

Hume on Causation and Causal Powers

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David Hume is perhaps most celebrated for his analysis of causation and of inductive causal reasoning. Moreover, his quest to understand causal power and necessity played a central role in his philosophy and was arguably the primary stimulus behind his *Treatise of Human Nature* (Millican 2016, 86–93). The longest part of that work, Book 1 Part 3, is centred around his analysis of the relation of cause and effect, whose main component is revealed at *T* 1.3.2.11 to be the idea of *necessary connexion*, which he later virtually equates with the idea of causal *power* (*T* 1.3.14.4, 1.3.14.19, 1.3.14.28). After exploring various associated byways into the Causal Maxim, inductive inference, belief, and probability, Hume’s quest for the origin of this idea culminates in Section 1.3.14, ‘Of the idea of necessary connexion,’ which finally identifies the crucial *impression* of necessary connexion from which the corresponding *idea* must be copied (in accordance with his Copy Principle).¹ Surprisingly, that impression turns out to be the customary inference of the mind that we characteristically make in response to observed regularities: having repeatedly seen A followed by B—what Hume calls a *constant conjunction* between A and B—we just find ourselves inferring B from A (a psychological propensity Hume calls *custom*), and it is this inferential tendency which leads us to think of A and B as causally connected and to view B as following *necessarily* from A. Essentially the same account is presented in Hume’s first *Enquiry*, published in 1748 and

¹ The Copy Principle is stated at *T* 1.1.1.7 and its application in the case of necessary connexion is summarized at *T* 1.3.14.1. Crudely, Humean *ideas* are thoughts, *impressions* are sensations or feelings, and the term *perceptions* covers both: ‘By the term *impression* . . . I mean all our more lively perceptions, when we hear, or see, or feel, or love, or hate, or desire, or will. And impressions are distinguished from ideas, which are the less lively perceptions, of which we are conscious when we reflect on any of those sensations or movements above mentioned.’ *EHU* 2.3.

reissued in many editions throughout his life. Thus so far, at least, we can be reasonably confident that it represents his settled and enduring view.

Having identified the impression of power or necessary connexion as deriving from mental inference rather than external perception, Hume in the *Treatise* repeatedly stresses the apparently paradoxical nature of this result. Causal necessity, he says, 'is nothing but an internal impression of the mind', and 'exists in the mind, not in objects'; again, 'power and necessity... are... qualities of perceptions, not of objects'. Indeed, *we cannot even form an idea of causal power or necessity as a quality of external objects* (*T* 1.3.14.20–7). Understandably, some readers have taken Hume here to be denying that there are any 'objective' causal relations, in the sense of causal relations that can be ascribed truly or falsely, irrespective of the subjective observer's point of view.² Such *causal subjectivism*, however, seems hard to square with Hume's clear endorsement of causal science, implicit in his overall project of an empirical 'science of man' (*T* Intro.4–10). It also seems to be contradicted by the first of his famous two 'definitions of cause' (*T* 1.3.14.31), which defines a cause in terms of objective relations of constant conjunction. Just a few paragraphs later, Hume seems to be even more explicitly objectivist in proposing 'general rules, by which we may know when... objects... *really are*... causes or effects to each other' (*T* 1.3.15.2, my emphasis). These rules are further elaborations of the claim '*that the constant conjunction of objects determines their causation*' (*T* 1.3.15.1, Hume's emphasis), again suggesting that he intends to reduce causation to objective regularity relations and is thus a *reductionist* or *regularity theorist*. Nor is there any plausible compromise in taking Hume to be subjectivist about *causal necessity* but objectivist about *causation*, given both his repeated insistence that necessity is essential to causation, and his later definition of necessity in exactly parallel terms.

Faced with these apparently conflicting strands in Hume's theory of causation, various subtler readings have recently been proposed to reconcile them. *Projectivist* interpretations, for example, view causal thought and language as a *projection* of our natural inferential tendencies. Such projection can lead to mistaken objectification (thus potentially explaining Hume's subjectivist rhetoric at *T* 1.3.14.20–7) but need not imply an *error theory* according to which causal language is irredeemably wrong-headed. Thus, in particular,

² This understanding of 'objective' should be borne in mind in what follows, for the word is notoriously slippery and interpretable in various other ways (e.g., 'in objects', 'non-mental', 'precisely measurable', 'unbiased', or even 'intersubjective').

quasi-realist interpretations take Hume's analysis as itself providing a *justification* of objectivist talk about causal relations and powers, permitting us to consider causal judgements as true (or false) even though such relations and powers do not feature metaphysically as part of the furniture of the universe. At the other extreme—and in far more radical contrast to traditional understandings of Hume—*sceptical realist* interpretations take causal relations and causal powers to involve *absolute (aprioristic)* metaphysical necessities quite independent of human language or judgement, and read Hume's discussion of causation not as *denying* such relations or powers, but rather as questioning our ability to understand or know anything about them. These 'New Hume' interpretations have taken encouragement from Hume's apparently sincere talk of *powers* in the first *Enquiry*, supposedly evincing his commitment to real powers at the fundamental metaphysical level.

In this chapter, I shall try to establish a reliable picture of Hume's view on causation and causal powers, primarily by close analysis of his relevant texts. But rather than diving immediately into complex interpretative debates, I shall start by attempting to establish twelve relatively straightforward *key points* about Hume's theory, all of which can be backed up very strongly and consistently from those texts. Only then shall I turn to the deeper interpretative issues, arguing that the key points indicate clearly where Hume's own views are to be found. To summarize, I shall be arguing that Hume is essentially a *reductionist* about causation and causal powers (with at most some modest hints of *projectivism*). Reductionism implies that Hume is *objectivist* about causes, in the sense specified earlier: he sees the ascription of causal relations and powers as potentially true or false, irrespective of the subjective observer's point of view. Whether he believes in *causal powers in objects*, however, turns out to be a more delicate question, as we shall see in the final section.

1. Key Points of Hume's Theory of Causation

Let us now examine those Humean tenets about causation whose textual support is sufficiently clear and consistent to justify treating them—at least for the present—as well-established 'key points' of his theory, before going on to consider their implications for his overall metaphysics of causation. These key points might ultimately have to be challenged if we find that they conflict with each other (or with yet further texts), but it seems obviously desirable, if we can, to find an interpretation that maximally respects them.

1.1. Whether A Causes B is an Objective Matter of Fact, and Causes—whether Superficial or Hidden—Can Be Discovered by Systematic Investigation

Hume's investigation of human nature is focused on the *empirical* discovery of *causes*, since only this can ground scientific explanation and inference to the unobserved. His declared aim is to discover the mind's 'powers and qualities... from careful and exact experiments, and the observation of those particular effects, which result from its different circumstances and situations,' endeavouring 'to render all our principles as universal as possible, by... explaining all effects from the simplest and fewest causes' (*T* Intro. 9, cf. *EHU* 4.12). As he begins his great investigation, he clearly considers *truth* about these things to be potentially achievable, though it is likely to 'lie very deep and abstruse' and to be discoverable only with great effort and 'pains' (Intro.3).

Much later, having completed his analysis of causation (and as already noted), Hume expands on his first definition of cause by spelling out eight 'Rules by which to judge of causes and effects,' whose explicit purpose is to facilitate the empirical discovery of *real* causes: 'Since therefore 'tis possible for all objects to become causes or effects to each other, it may be proper to fix some general rules, by which we may know *when they really are so*' (*T* 1.3.15.1, my emphasis). These rules are intended to help in identifying the genuine causal factors within complex situations, both by distinguishing amongst known factors, but also by prompting deeper investigation to discover factors that are not yet apparent. Such searches for hidden causes are also emphasized elsewhere, notably in a well-known paragraph which highlights how 'philosophers,' faced with a 'contrariety of events,' often find on further investigation that this superficial variability results from 'the [formerly] secret operation of contrary causes' (*T* 1.3.12.5, repeated at *EHU* 8.13).

1.2. Causes Are Understood to Be Prior and Contiguous to Their Effects

Hume starts his analysis of the idea of *causation* by pointing out that it involves a *relation* between cause and effect (rather than independent qualities of either) and then considering what relational properties might be involved. He quickly identifies *contiguity in time and place* and *temporal priority of the cause*—often abbreviated to 'contiguity and succession'—as obvious candidates and confirms these in his later *rules* (*T* 1.3.2.6–7,

1.3.15.3–4). However, his commitment to the contiguity requirement is not universal since, as he later points out, many of our impressions and ideas have no physical location and hence are not susceptible of spatial contiguity (*T* 1.4.5.10–14, referenced from *T* 1.3.2.6). In the first *Enquiry*, contiguity is not mentioned at all as a requirement on causal relations.³

1.3. The Principal Component of the Concept of Causation is Necessary Connexion, which is Essential to it

The most important component of the concept of causation, however, is neither contiguity nor priority of cause to effect: ‘Shall we then rest contented with these two relations of contiguity and succession, as affording a compleat idea of causation? By no means. An object may be contiguous and prior to another, without being consider’d as its cause. 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’ (*T* 1.3.2.11). That some particular event A is contiguous and prior to event B does not imply that A is the cause of B: we take causation between them to involve also some sort of connexion, whereby A’s occurrence brings B about, or necessitates B. Hume is here saying that necessary connexion is distinct from *single-case* contiguity and succession. A few sections later, when considering causal inference, he will introduce *repeated* events into his discussion, and talk of *constant conjunction*: ‘we have... discover’d a new relation betwixt cause and effect,... This relation is their CONSTANT CONJUNCTION. Contiguity and succession are not sufficient to make us pronounce any two objects to be cause and effect, unless we perceive, that these two relations are preserv’d in several instances. We may now see the advantage of quitting the direct survey of this relation, in order to discover the nature of that necessary connexion, which makes so essential a part of it’ (*T* 1.3.6.3). The wording and capitalization clearly refer back to *T* 1.3.2.11, signalling that constant conjunction—repeated contiguity and succession—is destined to provide the key to the idea of *necessary connexion*; it will do this by providing the ground of causal inference. Accordingly, the paragraph ends with the prophetic sentence: ‘Perhaps

³ Hume’s increasing awareness of Newtonian physics, with its gravitational action at a distance, could well have provided another reason for his dropping this requirement and might perhaps have given him pause even about the supposed impossibility of action at a *temporal* distance.

