Type: Article in Journal

Author: Antomarini, Brunella

Title: Peirce and Cybernetics: Retroduction, Error and Auto-poiesis in Future Thinking

Year: 2017

Journal: Cognitio

Volume: 18

Issue: 2

Pages: 187-204

Keywords: Abduction, Retroduction, Cybernetics, Auto-poiesis

Abstract: The aim of this paper is to connect Peirce's logic of abduction to the cybernetics of living systems. Living beings cannot be understood through a causalistic epistemology, as they behave according to the effects and not according to the causes. Cybernetics has analyzed the way in which non-trivial machines (that is, machines being able to reproduce themselves by correcting themselves) move through retroaction, or feedback loop: at each step the system (effector) corrects the previous step depending on how far the previous step goes with respect to a possible equilibrium. The dynamics implies a possible inhibition of excessive energy followed by a possible enhancement of insufficient energy. Each of these conditions are errors that automatically correct themselves reaching a temporary state of homeostasis. Self-correction means that they must add to the output a "creative" additional impulse, that is unique and unpredictable (or a new algorithm). The logic that is capable to make sense of this dynamics is Peirce's abduction, also called retroduction, in that the inferential act retroacts on an incomprehensible fact, an epistemological "error", by inventing its cause. Thinking and the auto-poiesis of living systems proceed on the same path, replacing occasional strategies to atemporal universal causes. Abduction is the evidence that it is possible to reach a condition of "knowledge" without resorting to causality. The possibility that the "laws of nature", (science itself), may proceed in this way concludes the essay, by adding physicist Lee Smolin's notion of the "principle of precedence", as inspired by Peirce's idea of the evolution of the laws of nature and their temporal, that is, contingent, character.

Language: English