# A COMPUTATIONAL SEMIOTICS APPROACH OF AUTOMATED ABDUCTION REASONING

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1. Semiotic Aspects of Reasoning by Abduction

Abductive reasoning is, according to C. S. Peirce vision, the "first stage" of scientific inquiries and of any interpretative processes. Abduction is the process of adopting an explanatory hypothesis and involves two stages: the selection and, respectively, the formation of plausible hypotheses. As a process of premises identification, the foundation of interpretative reconstruction of causes and intentions is as important as the inventive construction of theories. In a knowledge acquisition context, this process involves the interpolation of perception and action of reasoning tasks sequence consisting in: induction (assume a general principle that subsumes many facts), abduction (suppose a new hypothesis that explains some fact) and deduction (apply a general principle to infer some fact) (Sowa, 2006). According to C. S. Peirce's approach, the abduction was the fundamental form of logical inference, as a rearrangement of Aristotelian syllogism. In this way, I see abduction together with deduction and induction provide a cycle of knowledge development as:
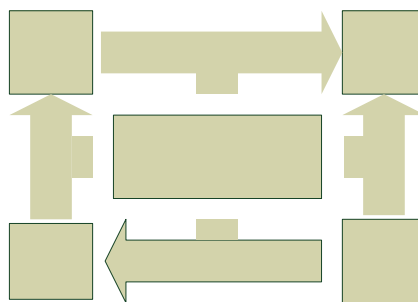
Fig. 1. Peirce's cycle of scientific knowledge
development (Ray, 2007)

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