'twill appear in the end, that the necessary connexion depends on the inference, instead of the inference's depending on the necessary connexion.'

Although constant conjunction will indeed prove to be key to what follows, we should note that it never displaces necessary connexion from Hume's account of the idea of the causal relation, for he continues to insist (as in the final sentence of the quotation from *T* 1.3.6.3 above) that necessary connexion is *essential* to that relation.⁴ He is particularly emphatic about this when discussing liberty and necessity, repeatedly stating that necessity 'makes an essential part' of causation itself (*T* 2.3.1.18; cf. *EHU* 8.25) and of the definitions of cause (*T* 2.3.2.4; *EHU* 8.27). Within these later discussions, the intimate link between causation and necessary connexion is emphasized even more strongly when Hume explicitly frames two definitions of necessity, reflecting those of cause.

1.4. Causal Necessity is Not the Same as *Conceptual* Necessity

Although Hume's terminology on the matter is not entirely consistent, it is clear that he generally presupposes a fundamental distinction between causal and conceptual modalities. Causal necessity is the main topic of *T* 1.3, and the target of the impression hunt which largely structures that part. Conceptual necessity, which Hume sometimes calls 'metaphysical' or 'absolute' necessity, is a stronger notion, applying to propositions that are intuitively or demonstratively certain—what the first *Enquiry* calls 'relations of ideas'—and is intimately linked with his important Conceivability Principle, *that whatever is conceivable is possible*. This contrast, and its significance for understanding Hume's theory of causation, is clear within his discussion of belief: 'with regard to propositions, that are prov'd by intuition or demonstration... the person, who assents, not only conceives the ideas according to the proposition, but is necessarily determin'd to conceive them in that particular manner... Whatever is absurd is unintelligible; nor is it possible for the imagination to conceive any thing contrary to a demonstration. But... in reasonings from causation, and concerning matters of fact, this absolute

⁴ Hence those who interpret Hume as denying that causal relations involve necessity are certainly mistaken if 'necessity' here is interpreted in Hume's own sense of the term. No doubt he does deny causal necessity as some other philosophers have supposed it to be; indeed, he denies that such philosophers even have any understanding of what they are trying to suppose (*T* 1.3.14.27, 1.4.7.5; *EHU* 7.29). But he seems to be a firm believer in causal necessity in what he insists is the only legitimate sense of the term.

necessity cannot take place, and the imagination is free to conceive both sides of the question' (*T* 1.3.7.3). Hume repeatedly emphasizes that causal relations are 'matters of fact' and *cannot* be determined by considerations of conceivability, which is why they can be discovered only by experience (rather than through a priori reasoning).⁵ Expressed in terms of *conceptual* modality, therefore, 'Any thing may produce any thing. Creation, annihilation, motion, reason, volition; all these may arise from one another, or from any other object we can imagine' (*T* 1.3.15.1, cf. 1.4.5.30, 1.4.5.32). And 'The mind can always *conceive* any effect to follow from any cause, and indeed any event to follow upon another: whatever we *conceive* is possible, at least in a metaphysical sense' (Hume *ABST* 11, cf. *EHU* 12.28–9). Thus, where A causes B, the two will be necessarily connected in a *causal* sense, but not in a *conceptual* (that is, *absolute* or *metaphysical*) sense. Hence it is vital not to confuse these types of modality when considering Hume's philosophy of causation.⁶

1.5. Hume is a Convinced Determinist, although his Basis for this is Unclear

Hume is a *determinist*, in the sense that he believes the course of events to be completely determined by antecedent conditions and temporally uniform causal laws. This thesis is compatible with a wide range of theories about what causation involves, thus allowing considerable variation in types of determinism. Presumably for Hume himself, however, it ultimately comes down to all events in the universe occurring *in conformity with* the relevant laws. So it does not require, for example, any 'deeper' metaphysical necessity underlying either the specific laws or the law-governed nature of the universe as a whole. Indeed, on Humean principles we cannot possibly expect any such 'deeper' explanation of determinism, given that it is a matter of fact rather than a conceptual truth.

⁵ See, for example: Hume *ABST* 18, 21; *EHU* 4.4, 4.14, 4.19, 5.3, 5.20, 7.27, 7.29, 12.28. 'Hume's Fork' between relations of ideas and matters of fact is introduced in *EHU* 4.1–2 and provides a significant improvement on the theory of relations of the *Treatise*, though the two are similar in spirit. For much more on these matters, see Millican 2017.

⁶ As pointed out in Millican 2017 (34), there is particular potential for confusion here because Hume's references to 'possibility' are most often to *conceptual* possibility, whereas his references to 'necessity' (especially in the parts of his works that concern his philosophy of induction and causation) are most often to *causal* necessity. Moreover, the two types of modality can often be mixed, as when we pursue the (absolute) logical consequences of what we take to be (causally) necessary laws, for example in applied mathematics (*EHU* 4.13), or when considering the implications of Hume's Copy Principle (*T* 1.2.6.8, 1.3.14.6, 1.3.14.22, 1.4.5.19–21, 1.4.6.2; *EHU* 7.8).

Hume's determinism has been apparent to most of his interpreters, and rarely questioned.⁷ It is most evident in his discussions of liberty and necessity (*T* 2.3.1–2; *EHU* 8) and his denials of *chance* or *indifference* (*T* 1.3.12.1, 2.3.1.18; *EHU* 6.1, 8.25),⁸ and is at least strongly suggested by his rules by which to judge of causes and effects (for example *T* 1.3.15.6). Determinism also features in his theological discussions, notably regarding the problem of evil (*EHU* 8.32–36) and the morality of suicide (*Essays* 580). Some of Hume's contemporaries were misled by his discussion of the Causal Maxim—'that *whatever begins to exist, must have a cause of existence*' (*T* 1.3.3.1)—to suppose that he denied it and therefore believed that things could come about without any cause. But as Hume emphasized in his 1745 *Letter from a Gentleman* (*LFG* 26) and a letter to John Stewart of February 1754 (Hume 1932, 1:186), his aim here is not to deny the Causal Maxim, but only to show that it 'is neither intuitively nor demonstrably certain' (*T* 1.3.3.3).

The basis for Hume's determinism is unclear, and may simply exemplify the typical optimism of someone dedicated to the scientific search for hidden causes. The nearest he comes to justifying it is at *EHU* 8.13, where he suggests that such causes are usually to be found. In the subsequent two paragraphs of the *Enquiry*, he backs this up by arguing that, in both the physical and human worlds, 'the irregular events, which outwardly discover themselves, can be no proof, that the laws of nature are not observed with the greatest regularity in its internal operations and government.... The internal principles and motives may operate in a uniform manner, notwithstanding these seeming irregularities' (*EHU* 8.14–15).

1.6. *Necessary Connexion* is One of a Family of 'Power' Terms, which Hume Treats as Virtually Synonymous in this Context

Hume is surely right to say that we think of a cause as being related to its effect by more than just contiguity and priority, but we might be less convinced that the missing component is correctly described as *necessary connexion*. In mechanical interactions, for example, we think of one billiard ball that strikes another as communicating some impulse, force, or energy to the

⁷ Harris (2003; 2005) is the most notable recent exception. Millican (2010) comprehensively answers Harris's contention that Hume is not a determinist, documenting and discussing all the points that are summarized here.

⁸ In the *Treatise*, Hume usually interprets 'liberty' to mean indifference (*T* 2.3.1.18, 2.3.2.2, 2.3.2.6–8) and denies its existence (2.3.1.15, 2.3.2.1).

other, which influences its subsequent motion, but we would not say that the impact literally *necessitates* that subsequent motion, which will depend also on other factors in the situation (for example, whether other balls are simultaneously impacting, or whether there is a fixed barrier, glue, or some other impediment to motion). Hume suggests that unscientific people—‘the vulgar’—may also disagree that causes necessitate, because they believe in what we might call ‘chancy’ causation, ‘attribut[ing] the uncertainty of events to such an uncertainty in the causes as makes the latter often fail of their usual influence; though they meet with no impediment in their operation’ (*T* 1.3.12.5; *EHU* 8.13). Such people may be misguided, as Hume himself goes on to argue, but the very possibility of such a belief makes it implausible to claim that our ordinary concept of *causation* includes literal *necessity* as an essential component, despite key point 1.3 above.

Hume himself, however, treats this as a mere terminological inconvenience, insisting rather glibly that his analysis will apply to the entire family of relevant terms:⁹ ‘I begin with observing that the terms of *efficacy*, *agency*, *power*, *force*, *energy*, *necessity*, *connexion*, and *productive quality*, are all nearly synonymous’ (*T* 1.3.14.4). But this seems implausible. As already noted, power, force, and energy do not suggest the inexorability of necessity. And connexion seems directionally symmetrical (that is if A is connected to B, then B is connected to A), whereas the other terms are not (for example, A can have a power to produce B, without B having the reciprocal power). So Hume here seems to be conflating what are in fact rather different ideas.

