



On classifying abduction



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ABSTRACT

We can witness the recent surge of interest in classifying different patterns or types of abduction. Many philosophers have suggested their own classifications emphasizing different aspects of abduction. Such a development is remarkable, in view of the fact that until quite recently the focus of the research on Peircean abduction was to identify its logical form. Another agenda in the recent attempts to classify abduction is whether to allow non-explanatory abductions. In order to resolve these two closely related issues, I propose to examine how Peirce would have responded to them. In particular, I suggest to do this in connection with Peirce's another life-long project, the classification of sciences. In this examination, it will be shown that Peirce struggled with the problem of conflating induction and abduction. I shall discuss how this problem influenced both Peirce's views on the interrelationship between abduction, deduction, and induction on the one hand, and his many classifications of sciences on the other. Also, the implication of the fundamental change in Peirce's views of abduction, deduction, and induction to the problem of the classification of sciences will be uncovered. Finally, I shall discuss whether inference to the best explanation is abduction. Insofar as this problem has bearing on the two controversial issues in classifying abduction, my negative answer will demonstrate that classifying abduction is yet to get off the ground.

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1. Introduction

We can witness the recent surge of interest in classifying different patterns or types of abduction. Many philosophers, including Thagard, Magnani, Gabbay and Woods, Schurz, and Hoffmann, have suggested their own classifications emphasizing different aspects of abduction (Thagard [51], Magnani [33,35], Gabbay and Woods [14], Schurz [46], and Hoffmann [23]). Such a development is remarkable, in view of the fact that until quite recently the focus of the research on Peircean abduction was basically to identify its logical form (Kapitan [24]). In one sense, it is strange that after all these years abduction is still unfamiliar to the general public: not on a par with deduction and induction. In another sense, however, it is also remarkable that abduction has been extensively studied by artificial intelligence researchers, cognitive scientists, and

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semioticians as well as by philosophers of science. No doubt, the diverse attempts in classifying abduction must represent the fact that the current level of the study of abduction is pretty high.

It is Schurz [46] that could be a nice point of departure for useful comparisons of all these classifications, for he provides us with a rather extensive list of different “patterns of abduction”. In terms of what entity is to be abducted, he distinguished between more than ten different patterns of abduction, grouped under 4 categories: i.e., factual abduction, law-abduction, theoretical model abduction, and second-order existential abduction. One significant point in Schurz’s classification is that he emphasizes the importance of second-order existential abduction, paying special attention on common cause abduction. Largely concurring with Schurz, Hoffmann further expands the list into a table by adding what he calls “meta-diagrammatic abduction” as a fifth category (Hoffmann [23], p. 581). Unlike Schurz, however, Hoffmann highlights what he calls “theoretical-model abduction” as a precondition for any abduction (Hoffmann [23], p. 580). Schurz’s and Hoffman’s classifications of abduction basically concern its “explanatory” character. They do not consider the problem of non-explanatory abduction, which is instead illustrated by Gabbay and Woods when distinguishing between AKM models of abduction and their own GW model (Gabbay and Woods [14], p. 49, n. 8).¹ Further, even Magnani not only concedes the existence of non-explanatory and instrumental abduction but also presents some extremely interesting examples. According to him, some cognitive processes that are occurring in mathematics are cases of non-explanatory abduction (cf. his study of “mathematical intuition” in Gödel’s sense (Magnani [35], p. 72)).

In Section 2, I shall discuss two of the most controversial philosophical issues involved in these attempts, i.e., (1) is classifying abduction compatible with the search for the logical form of abduction, and (2) could there be any non-explanatory abduction? In order to resolve these two closely related and potentially controversial issues, I propose to examine in Section 3 how Peirce would have responded to them. In particular, I suggest to do this in connection with Peirce’s other life-long project, the classification of sciences. In this examination, it will be shown that Peirce struggled with the problem of conflating induction and abduction. I shall discuss how this problem influenced both Peirce’s views on the interrelationship between abduction, deduction, and induction on the one hand, and his many classifications of sciences on the other. Finally, in Section 4, I shall discuss the classical problem of abduction as an inference to the best explanation. Insofar as this problem has bearing on the two controversial issues in classifying abduction, my negative answer to this problem will demonstrate that classifying abduction is yet to get off the ground.

2. Some recent attempts to classify abduction

2.1. Is classifying abduction compatible with the search for the logical form of abduction?

Until quite recently, the focus of philosophical discussions of abduction was its logical form. Kapitan, for example, differentiates five forms or schemata of abduction based on broadly developmental approach to Peirce’s own writings (Kapitan [24], pp. 480–488). However, Schurz criticizes this majority approach “aimed at one most general schema of abduction (for example IBE) which matches every particular case” as hopeless, for he writes:

“I do not think that good heuristic rules for generating explanatory hypotheses can be found along this route, because these rules are dependent of the *specific type* of abduction scenario, for example, on whether the abduction is mainly selective or creative (etc.)” (Schurz [46], p. 205; Emphasis is Schurz’s).

¹ ‘A’ for Aliseda, ‘K’ for Kowalski, Kuipers, and Kakas et al., and ‘M’ for Magnani, and Meheus et al. in AKM model, and ‘G’ for Gabbay, and ‘W’ for Woods in GW model.

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