On Goodman's Reading of Hume:
The Old Problem, The New Riddle, and Higher-Order Generalizations

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Numerous debates, objections, and attempts of solutions had been sparked by Nelson Goodman's "new riddle of induction," and the discussions have still continued without cease. Goodman's puzzle and his own prospects for the solution were attained by his assessment that Hume's attempt to answer the "old problem of induction" had been essentially on the right track. On Goodman's reading of Hume, however, Hume's response to the old problem was not adequate enough to be free from another query; the new riddle of induction.

My aim in this paper is twofold. One is to show that a "solution" to the new riddle can be found, contrary to Goodman's reading, in Hume's own texts, and that Hume's solution is similar to Goodman's in the sense that both of them find a clue to solving the puzzle in our language practices. The other is to point out that a commitment to the notion of higher-order generalizations, one of the important ingredients in Goodman's theory of projection, plays a considerable role also in Hume's account of inductive inferences. Towards the ends, I will firstly explicate Goodman's reading of Hume (chapter 1). After looking at the essentials of Goodman's theory of projection, which includes the notions of entrenchment and overhypotheses (chapter 2), we will then turn to seek a solution to the new riddle in Hume's own texts (chapter 3). Finally, Hume's account of higher-order generalizations shall be explained (chapter 4).

1. Goodman's Reading of Hume

1.1 The Old Problem

In the notable chapter of his *Fact, Fiction, and Forecast*, entitled 'The New Riddle of Induction,' Nelson Goodman opens up his discussion by addressing the "old" problem regarding inductions once posed by Hume, and rejecting the misguided interpretation of Hume's treatment of that problem. What Hume revealed is that the validity of our judgments or predictions about future is to be doubted since an unobserved case cannot be logically inferred from what has been observed, and there is no such a thing as necessary connection between what has been observed and unobserved. One may wonder, then, how our judgments about future are related to the past. We seem to have an idea of necessary connection between things: where does it come from? Hume answers,

with his supposedly "psychological" or "descriptive" vocabulary, when one kind of events constantly followed by another kind of events, the experience of such a constant conjunction gives rise to a habit or feeling in mind, and in virtue of that habit our mind is led to entertain the idea of an event of the second kind when we encounter an event of the first kind. There is not a necessary connection between things themselves, but only regularity, which in turn produces a certain inclination in our mind when it is observed. Therefore it is this regularity that makes us prefer one prediction to the others.

It had been somewhat commonplace to interpret this account as if Hume naïvely confused the problem of fact (*quid facti*) with the problem of justification (*quid juris*), or he just gave up for solving the latter and answered only the former. In any cases, such an interpretation holds that what Hume did was nothing more than a mere psychological explanation of how we make inductive inferences although what we need to answer is the question how those inferences are justified. Goodman rejects this interpretation and claims that Hume was on a right track in handling and answering the old problem. The problem of justifying induction, according to Goodman, is tantamount to the problem of defining valid induction, thus an answer to the problem should be nothing more or less than an attempt to state the circumstances under which those inductive inferences are made and normally accepted as valid. This is, Goodman holds, what Hume actually did in his treatment of the old problem of induction(1).

It is needless to say, however, that this does not mean that Goodman feels entirely comfortable with Hume's account of induction. Hume's reply to the "old" problem, in which past regularity and the habit stemmed from it are the sources of the validity of prediction, is simply incomplete. What specifically Hume failed to explain is to be made clear by the "new" problem Goodman formulated: "the new riddle of induction" or the "grue problem", which we shall turn then to focus on.

1.2 The New Riddle

A hypothesis is construed as a generalization of the evidence statement, but not every hypothesis is entitled to receive confirmation from an instance of it. For example, the fact that a given piece of copper is electrically-conductive will in part support hypothesis that all copper conducts electricity. In contrast, the fact that a sheet of paper on my table is blank will not increase the credibility of the hypothesis that all sheets of paper in the world are blank. The difference between these two hypotheses lies in the fact that the former is a lawlike statement while the latter is an accidental generalization. Only a lawlike statement is entitled to receive confirmation from its

instances. Therefore, provided that our problem of induction is how to define valid predictions, we need to know how to distinguish lawlike (or confirmable by given evidence) from accidental (or non-confirmable) statement.

