

Considering affinity: an ethereal conversation (part two of three)

Mary P. Winsor*

Institute for the History and Philosophy of Science and Technology, University of Toronto, 550 Spadina Crescent, Toronto, ON, Canada M5S 2J9

In 1840 Hugh Strickland published a diagram showing the relationships of genera of birds in the kingfisher family. Three years later he applied this mapping idea to genera of birds of prey and songbirds, creating a large wall chart that he displayed to colleagues but never published. Both of his diagrams featured a scale of degrees of affinity. The meaning of taxonomic affinity was something Darwin thought about deeply. Details in the chart undermine Strickland's claim that his method was purely inductive.

(We resume our eavesdropping on a conversation between Hugh Strickland, killed by a train in 1853 at the age of 42, and his near contemporary Charles Darwin, who has joined him in the afterlife in 1882. Finally free of life's cares, they can enjoy a relaxed discussion of a concept in which both men are deeply interested, the relationship that taxonomists, then and now, call affinity.)

STRICKLAND: As you rightly say, the chief idea of this big chart of mine is that all birds are linked to one another by a relationship we call affinity. I did my best to ignore analogies, which I consider accidental or merely adaptive.

DARWIN: And you defined affinity as similarity based on essential characters.¹

STRICKLAND: Exactly.

DARWIN: And you defined those essential characters by appealing to naturalists' conviction that groups in the natural system, once correctly identified, are real.

STRICKLAND: Most naturalists were ready to admit that the resemblances connecting living things form neither a linear chain, nor a continuous mass, but fall into groups separated by gaps. The groups to which we give a name, whether at the class level like birds, 'Aves,' or at the family level like kingfishers, 'Alcedinidae,' are entities that exist in nature. Of course I knew that there were still some naturalists

who asserted that since taxonomic categories are patently man-made things, the groups they name cannot be real, but I sensed that opinion on that was shifting.

DARWIN: I am in perfect sympathy with your feeling, though I fear we are trespassing into a realm of very old philosophical debate.²

STRICKLAND: I did not worry overmuch about this. The best zoologists and botanists were united in their determination to replace artificial classifications, of which any number can be constructed, with the natural system, which is but one, even though our knowledge of the natural system is still imperfect. And my reading of Whewell's volumes confirmed my impression.

DARWIN: Clearly this vision underlies your powerful analogy of mapping, for nothing feels more real than the solidity of land after one has spent time at sea. Your hope was to lay out on paper the families of birds much like a mariner who charts reefs and islands.

STRICKLAND: Well said. That view of the natural system was the foundation of my argument. Westwood's attempt to redefine essential character was a backhanded way of saying the natural system may include analogies. Even lapsed quarians, like your friend Waterhouse, still held onto Macleay's claim that analogies provide a second dimension of relationship, independent of affinities, which lie parallel to them and form a grander, more complex natural system.

My insistence that the term "essential character" must be strictly limited to those groups properly belonging to the natural system was fundamentally sound, even though I struggled to define it. I was sure of that, and I still am. Obviously I knew better than to say the

*Tel.: +1 416 920 8645.

¹ Although the dialogue is imaginary, all of the facts and ideas mentioned are based on historical evidence. Relevant quotations from the writings of Strickland and Darwin, as well as references to other primary and secondary sources, are given in the Supplementary data, and on my website, www.marypwinsor.com. Available online 26 December 2014

² Whether a taxon (a group of organisms named in a classification) has real existence or is only a man-made abstraction is a question as old as philosophy. Many commentators have placed Darwin in the latter camp (as a nominalist), but I agree with David Stamos (*Darwin and the Nature of Species*, State University of New York Press, 2007) that he was a realist. Indeed I am sure that this was a central element in his concept of evolution (as I say in my article "Darwin and Taxonomy" (*The Cambridge Encyclopedia of Darwin and Evolutionary Thought*, ed. Michael Ruse, pp. 72–79, Cambridge University Press, 2013).

