of the fiction of simple and individual objects to our account of sense-divide transcending objects situated in a single, individual space common to all the senses at least has this much to be said for it: it meets a genuine Humean need by genuinely Humean means.

See also 2 "Hume's Theory of Ideas"

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5

Hume on the Relation of Cause and Effect

FRANCIS WATANABE DAUER

Relying on earlier results, T 1.3.14 climaxes Hume's discussion of causation, a climax that is celebrated but internally problematic, intrinsically implausible yet suggestive.

Looking at the Text (T 1.3.14)

The first third of T 1.3.14 mainly surveys views of metaphysicians. He prefaces this survey by noting that members of the family of expressions (which I shall call the necessity family) "efficacy, agency, power, force, energy, necessity, connexion, and productive quality" are nearly synonymous and it would be "an absurdity to employ any of them in defining the rest." Hume tends to switch back and forth between members of the family and I follow this loose practice hoping nothing of substance is affected. (By "necessity" I shall mean *natural* necessity, something that "must" be true in our world but isn't true in all conceivable or even possible worlds.) Eschewing useless inter-definitions, he urges we "must look for [the idea of necessity] in the impressions, from which it is originally derived." This point is central and follows from his Copy Principle in T 1.1.1: "*all our simple ideas in their first appearance are deriv'd from simple impressions, which are correspondent to them, and which they exactly represent.*" All ideas are complexes of simple ideas and the idea of necessity is relatively simple; so, we need one or more impressions, which the idea of necessity represents, and from which the idea derives. Hume throughout assumes the genetic question ("What gives rise to the idea?") and the representation question ("What does the idea represent?") have the same answer in impressions. He criticizes metaphysicians of falsely imagining that they possess an idea in using the necessity family. If we use these terms as they do, "we have really no distinct meaning, and make use only of common words, without any clear and determinate idea." He immediately adds: "as 'tis more probable, that these expressions lose their true meaning by being *wrong apply'd*, than that they never have any meaning; 'twill be proper to bestow another consideration." This launches Hume's positive discussion, which consists of two arguments for his account (which I call the main and mini arguments), a defense and discussion of this account, and two definitions of cause.

The main and mini arguments

The main argument (occurring in T 1.3.14.15–20) starts with

1 Given a single instance of a cause C and an effect E, "from the simple consideration of one, or both these objects we never shall perceive the tie, by which they are united."

Some background is useful and provides the overarching structure of T 1.3. Distinguishing *a priori* from *a posteriori* relational claims in T 1.3.1, T 1.3.2 first notes that, among the latter, inferring (e.g., Mary's presence from Tom's) differs from perceiving (them together). For Hume, *a posteriori* inferences involve inferring the unobserved from the observed. He then urges a "conclusion beyond the impressions of our senses can be founded only on the connexion of *cause and effect*" (T 74). This is not a normative but descriptive point: We infer unobserved events from observed events only when we believe some connection binds them. Identifying it as a causal connection, he asks from what impressions the idea of causation arises. Quickly noting temporal priority and spatial contiguity, he adds, "There is a NECESSARY CONNEXION to be taken into consideration; and that relation is of much greater importance, than any of the other two above mention'd." Yet however closely we look at C and E, none of the observable qualities or relations can be identified with necessary connection, i.e., (1). Rather than abandoning the Copy Principle, he proposes beating around the bush (up to T 1.3.14) by inquiring into the nature of causal inferences.

(1) is followed by:

2 If we observe several instances in which C-like events and E-like events "are always conjoin'd together, we immediately conceive a connexion betwixt them, and begin to draw an inference from one to another."
3 "This multiplicity of resembling instances, therefore, constitutes the very essence of power or connexion, and is the source, from which the idea of it arises. To understand the idea of power, we must consider that multiplicity."

T 1.3.6 discovered that once we recall observed constant conjunction, "Without any farther ceremony, we call the one *cause* and the other *effect*, and infer the existence of the one from the other," i.e., (2). Given (1) and (2), (3) is plausible provided it is taken as an hyperbole for the observed regularity being the critical (essential) factor in making a causal inference, an inference which *pari passu* involves conceiving the items to be causally related. How then can observed regularity engender the idea of necessity? This leads to:

4 "The repetition of perfectly similar instances can never *alone* give rise to an original idea, different from what is to be found in any particular instance."
5 Therefore, the repetition "must either discover or produce something new, which is the source of that idea [of power]," and "wherever we find any [such new] thing, there we must place the power."

(4) basically stipulates what "repetition *alone*" can engender: it is limited to what can be found in any particular instance. Even the idea of repetition cannot be engendered

by repetition alone since that idea is absent in a single instance. So understood, (4) is unproblematic and gives a wide enough range for what a repetition can "discover" to make (5) a plausible consequence of (3).

The next three steps are:

6 "The repetition of like objects in like relation of succession and contiguity discovers nothing new in any one of them."
7 "This repetition of similar objects in similar situations produces nothing new either in the objects, or in any external body."
8 "There is, then, nothing new either discover'd or produc'd in any objects by their constant conjunction."

(6) and (7) need to yield (8): repetition can produce nothing new in, or reveal something new about, the repeated objects. Granting the fairly obvious (7), isn't constant conjunction something new discovered by the repetition? A parallel puzzle occurred in T 1.3.6: Joy that "We have insensibly discover'd a new relation between cause and effect, [the] relation [of] their CONSTANT CONJUNCTION," quickly turns to despair: "From the mere repetition of any past impression, even to infinity, there never will arise any new original idea, such as that of a necessary connexion." But why couldn't the *complex* idea of constant conjunction, rather than some new original idea, be the idea of necessity?

Hume's argument for (6) isn't clear but contains a clue: "repetition *discovers* nothing new since we can draw no inference from it." The idea of constant conjunction won't do for that of necessity because of the latter's role in inferring the unobserved. *Observed* constant conjunctions (conjunctions true in all observed cases) don't persuade us of anything about the next instance unless we take it to be evidence for a connection, the very idea in question. As for *eternal* constant conjunctions (conjunctions true in all cases whatsoever) or anything science may discover, our access to them is through a projection from the observed, a projection which presupposes, or has as its part and parcel, our taking observed conjunctions to be instances of causal necessity. So, the idea of eternal conjunctions also cannot play the role of inferring the unobserved. Thus, the idea of necessity cannot be identified with any idea of constant conjunction. This will do as well as (8) for the next step of the argument, which was anticipated in T 1.3.6: "Perhaps 'twill appear in the end, that the necessary connexion depends on the inference, instead of the inference's depending on the necessary connection."

The anticipated climax is:

9 "the *observation* of [constant conjunction] produces a new impression *in the mind*, which is [the] real model [of the idea of power]. We feel a determination of the mind to pass from one object to its usual attendant."

T 1.3.6 argued observed constant conjunctions produce inferences by the association of ideas: The inference "is not determin'd by reason, but by certain principles, which associate together the idea of those objects and unite them in the imagination." We can read (9)'s "determination of mind" in two ways: (a) Feelings (impressions) indicated by such words as "felt compulsion" or "a sense of having no choice but to believe E." (b) Dispositions, e.g., to infer Es from Cs, i.e., the ideas of C and E being associated.

Dispositions aren't felt but I can empirically access my current disposition to infer being burned from placing one's hand in fire by answering counterfactuals like, "Would I now infer Descartes was burned in 1621 if I were to believe his hand was placed in fire in 1621?" This is not an inference about how I would infer tomorrow, but an unmediated (albeit fallible) access to how I am *now* disposed to infer. We can, if we wish, add feelings of compulsion to actual and counterfactual inferences. (b) is the happier reading, and I shall hereafter adopt it, since Hume often drops "the feeling of" and simply speaks of determination of mind and his second definition of "cause" is clearly in terms of our inferences.

We now reach Hume's conclusion:

10 "This determination is the only effect of the resemblance; and therefore must be the same with power or efficacy. Necessity is the effect [of observing constant conjunctions], and is nothing but an internal impression of the mind, or a determination [of the mind]."

This conclusion depends on two highly plausible claims: (a) [Lacking innate ideas,] our idea of power or necessary connection is an effect of observing constant conjunctions. (b) The *only* effect of observing constant conjunctions (relevant to inferring the unobserved) is the determination of the mind. Given (a) and (b), the Copy Principle (an idea represents what gives rise to it) makes it *inevitable* that the idea of necessity represents the determination of the mind.

He immediately adds the mini-argument:

> [1] The necessary connexion betwixt causes and effects is the foundation of our inference from one to the other. [2] The foundation of our inference is the transition arising from the accustom'd union. [3] These are, therefore, the same. (T 1.3.14.21)

Because of possible slippage between reality and our take on it, [1] can't be quite right; the "foundation" of our inference must be our *belief* in necessity. So, [3] can at best claim this belief and the transition are the same. Still, one might complain of an equivocation: belief in necessity is the "foundation" of an epistemologically "justified" inference while the transition arising from the accustomed union is the "foundation" by being the psychological condition of the inference. But, this complaint is misguided: as already urged, [1] (derived from T 1.3.2) merely describes without raising normative issues. Still, while a functional equivalence between a belief in C and E's necessary connection and the corresponding inferential disposition is plausible, an outright identification is problematic: the intentional object of the belief is hard to locate in the disposition whose only intentional objects are those of C and E.

Defense and discussion (T 1.3.14.22–30)

The main argument ends by adding: without considering necessity as the mind's determination, "we can never arrive at the most distant notion of it, or be able to attribute it either to external or internal objects." But if necessity is the mind's determination, can he have recaptured the meaning of common words that allows attributing

necessity to objects? He recognizes the problem: He soon announces this is "the most violent paradox" he has occasion to advance, and later considers the objection: "What! the efficacy of causes lies in the determination of the mind! Thought may well depend on causes but not causes on thought." His main response repeats the unassailability of his main argument, once before and twice after announcing the paradox.

Before proclaiming the paradox, he claims:

> as the necessity, which makes two times two equal to four lies only in the act of the understanding; in a like manner the necessity or power lies in the determination of the mind [and] belongs entirely to the soul, which considers the union of two or more objects in all past instances.

Wittgenstein urged against Russell that logical necessities don't correspond to logical facts but lie in the methods of representation. Hume might be read to claim: though I can observe that doubling my two pigs results in four, I can't observe its *logical necessity*; that is due to relations among ideas we have formed. Similarly, though we can observe constant conjunctions, we cannot observe their natural necessity; that is due to the associative union the ideas acquire. Just as the relation between the ideas we formed engenders (recognition of) logical necessity, the association of ideas engenders (belief in) natural necessity. While Hume may intend this analogy, there is a disanalogy: while the parenthetical "recognition of" could perhaps be dropped for logical necessity, the parenthetical "belief in" seems ineliminable for natural necessity.