To approach the nature of this problem, Goodman introduces a predicate such as "grue," which is supposed to apply to a thing at a given time *t* if and only if either the thing is examined prior to *t* and is green, or the thing is examined not prior to *t* and is blue (Goodman, 1979, p. 74). Now, suppose that all emeralds observed before *t* have been green. Then, on the one hand, the evidence confirms the hypothesis that all emeralds are green. But on the other hand, all emeralds observed before *t* have also been grue by the definition of the predicate "grue," and hence the hypothesis that all emeralds are grue has as much inductive support as the former hypothesis. However, a problem arises, if the second hypothesis had been confirmed and thus an emerald subsequently examined would be grue, the emerald would be blue (by the definition of "grue") and hence not green. The two hypotheses yield incompatible predictions about the coming instance of emerald although they equally have good inductive support from the given evidence. We are inclined to claim that the predicate "green," rather than "grue," ought to be projected into the future but we are seemingly not able to articulate why it ought to be.

The grue problem thus poses us an uneasy question. Why ought one predicate to be projected rather than the other? What does distinguish confirmable (or lawlike) hypotheses ("All emeralds are green") from non-confirmable (or accidental) ones ("All emeralds are grue")? Goodman holds that Hume overlooks this "new" difficulty. Hume answered, to the old question, that valid inductive inferences or predictions are defined as those based on past regularities which in turn produce habits in our mind, but failed to recognize the fact, as the grue problem suggests us, that not all regularities in observed instances establish such a habit (Goodman, 1979, p. 82). Hume's answer should have incorporated an account for how we can distinguish confirmable predictions ("the next emerald will be green") from non-confirmable predictions ("it will be grue").

Although numerous discussions on and solutions for the grue problem have been published so far, it is beyond the scope of my current paper to examine them. Instead, my primary aim is to show that the essence of Goodman's attempt to answer the new riddle can be found in Hume's picture, in other words, that Hume recognizes the fact that some regularities do establish habits while others do not, and deals with the problem how we tell the former from the latter. I will try to show it in chapter 3, but before that, we need to learn in some detail how Goodman tries to address this new riddle of induction.

2. Goodman's Theory of Projection —Entrenchment and Overhypothesis

2.1 Entrenchment

Goodman's way out of the new riddle of induction, which he calls a theory of projection, begins with drawing our attention to what we actually have when asking which hypotheses are confirmed by any given evidence. We should surely have some hypotheses and evidence, but in addition to them, Goodman holds, we utilize some other relevant knowledge, namely, the record of past predictions that actually made and their outcomes (Goodman, 1979, p. 85). Given that the record of past predictions (or "actual projection" in Goodman's terminology) plus evidence and hypotheses are our raw material to deal with, we can set forth a principle by which we eliminate actually projected hypotheses that are not to be construed as legitimately projectible (or lawlike). Consider again the two hypotheses; "All emeralds are green" and "All emeralds are grue." To rule out the latter, Goodman maintains, we must take into consideration the fact that "green" had much more frequently projected than "grue" in our past record of projections than the predicate "grue." That is, in his word, "green" is better "entrenched" than "grue." Therefore our principle to eliminate the hypotheses that includes weird predicates such as grue is; a projection is to be ruled out if it conflicts with the projection of a much better entrenched predicate (Goodman, 1979, p. 94).

Let us now set forth Goodman's general rules for projectible hypotheses a bit more neatly. First of all, only supported, unviolated and unexhausted hypotheses are to be construed as projectible, where "supported" means having positive instances, "unviolated" means having no negative instances and "unexhausted" means having some remaining unexamined instances. Since this condition holds both of the hypothesis with "green" and the one with "grue," those two hypotheses are still conflicting. Then, among such conflicting hypotheses (supported, etc.), a hypothesis *H* will be said to "override" another hypothesis *H'* if *H* is the better entrenched hypothesis than *H'*. With this nomenclature, we have the following definition of projectibility (Goodman, 1979, p. 108), by which we can choose the hypothesis "all emeralds are green" rather than "all emeralds are grue."

> A hypothesis is projectible *iff* it is supported, unviolated, and unexhausted, and all such hypotheses conflicting with it are overridden.

Goodman develops several supporting arguments for this definition, but we do not need to be afraid of those niceties. What is to be noticed here is his commitment to the past record of prediction,

or actual projection, which enables him to invoke the notion of "entrenchment." As already stated, Goodman regards Hume as having dealt only with the problem of how predictions come to be made on the basis of observed evidence, i.e., regularities. Goodman takes his own problem, in contrast, as asking how —given the record of past predictions—those predictions come to be sorted out as valid and invalid. However, at least in its essence, I take it that Goodman's new riddle and reply to it are what Hume actually dealt with, which shall be my first point addressed in chapter 3.

