

Oxford Lectures on David Hume, 2024-25

David Hume, 1711-1776



4. Hume's Argument concerning Induction, and More on Belief

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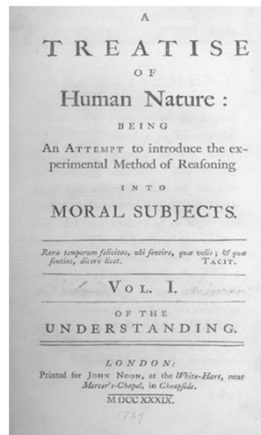
Last Time ...

- We reviewed Hume's faculty psychology, within which some of his key arguments are framed.
- We discussed his logical theory, based overtly on a (dubious) theory of relations in the *Treatise*, but more fundamentally on the Conceivability Principle, which grounds "Hume's Fork" in the *Enquiry*.
- Hume inherits from Locke the distinction between *demonstrative* and *probable* reasoning, roughly equivalent to the modern distinction between (informally) *deductive* and *inductive* inferences.
 - But Hume adapts this terminologically, by distinguishing between *proofs* and (mere) *probabilities*.

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The Role of *Treatise* 1.3.6



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T 1.3.6: "Of the inference from the impression to the idea"

- This section contains the first presentation of Hume's famous argument concerning causal reasoning (or "induction"), which apparently raises the notorious "problem of induction".
- In context, however, this topic is reached as a "neighbouring field" in Hume's search for the origin of the idea of causal necessity, answering the question raised at T 1.3.3.9:
Why we conclude, that such particular causes must necessarily have such particular effects, and why we form an inference from one to another.

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Causal Inference Is Not A Priori (T)

- Hume starts by arguing that causal inference cannot be based only on surveying the objects concerned and contemplating our ideas of them, because we can clearly *conceive* of things coming out differently (T 1.3.6.1).
 - Here he evinces the [common, but debatable] assumption that *any a priori inference would have to yield complete certainty*.

"'Tis therefore by EXPERIENCE only, that we can infer the existence of one object from that of another" (T 1.3.6.2).

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Experience and Constant Conjunction

- The kind of experience on which causal inference is based is repeated patterns of one thing, *A*, followed by another, *B*:
"Without any farther ceremony, we call the one cause and the other effect, and infer the existence of the one from that of the other." (T 1.3.6.2)
- Hume now announces major progress in his search for the origin of the idea of necessary connexion, with a comment which clearly refers back to T 1.3.2.11, and is best understood by comparing the texts:

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“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 if of much greater importance, than any of the other two above-mention'd” (T 1.3.2.11)

“Thus in advancing we have insensibly 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 [causation], in order to discover the nature of that *necessary connexion*, which makes so essential a part of it.” (T 1.3.6.3)

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■ So at T 1.3.2.11, Hume is saying that *causation* requires *necessary connexion* in addition to [single-case] *contiguity* and *succession*. At T 1.3.6.3, he is saying that *causation* requires *constant conjunction* in addition – i.e. the *contiguity* and *succession* have to be *repeated*, rather than being single-case.

■ How can mere repetition give rise to the new idea of necessary connexion? Hume comments that this seems mysterious, but goes on to say (T 1.3.6.3):

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

– This anticipates T 1.3.14.20, where inference is what gives rise to *the impression of necessary connexion*.

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A Question of Faculties

■ Since causal reasoning from the impression of cause *A* to the idea of effect *B* is “founded on past *experience*, and on our remembrance of their *constant conjunction*” (T 1.3.6.4),

“the next question is, whether experience produces the idea [i.e. expectation of *B*] 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?”

■ Hume famously goes on to argue that reason (i.e. the understanding) cannot ground this inference, concluding that it must be due to the imagination.

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Hume's Alternative Explanation

■ We'll learn that neither demonstrative nor probable reason can ground inductive inference; so instead, it must arise from associative principles of the imagination [specifically, the principle which Hume later – at T 1.3.7.6 – calls *custom*):

“When the mind, therefore, passes from the idea or impression of one object [the cause *A*] to the idea or belief of another [the effect *B*], it is not determin'd by reason, but by certain principles, which associate together the ideas of these objects, and unite them in the imagination.”

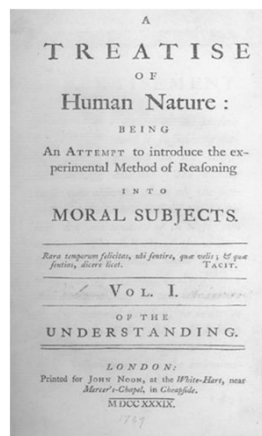
(T 1.3.6.12)

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The Argument Concerning Induction (T, A, and E)



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The Famous Argument (x3)

■ In *Treatise* 1.3.6, Hume doesn't seem fully to appreciate his new argument's significance – it is mainly a staging post in his search for the origin and nature of our idea of causation, and is not explicitly presented as sceptical in nature.