Two points of Hume's defense are noteworthy: (a) Bias against his view is explained by "the mind ['s] propensity to spread itself on external objects, and to conjoin with them any internal impression, which they occasion," e.g., we falsely locate sounds and smells in things occasioning them. This thought presumably underlies his claim:

> When we make the terms of power and efficacy signify something, of which we have a clear idea [viz., the mind's determination], and which is incompatible with those objects, to which we apply it [mindless external objects occasioning the determination], obscurity and error begin to take place, and we are led astray by a false philosophy [that necessity is in the objects]. (T 1.3.14.26)

(EHU 7.29n supports the reading in brackets.) External objects clearly don't infer, but Hume must allow ascribing necessity to objects in order to recapture the meaning of common words. (b) To his opponents, he says:

> If we have really no idea of a power or efficacy, 'twill be to little purpose to prove that an efficacy is necessary in all operations. We do not understand our own meaning in talking so.

His attitude that the necessity family has no meaning unless one accepts his account isn't consistent with his own words two paragraphs later: "The uniting principle among our internal perceptions is as unintelligible as that among external objects." Does he think the subject of this sentence is without meaning?

The two definitions (T 1.3.14.30–1)

Hume prefaces his definitions of cause, a pre-analytic notion he has used throughout, by noting "we have been oblig'd to advance in this seemingly preposterous manner, and make use of the term before we were able exactly to define them." The first definition defines cause as a philosophical relation or a comparison of two ideas: "An object precedent and contiguous to another, where all objects resembling the former are plac'd in like relation of precedency and contiguity to those objects, that resemble the latter." His usual talk of *observed* constant conjunctions is here replaced by *eternal* conjunctions (presumably because the former can subsequently fail). Since necessity is far more important than contiguity and priority, let us concentrate on the last clause and take it to define necessary connection. Let us also think in terms of species causation (fire causes heat) rather than this causing that. This is substantive by bypassing issues of singular causation but perhaps not too damaging since Hume repeatedly talks of constant conjunction, a notion applicable only to species. The first definition then becomes: C is necessarily connected with E just in case C and E are eternally (constantly) conjoined.

The second definition defines cause as a natural relation or an association of ideas:

> An object precedent and contiguous to another, and so united with it, that the idea of the one determined the mind to form the idea of the other, and the impression of the one to form a more lively idea of the other.

Given our simplifications, C is necessarily connected with E just in case we are disposed to infer E from C or the ideas of C and E are associated. This is one clear instance where Hume allows necessity to be ascribed to objects since it is the objects that are so united that their ideas are associated.

Postponing a discussion of these definitions, two points may now be made: (a) J. A. Robinson (1962) pointed out the obvious *prima facie* problem: these definitions can't define the same thing since they are not materially, let alone logically, equivalent. (b) Hume expresses unease about these definitions and says of the first,

> If this definition be esteem'd defective, because drawn from objects foreign to the cause, we may substitute [the second definition]. Shou'd this definition also be rejected for the same reason, I know of no other remedy.

The obvious reading is that since he is defining singular causation, both definitions import things foreign to it. One could read in a deeper unease.

Three Readings

The attempts to make satisfactory sense of Hume's undoubtedly problematic account in T 1.3.14 are too numerous to canvass. I shall limit myself to three readings that are in play in recent discussions. In each case I offer a few less than decisive criticisms.

Reductionist readings

The standard reading of Hume is that the first definition is *the* definition of causation. Despite various nuanced versions, for our purposes a sketch of the underlying idea may suffice: Since the determination of the mind cannot be part of the truth condition for causation, the idea of the former cannot represent causation. From what impressions, then, could the idea of causation be derived if it isn't observed constant conjunctions, which are eternalized to give us that idea? Yearning for a "thicker" connection violates the Copy Principle and causation is thus "reduced" to eternal conjunctions. A twentieth-century logical positivist replaces the Copy Principle by a verification principle whereby (a) the truth and falsity of a meaningful contingent claim must be observationally disclosable, and (b) the meaning of such a claim is the class of observation sentences each of which confirms the claim if true and falsifies it if false. "C causes E" means the class sentences of the form "c is conjoined with e," i.e., Cs and Es are eternally conjoined; by providing neither confirming nor falsifying conditions, the second definition is dismissed. For anyone with strong empiricist inclinations, a reductionist reading makes best sense of Hume. But Hume did say necessary connection is the most important part of causation, dismissed constant conjunction even unto infinity as giving us the idea of necessity, and the core of T 1.3.14 claims that necessity is the determination of the mind. To dismiss the second definition dismisses the overall structure of T 1.3 and its culmination in the core of T 1.3.14. This surely dismisses too much of the text. (The best reductionist option may deny Hume's claim that necessity is a component of causation and take T 1.3.14 to deal with the independent idea of necessity (see Beauchamp and Rosenberg 1981). This *is* an option and may be close to the revisionary reductionist discussed in the third reading below.)

A realist reading

Against the reductionist, a realist urges that even for Hume observed regularities are due to event binding real necessary connections. Taking Galen Strawson (Strawson 1989) as my sample realist reading, he relies on our pre-analytic notion of necessity, much as Hume was obliged to proceed in a "preposterous manner." His Hume is a non-committal skeptic insisting, "we know nothing about the true nature of causal power" (p. 3). But then Hume cannot claim, "causation in the objects was definitely (knowably) nothing but regular succession" (p. 12). Besides, since regular succession is knowable and causation isn't, causation cannot be regularity (cf., p. 86). Though we cannot *know* there are real connections,

> The belief that there is such a thing as natural necessity or causal power is not ruled out. Strictly non-committal skepticism can acknowledge the naturalness and overall theoretical plausibility of this belief. (p. 13)

Belief in real connections (causation) is natural because for Hume we cannot but believe it. As for theoretical plausibility, Strawson imagines a universe where some random generator produces a sequence of observable events that is "in respect to its perfect regularity, *just like* our universe. And so according to the Regularity-theory, it is, in

respect to *causation*, just like our universe" (p. 25). Strawson urges it is wildly implausible for most of us (Hume included) that the regularity we observe is a fluke, and thus plausible that Causation underlies it (cf. p. 95).

Much of what Hume says suggests that the necessity family has no meaning except the one he provides. But for Strawson this is misleading:

> There is a familiar ambiguity in the word "mean." On the one hand, "mean" means "positively-contentfully" mean (and this is how Hume standardly uses the word "mean"): a term can [so] mean something only [if] it has impression-derived content. On the other hand "mean" means "refer to." And so long as we have a way of picking out something X by reference to some relation to us, we can have a relative idea of it even though we may be unable to "positively-contentfully mean" it. (p. 122)

By one fell swoop of inserting "contentful" Strawson can disarm any possible counter-evidence, and there is one (but, I think, only one) passage where Hume allows a relative idea:

> The farthest we can go towards a conception of external objects, when suppos'd *specifically* different from our perceptions, is to form a relative idea of them, without pretending to comprehend the related objects. (T 1.2.6.9)

How *might* Hume refer to Causation by a relative idea? Strawson says:

> The central observable effect that Causation has on us is the regular character of our experience of object. Of course its having this effect on us is itself a Causal matter. But there is nothing problematic about the reference to an effect in an account of how we can come to acquire a ("relative") idea of Causation. (p. 123)

If we rely on our pre-analytic notion of causation, the reference succeeds (if there is Causation). But if we don't, the attempt seems no better than: "Rathation" refers to that which raths dogs. I am uneasy about Hume proceeding to the very end in the "preposterous manner" of using a term without defining it.

Strawson's account has other problems: (a) How can constant conjunction or the mind's determination be a (contentful) conception of Causation? The conception of a footprint includes a conception of a man whose walk on the ground caused it. But the concept of a depression on the ground differs from that of a footprint, which imports the idea of what caused the depression. Strawson's very argument against reductionism claims the concepts of regularity and Causation are disparate. The conception of regularity is as little a conception of Causation as that of a depression is that of what caused it. Again, if a relative conception of an external object X is a conception of something specifically different from perceptions, no conception of perceptions (e.g., shape) is a conception of X (contentful or otherwise). The same applies to conceptions of constant conjunctions and the mind's determination. Yet for Hume these *are* conceptions of necessary connection. (b) Since "power" (or "necessity") can't refer both to the mind's determination and Causation, Strawson urges Hume

> needs to differentiate *necessity*, understood as something that is "only in the mind," from the "ultimate connexion." If one accepts to call this something "necessity," and thinks of all necessity in the extreme subjectivist way, one risks losing one's grip on this point. Hume is pulled in this direction. But he continues to recognize and appeal to the distinction between causal power and necessity just outlined. (p. 158)

To support the last sentence he claims Hume "never actually uses the term 'necessity' in the referring expressions which he uses to refer to Causation. Instead he uses expressions like 'power,' 'ultimate force and efficacy,' [etc.]." I find this unpersuasive. "Necessity," "power," and "efficacy" belong to Hume's nearly synonymous necessity family and his main argument claimed, "This determination is the only effect of the resemblance; and therefore must be the same with power or efficacy."

An intermediate reading

Those who eschew real connections which can't be contentfully conceived and yet have the intuition that causation can't be mere regularity hope to find a non-reductive, anti-realist account in Hume, a hope encouraged by Hume having provided *two* definitions. Simon Blackburn's reading outlined in Blackburn (2003: 269–71) is an example. He claims Hume's two definitions provide

> the contribution of the world and the non-representative, functional difference in the mind that apprehends the regularity. [When the latter] takes place we think of the events as thickly connected; we talk of causation.

Against reductionists, Blackburn claims his reading

> happily predicts the "intuitions" that lead people to detest the positivistic "regularity" theory. Someone talking of cause is voicing a distinct mental set: he is by no means in the same state as someone merely describing regular sequences. The difference in this case is in the fixity the sequence of events takes in our thinking.

This difference may be true of someone describing *observed* constant conjunctions but is less clear of someone who, by an inductive inference, believes an eternal conjunction, which is what the reductionist takes causation to be.

As for Blackburn's anti-realism, consider first a contradiction he claims any reading of Hume faces: (a) The Copy Principle, (b) the lack of an impression of necessity to be copied, and (c) having the idea of necessity (p. 260). Hume denies (b) but Blackburn is dismissive: "Hume shows little interest in such questions [of representation] and can point only in misleading directions: He says, for example, by a necessary connexion we 'mean' a connection in the mind." Blackburn's solution denies (c) "by distinguishing a representative idea of connexion, which we do not have, from a capacity to make legitimate use of a term whose function is given non-representatively, which we can have." Clearly if there is no representative idea of necessity, we have no idea representing the realist's causation. But how can Blackburn's anti-realist "think of events as thickly connected" if there is no representational idea of thick connections? He thinks prospects of an answer "must be quite bright" and gestures towards the plausibility "of explaining the apparently objective content of moral judgments given their source in the passions."