2.2 Overhypotheses

My second point concerns Goodman's notion of "overhypotheses." The definition of projectibility mentioned above is not the only criterion for choosing among conflicting hypotheses. We can consider, his argument goes, *comparative* projectibility among them. Some hypotheses (among those supported etc.) are more projectible than others, and the degree of projectibility of each hypothesis not only relies on the entrenchment of its predicates but also is *indirectly* affected by the evidence for higher-order generalizations, or overhypotheses, of the hypothesis in question. Let us illustrate this with the following example (Goodman, 1979, pp. 108-110). Suppose that we have a bag B full of marbles, which is picked up from a certain stack S of such bags. Then, after we examined some of marbles in B and found that all of them were red, the hypothesis *H* "All the marbles in bag B are red" would be confirmed by the evidence to some extent. Suppose further that we picked up some other bags from the stack S and examined their contents to find that all marbles in each bags were uniform in color, say, all marbles in bag C were blue and in D they are all yellow. The evidence from this further investigation somewhat confirms the hypothesis *G* "Every bagful in stack S is uniform in color". Now, once we know this, the hypothesis *G* seems to reinforce the projectibility of *H*. In contrast, the projectibility of *H* will be decreased if the hypothesis *G'* "Every bagful in stack S are mixed in color" gets certain amount of projectibility by the evidence that the bag C contained both blue and yellow marbles, say. Each of these indirect effects on the projectibility of the hypothesis in question is attained by both first-order and second-order generalizations. The first-order generalization *H* concerns the contents of each bag while the second-order generalization *G* (or *G'*) concerns the uniformity in color of contents in each of all bags in S. The higher-order generalization such as *G* is called by Goodman "positive overhypothesis" and the one such as *G'* is called "negative overhypothesis."[(2)]

The notion of overhypotheses or higher-order generalizations is neither novel nor a mere theoretical supplement; rather it is familiar enough to be found in our ordinary life[(3)]. Instead, the

ability of overhypothesis formation is crucial in such occasions as inductive inference, causal learning and so on, provided we are normally given only limited evidence to draw a generalizable knowledge, which often turns out to be plausible enough(4). We will indeed find in chapter 4 that the idea of overhypotheses plays a significant role also in Hume's account of inductive inferences.

3. Hume's Solution of the New Riddle

3.1 Similarity-based Approach Fails

As we saw in chapter 1.2, Goodman maintains that Hume overlooked the new riddle of induction, even though his descriptive account of induction is considered as an essentially appropriate way to deal with the old problem. According to Hume, in Goodman's reading, the valid inductive inferences are those based on past regularities in experience, but this account fails to differentiate between confirmable and non-confirmable predictions since not all regularities establish habits nor confirm predictions; regularity in greenness confirms the prediction of future case while regularity in grueness does not. This Goodman's reading of Hume, seemingly, would be endorsed by apparent textual evidence from Hume's writings. One may think that there is no room for arguing against Goodman when she finds in *Treatise* the passages such as; "We only observe the thing itself, and always find that *from the constant conjunction the object acquire a union in imagination*. When the impression of one becomes present to us, we *immediately* form an idea of its usual attendant… [T 1.3.7.15, italic added](5)." Thus Hume apparently holds that when we observed a constant conjunction (i.e., regularity) in experience, we are immediately or automatically inclined to entertain an idea of one object when given an impression of another object that had been conjoined to it. Furthermore, Hume also asserts that the habits produced by such regularities are full and perfect(6). In Hume's writings on induction and causation, therefore, it seems hard to find the reason to believe that Hume is able to distinguish confirmable from non-confirmable predictions.

However, it does not mean that there is no way out of the grue problem in Hume's picture. It would look so only when we detached Hume's account of induction separately from his other means for explaining human understandings. Indeed, I argue, Hume has certain maneuvers for avoiding the new riddle. Nathan Stemmer (2007) suggests the initial step we can take for addressing this issue. He claims that a solution to the new riddle has been given by Hume himself, pointing out that Hume describes the predictions about future on the basis of regularity as being events that are *similar* to the observed events. In fact, similarity or resemblance plays a significant role in Hume's entire account of the nature of our inferences(7); "all arguments from experience are founded on the similarity which