■ In the *Abstract* of 1740 its role is more general, and it takes a much more prominent position, as the centre-piece of Hume's “Chief Argument”.

■ The fullest and clearest version is in the *Enquiry*, Section 4, whose title acknowledges that it raises “Sceptical Doubts” (moreover the *Enquiry* had 11 editions, the *Treatise* and *Abstract* just one each).

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A Major Structural Change

- In *Treatise* 1.3.6, Hume's focus throughout is on a paradigm *causal inference*, whereby observation of *A* (the cause) leads to expectation of *B* (the effect). This is "the inference from the impression to the idea" of the section's title.
- In the *Abstract* and *Enquiry*, Hume aims to reveal the basis of "all reasonings concerning *matter of fact*", and starts by arguing that these "are founded on the relation of cause and effect" (A 8, E 4).
 - This significantly improves the argument, because now any conclusion drawn about causal inference automatically applies to all "reasoning concerning matter of fact", i.e. all *probable* inference (in the broad Lockean sense).

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Causal Inference Is Not A Priori (A, E)

- In the *Abstract* and *Enquiry*, Hume imagines Adam (or ourselves, prior to experience), trying to predict the result of a billiard-ball collision:



how could he possibly make any prediction at all in advance of experience?



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- This again strengthens Hume's argument, clarifying that he's not relying on mere *conceivability* that an inference might fail, but emphasising (far more than T 1.3.6.1) the *arbitrariness* of any conclusion:

"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" (A 11)

"Were any object presented to us, and were we required to pronounce concerning the effect, which will result from it, without consulting past observation; after what manner, I beseech you, must the mind proceed in this operation? It must invent or imagine some event, which it ascribes to the object as its effect; and it is plain that this invention must be entirely arbitrary. ..." (E 4.9)

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The Need for Extrapolation

- So all inference to matters of fact beyond what we perceive or remember is based on causation, and our knowledge of causal relations (since it cannot be *a priori*) must come from experience.
- But learning from experience clearly takes for granted that observed phenomena provide a (positive) guide to unobserved phenomena.
- So we have to be able to *extrapolate* from observed to unobserved on the assumption that they resemble. Indeed this is what we do all the time, but is there a *rational* basis for doing so?

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UP: The Uniformity Principle

- Hume then focuses on the principle (UP) presupposed by such extrapolation:
 - "If reason determin'd us, it wou'd proceed upon that principle, *that instances of which we have had no experience, must resemble those of which we have had experience, and that the course of nature continues always uniformly the same.*" (T 1.3.6.4)
 - This seems *conditional*: IF reason is involved, THEN the inference must be based on this principle.
 - Elsewhere, it's unconditional: "probability is founded on the presumption of a resemblance ..." (T 1.3.6.7)

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UP in the *Enquiry*

- In the *Enquiry* UP is less explicitly stated:
 - We "put trust in past experience, and make it the standard of our future judgment ... all our experimental [experiential] conclusions proceed upon the supposition, that the future will be conformable to the past". (E 4.19)
 - No suggestion of conditionality here (likewise E 5.2: "in *all* reasonings from experience, *there is a step taken by the mind*" corresponding to UP).
 - It's vaguer than the original *Treatise* UP, and so more plausible: we expect the future to "resemble" (E 4.21) the past, but not to copy it exactly.

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The Role of the Uniformity Principle

- Hume need not be suggesting that we think of UP *explicitly* when making inductive inferences (and *T* 1.3.8.13 says we mostly don't: *such inferences are typically immediate and unreflective*).
- Rather, in making an inductive inference, we *manifest* the assumption of UP:
 - Inferring from observed to unobserved is *ipso facto* treating "the past [as a] rule for the future" (*E* 4.21)
 - Hence the question arises: *can this assumption of UP be founded on reason* (and if not, what is the alternative explanation for why we make it)?

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Can UP be Founded on *Argument*?

- After stating UP in the *Treatise*, Hume immediately continues:

"In order therefore to clear up this matter, let us consider all the arguments, upon which such a proposition may be suppos'd to be founded; and as these must be deriv'd either from *knowledge* or *probability*, let us cast our eye on each of these degrees of evidence, and see whether they afford any just conclusion of this nature." (*T* 1.3.6.4)

- By *knowledge*, Hume means *demonstration*, as becomes evident in the next sentence.