In another essay Blackburn gives a fuller outline of the kind of (quasi-) realism he accepts:

> The stage (which I called quasi-realism) explains on this basis [mental states, habits, dispositions, etc.] the *propositional behavior* of the commitments [which are verbal expressions of mental states, habits, dispositions, etc.]. The aim is to see these propositions as constructions that stand at a needed point in our cognitive lives – they are the objects to be discussed, rejected, or improved upon, when the habits [and] dispositions need discussion, rejection or improvement. *Their truth corresponds to correctness in these mental states, by whichever standard they have to meet.* (Blackburn 1993: 55, my italics)

The idea seems to be: Utterances of "C causes E" initially express (are projections of) our disposition to infer E from C. They acquire an objective dimension by being used to discuss, reject or improve the inferential disposition and are true when the inferential disposition is correct.

Two things need to be noted: (a) Only by relying heavily on linguistic behavior can utterances merely expressive of non-representational inferential dispositions dance the dance of objectivity and be true. Beliefs calling for believed ideas are bypassed. While Hume allows words can substitute for ideas, never in T 1 does he suggest ideas can be completely bypassed. (b) The truth of "C causes E" is aligned to the correctness of the disposition to infer Es from Cs, and the latter is surely never being led from truth to falsity, i.e., C and E being eternally conjoined. Simplicity considerations can "correct" inferential dispositions but the truth of "C causes E" remains eternal conjunctions elegantly inferred. Since Blackburn takes moral judgments to be supervenient on natural facts and structurally like causal judgments, causal talk is supervenient on eternal conjunctions (elegantly inferred). Because the supervenient can differ only through a difference in the subvenient, in the end causal judgments involve gilding or staining constant conjunctions by our inferential dispositions just as moral judgments involve "gilding or staining all natural objects with colours, borrowed from internal sentiment" (EPM App. 1.21). In describing his projectivism Blackburn approvingly quoted this second *Enquiry* passage in Blackburn (1984: 171).

Even if the reductionist grants that our concept of causation injects something not given by eternal conjunctions, if it is just gilding or staining, he can become revisionary and urge dispensing with the concept of cause in favor of that of cause*, viz., eternal conjunction. What real gain is there in causal talk? Blackburn urges the main gain "is that we 'make no longer any scruple of foretelling' [the future]. We may [also] become willing, to hold the sequence constant as we think about [counterfactual conditionals]" (Blackburn 2002: 271). But couldn't causal* talk achieve the same? Once we predict eternal conjunctions, we make no scruple of foretelling the future. To accommodate counterfactuals, the revisionary reductionist can appeal to Goodman type considerations (Goodman 1955) whereby inferential dispositions are corrected so that by projecting only "projectible conjunctions," they project "law-like" generalizations that sustain counterfactuals. To distance his quasi-*realism* from reductionism, Blackburn has to show that the gilding or staining does real work.

Reconstructions and Speculations

All three readings considered dismiss Hume's identification of necessity with the mind's determination despite the Copy Principle making it the inevitable result of the main argument. The intrinsic implausibility of the identification dictates its rejection by suspending the Copy Principle for the idea of necessity since genetic and representational issues diverge here. Except for that, let's see what the text yields and where the three readings would stand. Call this the modest reconstruction or R1. Since R1 (and later R2) *are* reconstructions, what follows are text based "Humean" views rather than straightforward textual interpretations.

Reconstruction R1

Our pre-analytic notion of necessary connection isn't completely opaque. C and E are not so connected if there is a C without E. T 1.3.2 also indicates we infer the unobserved precisely when we believe there is a necessarily connection. Since Hume thinks inferential confidence has degrees, let's align maximal confidence with what he calls "proofs" in T 1.3.11, the confidence we have in inferring we are mortal. That we have maximal confidence precisely when we believe there is a necessary connection is not normative but descriptive and, I suggest, descriptive of our use of the concept of necessity. For animals and young children lacking that concept, the inferential confidence is caused by the association of ideas but isn't matched by a belief in necessity. Even for those having the concept of necessity, though the inferential confidence is aligned with a belief in necessity, the causal basis of the confidence is not the belief but the association of ideas. We might then glean from Hume's view something like a conceptual claim concerning our use of the concept of necessity:

1 If one has the concept of necessary connection, one believes C and E are necessarily connected if and only if one places maximal confidence in the inference from C to E.

Though (1) is silent on what engenders the confidence, it accords with my suggestion (in discussing the mini-argument) that a belief in necessity is functionally equivalent to an inferential disposition.

Fused with (1) is Hume's causal account:

2 One places maximal confidence in an inference from C to E if and only if one has observed a constant conjunction between Cs and Es.

This is rough. (2) must exclude the mentally incapacitated. Also, in T 1.3.12–13 Hume distinguishes the wise and the vulgar by the kind of general rules governing their inferences. The wise discount certain failures in conjunctions by empirically inferring undetected interfering factors. Extensive constant conjunctions whose instances are terminated may be discounted if they suspect "essential and efficacious" factors were lacking. The wise adjust their inferential confidence to the data that are not discounted. However, let's avoid epicycles and simply work with (1) and (2), which give us:

3 If one has the concept of necessary connection, one believes C and E are necessarily connected if and only if one has observed a constant conjunction between C and E.

Given the conceptual (1) and causal (2), (3) can yield the counterfactual: If our belief in a necessary connection and our observation of constant conjunction were not attuned (through our inferential disposition), we would lack the concept of necessary connection. This gives the condition for our possessing the concept of necessity, which approximates Hume's view with alterations suggested in braces:

> 'The several instances [of an observed constant conjunction] lead us into the notion of power and necessity. These instances have no union but in the mind. {Belief in} Necessity, then, is the effect of this observation, and is nothing but {i.e., is functionally equivalent to} a determination to [mind]. Without considering it in this view, we can never arrive at the most distant notion of it. (T 1.3.14.20)

Turning to Hume's two definitions, we find a temporal mismatch: one is in terms of eternal conjunctions, the other in terms of current associations. One way to correct this eternalizes the second definition: C and E are connected just in case some actual or counterfactually possible observations would result in, and none would thwart, associating the ideas of C and E. Material equivalence is now plausible but logical equivalence still fails: we can conceive the associative mechanisms being different or absent while events are eternally conjoined. Don Garrett (Garrett 1997: 110–11) urges our concept of cause couldn't reach such worlds. For all possible worlds accessible by our concept, the definitions are coextensive. I find this counterintuitive and shall allow causal relations in possible worlds lacking our presence. This rules out the semantic adequacy of the second definition and any definition that has it as a conjunct (since the conjunction inherits the defect of any conjunct). The first definition fares no better. Someone's inferential capacities could be damaged so that observing constant conjunctions fails to engender inferential confidence and thereby beliefs in necessary connections. He lacks the concept of necessity by (3) but he could surely conceive (though not believe) that leap year marriages are eternally conjoined with divorce. But, lacking the concept, he doesn't conceive a causal connection. Since semantic adequacy should allow interchange in propositional attitude contexts, the first definition isn't semantically adequate and the reductionist reading fails. Both definitions of necessity are semantically inadequate and this could account for Hume's unease with them.

What then do the two definitions provide? To match them temporally by de-eternalizing the first may be preferable to eternalizing the second. For Hume the definitions present necessity as a philosophical or natural relation but in the eternalized second definition, associ*ability* isn't a natural relation. Craig urged the definitions are "best understood as presenting two descriptions of the circumstances under which belief in a causal connection arises" (Craig 2002: 227). Though the first doesn't state belief conditions, Craig suggests since Hume talks of how we may view the relation, "the thought of the observer is not too far away" (Craig 2002: 225). The second aligns belief in necessity with the inferential disposition and is our (1). If the observer is close at hand, the first becomes a variant of (3):

3* If one has the concept of necessary connection, one believes that C and E are necessarily connected if and only if one believes that C and E are eternally conjoined.

Since necessarily connections entail eternal conjunctions, one direction is obvious. Conversely, believing an eternal conjunction involves inferring from the observed, and by (1) we confidently infer precisely when we believe there is a necessary connection (provided we have the concept). (3*) and (1) rightly align the two definitions: Beliefs in necessity are related by (3*) to beliefs in philosophical relations and by (1) to inferential dispositions or natural relations. The two definitions then provide belief conditions for necessity, which can be variously stated: observed constant conjunction, maximal inferential confidence, or believed eternal conjunction. The key is Hume's associative mechanism: because of it observed constant conjunctions result in maximal inferential confidence and thereby beliefs in necessity and eternal conjunctions. Belief conditions are in the region of assertability conditions (*sans* normativity) and this is all R1 can glean from the *Treatise* for the concept of necessity. The content of the concept in terms of truth conditions remains elusive.

R1 rejects reductionism and is consistent with Blackburn's and Strawson's readings without endorsing either. R1 joins Blackburn in urging the concept of necessity emerges from inferential dispositions but Strawson needn't deny this. R1 is silent on (a) Blackburn's reliance on linguistic practice to imbue objectivity and representational capacity to utterances merely expressive of non-representational inferential dispositions and (b) Strawson's use of pre-analytic notions to secure reference for Causation. In taking causal talk to supervene on observations and inferential dispositions, Blackburn urges the standard anti-realist conversion of assertability or belief conditions ("at the ideal" of eternal conjunctions) into truth conditions. R1 is silent on this conversion as well as Strawson's standard realist resistance to it and insistence that real connections are the truth conditions of causal claims. In the end, I think one's realist or anti-realist commitments are the engines driving one's interpretation of the *Treatise*, a work which makes no such commitments (once the Copy Principle is suspended for the idea of necessity). Hume may have been pulled in both directions without taking a stand in the *Treatise*.

The reductionist will feel short changed. Against Strawson he will insist one can't forgo the Copy Principle without a substitute like the verification principle. A realist has responses: (a) Hume is a term-by-term empiricist and could allow a compositionality principle whereby compounds have meaning through their components. Since ordinary, finite dreams have empirical meaning, Hume need not reject as meaningless the Cartesian eternal dream hypothesis. Since (the "wise" recognize) "accidental finite constant conjunctions" can have empirical meaning, Strawson's thought experiment isn't meaningless. (b) Plausibly, we can attach meaning to terms applying to our world only if empirical evidence is assigned for and against their application. But one can resist the need for *decisive* evidence (at the ideal). Observed conjunctions are evidence for necessity and failure of conjunction (and evidence for accidental finite constant conjunctions) are evidence against necessity. Against Blackburn, the reductionist will become revisionary, and this move affects R1 as well. Real workload for the concept of necessity must be found. To investigate this, we need a more speculative reconstruction R2 that goes beyond the *Treatise*.

