Diálogos 74 (1999), pp. 63–70.

IS GOODMAN'S SOLUTION OF HUME'S RIDDLE TOO STRONG?

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(A) Introduction.

With striking clarity and force, Nelson Goodman pursues two goals in his classic essay, "The New Riddle of Induction". He begins by framing the notion of a "virtuous circle", then explains how this notion serves to justify inductive reasoning. This first feat serves to solve (or, to echo Goodman, *dissolve*) Hume's Riddle of Induction. Goodman then proceeds to his second task: the pursuit of criteria for discerning "projectible" empirical predicates. It is in this context that Goodman poses his vexing "grue paradox."

While subsequent attention to Goodman's classic paper has mostly centered on the grue paradox, our exploration shall focus on the first phase of Goodman's essay. Specifically, we wish to call attention to a surprising (and heretofore unseen) consequence lurking in Goodman's "virtuous circle" conception of deductive reasoning: That if Goodman's explanation suffices for justifying deduction, then Hume's inductive skepticism is not only false, but engenders doxastic incoherence, as well.[1]

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[1] This consequence appears unintended on Goodman's part, judging from his friendly remarks regarding Hume's riddle; "... we owe belated apologies to Hume. For in dealing with the question how normally accepted inductive judgments are made, ... [h]is answer was incomplete and perhaps not entirely correct; but it was not beside the point" (*Fact, Fiction, and Forecast*, Cambridge, MA: Harvard University Press, 1979, pp. 64–65).

Our path to demonstrating this corollary will proceed as follows. We commence by briefly retracing of the steps which give rise to Hume's Riddle, then examine how Goodman's "virtuous circle" resolves the riddle. Our focus at this brief stage will be to show how Goodman's picture underwrites a pair of premises concerning the justification of deductive proof. This done, the stage will be set for our main demonstration, where we show that Goodman's "virtuous circle" premises imply that it is impossible to justifiedly believe Hume's skeptical conclusion regarding induction.

(B) Hume's Riddle and Goodman's Circle.

As is ubiquitously known, Hume's riddle of induction targets the following type of everyday inference:[2]

(*) All observed A's have been followed by B's.
An A is observed now.
Thus, a B will occur.

The riddle commences with a simple query, to wit: What type of proof could justify the 'Thus' in inference (*)? It is here that Hume exhibits a gripping dilemma. For the following proposition seems fair enough:

(H1) We are epistemically justified in believing (*) only if our demonstration of (*) is deductive or inductive.

Now it seems, on one hand, that

(H2a) No demonstration of (*) can be deductively valid; for "All A's have been B's and an A is observed and a B will not occur" does not entail a contradiction;[3] and

(H2b) We are not epistemically justified if we believe (*) on the basis of an invalid deductive demonstration.

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[2] Here I follow Barry Stroud (*Hume*, New York: Routledge, 1977, pp. 42–67).

[3] "That there are no demonstrative arguments in this case, seems evident; since it implies no contradiction, that the course of nature may change. May I not clearly and distinctly conceive, that a body, falling from the clouds, and which, in all other respects, resembles snow, has yet the taste of salt or feeling of fire?" (*An Enquiry Concerning Human Understanding*, Steinberg, editor, section IV: ii, p. 22).

Yet we also face a robust threat if we confront the second horn of Hume's dilemma:

(H3a) If the demonstration of (*) is inductive, then it is circular; for such a demonstration would need to presuppose inferences like (*),[4] and

(H3b) We are not epistemically justified if we believe (*) on the basis of a circular inductive demonstration (i.e., the circularity is "vicious").

Thus, since either prospective path for underwriting (*) yields an unjustified demonstration, Hume skeptically concludes that "[i]f there be any suspicion, that the course of nature may change, and that the past may be no rule for the future, all experience becomes useless, and can give rise to no inference or conclusion."[5] We may express this conclusion more compactly: if it's possible that natural regularities could cease, then in that case,

(HC) We cannot be epistemically justified in drawing inference (*)

Given this result, Hume then proceeds to offer his "skeptical solution." That is, he implores us to cease seeking *reasons* which justify inductive inferences; for by Hume's lights, we may only describe brute psychological *causes* — e.g., "custom"— which provoke our belief that regularities observed today will continue to be observed tomorrow.