we discover among natural objects, and by which we are induced to expect effects similar to those which we have found to follow from such objects" (Hume, 1748/1975, p. 36). The precise meaning of "similarity" here, according to Stemmer, is to be understood as being "restricted" one in the sense that it holds between objects when they are similar "in appearance" and governs our "innately determined" extrapolations derived from an instinct tendency of ordinary human. Thus, it differs from "unrestricted" similarity that allows any pair of objects to resemble one another at least in some respect. With this restricted similarity notion, the argument goes (Stemmer, 2007, pp.142-3), Hume is able to give a reason for choosing "green" rather than "grue" by saying that the next emerald will be green because it will be the one that is similar to the observed emeralds in its "sensible qualities and appearance" (Hume, 1748/1975, p. 39). Although in Hume's account every observation of regularity establishes a habit and thus a prediction, the prediction "is not necessarily about the elements of the classes to which we might refer when describing the observed regularity" (Stemmer, 2007, p.143), and in virtue of the similarity-sensitive tendency inherent in our faculty of imagination, Hume is not committed to conflicting predictions in spite of the fact that the extension of green has been identical with that of grue (Stemmer, 2007, p. 150).

At first glance, Stemmer's suggestion seems to be cogent in the sense that it would enable us to understand why Hume can distinguish projectible from unprojectible predicates, and that it attributes the characteristics of such a "solution" to the new riddle to one of Hume's basic principles in explaining our inferences, i.e., the notion of similarity. However, Stemmer's similarity-based approach fails to provide Hume with a tenable solution of the new riddle for two reasons. Firstly, contrary to his take that Humean notion of similarity is a "restricted" one, it is rather an "unrestricted" one at least in the sense that a blue instance may resemble a green instance. This is clearly shown by Hume in *Treatise*;

> It's evident, that even different simple ideas may have a similarity or resemblance to each other; nor is it necessary, that the point or circumstance of resemblance shou'd be distinct or separated from that in which they differ. Blue and green are different simple ideas, but are more resembling than blue and scarlet; […] These admit of infinite resemblance upon the general appearance and comparison, without having any common circumstance the same [T 1.1.7.5. App.].

Humean similarity thus allows any pair of objects to resemble one another even when they do not

share any common quality or property, which *a fortiori* means that a blue instance may resemble green instances. Stemmer may reply to this in the following manner[8]: even though Humean similarity does not necessarily require any common property shared by different objects, it does not deny, in case that we can identify some perceptual or sensible properties in which things resemble each other, such a similarity in appearance overrides any other abstract similarity based on no common property. If so, he may argue, a green instance is *more similar* to another green instance than to a blue instance precisely because the resemblance among green instances are based on *more salient sensible or perceptual qualities* than the perceptual qualities in which a green and blue instances are similar to each other. This is tantamount to say that we can distinguish, among the multiple similarities in appearance among objects, the relevant similarities from the irrelevant ones *on the basis of empirical content of our sense perceptions*. However, here lies the second problem for Stemmer's approach. If, as Stemmer would hold, Hume's distinction between relevant and irrelevant similarities were provided by the immediate perceptual experiences, then it would make his theory of representation viciously circular. Indeed, as Steven Gamboa (2007) claims in his analysis of Humean notion of similarity, assuming that Hume's treatment of relevant resemblances is founded on intrinsic content of the ideas themselves will let Hume fall for *the myth of the given*: the difficulty that Wilfred Sellers (1997) once posed. To make this point clear, recall that, in Hume's theory of general ideas, the very principle of resemblance plays an important role in sorting particular ideas into general categories[9]. Then, what is to be explained is how the principle of resemblance can classify an immediate perceptual experience into general concepts for use in abstract reasoning, in which one cannot naïvely appeal to a brute given provided in the sensory content of the perception without falling into the myth of the given. Therefore, there must be something other than the intrinsic content of perceptual experience that determines which resemblances are relevant (Gamboa, 2007, pp. 27-8). So the grue problem comes again; *how do we sort things into one class of resembling entities and another without appealing to their sensible or perceptual qualities?*

3.2 Our Language Practices and the Solution

Although Gamboa suggests that Humean account of relevant resemblances will depend on how our passions and the like interact with objects in the world (2007, p. 37), I would rather step further into Hume's account of abstract ideas. As Hacking points out, Goodman's new riddle is not peculiarly about induction but is broadly construed as the problem of sorting kinds into "healthy" and "sick" ones, which could be well understood in line with Goodman's nominalism (Hacking,

1997). And in fact, I argue, Hume's way out of the new riddle is also to be found in his account of abstract or general ideas. According to Hume as a nominalist, general ideas are represented in mind by particular ideas with determinate degrees of quantity or quality. They are not represented by, as his opponents claim, abstract and indeterminate conceptions [T 1.1.7.2]. But in order to represent such a large variety of particular instances at once, the traditional realist objection goes, an infinite capacity is required in the mind, which is absurd. To rebut this objection, Hume offers the following account of general ideas;

> A particular idea becomes general by being annex'd to a general term; that is, to a term, which from *a customary conjunction* has a relation to many other particular ideas, and readily recalls them in the imagination [T 1.1.7.10, italic added].