Reconstruction R2

We cannot foretell the future well without the aid of science. Medical newsletters report finding correlations, say, between drinking red wine and reduced cardio-vascular problems, but warn a causal connection hasn't been shown. An explanation of the correlation enhances confidence in the wine's preventive virtues and the isolated critical ingredient allows finding it elsewhere and producing pills. Roughly, science seeks deep structure explanations with two components: (a) claims of relations between theoretical entities, and (b) claims that macro-objects are constituted by theoretical entities, which along with (a) predict the observational properties of macro-objects. While the acceptability of scientific claims is gauged by observational evidence, these claims cannot be *replaced* by talk about observational data. We cannot locate relevant regularities and their epicycles at the observational level (data without theory is useless) and science enables the production of rockets and nuclear plants creating new regularities. Since we take scientific claims to claim natural necessities, the workload of the concept of necessity must lie here, and this idea R2 attempts to exploit.

While the *Treatise* is silent on scientific explanations, in *Enquiry* (EHU 4.12) Hume talks of the effort of human reason to "reduce the principles, *productive* of natural phenomena, to a greater simplicity" (my italics), and claims

> Elasticity, cohesion of parts, communication of motion by impulse; these are probably the ultimate causes and principles which we shall ever discover in nature; and we may esteem ourselves sufficiently happy, if, by accurate enquiry and reasoning, we can trace up the particular phenomena to, or near to, these general principles.

(There are surrounding skeptical remarks which I shall discuss later.) Since Hume took claims of science to be claims of necessities or productive principles, R2 will have some basis in Hume.

Because observable objects are identified independently of each other, though we believe observed conjunctions are necessary, there is the possibility of accidental conjunctions even unto eternity. We take a theoretical explanation of the correlation to "confirm" our surmise that the conjunction wasn't accidental and to "show" drinking red wine to be a causal factor for health. This suggests the truth of a belief that a correlation is necessary lies in there being a true theoretical explanation of the correlation. These intuitive considerations suggest R2's characterization:

4 (a) The possibility of conceiving an eternal conjunction between C and E to be accidental depends on the possibility of independently accessing C and E. (b) If we can conceive the conjunction to be accidental, it is necessary just in case a true explanation explains it.

Though R1 provides belief conditions for necessary connections among observable objects, since the truth of necessity claims lies in there being deep structure explanations, the concept of necessity drives us towards these explanations. Since we cannot "get along

just as well" with observational regularities, the concept of necessity is indispensable and revisionary reductionism is wrong. As for Blackburn and Strawson, (4) is again consistent with both.

For an "intermediate position" the key is that being inter-defined, theoretical entities can't be accessed independently of each other. (4a), then, rules out the possibility of accidental relations between theoretical entities and, by default, the relations become necessary unless the theory is false. This has some intuitive basis. The idea of correlation has a firm foothold at the observational level precisely because we can independently access items and observe them to be correlated or not. The idea of finding genuinely theoretical entities to be correlated or not gains no foothold since they cannot be identified independently of the relational and constitutive roles the theory claims. We gauge the truth of theoretical claims by the success or failure of observational predictions the theory as a whole more or less deductively entails, not by finding correlations between theoretical entities. We might understand "genuinely theoretical entities" along the lines Quine suggests:

> Reference and ontology recede to the status of mere auxiliaries. True sentences, observational and theoretical, are the alpha and omega of the scientific enterprise. They are related by structure, and objects figure as mere nodes of the structure. What particular object there may be is indifferent to the truth of observation sentences, indifferent to the support they lend to the theoretical sentences, indifferent to the success of the theory in its prediction. (Quine 1992: 31)

Since theoretical statements are false or truths of natural necessity, content of beliefs in necessities become content of beliefs in theoretical claims. Since Hume allowed (in T 1.1.7.12 and 14) that words could substitute for ideas of government and large numbers, the object of a belief in a theoretical claim could just be a sentence. While Hume perhaps thought words could *in principle* be replaced by ideas, a sentence being a part of a web of sentences that relates holistically to positive and negative empirical evidence may have to suffice. (I depart here from Blackburn's "expressive" theory.) A theory's possible under-determination even at the ideal is problematic and would undercut supervenience. But there may be ways of dealing with this (cf., Quine 1992: 95–101), and if we can, (in an anti-realist Hegelian serpentine manner) a constant conjunction at the observational level acquires its necessity through theoretical claims whose truth lie, not in the initial constant conjunction, but in the totality of observational truths that makes the indispensable, holistically conceived scientific superstructure true.

R2 can also accommodate a realist who rejects anti-realist accounts of science. Even if theoretical entities are inter-defined, the claims of science as a whole can be taken to fix (rigidly) the reference of theoretical terms. Theoretical entities conceived *de re* allow for conjunctions or correlations, albeit of a massively complex sort, and (4a) engenders the possibility of the correlation being accidental. By (4b), if a believed explanation of a correlation is true, the correlation is necessary, and if we are right in thinking there is no true explanation of a correlation (such as an astrological one), the correlation is accidental. But there are no available explanations for the ultimate explanations available at any given moment. This not just a human limitation: unless

there is an unending series of deeper explanations, there is going to be an ultimate explanation having no explanation. At the ultimate level of massively complex correlations of theoretical entities, there are no further explanations. But if the ultimate correlations were accidental, this would transmit to observed correlations. Since we believe many of the latter are necessary, we must believe the ultimate correlations are also necessary. Evidently we must believe there is some bond in *rerum natura* binding theoretical entities, and that surely is Strawson's Causation.

R2 is again neutral between the realist and anti-realist outlooks. But Hume accepts the realist conception of science. The *Enquiry* passage is surrounded by skeptical remarks: "as to the causes of these general causes [cohesion, gravity, etc.], we should in vain attempt their discovery," and "The most perfect philosophy of the natural kind only staves off our ignorance a little longer." These aren't passing remarks but steps in arguing, "the observation of human blindness and weakness is the result of all philosophy, and meets us at every turn, in spite of our endeavor to elude or avoid it." Even if one invokes science, the causes of general causes must remain inexplicable. Since this *Enquiry* argument is so obvious, one *could* urge the *Treatise* simply collapsed the argument and claimed the uniting principles between observed events to be unintelligible.

R2 attempted to lend substance to the concept of necessity (which was thin and potentially dispensable under R1), and if not the *Treatise* at least the *Enquiry* suggests the *Humean* view is the realist option under R2. However this realism differs from Strawson's. His approach is "top down" from the unknowable, and his appeal to Causation as that which Causes regularity is unhelpfully circular. My approach is "bottom up" and ties the necessity of correlations to their explanations. However, this account *tends* to lead the concept of necessity towards an antinomy: To save the necessity of observational regularities, theoretical entities must be necessarily connected, not just correlated. Yet necessary connections between the ultimate theoretical entities would be precluded since ultimate explanations have no further explanations. We could plead an unending series of deeper explanations so that there is no ultimate explanation beyond what is ultimate for us at any given moment. But would an infinite regress of explanations be an explanation? Alternatively, we could plead that the relations between the ultimate entities are self-explanatory. But what could this mean to us except that the ultimate laws of nature are true *a priori*, something that seems utterly implausible and un-Humean? In claiming the ultimate uniting principle to be unintelligible perhaps Hume was pointing to these conceptual difficulties rather than relying on the Copy Principle (or its variants) or the possibility of there being things in the universe we are unacquainted with. But where does this leave us? We *do* have a partial, incomplete understanding of the concept of necessity in terms of deeper structure explanations. But we cannot complete this understanding without facing insuperable conceptual difficulties, a sign that a full or complete conception of necessity (contentful or otherwise) is beyond the limits of our understanding. The anti-realist option under R2 would be more in keeping with streamlined empiricism, but it does not seem to be Hume's perspective.

See also 2 "Hume's Theory of Ideas"; 6 "Inductive Inference in Hume's Philosophy"; 23 "Hume's Naturalism and His Skepticism"; 24 "Is Hume a Realist or an Anti-realist?"

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6

Inductive Inference in Hume's Philosophy

LOUIS E. LOEB

Hume's discussions of non-demonstrative or inductive inference may be grouped under a number of headings. First, the development of a general theory of simple or enumerative induction occupies the bulk of *A Treatise of Human Nature* 1.3 and sections 4–6 and 9 of *An Enquiry concerning Human Understanding* (hereinafter, "the *Enquiry*"). Second, there are applications of the theory: to inference to the existence of external objects, in *Treatise* 1.4.2 and *Enquiry* 12; and to inference to the existence of God, in *Enquiry* 11 and *Dialogues concerning Natural Religion* 2. Third, *Treatise* 1.4.2 also introduces a complication in regard to the underlying treatment of induction.

Some Context

Fundamental aspects of Hume's conception of epistemology must be gleaned from scattered remarks. To spot them, it is helpful to have in view a contrast with Descartes, though not a standard distinction between "empiricism" and "rationalism." Descartes seeks to explain how knowledge is possible for idealized cognizers for whom the search for truth is an overriding objective, and who fully and conscientiously employ their cognitive faculties under the most favorable conditions (Williams 1978). Descartes maintains that such cognizers can achieve *scientia*, "scientific knowledge" that meets exacting standards. Where, in Descartes' view, does this leave everyday epistemic agents? Evidently, any knowledge they possess is relegated to a second-rate status.

For Hume, if knowledge is possible, it is possible for the common person – and not just as a consolation prize. This formulation needs some explanation. There is in Hume a strict sense of "knowledge" in which the term is reserved for "assurance arising from the comparison of ideas" (T 1.3.11.2 – cf. 1.3.1), intuitive and demonstrative knowledge. At the same time, Hume recognizes other epistemic achievements. Some inductive inferences (for example, inferences to the conclusion that "the sun will rise to-morrow, or that all men must dye") constitute "proofs" (T 1.3.11.2, EHU 6n.10 – cf. 10.6). Hume even links such proofs to "knowledge," now more liberally construed: "No matter of fact can be proved but from its cause or its effect. Nothing can be known to be the cause of another but by experience" (T Abs. 21). Similarly, Hume writes that a person who stops his journey at a river "foresees the consequences of his proceeding

forward; and his *knowledge* of these consequences is convey'd to him by past experience" (T 1.3.8.13, emphasis added – cf. 1.3.8.14, 1.3.13.10).

In Hume's view, philosophy should account for the knowledge – the epistemic accomplishments – of everyday persons who are not especially reflective. In the *Natural History of Religion* 6, Hume's observation that "the vulgar . . . are never led into [theism] by any process of argument, but by a certain train of thinking, more suitable to their genius and capacity" (Gaskin 1998: 154) generates constraints on an explanation of religious belief; these are a constant refrain in this work. Although Hume casts this point in terms of belief, a component of knowledge, issues about the reasonableness of the belief in God stand in the background (cf. Gaskin 1978: ch. 8). In *Treatise* 1.4.2.14, Hume writes in regard to another fundamental belief:

> [W]hatever convincing arguments philosophers may fancy they can produce to establish the belief of objects independent of the mind, 'tis obvious these arguments are known but to very few, and that 'tis not by them, that children, peasants, and the greatest part of mankind are induc'd to attribute objects to some impressions.

This passage carries an epistemic resonance.