1.7. Understanding these Terms Involves Having a Certain Simple *Idea*, which is Copied from a Corresponding *Impression* of Reflection

As we shall see later, the conflation just noted may be related to another potential problem in Hume’s account, namely his apparent assumption that the idea in question is *simple*, which is at least suggested by the *Treatise*

⁹ Likewise, *EHU* 7.3 implies that the ‘ideas . . . of *power*, *force*, *energy*, or *necessary connexion*’ are all subject to a similar analysis. This identification is fully borne out by the subsequent text, which frequently alternates between the relevant terms, including ‘power or necessary connexion’ (7.5–6, 7.9, 7.26, 7.28, 7.30), ‘connexion or power’ (7.26), ‘power or energy’ (7.7–9, 7.11, 7.15–16, 7.19), ‘energy or power’ (7.10), ‘power or force’ (7.8, 7.12, 7.21), ‘force or power’ (7.26), and ‘force or energy’ (7.16, 7.21, 7.25). Later, Hume (*EHU* 8.25 n19; cf. *T* 1.3.2.10) points out that *producing* is another term in the same family, as is *by which*.

discussion and is explicitly stated in the *Enquiry*.¹⁰ But if there is any such thing as 'the idea of power or necessary connexion',¹¹ it is hard to see how it can possibly be a simple idea. For necessary connexion is clearly a relation (*T* 1.3.2.6, 1.3.2.11), and relations seem inevitably complex, as Hume himself acknowledges (*T* 1.1.4.7). Likewise, power must be understood, he says, as relative to an effect (*EHU* 7.14, 7.29 n17), so it is hard to see how an impression or idea of *power* can be simple either.

We shall return to these problems in the interpretative discussion below. But for now, let us note that Hume does in fact treat the idea of 'power or necessary connexion' as simple and that he considers it to be derived from an 'internal impression, or impression of reflection' (*T* 1.3.14.22), 'which we *feel* in the mind' (*EHU* 7.29; cf. *EHU* 7.30; *T* 1.3.14.20, 1.3.14.28–9) when we make an inductive inference. The nature of this impression is not entirely clear, however. For although Hume refers to it as something *felt*, most often in the *Treatise* he calls it a 'determination' of the mind or thought, and in the *Enquiry* a 'customary transition', neither of which sounds like a genuine feeling. Again, we shall leave this tricky interpretative issue for later, since the texts by themselves do not give a clear verdict.

1.8. That Impression Arises from Observed Constant Conjunction and the Consequent Tendency to Draw Inductive Inferences

Whatever Hume's views might be on the precise nature of the impression of power or necessary connexion, he is quite clear about the circumstances that give rise to it, namely, repeated observations of a constant conjunction between A and B, followed by a specific observation of just one of the pair. In these circumstances, we find ourselves irresistibly expecting (or drawing an inference to) the other of the pair through a process that Hume calls *custom*. This harks back to his discussion of induction, and his prophetic comment from *T* 1.3.6.3: 'Perhaps 'twill appear in the end, that the necessary connexion

¹⁰ *EHU* 7.8 n12 presumes that 'the idea of power' is an 'original, simple idea' in the course of criticising Locke's account of its origin (see also *T* 1.3.14.5). The simplicity of the idea is also strongly suggested by Hume's apparent denial that it can be defined (*T* 1.3.14.4; *EHU* 7.4–5), as complex ideas may be.

¹¹ See note 9 for paragraphs in the *Enquiry* that use this phrase, which also occurred in the original title of *Enquiry* 7, with the words 'power or' being deleted from the Third Edition (1756) onwards. In the *Treatise*, the precise phrase does not occur, but there is one reference to 'the idea of power or necessity' (*T* 1.3.14.19).

depends on the inference, instead of the inference's depending on the necessary connexion.' The instinctive inference comes first, and explains our ascription of causal necessity, whereas naïvely we might expect that inductive inference would depend on prior causal beliefs.

Once we have explicitly ascribed a causal connexion between A and B, however, this order of explanation changes, and we can then go on to make further inferences—often of much greater complexity—based on that ascription, beyond the simple, instinctive cases of customary inference which Hume initially discusses. And even in the ascription of causes, careful reflective reasoning is often required to distinguish genuine causal relations from those that are merely superficial, as Hume emphasizes when discussing 'unphilosophical probability' and his rules by which to judge of causes and effects (*T* 1.3.13, 1.3.15). So, his initial simple story 'of the idea of necessary connexion' (*T* 1.3.14; *EHU* 7) is apparently intended to focus on the origin of that idea within simple customary inference, and does not pretend to cover its application in general.

1.9. Hume Accordingly Provides Two Definitions of Cause

The famous two 'definitions of cause', which come at the culmination of Hume's account 'Of the idea of necessary connexion' in both the *Treatise* and the *Enquiry*, apparently aim to capture the two crucial circumstances from which that idea arises: *constant conjunction* and *inference of the mind*. Hume writes:¹²

We may define a cause to be [1] 'An object precedent and contiguous to another, and where all the objects resembling the former are plac'd in like relations of precedency and contiguity to those objects, that resemble the latter.' If this definition be esteem'd defective, because drawn from objects foreign to the cause,¹³ we may substitute this other definition in its place,

¹² I have inserted numbers into the quotations below to signpost the first and second definitions. Note that the *Enquiry* contains a counterfactual variation on the first definition, marked as 1c, which is not equivalent to 1 because 1 specifies an implication from the first 'object' to the second, whereas 1c specifies an implication from *absence of* the first to *absence of* the second. In the *Treatise*, the fourth rule by which to judge of causes and effects appears to make a similar conflation: 'The same cause always produces the same effect, and the same effect never arises but from the same cause' (*T* 1.3.15.6).

¹³ The definition is 'drawn from objects foreign to the cause' because on Hume's account whether some particular 'object' is a cause depends on patterns of behaviour amongst other 'objects' and so is not dependent purely on the particular instance. Hume makes no such deprecatory comment about

viz. [2] 'A cause is an object precedent and contiguous to another, and so united with it, that the idea of the one determines the mind to form the idea of the other, and the impression of the one to form a more lively idea of the other.' (*T* 1.3.14.31)

Similar objects are always conjoined with similar. Of this we have experience. Suitably to this experience, therefore, we may define a cause to be [1] *an object, followed by another, and where all the objects, similar to the first, are followed by objects similar to the second.* Or in other words, [1c] *where, if the first object had not been, the second never had existed.* The appearance of a cause always conveys the mind, by a customary transition, to the idea of the effect. Of this also we have experience. We may, therefore, suitably to this experience, form another definition of cause; and call it, [2] *an object followed by another, and whose appearance always conveys the thought to that other.* (*EHU* 7.29)

There has been much scholarly debate over how these 'definitions' should be interpreted.¹⁴ But it seems unlikely, in view of the points made above, that Hume's intention here is to provide two distinct analytical specifications of the necessary and sufficient conditions for one thing to be the cause of another. He is well aware that customary inference can occur in respect of conjunctions that are very far from constant, as, for example, with the prejudices mentioned at *T* 1.3.13.7. He is also well aware that genuine constant conjunctions can lie undiscovered, so that 'philosophers' who wish to identify them have to go to great trouble to do so (*T* 1.3.12.5, 1.3.15; *EHU* 8.13). So the two definitions—one couched in terms of constant conjunction, and the other in terms of customary inference—will often come apart in practice. This need not be seen as a major problem, however, if we set the definitions in their appropriate context of Hume's theory of ideas rather than anachronistically expecting him to be engaged in an analytic investigation of the type that would become popular more than two centuries later (for example Mackie 1965; 1974).¹⁵ For Hume's primary aim seems to be to investigate our understanding of the relation of cause and effect in terms of [1] the circumstances

his definitions of *necessity* (discussed in Section 1.10 below), perhaps because necessity is standardly understood to be a universal relation rather than a property of an individual object or pair of objects.

¹⁴ For a useful overview see Garrett (1997, 97–101). For a discussion comparing Garrett's approach to the one favoured here, see Millican 2009, 659–66.

¹⁵ The nearest Hume comes to anything that bears comparison with such an analysis is in his 'Rules by which to judge of causes and effects' (*T* 1.3.15).

in which the idea of causal necessity arises, and [2] the impression from which the relevant idea is copied. The two definitions thus aim to sum up these two distinct aspects of his lengthy investigation into the origin of the idea of cause, and in particular its most important component, the idea of necessary connexion.

1.10. Hume Also Provides Two Definitions of Necessity, which He Applies to the Issue of ‘Liberty and Necessity’

The most important application of Hume’s investigation of the idea of necessary connexion is to the topic of ‘liberty and necessity’ (roughly, what we would now call free will and determinism).¹⁶ Here, however, Hume’s focus is not so much on identifying *causes* as identifying *causal necessity*. Hence he does not directly apply his two ‘definitions of cause’, but instead applies two corresponding definitions of *necessity*: ‘Necessity may be defined two ways, conformably to the two definitions of *cause*, of which it makes an essential part. It consists either in *the constant conjunction of like objects, or in the inference of the understanding from one object to another*’ (EHU 8.27; see also T 2.3.2.4). Hume considers the distinction between the two pairs of definitions sufficiently important that in his index to the *Enquiry* (EHU 307–10) he gives separate entries for ‘CAUSE and EFFECT... Its Definition’, referring to 7.29 and 8.25 n19, and for ‘NECESSITY, its definition’, referring to 8.5 and 8.27.