We can find here a clue to understand Hume's solution of the grue problem. Even a red entity and a white entity may resemble each other and indeed they may be called by the same general term such as "color." But a white entity is not to be called "red." This is because each of white or red entities (or particular ideas) has a relation from a *customary conjunction* to a general term "color" while a white entity does not has such a relation to a term "red." A customary conjunction of a term and entity simply concerns the past record of our language practices. It does not concern any inherent perceptual qualities between them. Who dares to say a red instance resembles a term "red"?

Now let us see how Hume solves the new riddle of induction. From the same set of observed instances of emeralds, we have regularity in greenness on the one hand and regularity in grueness on the other hand. Given only this evidence, we are logically free to sort the instances of emerald in future either into the class of green or the class of grue. But looking at the past record of our language practices, we come to find each of the observed instances of emerald have a customary conjunction with a general term "green" but not so with a term "grue." Therefore, we predict that all emeralds are green because the predicate "green" is, let us say, *better entrenched* than the predicate "grue."

4. Higher-order Generalization in Hume —Single Observation and General Rules

As already stated in chapter 2.2, the main components of Goodman's theory of projection include not only the notion of entrenchment but also that of overhypothesis. What is known with the example we saw there is that the evidence for higher-order hypotheses indirectly affects the projectibility of the hypothesis in question, thus any plausible theory of inductive inferences need to

be equipped with some account of those relevant higher-order generalizations. In this final chapter I will provide some examples of Hume's account of higher-order inductive inferences that indeed play important roles in his account of inductive inferences.

One salient example of Hume's treatment of higher-order generalizations appears soon after one of his most notorious remarks is made, "all probable reasoning is nothing but a species of sensation" [T 1.3.8.12], which are supposed to manifest "sceptical" or "destructive" aspects of Hume's philosophy. But his commitment to the notion of higher-order generalizations, which is shown subsequently to the following quotation, suggests one of the "constructive" aspects of it in the sense that it provides a plausible and realistic account of our inductive inferences.

> It is certain, that not only in philosophy, but even in common life, we may attain the knowledge of a particular cause merely *by one experiment*, provided it be made with judgment, and after a careful removal of all foreign and superfluous circumstances. [T 1.3.8.14, italic added]

This fact could be a problem for Hume's account of causal inferences, according to which they are based on habits and constant conjunction between causes and effects, since one experiment cannot produce such a conjunction nor yield any habit in our mind. Hume rejects this difficulty in the following manner. Even though our hypothesis has only one evidence statement in this case, the hypothesis receives good amount of credibility from the hypothesis with wider scope; *K* "Like objects placed in like circumstances will always produce like effects." For this hypothesis *K* has been established by a sufficient custom in our past experiences. This account by Hume clearly shows his appeal to higher-order generalization since *K* indirectly supports the hypothesis in question, as Louis Loeb states, "Hume allows […] that custom can produce expectations about unobserved events based on a single observations or experience. This is possible in virtue of a second-order belief: that like objects placed in like circumstances produce like effects" (Loeb, 2002, p. 23).

Let us turn then to see Humean use of higher-order generalizations from another perspective. Hume's account of inductive inferences or causal reasoning, which bases them on faculties of imagination, sees our judgments as inevitably erroneous. This seemingly negative aspect of Hume's account had clouded its positive aspects that Kemp Smith's naturalistic interpretation of Hume's philosophy tried to reveal (Kemp Smith, 1941). Thomas Hearn claims that the notion of "general rule" is one of the most basic ingredients in Hume's philosophy, which provides "corrective, normative principles for the evaluation of those feelings which form the basis of both empirical and

moral beliefs" and hence highlights its constructive or non-sceptical aspects (Hearn, 1970, pp. 405-406).