natural system may only use essential characters and then to define essential characters as the ones revealing the natural system. How quickly the attempt to define words gets one into difficulty! I was convinced the living world was created according to some deep rationale, giving it a subtle design far more interesting than the mere adaptations celebrated in Reverend Paley's *Natural Theology*, but it was hard to express so profound an idea. I was so pleased when I hit upon an apt metaphor that I remember it exactly. Those groups that all taxonomists agree are natural, like Mammalia, Insecta, Coleoptera, I called "real apartments in the edifice of the Divine Architect".

DARWIN: That broke you out of the vicious circle of definition, I suppose. At least you didn't make the mistake of defining essential character as a feature belonging to the creature's essence. Then if I had pressed you, your classical education would lead you to Aristotle's definition of "essence" as that-which-makes-it-be-what-it-is.

STRICKLAND: Thank you, yes, I was not quite that silly. Of course I understood that my allusion to the thoughts of the Creator could not function as a scientific definition of the natural system. Rather, I appealed to the consensus of our fellow naturalists, the majority of whom, I think, shared my conviction, as I know you did, that we were discovering rather than inventing natural groups.

DARWIN: At the time you were making your maps, early in the 1840s, I had already become convinced that the diversity of organic form is the product of descent with modification, so that taxonomic groups, at least the ones accurately recognised by competent workers, indicate historical kinship. This idea, transformation, unfortunately does not supply any new basis for making judgements of affinity beyond the criteria skilled taxonomists were already using. Thus your appeal to the natural system as a means of defining essential characters strikes me as reasonable, in a practical sense.

STRICKLAND: You may be amused to learn that since my arrival in this blessed realm, I have learned that a somewhat different idea of essential characters existed in the 18th century.

DARWIN: Gracious, I am all ears.

STRICKLAND: I had the great pleasure of meeting, quite by chance hereabouts, our distinguished predecessor, the very founder of our enterprise it's fair to say, Carl Linnaeus.

I wasn't so clever as to think of seeking him out, but I'm not surprised he's here, for he was deeply pious, in spite of that streak of conceit that marred his character. I think you will be as surprised as I was to learn that he had constructed an eminently practical definition of essential character.

DARWIN: This is most extraordinary. Now I realize that I was so wrapped up in our conversation in this peaceful, secluded bower that I gave no thought to the fact there must be thousands – or is it millions – of other spirits here. My greatest joy will be to reunite with my daughter Annie, whose death caused such pain to her mother and me. Yet I find myself wonderfully free of any anxiety, knowing I have before me all eternity to hold her hand, so I am quite content for now that you and I should pick up the thread of our conversation. By all means go on, and tell me, what did Linnaeus say to you about essences?

STRICKLAND: In his time on Earth, he was quite uninterested in philosophical distinctions, although now he can often be found walking arm in arm with the king of philosophers, old Aristotle. They seem to enjoy endless jokes, though I had imagined them both to be rather humourless fellows.

In his day, Linnaeus did wonder what made a plant what it was, but he wrote nothing at all about the essences of philosophers. In his aphorisms, however, he mentioned something called the *character essentialis* of a plant. All his writings were in Latin, of course, but his language was not quite the classical Latin I learned as a boy, so he and I spent some time talking over these words. After a while we decided that his term *character* does not correspond to what you and I call a taxonomic character, the individual features of a plant or animal. Its closest equivalent in English would be the character you are asked to give a maid who leaves your service.

DARWIN: Oh, one of those exasperating English words used ambiguously. Your servant is a woman of fine character, so you give her a letter which we also call a 'character.'

STRICKLAND: Exactly so, and your document will contain points of information, such as her honesty, her cheerfulness, her promptness, all those features that together make up her character. In botany, Linnaeus called such features or characteristics *notae*, notes, things like the shape of a plant's leaves or details of its

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