Hume wields these two definitions of necessity to argue that the very same kind of necessity applies both to physical events (such as impacts of billiard balls) and to human actions. The structure—and much of the wording—of this argument is virtually identical in the *Treatise* and the *Enquiry* (see Millican 2007a, 190–3; 2009, 693–702). But it is put most pithily in the *Abstract*, which in part quotes from T 2.3.1.4:

‘Here then are two particulars, which we are to regard as essential to *necessity*, viz. the constant *union* and the *inference* of the mind; and wherever we discover these we must acknowledge a necessity.’ Now nothing is more evident than the constant union of particular actions with particular

¹⁶ Another important application comes in ‘Of the Immateriality of the Soul’ (T 1.4.5.29–33), where Hume appeals to his analysis of causation to refute the anti-materialist claim that ‘matter and motion’ cannot cause thought.

motives.... And...the inference from the one to the other is often as certain as any reasoning concerning bodies:...Our author pretends, that this reasoning puts the whole controversy in a new light, by giving a new definition of necessity. And, indeed, the most zealous advocates for free-will must allow this union and inference with regard to human actions. They will only deny, that this makes the whole of necessity. But then they must shew, that we have an idea of something else in the actions of matter; which, according to the foregoing reasoning, is impossible. (ABST 32–4)

The crucial application of the definitions is in the final sentence, highlighting the impossibility of forming any other notion of necessity beyond Hume's two definitions. Hence those who attempt to draw a distinction between *moral* and *physical* necessity—most famously Samuel Clarke—are refuted: they cannot even form a coherent idea of the 'something else' that they wish to attribute to 'the actions of matter', and hence their would-be distinction cannot even get off the ground.¹⁷

1.11. When the Two Definitions Come Apart, *Constant Conjunction* Dominates

As pointed out above, Hume's two definitions frequently come apart in practice, since our inferential tendencies do not always correspond with genuine constant conjunctions. But he is clear that, in our causal reasonings, we should attempt to refine those inferential tendencies so that they do thus correspond as far as possible. Hence, for example, we should endeavour to discover the reliable causal conjunctions that underlie superficial inconsistencies (*T* 1.3.12.5; *EHU* 8.13–15), to identify high-level general rules that can overcome our natural prejudices (*T* 1.3.13.11–12), and—more specifically—to

¹⁷ Clarke defends the distinction in his *Remarks* (1717, 15–18). Hume's first attack on it is at *T* 1.3.14.33, just two paragraphs after the presentation of his two definitions, strongly confirming that this provided significant motivation for his analysis of causation. Despite the prominence and repetition of Hume's argument against the distinction, however, it is philosophically unpersuasive (except, perhaps, as interpreted *ad hominem* against Clarke and others). For there is available a more plausible way of distinguishing between intentional and physical causation, based not on supposed different types of necessity but instead on the distinction between causal processes that are directed towards some outcome through means-end reasoning and those that are simply the working out of purposeless laws. Even putting mentality aside, the example of a chess computer illustrates how a physical causal substrate can implement teleological processing that is responsive to relevant rules and goals, thus potentially permitting two quite distinct patterns of causal explanation of the same behaviour. Hume does not consider the possibility of distinguishing between types of explanation rather than types of necessity, and thereby leaves a potential weakness in his overall theory of causation.

apply the rules by which to judge of causes and effects which Hume spells out in *T* 1.3.15 ‘to distinguish the accidental circumstances from the efficacious causes’,¹⁸ something that he apparently considers to be necessary if we are to discover the true causal relationships within *any* ‘phaenomenon in nature’ (*T* 1.3.15.11). When we are unable to identify genuinely constant causal relationships, moreover, he enjoins us to do the next best thing by reasoning probabilistically, conditioning our expectations by the experienced frequencies (*EHU* 6, 10.3–4; *T* 1.3.11–12). In all of this, Hume is implicitly giving his first definition of cause priority over the second, favouring actual constant conjunctions over our natural inferential tendencies.¹⁹ Another clear example of this priority comes in his discussion ‘of the immateriality of the soul’, which states boldly ‘that all objects, which are found to be constantly conjoin’d, are upon that account only to be regarded as causes and effects’ (*T* 1.4.5.32). In other words, constant conjunctions alone are sufficient to determine causal relations, whether or not they happen to correspond with natural human inferential tendencies.

All this tends to confirm again that the point of Hume’s second ‘definition’ is to characterize the original *impression* from which the idea of power or necessary connexion is copied, and it is not intended to provide a general *criterion* for application of that idea. Our natural inferential tendencies are crucial to get us started in inductive inference, but Hume never suggests that—once started—we should accord those natural tendencies (as encapsulated in the second definition) authority over the disciplined observation of constant conjunctions and judgements of probabilities. On the contrary, he frequently emphasizes the priority of the first definition by stating explicitly that ‘the very essence’ of power, cause and effect, or necessity is constituted by the ‘constant conjunction of objects’ (*T* 1.4.5.33), the ‘multiplicity of resembling instances’ (*T* 1.3.14.16), ‘constancy’ (*EHU* 8.25 n19), or ‘uniformity’ (*T* 2.3.1.10).

¹⁸ At *T* 1.3.13.11, in his discussion of prejudice, Hume gives a footnote reference to *T* 1.3.15, while saying, ‘We shall afterwards [note: Sect. 15] take notice of some general rules, by which we ought to regulate our judgment concerning causes and effects; . . . By them we learn to distinguish the accidental circumstances from the efficacious causes.’

¹⁹ Garrett (1997, 108–13) argues for an *idealized* understanding of the two definitions, whereby we consider the second definition as concerned with the inferential tendencies that we *would* have if fully informed and rational, thus making the two definitions coextensive. But Hume’s text exhibits no such apparent sophistication, and he seems to see the role of the second definition as being to identify the impression in question rather than specifying idealized conditions for the application of the resulting idea. Hume recognizes that we need to apply careful, conscious discipline to infer well, rather than just relying on our natural tendencies, and he sees such discipline as often requiring explicit understanding of the first definition and its refinement in his rules. By contrast, being told to infer ‘as an idealized reasoner would do’ by itself provides no such specific understanding, and hence the second definition—if taken to have the intention of identifying actual causal relations—would be useless to us.

Such consistent patterns could in principle provide a perfectly informed observer with a reliable basis for inductive inference, but it is clearly the uniformities themselves, not the actual occurrence of any inference based on them, that constitute 'the very essence' of causal necessity (as we shall see further in our discussion of *T* 2.3.2.2 and *EHU* 8.22 n18 in Section 2.1 below).

1.12. In the First *Enquiry*, Hume Recognizes More Sophisticated Causal Relations than in the *Treatise*, Mediated by Quantitative Powers and Forces

There is a significant difference between Hume's discussions of causation in the *Treatise* and in the first *Enquiry*, apparently reflecting a more sophisticated understanding of science. In the *Treatise*, Hume seems to be thinking of causal relations as holding almost exclusively between discrete types of event. Thus, he repeatedly talks of 'constant conjunction,' and even the rules by which to judge of causes and effects are mostly couched in terms of the absolute presence or absence of particular causal factors: '5... where several different objects produce the same effect, it must be by means of some quality, which we discover to be common amongst them.... 6... The difference in the effects of two resembling objects must proceed from that particular, in which they differ' (*T* 1.3.15.7–8). Only Hume's seventh rule gives any hint that we might be dealing with varying quantities, which cannot therefore be characterized in terms of discrete types of 'object': '7. When any object encreases or diminishes with the encrease or diminution of its cause, 'tis to be regarded as a compounded effect, deriv'd from the union of the several different effects, which arise from the several different parts of the cause' (*T* 1.3.15.9). But such talk of 'parts' of the cause still seems unsophisticated and inadequate when compared with the Newtonian physical science of the time, which would treat the impact of billiard balls, for example, not in the crude terms of 'motion in the first ball' causing 'motion in the second' but rather in terms of the relevant velocities, masses, angles, coefficient of restitution, and so forth—all of these being arithmetically quantifiable on a continuous scale.²⁰

The most important Newtonian law applicable to the collision of billiard balls is that of the Conservation of Momentum, which makes no obvious

²⁰ Recognition of this crudity in his rules by which to judge of causes and effects might well account for Hume's omission of them from the *Enquiry*. The nearest equivalent in the *Enquiry* is the long note to *EHU* 9.5, in the section 'Of the reason of animals,' which could have included such rules had Hume still considered them adequate.

appearance in the *Treatise* but is explicitly mentioned in the *Enquiry*: ‘it is a law of motion, discovered by experience, that the moment or force of any body in motion is in the compound ratio or proportion of its solid contents and its velocity’ (*EHU* 4.13). This passage shows an awareness that mechanical causation involves arithmetic quantities such as ‘moment or force’, and three paragraphs later Hume talks again of ‘that wonderful force or power, which would carry on a moving body for ever in a continued change of place, and which bodies never lose but by communicating it to others’ (*EHU* 4.16). ‘Secret powers’ are accordingly mentioned repeatedly both at *EHU* 4.16 and *EHU* 4.21, though Hume’s discussion is still couched in terms of constant conjunctions (but now between ‘sensible qualities’ and ‘secret powers’ rather than between ‘objects’ as in the *Treatise*). In a footnote to *EHU* 4.16, however, Hume points out that his talk of powers here is ‘loose and popular’, referring forward to the ‘more accurate explication’ that will be delivered in *EHU* 7.²¹

Even in Section 7 of the *Enquiry*, however, the main text shows only modest evidence of Hume’s increasing awareness that physical causation involves continuously varying quantities rather than discrete types of event, and only in two notes does this come through relatively clearly:

We find by experience, that a body at rest or in motion continues for ever in its present state, till put from it by some new cause; and that a body impelled takes as much motion from the impelling body as it acquires itself. These are facts. When we call this a *vis inertiae*, we only mark these facts, without pretending to have any idea of the inert power; in the same manner as, when we talk of gravity, we mean certain effects, without comprehending that active power. (*EHU* 7.25 n16)

According to these explications and definitions, the idea of *power* is relative as much as that of cause; and both have a reference to an effect, or some other event constantly conjoined with the former. When we consider the *unknown* circumstance of an object, by which the degree or quantity of its effect is fixed and determined, we call that its power: And accordingly, it is allowed by all philosophers, that the effect is the measure of the power. But if they had any idea of power, as it is in itself, why could not they measure it in itself? The dispute whether the force of a body in motion be as its velocity, or

²¹ The main point of this footnote (*EHU* 4.16 n7) seems to have been to counter an objection made by Henry Home (Kames 2005, 188–9), who considered the references to powers in the first three paragraphs of *EHU* 4.16 to be inconsistent with the theory of causation that Hume would later present in Section 7. See Millican 2007b, 236–7.

the square of its velocity; this dispute, I say, needed not be decided by comparing its effects in equal or unequal times; but by a direct mensuration and comparison. (*EHU* 7.29 n17)

These notes seem to be intended to bring quantitative ‘powers’ within the scope of Hume’s theory of causation, generalizing beyond mere constant conjunction—and even beyond the multifactor interactions envisaged by the rules of the *Treatise*—to include arithmetical functional relationships. But Hume’s main point here seems to be his insistence that our only grasp of such powers is relational: we have no idea or comprehension of them as they are in themselves, and no means of assessing them except in terms of their perceived effects. It is helpful to have this confirmation that Hume intended his language of powers to fit within his ‘official’ overall theory of causation, but these notes provide at best a sketch of how that theory would be refined to accommodate them.

2. Reductionism, Subjectivism, and Projectivism

The key points itemized above are clearly supported by multiple Humean texts and clearly contradicted by none; hence they should be relatively uncontroversial. Taken together, they strongly support a traditional *reductionist* reading of Hume’s theory of causation, with causal relations being objective, universal, and determined by constant conjunctions (or functional relationships of a more complex sort). Yet in recent years, many scholars have rejected this traditional style of interpretation, preferring instead to see Hume as either a *projectivist* or a *sceptical realist*.²²

The most influential objections to the reductionist reading have focused on what many readers are likely to consider to be the most conspicuous omission from my key points above, namely Hume’s notorious and emphatic declarations in *T* 1.3.14 to the effect that ‘necessity is . . . in the mind, not in objects’

²² To summarize several recent overviews of the interpretative landscape: Dauer (2008, 94–8) takes the three main types of reading to be ‘reductionist’, ‘realist’, and ‘intermediate’, the last exemplified by Blackburn’s ‘projectivism’. Beebe (2012, 137–43) follows the same order but with different labels, dividing the potential interpretations into ‘traditional’, ‘sceptical realist’, and ‘projectivist’. Beebe (2016, 235–43) likewise starts with the traditional ‘regularity theory’, but then goes on to ‘projectivist’ theories before turning to ‘sceptical realism’. Garrett (2015, 82–99) uses different terms but agrees that the three main options are ‘causal projectivism’, ‘causal reductionism’, and ‘causal realism’. His own view, however, combines elements of all three, together with the novel idea that Hume has a ‘causal-sense theory’ (for comments on which, see Millican 2014, 216–19).

(*T* 1.3.14.22).²³ Such declarations sit uneasily with reductionism, for if causal necessity were indeed a matter of constant conjunction, then it ought to be as objective as the constant conjunctions themselves rather than mind-dependent (cf. *T* 1.3.14.28, where Hume acknowledges that objects' regular 'relations of contiguity and succession' are 'independent of, and antecedent to the operations of the understanding'). So if, contrariwise, we honour Hume's subjectivist declarations and place necessity only 'in the mind', this seems to imply a rejection of reductionism.

Below I shall explain why I consider Hume's subjectivist declarations to be undeserving of the interpretative weight they have generally been accorded. In short, they are overblown, prominent only in the youthful *Treatise*, in tension with Hume's more consistent commitments (notably his first definition of necessity), and therefore best understood not as considered conclusions about causation's metaphysical status, but rather as dramatic expressions of Hume's surprising result regarding the origin of our idea of causal necessity. He is pushed towards subjectivism by his identification of the key 'impression' as something felt 'in the mind', for it is hard to see how an idea copied from an internal feeling could represent something existing outside a mind. Though far less emphasized in the *Enquiry*, this source of tension with objectivist reductionism remains there, but below I shall propose a way of understanding Hume's theory that makes reasonable sense of what he says while also dealing with two other internal problems that were noted above (in Sections 1.6 and 1.7). These tensions in his texts, I shall argue, arise not from any serious doubt on his part about the objectivity of causal relations but, rather, from an impoverished view of reflection, which is evident in other contexts and hinders him from expressing his theory in the most consistent manner. Understood in this light, Hume's theory remains fundamentally reductionist and objectivist, and these conclusions are not threatened by the element of projectivism implicit in his empiricist account of our causal thinking.

2.1. Is Humean Necessity Only 'In the Mind'?

There is an obvious tension between Hume's apparent belief in objective causal relations (key points 1.1, 1.5, 1.11, and 1.12) and his pronouncements—forcefully and conspicuously repeated in the *Treatise*—that the

²³ Beebee (2006, 216; 2012, 137–8) and Dauer (2008, 95), for example, both see the crucial objection to reductionist interpretations as deriving from the mind-dependence of Humean necessity.

power, necessity, efficacy, or energy of causes are in the mind, not in objects (*T* 1.3.14.20, 1.3.14.22–4, 1.4.7.5, 2.3.1.4, 2.3.1.6) and that we cannot even form an idea of them as qualities of objects (*T* 1.3.14.22, 1.3.14.25, 1.3.14.27, 1.4.3.9, 1.4.7.5). Hume apparently sees these claims as following straightforwardly from his identification of the impression of power or necessity as the ‘determination of the mind’, and his view—likewise frequently reiterated in the *Treatise*—that ideas can only represent the impression from which they are copied (*T* 1.1.1.7, 1.1.1.12, 1.2.3.4, 1.2.3.11, 1.3.7.5, 1.3.14.6, 1.3.14.11, 1.4.5.21). But such strident subjectivism sits very uneasily with his two definitions of necessity, reflecting only the second and apparently conflicting with the first. For if causal necessity can indeed be defined in terms of objective constant conjunction, then why can we not frame thoughts about it in those terms also?

Rather than attempting to square all of Hume’s problematic statements in the *Treatise*, we can conveniently sidestep them by observing that the presentation of his theory in the later *Enquiry* changes enormously in the relevant respects. There he never says that ideas can only represent impressions, and only once does he even get close to saying that necessity is in the mind, not in objects:

The necessity of any action, whether of matter or of mind, is not, properly speaking, a quality in the agent, but in any thinking or intelligent being, who may consider the action; and it consists chiefly in the determination of his thoughts to infer the existence of that action from some preceding objects; as liberty, when opposed to necessity, is nothing but the want of that determination, and a certain looseness or indifference, which we feel, in passing, or not passing, from the idea of one object to that of any succeeding one.

(*EHU* 8.22 n18)

Moreover, this single passage is of limited significance. It is part of a note copied largely verbatim from the text of *T* 2.3.2.2, whose point—within Hume’s discussion of liberty and necessity—is to explain ‘The prevalence of the doctrine of liberty’ in terms of ‘a false sensation or seeming experience . . . of liberty or indifference’. Here the pertinent contrast is between the determination of our thoughts that applies in the case of necessity, and the apparent ‘want of that determination . . . which we feel’ in other cases. The note ends by pointing out that, however we may imagine we feel a liberty within ourselves, a spectator can commonly infer our actions from our motives and character; and even where he cannot, he concludes in general, that he might, were he perfectly acquainted with every circumstance of our situation and temper, and the

most secret springs of our complexion and disposition. Now this is the very essence of necessity, according to the foregoing doctrine.' Here 'the very essence of necessity' turns out to be the *potential* for well-informed inference—based on the relevant constant conjunctions—rather than *actual* inference. It thus corrects any misleading impression that the wording earlier in the note might give towards the sort of extreme subjectivism that was so conspicuous in the *Treatise*.²⁴

There is just one other passage in the *Enquiry* that might be thought to imply such extreme subjectivism, and this occurs in a far more significant location, namely the paragraph prior to the two definitions in Hume's discussion 'Of the idea of necessary connexion': 'When we say, therefore, that one object is connected with another, we mean only, that they have acquired a connexion in our thought, and give rise to this inference, by which they become proofs of each other's existence' (*EHU* 7.28). But this too turns out to be much less than it appears. First, the focus of this paragraph is very clearly on the *origin* of the relevant idea, and on how we come to say that 'objects' are connected. Secondly, just one paragraph later—having given his two definitions—Hume goes on to state very explicitly that we can indeed 'mean' something more by our attributions of causal connexion, echoing now the first definition as well as the second: 'We say, for instance, that the vibration of this string is the cause of this particular sound. But what do we mean by that affirmation? We either mean, *that this vibration is followed by this sound, and that all similar vibrations have been followed by similar sounds*: Or, *that this vibration is followed by this sound, and that upon the appearance of one, the mind anticipates the senses, and forms immediately an idea of the other*' (*EHU* 7.29). The proximity of these two passages seems unlikely to be coincidental,²⁵ suggesting that the latter is intended as a deliberate extension or correction of the former. When we first infer from observed A to anticipated B by custom, this naturally leads us to assert a connexion between them, and at that stage 'we can only legitimately mean' that they are connected in our thought.²⁶ Having gone on to analyse the objective circumstances that generate this

²⁴ Note also that the earlier wording—'a quality...in any thinking or intelligent being, who *may* consider the action'—is naturally readable as expressing a potentially *counterfactual* conditional, rather than applying only where the 'determination of the mind' actually takes place.