Hume also thinks that epistemology must account for the knowledge of non-human animals. In "Of the reason of animals," he writes:

> When any hypothesis . . . is advanc'd to explain a mental operation, which is common to men and beasts, we must apply the same hypothesis to both . . . The common defect of those systems, which philosophers have employ'd to account for the actions of the mind, is, that they suppose such a subtility and refinement of thought, as not only exceeds the capacity of mere animals, but even of children and the common people in our own species. (T 1.3.16.3: cf. EHU 9.5)

Hume again has knowledge, as well as belief, in view: "the most ignorant and stupid peasants, nay infants, nay even brute beasts, improve by experience, and *learn* the qualities of natural objects, by observing the effects, which result from them" (EHU 4.23, emphasis added). Some commentators highlight Hume's treating animal and human mental capacities alike as parts of the natural world (Huxley 1909; Bennett 2001; Millican 2002a). It is crucial that Hume includes knowledge within the purview of this naturalism. The principles that explain "the operations of the understanding" in humans should "explain the same phenomena in all other animals" (EHU 9.1); that "animals as well as men learn" is an example (EHU 9.2). Whereas for Descartes the proper object or chief subject matter of epistemological study is the idealized cognizer, for Hume it is the knowledge possessed by a variety of perfectly ordinary organisms.

Hume's epistemological interests are embedded in his commitment to contributing to a "science of human nature" (T Intro. 9, 1.1.1.12) by establishing an associationist psychological theory. For Hume, associationist mechanisms include one perception (conscious state) inducing the existence of a related perception and also the transfer of vivacity between related perceptions. Hume analyzes mental phenomena (such as belief) in terms of vivacity or liveliness and appeals to principles of association to explain their occurrence. Associationism permeates the structure of the *Treatise*

T Abs. 35). As early as 1.1.4, Hume introduces associative principles specifically for
s, one kind of perception. In 1.3, association by the relation of cause and effect explains
sal inference; in 1.4, confusing the idea of identical objects with that of related objects
lains various mistaken beliefs about mind and body; in 2.1–2, a double association
npressions and ideas explains the indirect passions; and in 3.2–3, an associationist
hanism of sympathy explains ideas of justice and morality.

The Traditional Interpretation

Hume, basic inductive inference takes place against the background of the
eated observation of conjoined instances of two kinds of objects. (Non-basic induc-
inference includes chains of basic inferences and also inferences from observing a
gle instance of a conjunction.) On a new occasion, one observes an object of one
d, but without observing an object of the kind with which it is usually conjoined,
then infers the existence of an unobserved instance of an object of the latter
d. Hume's associationism is at work here; the repeated, past observation of the con-
ction, together with the new observation, induces a lively idea of the unobserved
ct. After repeatedly observing fire followed by smoke and smoke preceded by fire,
a new occasion one observes fire without observing smoke or observes smoke
hout observing fire, and infers the existence of the smoke or the fire. In these
mples, the smoke is the unobserved cause of the fire and the fire the unobserved
ct of the smoke. Hume has a pronounced tendency to assimilate all inductive
rence to causal inference (Price 1940b: 25, 1969: 176–9; Passmore 1952/1968:
–34; Pears 1990: 71–2), though this need not concern us.

According to the traditional interpretation, Hume maintains that it is in principle
ossible to have any justification for beliefs about the unobserved, and does so on
basis of what has come to be known as "the (skeptical) problem of induction." This
blem may be stated as follows:

> Any argument for a belief about the unobserved depends upon a uniformity principle: that observed conjunctions (regularities, uniformities) hold also in unobserved cases.
> No demonstrative argument can be the basis of belief in the uniformity principle; by showing that it must, of necessity, be true; it is conceivable, and hence possible, that nature is not uniform.
> No non-demonstrative (empirical, probable) argument can be the basis of belief in the uniformity principle; any such argument would extrapolate from observed to unobserved conjunctions, thus presupposing the point at issue, that the observed conjunctions hold also in unobserved cases.
> Thus, the uniformity principle is not based on argument.
> Thus, there can be no justification for any belief about the unobserved.

ther words, there is equal justification for every belief about the unobserved – none
atsoever. (For statements of the problem and possible solutions, see Swinburne 1974;
rms 1986; Howson 2000.)

It can seem easy enough to document that Hume subscribes to each of these steps. For step (1), see *Treatise* 1.3.6.4 and *Enquiry* 4.18–19 and 21. For (2), see *Treatise* 1.3.6.5 and *Enquiry* 4.18 and 21. (At T 1.3.6.8–10, Hume considers a possible escape route from the argument for this step.) For (3), see *Treatise* 1.3.6.6–7 and *Enquiry* 4.19 and 21. Step (4) is implicit at *Treatise* 1.3.6.12 and explicit at *Enquiry* 4.17 and 21. For (5), there are the *"no reason" passages*, statements about the inference to belief in an unobserved object: "there be no reason to determine us to that transition"; the mind makes the "transition without any reason" (T 1.3.6.12 – cf. 1.3.6.11, 1.3.12.20).

What I call "the traditional interpretation" dominated the literature for four decades beginning in the 1940s (Price 1940b, though he finds Hume "of two minds" about induction; Kemp Smith 1941: 46, 121, 374–5; Russell 1945; Popkin 1951; Stove 1965, 1973; Bennett 1971: 299–304; Penelhum 1975; Stroud 1977) and is presupposed in attempts to explain why the problem of induction emerges in Hume, but not before (Hacking 1975; Milton 1987). By the mid-1970s, the traditional interpretation was encountering systematic resistance. (This is consistent with its having staying power – Fogelin 1985; Stroud 1991; Johnson 1995; Dicker 1998.) Since 1990–2000, there has been a scholarly consensus that the traditional interpretation is mistaken. Dissenters have emerged (Penelhum 1992; Winkler 1999), but no serious historical work on Hume can ignore the case against the tradition.

All parties concede that Hume flirts with broadly skeptical or destructive conclusions. For example, Hume argues that our faculties lead to contradictory beliefs about the existence of matter (T 1.4.4.15; EHU 12.15–16). The present question, however, is whether Hume subscribed to skepticism specifically with respect to induction. Hume writes in the concluding section of Book 1: "I am ready to reject all belief and reasoning, and can look upon no opinion even as more probable or likely than another" (T 1.4.7.8). This seems to imply, as a special case, that beliefs about the unobserved are to be rejected, and rejected because they are equally probable in that they are not justified at all – the conclusion at (5). Still, Hume's finding some argumentative path to this result (for example, via the claim that our faculties are incoherent) does not show that he propounded *the problem of induction*, an argument for (5) along the lines of (1)–(4).

Indeed, in route to his 1.4.7 announcement that all beliefs are equally probable, Hume appeals to various perplexities and supplies cross-references to sections of the *Treatise*: the contradiction in our faculties uncovered in 1.4.4 (1.4.7.4); the discovery in 1.3.14 that causation involves no connection outside the mind (T 1.4.7.5); and a "dangerous dilemma" stemming from the contention in 1.4.1 that the understanding subverts itself (T 1.4.7.6–8). Hume also expresses qualms about the role of enlivening in his account of belief (T 1.4.7.3). Since this concern applies to any belief, it is too general to attribute to the problem of induction. Also, the claim that belief is a lively idea is developed in 1.3.7. Notably absent from the inventory in 1.4.7 is any reference to 1.3.6. This omission is inexplicable on the hypothesis that Hume arrives at skepticism on the basis of his main argument about induction (Arnold 1983; Broughton 1983). This should give pause with respect to the viability of the traditional interpretation, at least as regards the *Treatise*.

Disarming the Evidence for the Traditional Interpretation

Any attempt to undermine the traditional interpretation must disarm the textual evidence that Hume subscribed to (5). An important strategy is to interpret the "no reason" passages to mean that inferences to the unobserved are not the product of a faculty of reason *as conceived by other philosophers*. Commentators differ in their characterizations of the conception of reason Hume has in his sights: deductivist, syllogistic, or demonstrative (Beauchamp and Mappes 1975; Connon 1976; Winters 1979; Beauchamp and Rosenberg 1981; Broughton 1983; Baier 1991; Wolterstorff 1996); as caused by further reasoning or argument (Ferreira 1986; Garrett 1997; Noonan 1999); as due to a faculty of rational insight or rational perception (Craig 1987; Millican 2002b); or as requiring intermediate steps (Owen 1999). If, as most of these commentators maintain, Hume does not assume that his target exhausts possible conceptions of reason, the "no reason" passages do not imply that he subscribed to the claim at (5). (Millican's detailed 2002b examination of the structure of part 2 of *Enquiry* 4 illuminates the constraints on what Hume's target could be.)

The lead paragraph of the main argument about induction suggests that Hume's target is more general than particular historical models of "reason":

> [T]he next question is, whether experience produces the idea by means of the understanding or imagination; whether we are determin'd by reason to make the transition, or by a certain association and relation of perceptions? (T 1.3.6.4)

Hume identifies reason with the understanding and contrasts it with the imagination, conceived as a faculty of association. It is reason, so characterized, that must rely on the uniformity principle, by way of a demonstrative or probable argument. In either case, reason must proceed non-associatively. Hume thus concludes:

> When the mind, therefore, passes from the idea or impression of one object to the idea or belief of another, it is not determin'd by reason, but by certain principles, which associate together the ideas of these objects. (T 1.3.6.12)

Taken in context, the "no reason" claim means that the inference to belief in an unobserved object is not due to a putative non-associative faculty, without implying that inductive inference is any the worse for that (Loeb 2002). This is also the case in 1.3.12, where Hume turns his attention to inductive inferences based on observation of statistical regularities, conjunctions that are not constant. In such inferences, we often "carefully weigh the experiments, which we have on each side" (T 1.3.12.7). At 1.3.12.8–19, Hume provides an associationist explanation of these inferences. At 1.3.12.20, he recalls the result in 1.3.6:

> [T]*hat even after the observation of the frequent or constant conjunction of objects, we have no reason to draw any inference concerning any object beyond those of which we have had experience* . . . These principles we have found to be sufficiently convincing, even with regard to our most certain reasoning from causation . . . with regard to these conjectural or probable reasonings they still acquire a new degree of evidence.

Hume takes 1.3.12 to confirm his 1.3.6 conclusion; inductive inferences, whether based on constant or imperfect conjunctions, are not due to a non-associative faculty of reason. This reading coheres nicely with Hume's associationist ambitions.

