

Abstract

Abduction and Gestalt Perception: A Striking Similarity

On Patterns of Reasoning in Science and Engineering Praxis

According to Charles Sanders Peirce there are three elementary kinds of reasoning. These three kinds are *induction*, *deduction*, and *presumption* (for which Peirce proposes the name abduction). Peirce defines abduction as “the process of forming an explanatory hypothesis”; and he vigorously claims: “It is the only logical operation which introduces any new idea”.

In forming an explanatory hypothesis, according to Peirce, epistemic objects are not passive but suggestive: Abduction is the “step of adopting an hypothesis as being suggested by the facts”, whereas the mode of suggestion by which the facts suggest the hypothesis “is by *resemblance*, -- the resemblance of the facts to the consequences of the hypothesis.”

Abduction, thus, is forming principles or ‘seed crystals’ of order which rearrange complex and confusing manifolds as coherent wholes. But precisely this is gestalt perception! Gestalten are heterogeneous wholes which spontaneously emerge in the interaction of perceiver and the perceived. However, abductive reasoning is found to be more explicit, more language bound than gestalt perception. My presumption will be that abductive reasoning essentially forms the cognitive top level of gestalt perception in justification contexts.

Pragmatic theory of abduction and gestalt theory are explanatory theories on the very same lifeworld phenomena, the first coming its way from disputing classic assumptions on logical reasoning; the latter coming from reflection on embodied perception. The converging point of both theoretical layouts notably shows up in modelling a recurrent social moment in everyday praxis of both science and engineering; the moment of explaining a perceived gestalt to an other who cannot see it yet.

In science/engineering a given course of reasoning might be of this form: The unfitting and thus surprising fact, *C*, is observed (science) / the unfitting and thus contradictory function, *C*, is envisaged (engineering); but if *A* were true/workable, *C*, would be a matter of course; hence there is reason to suspect that *A* is true/workable. The problem was confusing at first. However, the solution became clear through adopting the hypothesis *A*.

Interestingly enough, this mode of clearance is by *guessing*. The ad hoc adopted explanatory hypothesis, *A*, which ontologically is something like the verbalized surface of an underlying gestalt, evokes order and thus plausibility of that what did not cohere before.

I believe that abductive reasoning on the basis of gestalt perception is a common pattern of reasoning in both science and engineering praxis. Maybe it is the most fundamental pattern of reasoning at all.