²⁵ The phrase 'we mean' occurs in only twelve paragraphs of Hume's philosophical works, and this is the only case of its occurring in adjacent paragraphs.

²⁶ The scare quotes here highlight that phrases like 'we only mean X' are typically less than rigorous and often used loosely. Hume twice in the *Treatise* uses the phrase 'mean nothing but X', once in connexion with the will and once as applied to moral pronouncements (*T* 2.3.1.2, 3.1.1.26), and neither of these occurrences seems to be meant literally.

connexion, however, and after framing Hume's two definitions, we can then mean something more, namely the obtaining of those objective circumstances. So, by the time he wrote the *Enquiry*, at least, Hume seems to have considered the obtaining of causal relations—and of the causal necessity that is essential to those relations—to be a thoroughly objective matter based on the constant conjunctions and related functional relationships involved (as explored above in key points 1.11 and 1.12 above). Hume's omission of the stridently subjectivist declarations of the *Treatise*, therefore, was both deliberate and appropriate.

2.2. What is the 'Impression' of Necessary Connexion?

Despite all this, however, a suspicion might remain that causal subjectivism was indeed the appropriate conclusion to draw from Hume's empiricist starting point, on the basis that an idea that is copied from an internal impression cannot coherently be ascribed to anything external. So if, on the other hand, Hume wishes to preserve the objectivism of his first definition and rules, then it might seem that he should abandon his empiricist account altogether: what useful role can a subjective impression perform within an objectivist theory?

I shall address this concern by sketching a plausibly Humean account of what his 'impression of power or necessary connexion' might be and how this could generate a corresponding 'idea' that is coherently ascribable to external objects. But to provide independent motivation for this account, it will be useful to start by returning to our earlier discussion and the two highly questionable moves that we saw Hume make when initially framing his impression quest. First (1.6), he casually conflates a wide range of notions, boldly—but somewhat implausibly—claiming 'that the terms of *efficacy*, *agency*, *power*, *force*, *energy*, *necessity*, *connexion*, and *productive quality*, are all nearly synonymous' (*T* 1.3.14.4). Secondly (1.7), he takes for granted that the idea whose impression he seeks is a simple idea despite having previously implied that any such relational idea must be complex (and later going on to assert that any power is relative to its effect). The obvious way of making sense of both of these otherwise gratuitous moves, I suggest, is to interpret Hume as attempting to identify a simple *common element* in all of the various relational notions that he is investigating. When we say that A has an *efficacy*, *power*, *force*, *energy*, or *productive quality* to bring about B, or when we say that A *necessitates* B, we are assigning some kind of *consequential* relation between A and B, a term which is intended to abstract from the detailed differences

between these notions and to focus on the fundamental feature that B is understood to be some kind of consequence of A. It is the origin of the idea of this fundamental element of *consequentiality*, I suggest, which is Hume's real quarry.

It is understandable that Hume would view all these consequential notions as problematic from an empiricist point of view, and in exactly the same way: how can any sensory impression or feeling—or even a sequence of such impressions or feelings—possibly give rise to the idea that B was *a consequence of A*, as opposed to merely *following A*? And if this is indeed the fundamental difficulty that motivates Hume's quest, then it also becomes understandable why he might conflate all the various terms and target what he sees as their simple common element. His ingenious innovation is then to switch focus from *causal* consequentiality to *inferential* consequentiality, finding the impression-source of the crucial idea in 'that inference of the understanding, which is the only connexion, that we can have any comprehension of' (*EHU* 8.25). This seems to imply that in customary inference we directly experience a kind of consequential relation within our own minds—awareness of A leads to an expectation of B—this being the only sort of intrinsically consequential 'impression' that our minds ever receive. Though ingenious, however, this answer is itself problematic, because even if our perception of A is regularly followed by our expectation of B, we have no direct awareness of the causal mechanism that underlies this inference, as Hume himself insists (*T* 1.3.14.12; 1.3.14.29; *EHU* 7.9–20). How, then, can this experience of inductive inference help in explaining the impression of causal power?

One possible answer, influentially urged by Barry Stroud (1977, 85–6), is that Hume takes inductive inference to be always accompanied by some distinctive simple feeling, which provides the impression in question. But against this, Hume never says that there is any such 'third perception' between the impression of A and the enlivened idea of B. Such a claim would seem to conflict with what he says about the immediacy and insensibility of inductive inference (*T* 1.3.8.2, 1.3.8.13, 1.3.12.7), and it is hard to see how any such simple feeling—even if it does happen to *accompany* inductive inference—thereby provides an impression of a connexion 'that we can have...comprehension of'. A more attractive resolution, I suggest, is to see Hume as implicitly appealing to a faculty of reflection of a Lockean kind (*Essay* II.i.4, 105–6), which enables us to monitor our mental operations and thus become aware when an inference is taking place rather than simply experiencing a succession of thoughts and feelings. This implies a richer view of reflection than Hume suggests elsewhere in the *Treatise*, where he often writes as though 'impressions

of reflection,' or 'internal impressions,' are confined to 'passions, desires, and emotions' (*T* 1.1.1.1., 7; 1.1.2.1, 11; 1.1.6.1, 16; 1.2.3.3, 27).²⁷ But clearly some extension of this narrow view is required anyway, if such impressions are to include that of power or necessity.²⁸ Perhaps this realization explains Hume's change of emphasis in the first *Enquiry*, where what little he says about reflection strongly suggests the Lockean conception of mental monitoring, with talk of 'reflection on the *operations* of our own minds' (*EHU* 7.9, my emphasis) and 'reflection on our own faculties' (*EHU* 7.25) but no mention of the cruder conception—the raw feeling of passions—which had dominated the *Treatise*.²⁹

If Hume's account of the impression of power or necessary connexion is indeed informed by this Lockean perspective, then it becomes relatively easy to understand why he so often writes as though the impression is, literally, a 'determination' of the mind or thought, or a customary 'transition of the imagination'.³⁰ For thus interpreted, the 'impression' is not simply some feeling that happens to accompany inductive inference; rather, it is reflective awareness of such inference taking place, of the very transition itself. This brings at least two considerable advantages. First, it can explain why Hume takes this 'inference of the understanding' to be a 'connexion, that we can have...comprehension of' (*EHU* 8.25), since this form of reflection would enable us to grasp the inference as a movement of the mind from A to B rather than just as a succession of independent perceptions. And that in turn would explain why he sees this as a crucial insight, solving the empiricist conundrum of how consequential concepts can be acquired by experience. Secondly, this account explains how the 'idea' corresponding to that impression might plausibly be seen as essential to a correct understanding of causation (and associated consequential relations) and at least in some sense attributable to external causes and effects such as the motion of billiard balls. If the impression were a mere subjective feeling, then the whole theory would

²⁷ See also *T* 2.3.3.5 and 3.1.1.9, which notoriously suggest a highly atomistic view of these impressions of reflection. Hume's later works make no such atomistic claims and correspondingly downplay his simple/complex distinction, while the related Separability Principle (e.g. *T* 1.1.7.3) disappears.

²⁸ And also, apparently, that of willing or volition: '*the internal impression we feel and are conscious of, when we knowingly give rise to any new motion of our body, or new perception of our mind*' (*T* 2.3.1.2).

²⁹ See also: 'the operations of the mind... become the object of reflection' and 'the mind is endowed with several powers and faculties, ... [which] may be distinguished by reflection' (*EHU* 1.13–14).

³⁰ The phrases 'determination of the mind' and 'determination of the thought' occur over a dozen times in the *Treatise*, but never in the *Enquiry*, whereas the phrase 'customary transition' occurs in both works (*T* 1.3.8.11, 1.3.10.9, 1.3.13.3, 1.3.14.24, 1.4.4.1; *EHU* 5.20, 7.28–9, 8.21). I suspect that Hume dropped the term 'determination' in the *Enquiry* because of its causal overtones, which can seem viciously circular when he is trying to account for the origin of our causal concepts, a circularity of which he evinces awareness (*EHU* 8.25 n19).

look bizarre; but if what is being attributed is an inferential relation between events, then it makes far better sense. This in turn renders the theory more plausible interpretatively, because Hume's account of our 'idea of power or necessary connexion' is not intended to debunk that idea. On the contrary, he clearly sees his quest for the crucial impression as successful, and hence as legitimating the corresponding idea through the Copy Principle.³¹ It is hard to see how this could be achieved unless the resulting idea is coherently attributable, at least in some sense, to external causes and effects.

2.3. Is Hume a *Projectivist* about Causation (and Morality)?

As remarked above, recent discussions of Hume give considerable prominence to the view that he is best seen as a 'projectivist' about causal necessity, the general idea being that, in ascribing necessity, we are *projecting* onto the external world qualities that are really internal and mental. This, if accepted, might seem to pose a threat to the objectivist theory of causation that I am here attributing to Hume, so I shall briefly explain why I see no such threat.