Although the traditional interpretation has been widely applied to the *Enquiry* (Flew 1961, 1986; Penelhum 1975, 1992; Broughton 1983: 4, 15; Stroud 1991: 235–237; Fogelin 1993; Winkler 1999), its critics have focused on the *Treatise*. (Buckle 2001 and Millican 2002b are exceptions.) There is a case to be made against reading Hume as subscribing to skepticism about induction even in the *Enquiry*. Hume asks in the first paragraph of part 2 of section 4: "*What is the foundation of all conclusions from experience?*" (EHU 4.14 – cf. 4.21). We can construe him as seeking to locate a *psychological* found-ation, the faculty that gives rise to causal inference. In the next paragraph, he announces: "I shall content myself, in this section, . . . to give a negative answer . . . [O]ur conclusions from . . . experience are *not* founded on reasoning" (EHU 4.15 – cf. part 2 of section 5). He introduces his positive view at 5.5: "All inferences from experience . . . are effects of custom." In both the *Treatise* and the *Enquiry*, after arguing that the uniformity principle is not based on reason, Hume concludes that inductive inference has some other source, custom or habit. (*Enquiry* 6 extends this conclusion, in the manner of *Treatise* 1.3.12, to statistical inference.) The recurrent statements in part 2 of *Enquiry* 4 and early in part 1 of *Enquiry* 5 that inductive inference is not due to *argument*, sometimes cited to support the traditional interpretation (Fogelin 1985: 45–6, 153; 1993), are consonant with Hume's constructive theme that animals, young children, and common persons learn from experience.

Nowhere in part 2 of *Enquiry* 4 does Hume claim that there is "no reason" for inductive inference or that such inference occurs without "any reason" (though, eight sections later, there is 12.25). (I consider 12.21 and 12.22 too vague and too far removed from the earlier argument to support the skeptical reading.) Passages within *Enquiry* 4–5 that engender a skeptical interpretation include the section titles – "Sceptical Doubts concerning the Operations of the Understanding" and "Sceptical Solution of these Doubts"; and 4.21, where Hume considers an objection – "My practice, you say, refutes my doubts." A promising response is that the doubts involve *the scope* of the understanding, whether reason's operation extends to inductive inference (Beauchamp and Rosenberg 1981: 47–8).

In the *Treatise*, Hume contends early in 1.3.6 that inductive inference is due either to reason or to a faculty of association. He thus structures the dialectic so that a positive conclusion – that inductive inference is due to an associative process – follows immediately on the heels of (4). In part 2 of *Enquiry* 4, Hume is content with a stark "negative answer" and "negative argument" (EHU 4.17): that inductive inference cannot be supported by argument or reason. Against this background, as Moore observed (1909: 155–6), Hume's announcement in part 1 of *Enquiry* 5 of the constructive result that inductive inference is due to custom invites the reading that it is due *merely* to custom, a result of custom and thereby groundless. Hume's discussions of custom, however, do not carry this pejorative force.

Evidence that Hume Considers Inductive Inference Justified

The traditional interpretation tends to draw on a narrow range of texts. Commentators, especially those who have sought to disarm the evidence that Hume was a skeptic about induction, have produced wide-ranging evidence that Hume considers inductive inference justified. I arrange the points of evidence in the order they emerge in the *Treatise*. Item (g), to my knowledge, is new to the literature.

(a) The *Treatise* carries the subtitle, "BEING AN ATTEMPT TO INTRODUCE THE EXPERIMENTAL METHOD OF REASONING INTO MORAL SUBJECTS." As early as 1.1.1.8, Hume relies on inductive evidence to establish his principle that every simple idea exactly resembles a preceding impression (cf. EHU 2.6–7). Just two sections following the main argument about induction, Hume appeals to "experience" and "experiments" to confirm – indeed, "to prove" – his associationist account of belief (T 1.3.8.3, 4, 5). As in other contexts where he employs inductive inference, Hume does not pause to note some would-be epistemic difficulty.

(b) Hume writes of causal inference leading to belief in the unobserved in a way that implies epistemic success. Causation is the only relation that enables the mind to "go beyond what is immediately present to the senses, either to *discover* the real existence or the relations of objects" (T 1.3.2.2); the relation of causation "*informs us* of existences and objects, which we do not see or feel" (T 1.3.2.3). We then find 1.3.8.13, previously cited; also, the relation of cause and effect "*brings us acquainted* with such existences, as . . . lie beyond the reach of the senses and memory." We have in the *Enquiry*:

> Had not the presence of an object instantly excited the idea of those objects, commonly conjoined with it, all our *knowledge* must have been limited to the narrow sphere of our memory and senses. (EHU 5.21)

And this: "The existence . . . of any being can only be *proved* by arguments from its cause or its effect; and these arguments are founded entirely on experience" (EHU 12.29). Emphases have been added in quotations under (b).

(c) Hume writes: "cause and effect . . . 'tis the only [connexion or relation of objects], on which we can found a just inference from one object to another" (T 1.3.6.7). This endorsement occurs within Hume's main argument about induction, where the skeptical tone that pervades 1.4 is absent. At 1.3.13.3, causal inference is "just and conclusive." At 1.4.4.1, Hume writes:

> One who concludes somebody to be near him, when he hears an articulate voice in the dark, reasons justly and naturally; tho' that conclusion be deriv'd from nothing but custom.

In *Enquiry* 10: "One, who, in our climate, should expect better weather in any week of JUNE than in one of DECEMBER, would reason justly, and conformably to experience" (EHU 10.3 – cf. 10.10). *Enquiry* 11 includes numerous references to "rules of just reasoning" or to a "just reasoner" (EHU 11.13, 18, 23, 26).

(d) Hume applies "reason" and its cognates to causal inference in T 1.3.6 subsequent to the main argument about induction (T 1.3.6.15), in 1.3.7 (T 1.3.7.2, 3, 5n), and

also after attributing causal inference to custom (T 1.3.8.12, 13, 15). What are we to make of these passages, in light of Hume's characterization of reason as non-associative at 1.3.6.4 and his conclusion that inductive inference is not due to reason (T 1.3.6.12, 1.3.7.6)? Hume's position is that if reason is the faculty that generates inductive inference, it is a mistake to characterize reason as non-associative. He writes at 1.3.9.19n:

> When I oppose the imagination to the memory, I mean the faculty, by which we form our fainter ideas. When I oppose it to reason, I mean the same faculty, excluding only our demonstrative and probable reasonings.

The imagination in the first, inclusive sense, is the faculty of association. Within this faculty, Hume draws a distinction between reason, which includes probable reasoning or causal inference, and the imagination in a second, narrow sense. Earlier in the section, Hume contrasts beliefs "arising from custom and the relation of cause and effect" with beliefs that "are merely the offspring of the imagination" (T 1.3.9.4), that is, that arise within the imagination in the restricted sense. Hume is here disparaging associative processes not based on custom, not custom itself. At 1.3.9.19, 1.4.2.14, and 1.4.4.15, reason is identified with causal inference.

(e) Hume recognizes gradations in inductive evidence. At 1.3.13.19–20, he provides an inventory of "degree[s] of evidence" that includes proofs and also probability, beliefs based on observation of conjunctions that are not constant or on infrequent observation of conjunctions (T 1.3.12.2–4, 25). (The term "probability" has a wider meaning at T 1.3.9.19n) Within probability, there are degrees of "force" (T 1.3.12.2) and "evidence" (T 1.3.12.2, 1.3.13.19). Hume devotes 1.3.13 to "unphilosophical probability," in contrast to "kinds of probability [that] are receiv'd by philosophers, and allow'd to be reasonable foundations of belief and opinion" (T 1.3.13.1). In the *Enquiry*, some events are "more probable" (EHU 6.4) than others; and "A wise man . . . proportions his belief to the evidence" (EHU 10.1.4 – cf. 10.16).

(f) Hume writes at 1.3.13.11: "We shall afterwards take notice of some general rules, by which we ought to regulate our judgment concerning causes and effects." Hume's footnote references 1.3.15, "Rules by which to judge of causes and effects," where he offers eight rules, "all the LOGIC I think proper to employ in my reasoning" (T 1.3.15.11). Hume writes that the fourth rule (same cause, same effect; same effect, same cause) "is the source of most of our philosophical reasonings" (T 1.3.15.6).

(g) The "philosophical system" of the double existence of perceptions and objects (indirect or representative realism) postulates extended objects as causes of perceptions. Hume writes: "[t]he relation of cause and effect can never afford us any just conclusion from the existence or qualities of our perceptions to the existence of external continu'd objects" (T 1.4.2.54 – cf. 1.4.2.14). He explains:

> The only conclusion we can draw from the existence of one thing to that of another, is by means of the relation of cause and effect . . . The idea of this relation is deriv'd from past experience . . . But as no beings are ever present to the mind but perceptions; it follows that we . . . can never observe [a conjunction] between perceptions and objects. 'Tis impossible, therefore, that from the existence or any qualities of the former, we can ever form any conclusion concerning the existence of the latter, or ever satisfy our reason in this particular. (T 1.4.2.47)

Hume reproduces the argument in the *Enquiry*:

> By what argument can it be proved, that the perceptions of the mind must be caused by external objects . . . ? . . .
>
> It is a question of fact . . . How shall this question be determined? By experience surely . . . But here experience is, and must be entirely silent. The mind has never any thing present to it but the perceptions. (EHU 12.11–12)

On the traditional interpretation, this argument would be unnecessary; if there is no justification for inductive inference based on observed conjunctions, a fortiori there is no justification for inductive inference not backed by observed conjunctions. Perhaps Hume's position is that although inference from observed conjunctions is unjustified, *even if it were justified* there would be a special difficulty for inference to extended objects. Against this suggestion, *Treatise* 1.4.2.47 and 54, and *Enquiry* 12.11–12, say or imply that inductive inference based on observed conjunctions is justified. In his contention that no inductive inference to extended objects can get off the ground, Hume does advocate skepticism about some inductive inferences, but his argument presupposes the legitimacy of inductive inference based on observed conjunctions.

Items (a–g) constitute impressive evidence that Hume endorses inductive inference. Some commentators who seek to disarm the case for the traditional interpretation want to minimize this evidence as well. They agree (against the traditional interpretation) that Hume is not a skeptic about inductive inference, but caution that Hume does not engage in epistemological or philosophical evaluation (negative or positive) of inductive inference until *Treatise* 1.4; 1.3 and perhaps much of 1.4 is purely descriptive – either of epistemic distinctions internal to a practice (Owen 1999), or of the psychology of epistemic evaluation (Garrett 1997). Focusing especially on (a), (c), (d), (e), and (f), these cautious critics of the traditional interpretation try to explain away the evidence that Hume considers causal inference justified in 1.3. (For detailed criticism, see Loeb 2006.) Since even those who favor the descriptivist reading agree that in 1.4 Hume comes around to offering a normative epistemological position intended to sustain inductive inference, I put these ongoing controversies to the side.

The Traditional Interpretation Revisited

How might proponents of the traditional interpretation respond to the evidence of Hume's favorable evaluation of inductive inference? Some charge Hume with inconsistency (Russell 1945: 672; Flew 1986: 56–7). In light of (a–g), the self-contradiction attributed to Hume is of breathtaking proportions. Fogelin tries to remove the sting: in Hume's view, we are psychologically compelled to undertake epistemic assessments (1985: 148–9). Even so, Hume was not compelled to report such evaluations, much less to do so without taking note of the inconsistency.