According to Hume, there are two kinds of general rules, or put differently, general rules influence our mind (specifically, the imagination) in two different ways. The first kind of general rules is attributed to the imagination as being "capricious and uncertain [T 1.3.13.11]," and could lead us to rashly form an erroneous belief [T 1.3.13.7]. In contrast, the second kind of general rules is attributed to our judgment as being "extensive and constant," and is formed on "our experience of the operations of our understanding in the judgments we form concerning objects" [T 1.3.13.11]. Thus, these two kinds of general rules have contrasting natures and indeed operate on the imagination in opposition to each other [T 1.3.13.12]. Now, let us see how the general rules relate to higher-order generalization and how they provide "corrective, normative principles" for the evaluation of our beliefs. Hume illustrates it with the following example [T. 1.3.13.10] (cf. Loeb, 2002, pp. 106-109). Suppose that a man is in a cage of iron that is hung out from a high tower. When seeing the precipice below him, he feels fear and trembles because so far he has fallen *whenever he sees a precipice and is not suspended.* However, at the same time, he is aware of his safety since he has not fallen whenever he is suspended. Suppose that this is the first time for him to see a precipice and also be suspended, and that he forms the two conflicting first-order hypotheses, H_1 "Whenever I see a precipice, I will fall," and H_2 "Whenever I am suspended, I will not fall." Obviously, H_2 is a lawlike generalization but H_1 is a mere accidental generalization because the cause of his fall is not his seeing a precipice but his not-being suspended. According to Hume, an accidental hypothesis such as H_1 is produced under the influence of the first kind of general rules [T 1.3.13.10], and he claims that H_1 can be eliminated by the second kind of general rule such that "when we find that an effect can be produced without the concurrence of any particular circumstance, we conclude that that circumstance makes not a part of the efficacious cause, however frequently conjoin'd with it [T 1.3.13.11]." Following this general rule, one may form a second-order generalization (i.e., a generalization about the first-order generalizations such as H_1 and H_2) such as U "first-order generalizations relating different kinds of circumstances (like sight and physical safety) are falsified." Actually, if U will receive a certain amount of evidence, H_1 will lose its credibility to some extent.

Notes

(1) "And we owe belated apologies to Hume. For in dealing with the question how normally accepted inductive judgments are made, he was in fact dealing with the question of inductive validity. […] The problem of induction is not a problem of demonstration but a problem of defining the difference between valid and invalid predictions" (Goodman, 1979, pp. 64-65).

(2) Here are the definitions of positive and negative overhypotheses (cf. Zabludowski, 1994, p. 66); a hypothesis *h'* is a *positive* overhypothesis of a hypothesis of *h* if the antecedent and consequent of *h'* are parents of, respectively, the antecedent and consequent of *h*. A hypothesis *h'* is a *negative* overhypothesis of *h* if the antecedent of *h'* is a parent of the antecedent of *h*, while the consequent of *h'* is a predicate complementary to a parent of the consequent of *h*. A predicate is a *parent* of another if the extension of the latter is a member of the extension of the former.

(3) A recent psychological experiment reports that even 9-months-old infants are able to form overhypotheses; the infants formed a seond-order generalization about categories in general after they had learned about a few objects in some category (Dewer & Xu, 2010).

(4) If our cognition and learning process depended merely on a first-order inductive inference, our progress in learning would be so tardy and conservative that in each newly encountered circumstance we would be stuck in short of direct evidence from which some inductive inference is to be made. In fact, however, we often make a plausible inference even when given only an instance or two; one can decide to run away for her safety when she encountered an unknown huge animal in a forest.

(5) References to Hume (1739/2000) are given with the abbreviation such as [T Book. Part. Section. Paragraph].

(6) "We may observe, that the supposition, that the future resembles the past, is not founded on arguments of any kind, but is deriv'd entirely from habit, by which we are determin'd to expect for the future the same train of objects, to which we have been accustom'd. This habit or determination to transfer the past to the future is *full and perfect*…" [T 1.3.12.9, italic added].

(7) In *Treatise*, too, we can find numerous supporting remarks for this point. For example, Hume asserts that "the only general principles, which associate ideas, are resemblance, contiguity and causation" [T 1.3.7.13] and "Without some degree of resemblance, as well as union, it's impossible there can be any reasoning" [T 1.3.12.25].

(8) I'd like to thank Timothy Loughlin, Luke Elwonger, and an anonymous referee for their helpful comments in explicating Stemmer's possible reply.

(9) For a clear exposition of this point, see Collier (2005).

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