

## **What To Believe and What To Take Seriously: A Reply to David Chart concerning the Riddle of Induction**

In his commentary on my paper, “Means-Ends Epistemology”, David Chart constructs a Riddle of Induction with the following feature: Means-ends analysis, as I formulated it in the paper, selects “all emeralds are grue” as the optimal conjecture after observing a sample of all green emeralds. Chart’s construction is rigorous and correct. If we disagree, it is in the philosophical morals to be drawn from his example. Such morals are best discussed by elucidating some of the larger epistemological issues involved.

“Means-ends Epistemology” sought a normative theory of *hypothesis selection*. I defined what it means for an inductive method to reliably and efficiently find a correct hypothesis from a set of alternative hypotheses. (In fact, I investigated a number of standards of empirical success for inductive methods.) Call such methods *optimal*. We may take optimal inferences to be those made by optimal methods. This defines a relation Optimal-Inference(h,e,H): “given the set of alternative hypotheses H, and evidence e, hypothesis h is an optimal inference”. One fundamental difference between the means-ends approach and traditional confirmation theory is that the latter has sought a two-place relation between theory and evidence alone, something like “hypothesis h is highly confirmed given evidence e”. From my point of view, posing the problem of induction as discerning the right relation between theory and evidence is elliptical because it leaves unspecified the set of alternative hypotheses under investigation (as well as other relevant factors, such as the scientist’s background knowledge, observational means, cognitive capacities and epistemic values).

Chart’s Riddle highlights the fact that depending on the space of alternative hypotheses, means-ends analysis may select a *different hypothesis* on the *same evidence*: “all emeralds are green” in my Goodmanian Riddle, and “all emeralds are grue” in his. To my mind, his example

proves that means-ends epistemology is *not biased* towards green-blue rather than grue-bleen. (A formal demonstration that means-ends analysis is language-invariant for all inductive problems appears in my paper “The Logic of Reliable and Efficient Inquiry” [Schulte 99].) Chart, however, concludes that “means-ends epistemology does not resolve Goodman’s problem”. That depends on what one takes Goodman’s problem to be. If the problem is to find the right inference for a given set of alternative hypotheses and a given piece of evidence, means-ends analysis applies. Chart suggests that instead, we should “ask ... about the problem-space within which it [a hypothesis] is cast”. It seems that the problem he is raising is what should count a priori as an acceptable hypothesis to be taken seriously.

In various guises the problem of constraining the hypothesis space has captured the attention of philosophers. Harman calls it the problem of “what hypotheses to take seriously” ([Harman 94]). Popper famously sought a criterion of “demarcation” that would separate those hypotheses worthy of empirical test from the unworthy ones ([Popper 68]). Hempel considered what characterizes claims with “cognitive significance” ([Hempel 65]). Kuhn argues that a scientist’s current paradigm constrains what counts as an acceptable theory ([Kuhn 70]). (Chart seems to consider such elements of the historical context to be “irrelevant contingencies”.) This is not the place to enter into a full discussion of the problem of constraining the hypothesis space, except to clarify the relationship with my original paper.

(1) An account of what hypotheses to take seriously *helps* with the problem of what hypothesis to select on given evidence—for if a priori we shouldn’t take a hypothesis seriously, then surely we shouldn’t adopt it in the course of inquiry. But knowing what hypotheses to take seriously *does not solve* the problem of hypothesis selection, because there will almost always be more than one serious candidate to select from. (2) “Means-ends Epistemology” deals with the

problem of hypothesis selection, *not* with framing the hypothesis space. It does not defend a particular choice of hypothesis space. Hence any complaint, whether correct or not, that some one or other of the hypothesis spaces analyzed in the paper incorporates a bias, misses the mark.

Specifically, in the Goodmanian Riddle of Induction, I chose the alternative hypotheses not because I considered them particularly simple, testworthy, cognitively significant, or otherwise a priori superior, but because they are the hypotheses that make an appearance in Goodman's writings. Chart's Riddle involves "gruegr" predicates (green up to some point, blue for a while thereafter, finally always green) which as far as I know Goodman does not mention. Regardless of Goodman's intentions, I am happy to entertain different Riddles of Induction. "Means-Ends Epistemology" and "The Logic of Reliable and Efficient Inquiry" ([Schulte 99]) contain means-ends analyses for 7 different versions.

In sum, Chart's Riddle is interesting because it exhibits a space of alternative hypotheses in which means-ends epistemology selects "all emeralds are grue" on a sample of all green emeralds. The fact that the recommendations of means-ends epistemology depend on the hypothesis space under consideration raises the issue of what should or does constrain the hypotheses that an inquirer takes seriously: some sort of simplicity, testworthiness, aesthetic appeal, historical context, or what? "Means-ends Epistemology" does not address this issue. Instead, it presents a novel and powerful account of what hypothesis to select from a given set of alternatives when new evidence is obtained.

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## References

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