A more charitable response originates with Kemp Smith (1905, 1941). He and his successors (Price 1940b; Popkin 1951; Jessop 1952; Penelhum 1975; Stroud 1977; Ayer 1980; Woolhouse 1988) are traditionalists: Hume advances the problem of induction and accepts its skeptical conclusion. The Kemp Smith interpretation,

however, plays up Hume's statements that "all probable reasoning is nothing but a species of sensation," a matter of "taste and sentiment" (T 1.3.8.12); and that "*belief is more properly an act of the sensitive, than of the cogitative part of our natures*" (T 1.4.1.8). Beliefs are feelings; they are not due to reason, and hence not so much irrational as arational or nonrational. Further, beliefs about the unobserved are "irresistible" and "inevitable"; the claim that such beliefs are unjustified and that we ought not to hold them is thus pointless, or even false (if ought implies can).

Although a significant advance, the Kemp Smith interpretation has difficulty accommodating the evidence of Hume's epistemic approval of inductive inference. In the Kemp Smith interpretation, inductive inference is nonrational, not due to a faculty deserving of the name "reason." The interpretation entirely overlooks the significance of the passages at (d): once his main argument about induction is complete, Hume persists in attributing causal inference to "reason," which he reconstructs as a component of the faculty of association carrying epistemic pride of place.

Hume's Epistemic Options

If Hume is not a skeptic about induction on the basis of *Treatise* 1.3.6 and part 2 of *Enquiry* 4, it remains to identify the grounds on which he considers inductive inference reasonable. The Kemp Smith interpretation invokes irresistibility to explain why skepticism does not dislodge inductive beliefs. One interpretive option is to jettison Kemp Smith's emphasis on nonrationality while retaining that on irresistibility: inductive inference is justified or reasonable because it is irresistible (Wilson 1997: 113–20). Such "justification," however, amounts to nothing more than the inescapability of beliefs; this is a rather thin sense in which beliefs about the unobserved are justified (Lenz 1958), or as at (c), "just." Similarly, the assessments at (b), cast in terms of "knowledge" and other language implying epistemic success, are more robust than the interpretation allows.

Furthermore, Hume endorses beliefs that are not justified even in the attenuated sense of accounts in terms of irresistibility. At (e), inductive evidence admits of degrees. Unlike proofs, which are conditioned by frequent observation of constant conjunctions (T 1.3.11.11, 1.3.13.8), judgments of probability are not irresistible (T 1.3.12.2–3, 25, 1.3.13, 19–20 – cf. 1.4.4.1). Nor are justified inferences based on observing a single instance of a conjunction; they arise in an "*oblique* and *artificial* manner" via the second-order belief that like objects in like circumstances produce like effects (T 1.3.8.14 – cf. 1.3.15.6). In light of these cases, perhaps Hume should take the justification of resistible beliefs to consist in their systematic interconnections or coherence with those inductive expectations that are irresistible.

Hume does allude, in the *Enquiry*, to a "methodized and corrected" (EHU 12.25) refinement of common beliefs. Hume writes in the *Dialogues* that "[W]e always render our principles the more general and comprehensive," and calls attention to "a more regular and methodical operation of the same kind" (DNR 1; Kemp Smith 1947: 134). These remarks, applied to inductive inference, encourage a coherentist interpretation in which reasonableness is a matter of codification and systematization (Noxon 1973: 8–16, 81–90; cf. Passmore 1952/1968: 53–63). The rules at (f) are an element of such

a system. The theory attributed to Hume has affinities with that of Goodman (1955: ch. 3.2): justification consists in coherence, where particular instances of inductive inference conform to beliefs about general canons of induction, and vice versa. In Hume, there is the twist that the irresistible beliefs, which cannot be sacrificed, provide constraints on such codification (Strawson 1958, 1985: 10–14; Penelhum 1992; Millican 2002b).

An initial worry is this. In the *Enquiry* and the *Dialogues* passages, Hume is characterizing "philosophical decisions" and "*philosophy*." He is discussing a distinctive, reflective activity, not providing a general account of reasonableness. This is a symptom of a large problem: a justification for induction in terms of systematization is incompatible with Hume's anti-Cartesian epistemological project. Animals, young children, and ordinary adult humans have knowledge, for example, about their immediate and prospective physical environment. In the *Enquiry*, Hume introduces this theme in the concluding paragraph of part 2 of section 4. In the *Treatise*, it is deferred to 1.3.16, where the "reason" of animals confirms Hume's account of inductive inference:

> Beasts . . . can never by any arguments form a general conclusion, that those objects, of which they have had no experience, resemble those of which they have. 'Tis therefore by means of custom alone, that experience operates upon them. All this was sufficiently evident with respect to man. But with respect to beasts there cannot be the least suspicion of mistake. (T 1.3.16.8)

These observations apply to codification: much as nonreflective creatures possess knowledge, but lack the ability to support beliefs with arguments, their belief systems seem insufficiently sophisticated to meet the required threshold of systematization. They might, for example, lack sufficiently "general and comprehensive" beliefs. A coherentist epistemology threatens to deprive many organisms of routine knowledge. Interpretations that stress reflective approval, locating justification in the successful application of (higher-order) induction to inductive methods themselves (Baier 1991; Winkler 1999 – cf. Korsgaard 1996: 49–66), also founder on this objection.

What sorts of epistemological theories might license attributions of knowledge to animals and children, as well as to adult humans, however reflective? Externalism is the obvious possibility. (Another possibility is a "negative" coherence theory. See Loeb 2001.) According to externalism, the epistemic status of a belief depends, at least in part, upon naturalistic facts about the mechanisms that produce it. Hume was a forerunner of externalism, at least in sharing one of the motivations of its recent proponents: to account for the knowledge of infants and non-human animals (Goldman 1975; Dretske 1991; Kornblith 2002).

Externalism represents a class of theories. One prominent option is reliabilism; true beliefs constitute knowledge if they result from belief-forming mechanisms that tend to produce a sufficiently high proportion of true beliefs. A related theory identifies knowledge with true beliefs that result from mechanisms that are adaptive; another, with true beliefs that result from the proper functioning of cognitive faculties. Some see Hume as a reliabilist (Dauer 1980; Costa 1981; Schmitt 1992, who also considers an adaptivist alternative). Others attribute a proper functioning account to Hume (Craig 1987: 81; Wolterstorff 1996: 166, n.6). Another interpretation focuses on

mechanisms that tend to produce psychologically stable sets of beliefs (MacNabb 1951/1966: 94–100; Loeb 2002). Each of these externalist theories has the potential to explain the epistemic accomplishments of the common person, young children, and animals.

Hume's conclusions at *Treatise* 1.3.6–7 and part 2 of *Enquiry* 4 and part 1 of *Enquiry* 5 that inductive inference is due to an associative faculty and to custom in particular, and the arguments that support them, have no tendency to show that custom is unreliable, or not adaptive, or not conducive to stability in belief. They thus have no tendency to establish skepticism about induction, by externalist standards. Much to the contrary. In the *Enquiry*, Hume finds "a kind of pre-established harmony between the course of nature and the succession of our ideas" (EHU 5.21). He elaborates:

> [T]his operation of the mind, by which we infer like effects from like causes, and *vice versa*, is so essential to the subsistence of all human creatures, it is not probable, that it could be trusted to the fallacious deductions of our reason, which is slow in its operation; appears not, in any degree, during the first years of infancy; and at best is, in every age and period of human life, extremely liable to error and mistake. It is more conformable to the ordinary wisdom of nature to secure so necessary an act of the mind, by some instinct or mechanical tendency, which may be infallible in its operations, may discover itself at the first appearance of life and thought, and may be independent of all the laboured deductions of the understanding. . . . [N]ature has . . . implanted in us an instinct, which carries forward the thought in a correspondent course to that which she has established among external objects. (EHU 5.22)

In attributing inductive inference to custom, Hume sees himself putting it on a firm epistemic footing (Monteiro 1976; Dauer 1980 – but see Passmore 1952/1968: 146–7; Stroud 1991). The final paragraph of *Treatise* 1.3.16 has a similar character. These and related passages, especially 1.3.10.2–3 and 1.4.4.1–2, bring to light externalist strands in Hume's thinking that begin to explain how he could assign inductive inference a positive epistemic status: *because* it results from custom.

Although we cannot attribute a coherentist theory to Hume, we can accommodate his remarks about systematization within an externalist interpretation. At the *Enquiry* 12.25 and *Dialogues* 1 passages that stress methodical procedures, Hume sees philosophy as supplementing, and continuous with, "the reflections" or "principles" of "common life". In the *Dialogues*, common life has its roots in "our earliest infancy." Against the background of the anti-Cartesian project, this suggests relying on externalism to subsume and explain the importance of codification. Beliefs that arise from custom filtered by codification and systematization will be more reliable, more adaptive, more stable, and the like, than beliefs that arise from custom in a purely unreflective way. Young children and animals can secure genuine knowledge without employing such filters. Since codification and systematization are available to reflective adults, their beliefs count as knowledge only if they would result from custom that is suitably filtered. Creatures differ in the belief-forming mechanisms available to them, but the underlying epistemology is externalist in all these cases. This is the point of *Enquiry* 9.5n, where Hume explains why "men so much surpass animals in reasoning, and one man so much surpasses another," even though "all reasoning concerning facts or causes is derived merely from custom."

Applications to Extended Objects and Belief in God

At (g), Hume insists that inductive inference cannot justify belief in extended objects: induction depends upon the observed conjunction of "two beings [that] are constantly conjoin'd" (T 1.4.2.47). In the *Enquiry*, Hume marshals a parallel case against the argument from design:

> It is only when two *species* of objects are found to be constantly conjoined, that we can infer the one from the other . . . If experience and observation and analogy be, indeed, the only guides which we can reasonably follow in inference of this nature; both the effect and cause must bear a similarity and resemblance to other effects and causes . . . which we have found, in many instances, to be conjoined with another . . . [T]o pursue the consequences of this principle, I shall just observe, that . . . the antagonists of EPICURUS always suppose the universe, an effect quite singular and unparalleled, to be the proof of a Deity, a cause no less singular and unparalleled. (EHU 11.30)

Earlier, "The Deity . . . is a single being . . . not comprehended under any species or genus" (EHU 11.26). In *Dialogues* 2, Hume reiterates the argument with respect to the singularity of the universe (Kemp Smith 1947: 149–51).

We observe internal perceptions, but not extended objects, and hence no conjunction between them; we observe neither God nor other universes, and hence no conjunction involving them. There is no observed conjunction to ground an inference either to extended objects or to God, as unobserved causes (Mounce 1999: 115). In this respect, these inferences are in the same boat. Here we have an important pattern of argument – the *no new kinds* argument – to the conclusion that there is no justification for inductive inference to the existence of kinds of objects that have not been observed. Whereas Hume regards inference to unobserved instances of kinds of objects that have been observed as unproblematic, he is a genuine skeptic about inductive inferences to "new kinds" of objects. Let us evaluate his grounds for this.