The idea that Hume is a projectivist is usually combined with the suggestion of a deep parallel between his causal and moral theories, and often motivated by citation of these two famous texts:³²

'Tis a common observation, that the mind has a great propensity to spread itself on external objects, and to conjoin with them any internal impressions, which they occasion, . . . the same propensity is the reason, why we suppose necessity and power to lie in the objects, . . . not in our mind. (T 1.3.14.25)

Thus, the distinct boundaries and offices of *reason* and of *taste* are easily ascertained. The former conveys the knowledge of truth and falsehood: The latter gives the sentiment of beauty and deformity, vice and virtue. The one

³¹ Hume identifies the impression in question at T 1.3.14.20–2 (anticipated at T 1.3.14.1) and *EHU* 7.28–30. Hume's attitude to the idea of necessary connexion is thus quite different from his attitude to our thoughts of external objects or selves, which turn out to be fictions rather than bona fide impression-derived ideas (for external objects, see T 1.4.2.29, 1.4.2.36, 1.4.2.42–3, 1.4.2.52; for selves, see T 1.4.6.6–7). Any interpretation that treats these three topics as together exemplifying a common form of 'Humean scepticism'—or indeed, 'Humean naturalism' (see below p. 232 n37)—should therefore itself be treated with extreme scepticism!

³² The two passages are cited together by Beebe (2012, 142) and Garrett (2015, 81) and also in the first sentence of Kail's introduction to his book on Humean projection (2007a, xxiii). Blackburn (2008, 27–8) explicates Humean causation as 'a kind of projection of our confidence that one kind of thing will follow another' and goes on to compare this with 'the identical kind of theory that Hume will offer in the case of . . . ethics.'

discovers objects as they really stand in nature, without addition or diminution: The other has a productive faculty, and gilding or staining all natural objects with the colours, borrowed from internal sentiment, raises, in a manner, a new creation. (*EPM* App. 1.21)

Since Hume's moral theory has standardly been read as anti-realist, this supposed parallel has encouraged the reading of his causal theory as anti-realist also. But in fact the parallel is questionable, and the pairing of these two famous quotations is highly problematic, because whereas the latter passage apparently approves of 'gilding or staining' in the moral case, the former is clearly critical of mental spreading in the causal case. Indeed, the previous sentence—'This contrary bias is easily accounted for'—makes clear that Hume is here explaining away an erroneous objection to his theory of causal necessity rather than presenting a positive 'projectivist' account.³³

The second quotation by itself, when seen in context, gives another serious ground for doubt about any would-be projectivist synthesis. For here Hume is distinguishing between the 'boundaries and offices' of reason and taste, saying that reason 'conveys the knowledge of truth and falsehood' and 'discovers objects as they really stand in nature, without addition or diminution' (*EPM* App. 1.21),³⁴ while taste gilds or stains 'natural objects with the colours, borrowed from internal sentiment'. But, crucially, within this whole discussion Hume himself clearly locates causal judgements within the domain of *reason*,³⁵ thus standardly representing objects without addition or diminution. By contrast, the sentimental gilding that he associates with taste, and which distinguishes it from reason, appears to involve its action-guiding nature and its association with human desires (*EPM* App. 1.18–20; cf. *T* 3.1.1.6). Thus Hume's distinction between reason and taste here seems to come down to the familiar divide between the cognitive and the conative. And so far from 'gilding or staining' being a unifying theme across Hume's theories of causation and morality, its application to moral judgements is

³³ Likewise, a sentence and footnote elided from the quoted passage make clear that such 'projection' is an error, comparable with attributing spatial location to sounds and smells (Hume alludes here to *T* 1.4.5.11–14).

³⁴ Reason here is accordingly our cognitive faculty, 'by which we discern Truth and Falshood' (*EHU* 232, 1748 and 1750 editions; cf. *DOP* 5.1), whether of relations of ideas or matters of fact (*T* 3.1.1.9; *EPM* App. 1.6). For extensive discussion of this notion of reason and its relation to 'the imagination' within Hume's thinking, see Millican 2012, 79–85.

³⁵ *EPM* App. 1.2–3 repeatedly emphasizes that '*reason* instructs us in the several tendencies of actions'. See also: 'the causes and effects ... are pointed out to us by reason and experience' (*T* 2.3.3.3), and 'reason, in a strict and philosophical sense, ... discovers the connexion of causes and effects' (*T* 3.1.1.12).

precisely what pushes them into the category of taste, thereby distinguishing them sharply from causal judgements, which he clearly takes here to be thoroughly objective and susceptible of truth and falsehood.

3. Hume and Causal Powers

Finally, we come to the question that is particularly germane to the current volume, namely, whether Hume believes that objects have genuine ‘causal powers’. I shall argue that he does accept objective powers, though not in the sense that has become prominent in recent decades through the so-called ‘New Hume’ or *sceptical realist* interpretation. To clear the ground, it will be helpful first to deal with the latter issue.

3.1. Does Hume Believe in ‘Thick’ Causal Powers?

Sceptical realism—a term coined by John Wright for the title of his 1983 book—involves the claim that Hume believes in a form of objective causal power that is ‘thick’ in the sense of going beyond his two definitions. On this type of interpretation, which encompasses several varieties, the ‘idea of necessary connexion’ revealed by his investigations in *T* 1.3.14 and *EHU* 7 does not represent genuine causal necessity at all, but is only a psychological surrogate that manifests our own limited understanding of causation, confined as it is to the observation of regularities and experience of inductive inference. Real causation, by contrast, is usually taken by sceptical realists to involve hidden *absolute* powers or necessities, such that A’s being a real cause of B involves A’s having some property which, if only we knew of it, would sanction the inference that B must follow *with a priori certainty*.³⁶ We cannot achieve such perfect knowledge, of course; nor can we form any but the most indirect and relative conception of what such powers and necessities might involve. But—at least on the most prominent of these interpretations—we are still able to believe in them and in the causal relations which they constitute.³⁷

³⁶ Strawson (1989, 111) calls this the ‘AP property’ and Kail (2007b, 256) the ‘reference-fixer for power’.

³⁷ Strawson (1989, 1) particularly emphasizes here what he calls Hume’s ‘central doctrine of “natural belief”’. But in fact no such doctrine is evident in Hume’s texts, and the term derives from Norman Kemp Smith, who saw close parallels between Hume’s views on causation and the external world: ‘Natural belief takes two forms, as belief in continuing and therefore independent existence,

Most of the evidence adduced in favour of the sceptical realist reading has been problematic and insubstantial, as I have argued at length elsewhere (Millican 2007b; 2009). But it achieved popularity in a context where Hume was widely seen as sceptical about objective causation in general, enabling Galen Strawson's 1989 book *The Secret Connexion* to have a major impact by highlighting a wide range of passages where Hume appears to express sincere objectivist commitments, most notably his references to 'secret powers' in *EHU* 4. Such passages, however, pose no difficulty for the kind of reductionist reading proposed here, encompassing the key interpretative points presented above. For that is itself an objectivist interpretation, explicitly recognizing the search for hidden causes (key points 1.1; 1.5; 1.11) and specifically accounting for Hume's relatively prominent talk of 'powers' in the *Enquiry* (1.12).

There are also a number of powerful objections to the sceptical realist reading, many deriving from its radical conflict with central aspects of Hume's philosophy as generally understood, which provoked Kenneth Winkler's (1991) coining of the moniker 'New Hume' in his eponymous article. To begin with, it requires fundamental reinterpretation of Hume's quest for the impression of necessary connexion, which has to be seen as epistemologically motivated rather than—as the texts themselves suggest (*EHU* 7.3–5, 7.29)—a semantic attempt to define or clarify the meaning of causal terms through identification of the corresponding impression (see Millican 2009, 655–9). On the New view, the genuine causation to which those terms properly refer involves something of which we can have no impression. Yet we do supposedly believe in it, thus apparently violating either Humean empiricism, by allowing ideas that are not derived from impressions, or Hume's theory of belief, by allowing beliefs that are not enlivened ideas.³⁸ Meanwhile, the type of necessity governing such genuine causation is supposedly absolute and aprioristic, despite Hume's repeated insistence that from an a priori point of view 'Any thing may produce any thing' (*T* 1.3.15.1, 1.4.5.30; cf. *T* 1.3.7.3; Hume *ABST* 11; *EHU* 12.28–9, and see Section 1.4 above). This seems to imply violation of his even more fundamental and oft-repeated Conceivability

and as belief in causal dependence' (Smith 1941, 455). For serious doubts about these supposed parallels and the alleged doctrine, see above p. 230 n31 and Millican (2016, 84).

³⁸ Strawson (1989, 52 and 122) claims that Hume allows a *relative* idea of genuine causation, which could potentially escape this objection because such a complex idea need not be copied directly from any impression. But his account runs into a similar difficulty in explicating the relation involved, as pointed out by Winkler (1991, 62–3) and Millican (2007b, 248 n12). Kail (2007b, 254), in contrast with Strawson, fully recognizes the objection, and accordingly suggests that Hume *assumes* or *supposes* thick powers rather than *believing* in them.

Principle (for discussion see Millican 2009, 676–84), which limits such necessity to matters whose falsehood is inconceivable (*T* 1.3.6.5; Hume *ABST* 11; *EHU* 4.2).