This brings us to Goodman's path out of Hume's thicket, which proceeds by confronting the Humean dilemma's latter horn. Goodman begins by inviting us to consider three features in the justification of deductive inferences. First, we adduce that a deductive argument is valid by "showing that [it conforms] to the general rules of deductive inference"[6] — *modus tollens* for instance. As for the further question of what,

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[4] "It is impossible ... that any arguments from experience can prove the resemblance of the past to the future; since all these arguments are founded on the supposition of that resemblance" (Ibid., p. 24).

[5] Ibid.

[6] *Fact, Fiction, and Forecast*, p. 63. All quotations of Goodman in the remainder of this section derive from this, and the following, page.

in turn, justifies these general deductive rules, Goodman claims that these "[p]rinciples ... are justified by their conformity with accepted deductive practice. Their validity depends upon accordance with the particular deductive inferences we actually make and sanction."

Goodman then concedes that the preceding pair of answers "look flagrantly circular." Yet he insists that the circle is not — *contra* the Humean premise (H3b)— "vicious"; rather, the circle is a "virtuous" one.[7] For the justificatory ideal in this situation is one of reflective equilibrium:

> The point is that rules and particular inferences alike are justified by being brought into agreement with each other. *A rule is amended if it yields an inference we are unwilling to accept; an inference is rejected if it violates a rule we are unwilling to amend* (emphasis Goodman's).

Yet if this procedure of seeking "agreement" between rules and practice —despite its circularity— suffices for justifying deduction (and Goodman claims that it does[8]), then couldn't a similar tack prove effective for addressing the analogous matter of justifying induction? Indeed, this proves to be Goodman's aim: "[a]n inductive inference, too," he notes, "is justified by conformity to general rules, and a general rule by conformity to accepted inductive inferences."

So we seem to have a principled reply to Hume's riddle. To encapsulate, Goodman's project turns upon identifying the "virtuous circle" model for justifying deduction, then redeploying it in the service of justifying induction. As for the specific justificatory properties attaching to his "virtuous circle" model, we may summarize them by means of the following premises.

(Good 1) A deductive argument is valid if and only if that argument conforms to some general rules of inference.

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[7] For discussion, see Rupert Read, "On (Virtuous?) Circles of Concepts in Goodman —and Quine," *Diálogos* 68 (1996), pp. 7–12.

[8] "The process of justification is the delicate one of making mutual adjustments between rules and accepted inferences; and in the agreement achieved lies the only justification needed for either." (*Fact, Fiction, and Forecast*, p. 64). I will not, for now, take issue with this supposition —though see section (D), below.

(Good 2) A rule of inference is justified if and only if the rule conforms with accepted deductive practice.

Let's provisionally follow Goodman's lead —let's suppose, that is, that we're justified in believing these principles. Then Hume's riddle is, to echo Goodman, dissolved; in particular, Goodman's model evades the Humean dilemma's latter horn by confuting Hume's premise that circular explanations never suffice for epistemic justification.

(C) The Surprising Corollary.

Yet there's more to be said. For our Goodmanian premises seem to underwrite a far stronger moral concerning Hume's skepticism. Specifically, not only does Goodman's "virtuous circle" justification of deduction "dissolve" Hume's dilemma — it in fact implies that Hume's presumption (i.e., that his skepticism is justified) is an incoherent premise.

We show this by *reductio ad absurdum*. Suppose an agent could be justified in believing Hume's skeptical conclusion:[9]

(1) JB [Hume's conclusion].

Let us suppose, further, that the agent's justification for believing Hume's conclusion resides in his *(ex hypothesi* justified) belief that Hume's argument is sound. Then it seems safe to say that our agent cannot be justified in believing Hume's conclusion unless he's justified in believing that Hume's argument is valid:

(2) JB [Hume's conclusion] only if JB [Hume's argument is now valid].

So, by *modus ponens* we get:

(3) JB [Hume's argument is now valid].

Let us now consider the following principle:

9 Hereafter, we abbreviate the expression, 'our agent is justified in believing that x', as 'JB[x]'.

Timelessness of Deductive Validity (TDV): If an inference, [p ∴ q], is deductively valid at time t, then that inference is deductively valid at all times.

Now the justification for this seems sound enough —for the alternative is the unpalatable one of denying that tautologies are necessarily true.[10] Accordingly, we presume that our agent is justified in believing (TDV) —which means, in turn, that if we also suppose that our agent is justified in drawing the immediate conclusion of his justified beliefs (i.e., (3) and (TDV)), then we arrive at the corollary that our agent justifiedly holds an omnitemporal belief, viz.,

(4) JB [Hume's argument is deductively valid at all times], an instance of which is

(5) JB [Hume's argument will be deductively valid tomorrow].

