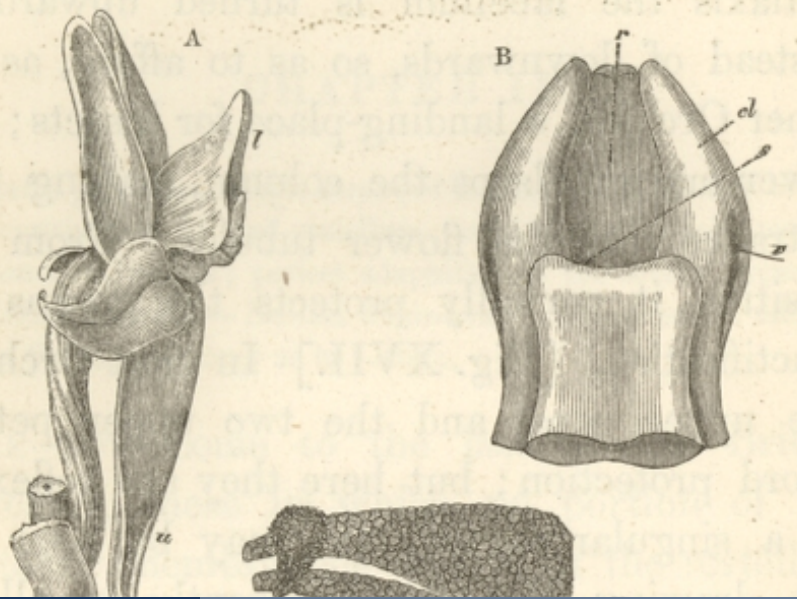
Outline

1. Darwin after the *Origin*
2. A natural reading
   - 2.1 Trouble for consilience and scope
   - 2.2 A caveat
3. A new reading: explanatory breadth

The take-home: Darwin's post-*Origin* work is better understood through the prism of the pursuit of **explanatory breadth** than something like consilience or scope.

Darwin post-*Origin*

Fig. XVII.



A Natural Reading

The *Origin*'s Argument

Classic understanding of its structure:

- Analogy / *vera causa*
- Responses to objections
- Consilience with other areas

Continuing the Argument

Historians [CP: and philosophers!] of nineeteenth-century biology need to narrow the yawning asymmetry between what our subjects found worthy of their activity and what of their activity we have found worthy of our attention.

It is time historians acquainted themselves with the birds and the bees – and the flowers they visit. (Bellon 2009, 398)

I think this little volume will do good to the Origin, as it will show that I have worked hard at details, & it will, *perhaps,* serve [to] illustrate how natural History may be worked under the belief of the modification of Species.
(Darwin to John Murray, September 24, 1861)

A Few Worries...

Where's the Argument?

Philosophical reconstructions tend to present the "one long argument" of the *Origin* as self-contained.

Where and how exactly do we integrate the "more argument" coming from the *Orchids* (and other later works) into that "long argument" for natural selection?

Consilience

> The Consilience of Inductions takes place when an Induction, obtained from one class of facts, coincides with an induction, obtained from another class. This Consilience is a test of the truth of the Theory in which it occurs. (Whewell, *Philosophy*, 2e, II.469)

This fits for, e.g., the **biogeography** or **paleobiology** arguments of the *Origin*, but does it really make sense for *Orchids*?

Scope

What about **scope**?

One of the classic list of epistemic virtues: “accuracy, consistency, scope, simplicity, and fruitfulness” (Kuhn 1977, 322)

What *is* Scope?

Not often actually explicated in the literature. Doesn't even appear in the index of Sam Schindler's new book on theoretical virtues.

Compare with depth!

A Proposal

I want to preserve **scope** for a value placed on *universal applicability* – think here about, e.g. Newtonian mechanics.

But then…

But in that case, Darwin's late work doesn't look like either the pursuit of consilience nor the pursuit of scope. So what is it?

A Caveat

There's more than one explanation here! At the very least, social factors are also at play.

But I'm looking at how to understand the *explanatory structure* for present purposes.

A New Reading

> Under a general point of view, I am quite convinced (Hooker & Huxley took same view some months ago) that a philosophic view of nature can solely be driven into naturalists by treating **special subjects** as you have here done. (Darwin to H.W. Bates, December 3, 1861)

Not universal applicability — very carefully constructed regimes of application!

Not always better to apply to any further cases — reflects serious influence from other epistemic and social values!

Not **scope** — **breadth**!

Breadth and the Orchids

Darwin is thinking about the biology of flowering plants as a target for evolutionary explanations as early as the 1840s.

The example of *Primula* makes it into the *Origin*, though only briefly.

Breadth and the Orchids

> Working naturalists who steadfastly refused to embrace evolution were willing to applaud and, frequently, share in Darwin's [botanical] practice. His enemies in science had been outflanked, with revolutionary consequence. Darwin's triumphal integration of evolution with the prevailing standards of inductive science was an absolute precondition for the role evolution played in the intellectual, social and cultural upheavals that followed its wake. (Bellon 2009, 397)

Explanatory Breadth

Part of a broader project to offer an account of breadth as a less-discussed explanatory virtue.

Particularly important in the life sciences:

- recent calls for revitalization of natural history
- role and use of big data
- integration of levels from biochemical to ecosystemic
- etc.

Questions?

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