The most serious objections to the New Hume interpretation, however, directly target its central claim that Hume conceives of genuine causation as *thick* in the sense of going beyond his own two definitions. These objections draw attention to various implications that Hume clearly takes to follow from his definitions, all apparently based on the claim that we can have no conception whatever of causal necessity that goes beyond them. Such implications include rejection of ‘the common distinction betwixt *moral* and *physical* necessity’ (*T* 1.3.14.33) and refutation of the standard argument that ‘matter and motion’ could not possibly cause thought (*T* 1.4.5.29–33). But the most conspicuous and important application of the two definitions comes in the sections on ‘liberty and necessity’, with Hume’s positive argument that the very same kind of necessity applies to the physical and mental worlds.³⁹ This crucial argument is essentially the same in the *Treatise*, the *Abstract*, and the *Enquiry*, and in all three it explicitly anticipates protests from those who take physical causation to involve some kind of necessity beyond Hume’s two definitions, which is just what the New Hume position implies. Such opponents deny that satisfaction of the definitions ‘makes the whole of necessity’ (Hume *ABST* 34), ‘maintain there is something else in the operations of matter’ (*T* 2.3.2.4), and thus ‘rashly suppose, that we have some farther idea of necessity and causation in the operations of external objects’ (*EHU* 8.22). Hume’s response is to insist that his analysis shows any such idea to be ‘impossible’ (Hume *ABST* 34), and hence that ‘there is no idea of any other necessity or connexion in the actions of body’ (*EHU* 8.27, cf. *T* 2.3.2.4). He highlights the same point at the beginning of the *Enquiry* version of the argument: ‘Beyond the constant conjunction of similar objects, and the consequent inference from one to the other, we have no notion of any necessity, or connexion’ (*EHU* 8.5). This passage occurs only six paragraphs after Hume’s two definitions of cause (7.29) and is where he starts applying them to solve ‘the long-disputed question concerning liberty and necessity’ (8.2), ‘the most contentious question, of metaphysics, the most contentious science’ (8.23). Nobody reading these two sections together could reasonably be in any doubt

³⁹ See Millican 2007a, 190–3; 2007b, 243–5. Beebe (2007) and Kail (2007b, 262–7) proposed answers which were briefly addressed in Millican 2009. Meanwhile Wright (2009, 183–6) suggested that the problem can be circumvented by taking *T* 2.3.2.4 (and presumably similar passages elsewhere) to be disingenuous. The approaches of Beebe, Kail, and Wright were comprehensively criticized in Millican 2011, to which so far no reply has been offered.

that the definitions have been presented expressly with a view to this important application.⁴⁰ But in order to serve this role, those definitions have to be understood as delimiting *what we can properly mean* by causal power and necessity, which is exactly what the New Hume interpretation denies. This is as close to an outright refutation as one is likely to find in historical philosophical scholarship.⁴¹

3.2. Does Hume Believe that Objects Really Have Causal Powers?

If Hume is to be counted as a believer in causal powers, then these must be understood in a way that is compatible with the key points above, strongly suggesting a reductionist approach. Our subsequent discussion has supported this by deflecting the threat of extreme subjectivism, interpreting the ‘impression’ of causal power or necessity as plausibly attributable to objective occurrences, rejecting any strongly subjectivist form of causal projectivism, and refuting the alternative New Humean understanding of causal powers.

Several of our key points—notably in Sections 1.1, 1.5, and 1.11 above—seem to imply that if we interpret the term ‘cause’ faithfully to his own theory, Hume does believe in real causes. Since, moreover, he sees causation as essentially involving causal power or necessity (1.3), it seems likewise to follow, again assuming faithful interpretation of the relevant terms, that Hume also believes in real causal powers and real causal necessity.⁴² However, there are subtle nuances to be discussed here, as we shall see, and the answer to the question posed is not quite so straightforward.

Identifying the relevant causes, powers, and necessities can be relatively easy where they conform to straightforwardly observable, exceptionless constant conjunctions, and this is the paradigm case from which Hume develops his theory. But as we saw in Sections 1.11 and 1.12, he clearly recognizes, in both the *Treatise* and the *Enquiry*, that it is very far from the whole story.

⁴⁰ This point has, however, been generally underappreciated, probably owing to most scholars’ greater focus on the *Treatise*, where the application to ‘liberty and necessity’ is postponed until Book Two. The New Humeans’ neglect of this application is more surprising, given their emphasis on the *Enquiry* as Hume’s authoritative work (Strawson 2000, 31–3; Wright 2000, 95–8).

⁴¹ Other scholars concur: both Ott 2011 and Willis 2015 (205 n43) allude to a general view that ‘the New Hume debate has run its course’ and been ‘ended...once and for all’ by the objection from liberty and necessity. Hakkarainen 2012 (307 n36) refers to the objection as ‘devastating...against any form of the New Humean interpretation’.

⁴² The point about faithful interpretation of the terms is crucial here (see above p. 211 n4). Hume emphatically does not believe in what some other philosophers suppose ‘real causal powers’ to be.

In more complex cases, the discovery of causal powers and necessities will require careful and painstaking investigation, including systematic observation, experimentation, and generalization, in the attempt to devise laws—sometimes mathematically complex laws—capable of reducing the various phenomena to order. Some of these laws, like the Newtonian laws governing mechanical impact, may involve quantitative factors, such as momentum and kinetic energy, that are naturally expressible in terms of ‘energy’, ‘force’, and ‘power’, through which one can relatively straightforwardly correlate the factor with the effect (thus implying, in the language of *EHU* 7.29 n17, ‘that the effect is the measure of the power’). But there is no guarantee that this will always be true,⁴³ and Hume says so little on these matters that we can only speculate what his reaction would be to yet more sophisticated scientific developments that are not amenable to such expression. Here, however, his apparently crude running together of such a wide variety of causal terms (noted above in Section 1.6) could turn out to be a positive advantage, manifesting his open-mindedness over the form that future theories might take. Rather than attributing to him any firm commitment to ‘powers’, therefore, it might be better simply to say that he believes the world to have a deterministic causal structure and one that permits—at least to some extent—the human discovery of laws that can predict future outcomes and which hence have a *consequential* nature (in the sense described above).

If the ‘power’ language of the *Enquiry* is indeed intended to be thus open-minded, then it need not indicate any commitment to *powers in objects*, but only—in a sense—to *objective powers*, powers that are real and not mind-dependent. Accordingly, when Hume talks of the ‘powers and forces’ of objects, he can be understood as referring to those characteristics—typically unknown and quite likely quantitative—of both individual objects and their situations that determine their behaviour in accordance with the appropriate laws of nature. What then actually occurs will be a holistic result of the entire array of ‘powers and forces’ operative in the situation, quite different from the simplistic ‘inference from one object to another’ suggested by his talk of ‘constant conjunction’, and significantly more complicated than the scenarios envisaged in the *Enquiry* footnotes discussed in Section 1.12, where an object’s behaviour is straightforwardly dependent on its own ‘power’. But even this, after all, does not represent any wholesale change in approach from

⁴³ Consider, for example, wavelengths of electromagnetic radiation and their interference, in which there will often be no straightforward correlation between quantitative factors and the magnitude of the effect.

Hume's initial presentation of his theory in the *Treatise*, for he was keen from the start to make clear that causal connexion is not to be understood as a property of a single object (*T* 1.3.2.5–6), or even of a cause–effect pair (*T* 1.3.14.15), but rather as involving a relation between kinds of object in the form of a constant conjunction of the cause-kind with the effect-kind (*T* 1.3.14.16), or some more complex relation as envisaged by his rules by which to judge of causes and effects (*T* 1.3.15). Moreover, when presenting his definitions of cause, in both the *Treatise* and the *Enquiry* he draws special attention to this aspect of his theory, noting that identification of a cause can only be made in terms that are 'foreign' to it rather than intrinsic (*T* 1.3.14.31; *EHU* 7.29).⁴⁴

To conclude, therefore, both the early and the mature Hume can wholeheartedly agree that there are objective causal powers in nature, in the sense of stable causal relationships that are mind-independent and subject to truth and falsehood.⁴⁵ Some of what he says in the *Enquiry* also seems to endorse attribution of quantifiable powers to individual objects, in cases where we suppose there to be some 'circumstance of an object, by which the degree or quantity of its effect is fixed and determined' (*EHU* 7.29 n17). But the latter will apply only in straightforward cases where 'the effect is the measure of the power', and in more complex scenarios there is unlikely to be any simple correlation between some quantifiable feature of an object and the effect that results from its action. Hence a Humean theory ought to treat attribution of powers to individual objects as dispensable. Fortunately, this accords very well with the spirit of Hume's texts, which, as we have seen, take causal properties to be relational and as arising from patterns of interaction between objects rather than from their individual properties. The upshot is that a consistent Humean—and most likely the historical Hume himself—would be firmly committed to *objective powers*, but not necessarily to *powers in objects*.⁴⁶

⁴⁴ Perhaps this relational aspect of Hume's theory also made him relatively comfortable with saying that necessity is 'in the mind', since it was then a Lockean commonplace that relations are mind-dependent. Locke (*Essay* II.xxv.8, 322) states that 'Relation... [is] not contained in the real existence of Things, and Ephraim Chambers (1738, s.v. 'Relation, *Relatio*')—which takes much of its content from the *Essay*—echoes this: 'relation, take it as you will, is only the mind; and has nothing to do with the things themselves.' The *Treatise* sometimes seems to follow this orthodoxy, for example by suggesting that a relation 'arises merely from the comparison, which the mind makes' (*T* 1.2.4.21). But more generally, Hume treats relations as thoroughly objective (see Millican 2017, 7–8).

⁴⁵ An issue that Hume does not consider is the possibility of multiple theories that are empirically equivalent, so that no one theory is uniquely favoured by the observational data. It seems plausible that, if he had taken this possibility seriously, he would have been inclined towards an instrumentalist approach to the relevant 'powers and forces', preserving the possibility of truth and falsehood even for rival, but equivalent, theories.

⁴⁶ For helpful comments on an earlier draft, I am very grateful to Henry Merivale and Hsueh Qu.

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