Now let us note that proving Hume's conclusion from his premises turns upon use of De Morgan's Law, [(~p & ~q)/~(p V q)], and *modus tollens* [p ⊃ q, ~q/~p]. So we may replace (5) with:

(6) JB [*modus tollens* will be a valid scheme of reasoning tomorrow].

It is at this point that our Goodmanian premises come to the fore.

Specifically, recall the second "virtuous circle" principle, (Good 2); this states that a deductive rule is justified only if, in our deductive "practice", we find its instances acceptable; thus:

(7) JB [*modus tollens* will be a justified scheme of reasoning tomorrow only if we will accept instances of *modus tollens* tomorrow].

Therefore, again assuming that our agent is justified in drawing the immediate consequence of his justified beliefs, (6) and (7), we arrive at:

[10] Which in turn follows from the facts that [p ∴ q] *is valid* just in case [p ⊃ q] *is a tautology* and that if there's a time at which some claim is false, then that claim must be contingent.

(8) JB [We will accept instances of *modus tollens* tomorrow].

We are now within a stone's throw of a contradiction. For recall the content of Hume's skeptical conclusion,

(HC) We cannot be epistemically justified in drawing inference (*).

Now the very question of whether past behavioral regularities in humanity's "practices" will persist (and, *a fortiori* whether our minds/brains will continue to assent at the sight of certain patterns of reasoning) certainly seems to be an inductive inference —that is, an instance of the inferential schema (*). So anyone who is justified in believing that "all experience [is] useless, and can give rise to no inference or conclusion" simply cannot, with justification, simultaneously believe that past regularities in human practices will continue tomorrow:

(9) JB [Hume's conclusion] ⊃ ~([JB [instances of *modus tollens* will be accepted tomorrow]).

Yet, by hypothesis (premise (1)), our agent is justified in believing Hume's conclusion; hence (1) and (9) yield:

(10) ~(JB [instances of *modus tollens* will be accepted tomorrow). And, finally, conjoining expressions (8) and (10), we arrive at our contradiction:

(11) JB [We will accept instances of *modus tollens* tomorrow] & ~(JB [instances of *modus tollens* will be accepted tomorrow]).

Therefore, if we suppose that an agent is justified in believing Hume's conclusion, we arrive at a contradiction. Which is what we set out to show.

(D) Conclusion.

If the previous demonstration is apt, there still remains a significant question: How should we interpret this result? On this score, two paths seem available.

We might, on the one hand, take the demonstration at face value. Since, that is, Goodman's "virtuous circle" *does* indeed justify deduction, we might say, then indeed our demonstration binds us to also denying that induction-skepticism could ever be justifiedly believed. Adherents to such an interpretation of our result would not lack esteemed company. After all, recall Susan Haack's reading of Quine and Carnap, which urges the "moral that deduction is no less in need of justification than induction; or, optimistically, that induction is in no more need of justification than deduction."[11] Under this perspective, then, we may view our demonstration as a perspicuous proof of the Quine/Carnap credo.

Yet an alternative interpretation is in the offing. For, no doubt, some will see our demonstration's conclusion as simply too strong to be true. Because while our world's empirical regularities are familiar, they certainly aren't metaphysically necessary, are they? Again, as Hume puts the query:

"May I not clearly and distinctly conceive that a body, falling from the clouds, and which, in all other respects, resembles snow, has yet the taste of salt or feeling of fire?" Indeed, this appears at least possible. What's more, suppose such shocking circumstances *were* to occur; wouldn't a so-situated agent then be justified in taking Hume's skepticism to heart?

If so, then our demonstration takes on the form of a *reductio ad absurdum* against Goodman's justificatory project. For recall that it was his own "virtuous circle" —as captured by principles (Good 1) and (Good 2)— which grounded our demonstration in the first place. Which means that, if we choose to reject our demonstration's conclusion as too strong, then we appear to be tied to a more sweeping conclusion — namely, that Goodman's proffered "virtuous circle" justification of deduction (and induction) must go by the board.[12]

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[11] "The Justification of Deduction," *Mind* 85 (1976), reprinted in *A Philosophical Companion to First-Order Logic*, R. I. G. Hughes, editor (Indianapolis, IN: Hackett, 1993, p. 84).

[12] I thank Nick Huggett and Rupert Read for helpful comments on an earlier incarnation of this essay.