Within Hume's theoretical framework, it is difficult to locate a principled basis for applying the no new kinds argument to belief in God. Legitimate inductive inference depends upon an observed conjunction between two "species" (T 1.3.6.2, 14; EHU 7.27 – cf. *Dialogues* 2; Kemp Smith 1947: 144, 149) or "kinds" (EHU 5.8). A difference "of kind" is a difference in "resemblance" (T 1.1.5.10). Although "An experiment loses of its force, when transferr'd to instances, which are not exactly resembling," Hume allows "it may still retain as much as may be the foundation of probability, as long as there is any resemblance remaining" (T 1.3.12.25 – cf. EHU 9.1); "any traces of . . . resemblance" (T 1.3.13.8) ground probability.

The strategy of the design argument is to claim that observed conjunctions between ordered, complex objects (such as clocks) preceded by intelligent (human) design ground the inference to an intelligent designer of the universe. The argument meets the test of resemblance: the order and complexity of the universe is similar to that of machines; similarly, God belongs to the species of intelligent beings. God may be singular in the sense of possessing a specific property to an unparalleled degree or possessing a unique set of properties; however, from the existence of an enormous

cloud of smoke we might properly infer the existence of a fire that is unparalleled in its extent or that has a unique combination of properties. Hume's restrictions on inductive inference are too strong (Plantinga 1967: 98–101; Pike 1970: 149–54; Swinburne 1979/1991: 117–18). (Commentators who seek to defend Hume include Flew 1961: 227–33, 1986: 64–7; Hurlbutt 1965: 153–4; Gaskin 1978: 20–2, 2002: 363–5; Buckle 2001: 288–92; O'Connor 2001: 71–5.)

Related difficulties beset Hume's application of the no new kinds argument to belief in extended objects (Moore 1909: 161–3). In considering the argument from design, Hume assumes the existence of the material world – the cosmos, machines. In considering indirect realism, the existence of extended objects is the point at issue. Indirect realists postulate "another existence, resembling these perceptions" (T 1.4.2.48 – cf. 1.4.2.54, EHU 12.11). Hume's point is that indirect realists hold that perceptions resemble at least the primary qualities (size, shape, etc.) of external objects. Extended objects bear some resemblance to perceptions, much as an intelligent God bears some resemblance to intelligent human designers. The "new kinds" of entities meet the requirement that the inferred bears traces of resemblance to the observed.

It is helpful to consider the distinction between enumerative induction, inferences to objects of the same kind that have been observed, and theoretical induction, inference to kinds of entities that have not been observed. It is natural to classify the inferences from order to God (Flew 1961: 225–6) and from perceptions to extended objects as paradigmatically theoretical. In subjecting these inferences to the no new kinds argument, Hume assimilates them to enumerative induction. (Harman 1965 and, in the Hume literature, Mounce 1999: 111–12, suggest just the opposite: that enumerative induction is a form of inference to the best explanation.) Hume thus evaluates inferences we regard as theoretical within an enumerative framework. This opens the door to bringing similarities to observed objects to bear, undermining his no new kinds argument.

Perhaps the thought behind the no new kinds argument is that the offending inferences are to entities that are *in principle unobservable* (Flew 1961: 246; Noxon 1973: 161). Theoretical inference is thus to be eschewed, at least in metaphysics. This interpretation has some plausibility in the case of extended objects, since Hume maintains that we are directly aware only of perceptions (T 1.2.6.7–8, 1.4.2.9, 14, 1.4.5.15, EHU 12.9). Hume's posture toward the inference to God is more difficult to explain along these lines. Granted, Hume claims that an immaterial soul or spirit is unobservable (Hurlbutt 1965: 155), even that we have no idea of such an entity (T 1.4.5.2–5, 1.4.6.2). If, however, we put aside theological obstacles (DNR 4; Kemp Smith 1947: 158–60), we may think of the mind of God as metaphysically like any other – a bundle or collection of perceptions (T 1.4.2.39, 1.4.6.4). If God, understood in this way, is unobservable in principle, so too is the mind of any other person. Yet, Hume raises no reservations in regard to beliefs about the mental states of others, beliefs required for the operation of sympathy (T 2.1.11.4–7, 2.2.9.13).

Mounce (1999: 18–21, 108–11) suggests that Hume simply assumes that all inductive inference is enumerative. Perhaps there is more to say. Hume absorbed a Newtonian caution with respect to "hypotheses" (T Intro. 8, 1.1.4.6; Abs. 2; EHU 4.12

– see Passmore 1952/1968: 42–9; Noxon 1973). There is an additional factor. Theoretical inference is a species of inference to the best explanation. Berkeley, in the *Principles of Human Knowledge* I, 19, recognized the possibility that it is "easier to conceive and explain [sensations'] production, by supposing external bodies in their likeness," so that "it might be at least probable there are such things as bodies" (Ayers 1993: 96). He nevertheless rejected indirect realism as an explanatory hypothesis, on the ground that even its proponents, such as Locke, deem body–mind interaction incomprehensible. Berkeley's preferred hypothesis, that God's volitions cause perceptions, involves no such dualistic interaction. Berkeley thus appeals to differences in the intelligibility of various causal relations to adjudicate between competing explanations of perceptions. Such considerations are not available to Hume; one of his central claims is that for all we know a priori, "any thing may produce any thing" (T 1.3.15.1, 1.4.5.30 – cf. 1.4.5.32, EHU 12.29). Perhaps he can fall back on considerations of "simplicity" (Wright 1983: 194–5), but Hume's views about causation are an obstacle to his formulating criteria for discriminating among explanations (Passmore 1952/1968: 49–51).

Can Hume salvage the no new kinds arguments within the confines of his theory of enumerative induction? The fundamental difficulty is to explain why some resemblances, but not others, are legitimate foundations for inference to the unobserved (Plantinga 1967: 101–7). Since Goodman (1955: ch. 3, 4), this has been a well-known problem within the theory of inductive inference. In discussing the fourth kind of unphilosophical probability, Hume considers rash generalizations based on irrelevant similarities (cf. T 1.3.13.7, 9). Hume's "general rules" at 1.3.13.7–18, in their "second influence" (T 1.3.12), are best construed as higher-order generalizations about the success of lower-order extrapolations that rely on particular kinds and degrees of similarity (Falkenstein 1997; Loeb 2002: 105–11). (General rules are among the filters that reflective humans can apply to custom.) Anticipating Goodman (1955: ch. 4) and Quine (1969), standards of similarity can be refined. In order to sustain his no new kinds argument, Hume needs to show that enumerative arguments for the religious hypothesis and for indirect realism rely on kinds of similarities that would not themselves be inductively ratified.

What is more, an embarrassing enumerative inference is waiting in the wings. As Berkeley maintained at *Principles* I, 28 (Ayers 1993: 99), we can excite faint perceptions, as in day-dreams, at will. Also, at *De Motu* 25 and *Philosophical Commentaries* 548 (Ayers 1993: 261, 371), our volitions to move a particular limb are followed by vivid visual and tactile perceptions of the limb moving. (For Berkeley, a "limb" consists in a set of perceptions.) We have observed that many of our perceptions are preceded by our own volitions. Consider perceptions that we receive passively, that are not within our voluntary control. Since passive perceptions resemble those that are preceded by our volitions, probably these passive perceptions are preceded by volitions, volitions of some other being (putting aside, as these figures would, the possibility of unconscious volitions of our own). Hume is mistaken in his claim that "experience is, and must be entirely silent" on the question of the external causes of perceptions. Experience supports a Berkelian world-view, where the volitions of some other spirit are the direct causes of sensory experiences!

Limitations on Enumerative Induction

In *Treatise* 1.3, Hume writes as if there are numerous cases of the frequent observation of constant conjunctions. In 1.4.2.20–22, more careful consideration shows that the earlier model is highly idealized; observation is haphazard and fragmentary. Hume here discovers a difficulty for enumerative induction that is prima facie distinct from both the problem of characterizing relevant similarities and the skeptical problem of induction. Although Hume focuses on observed conjunctions between sense-impressions (e.g., visual and auditory experiences), the point that emerges about induction is independent of the ontology on offer. In what follows, I apply Hume's discussion to observed conjunctions between material objects.

Adapting one of his examples, when Hume hears "a noise as of a door turning," he infers a prior "motion of a door" (T 1.4.2.20) as its cause. Even on previous occasions, however, Hume has not observed a constant conjunction between the noise and a prior motion. We can suppose that he is typically asleep or engrossed in thought, so that his seeing the door move prior to hearing the noise is an exception. In these circumstances, how is habit to account for the inference to the existence of the moving door?

The difficulty is not that the observed conjunction is statistical rather than constant. Hume allows inductive inferences based on observed statistical regularities and provides an associationist explanation of why we assign a probability equal to the ratio in the observed sample (T 1.3.12.22, 1.3.13.20). If 30 percent of smokers develop lung cancer, we infer (other things equal) a 30 percent probability that this smoker will develop lung cancer. If the observed correlation between the noise and a prior motion is 30 percent, we nevertheless think it overwhelmingly probable, not 30 percent likely, that the door moved. Hume's 1.3.12 treatment of statistical inference does not explain this judgment.

Hume's response is to appeal to a supplementary psychological principle. The mind, "like a galley put in motion by the oars, carries on its course without any new impulse" (T 1.4.2.22). There is a propensity to enhance observed statistical regularities, treating them (insofar as doing so is not inconsistent with observation) as if they were non-statistical. The mind proceeds as if the moving door had been observed on the occasions that we were asleep or preoccupied. Hume recognizes that invoking the regularity-enhancing principle might seem ad hoc and tries to defend himself against this criticism (T 1.4.2.22). That is as far as he took the discussion (Price 1940a: 50–9).

There are deeper difficulties for the psychological galley (Williams 1977: 137–44; Pears 1990: ch. 11). We might fail to see the door, even though we hear the noise, because we are asleep, day-dreaming, or looking the other way, and hence not positioned to observe it. Alternatively, we might fail to see the door because it has been removed for repair and the porter simulated a turning noise, or because doors intermittently pop in and out of existence. We should not want to rely on the regularity-enhancing propensity in these latter cases, where we do not see the door because it is not present. Reliance on the propensity must therefore be constrained or mediated by beliefs about the sources of failures to observe the door, explanations

that presuppose an elaborate theory about the world. The lesson seems to be that enumerative induction can itself take place only against a background theory. Hume did not draw this moral, but he recognized the difficulty that exerts pressure in its direction.

See also 2 "Hume's Theory of Ideas"; 5 "Hume on the Relation of Cause and Effect"; 7 "Hume on Belief in the External World"; 18 "Hume on the Nature and Existence of God"; 23 "Hume's Naturalism and His Skepticism"

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