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- Both forms of argument for UP are ruled out, *demonstration* by the Conceivability Principle:

"We can at least conceive a change in the course of nature; which ... proves, that such a change is not absolutely impossible [and thus yields] a refutation of any pretended demonstration against it." (*T* 1.3.6.5)

- And *probable* argument by circularity:

"probability ... is founded on the presumption of a resemblance betwixt [observed and unobserved]; and therefore 'tis impossible this presumption can arise from probability." (*T* 1.3.6.7)

(At *T* 1.3.6.6-7 Hume needs the lemma that probable inference is causal and hence dependent on UP: diagram below shows duplication in *Treatise* version)

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The *Enquiry* is More Thorough

- At *T* 1.3.6.4 and *A* 14, Hume assumes that *demonstration* and *probable inference* are the only possible foundations for UP. In the *Enquiry*, he first rules out *sensation* and *intuition*:

"there is no known connexion between the sensible qualities and the secret powers; and consequently, ... the mind is not led to form such a conclusion concerning their constant and regular conjunction, by any thing which it knows of their nature." (*E* 4.16)

"The connexion ... is not intuitive." (*E* 4.16)

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Argument Summary

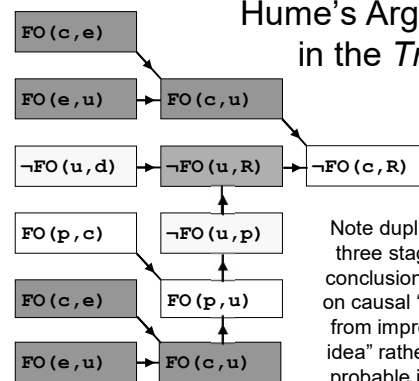
- The logical structure of the argument can be represented in outline using the "founded on" relation (FO), together with:

p Probable/factual inference to the unobserved
 c Causal reasoning
 e (Reasoning from) Experience d Demonstration
 u Uniformity Principle i Intuition
 R Reason s Sensation

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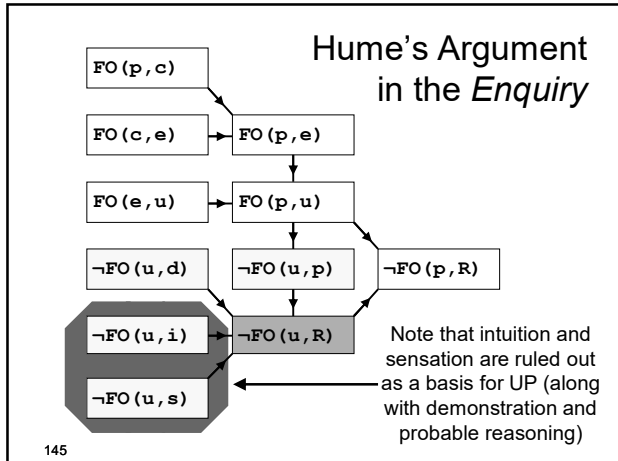
Hume's Argument in the *Treatise*



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“Sceptical Doubts ...” (*Enquiry* 4)

- Recall Hume’s 1745 statement:

“It is common for Philosophers to distinguish the Kinds of Evidence into *intuitive, demonstrative, sensible, and moral*”.
- His argument in the *Enquiry*:
 - Starts by showing that all factual inference is founded on the Uniformity Principle;
 - Then goes on to undermine all four possible evidential foundations for UP;
 - This looks very much like a sceptical strategy, as the title of the section suggests (in contrast to the *Treatise*, which evinces no such intent).

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The “Sceptical” Conclusion

“even after experience has inform’d us of [causal] *constant conjunction*, ’tis impossible for us to satisfy ourselves by our reason, why we shou’d extend that experience beyond those particular instances, which have fallen under our observation.” (*T* 1.3.6.11, cf. 1.3.12.20)

“even after we have experience of the operations of cause and effect, our conclusions from that experience are *not* founded on reasoning, or any process of the understanding” (*E* 4.15)

“in all reasonings from experience, there is a step taken by the mind, which is not supported by any argument or process of the understanding” (*E* 5.2)

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Epistemology, or Cognitive Science?

- Does Hume view his discussion of induction, and its upshot, as being *epistemological* (concerning the possibility of good reasons for inductive belief) or *psychological* (concerning how our mind works)?
- The plausible answer here is: *“both!”*:
 - Hume does indeed draw conclusions about how our mind works in making inductive inferences.
 - But his argument proceeds by *ruling out* the competing hypothesis that we suppose continuing uniformity on the basis of having good evidence for it. It shows that *we do not in fact* base our inferences on “reason”, because *it would be impossible for us to do so*.

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But Is Hume Himself Sceptical?

- In the final section of the *Enquiry*, Hume revisits his argument of Section 4, apparently putting it in the mouth of “the sceptic”:

“The sceptic ... seems to have ample matter of triumph; while he justly insists ... that we have no argument to convince us” of UP (*E* 12.22)
- Hume then (at *E* 12.23) goes on to *answer* the sceptic, suggesting that his extreme doubts are pointless, and ultimately advocating (in the final Part 3 of Section 12) a form of “mitigated scepticism” which looks rather like scientifically informed common sense.

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- Summarising “the sceptic’s” argument:
 1. All inference to the unobserved depends on UP.
 2. UP cannot be given any independent (e.g. non-circular) epistemological foundation.

∴ We should give up inference to the unobserved.
- This way of arguing emphasises the sceptical premise 2, but Hume’s response to “the sceptic” implicitly emphasises instead premise 1:
 1. All inference to the unobserved depends on UP.

∴ We should take UP for granted.
- We shall be saying more about Hume’s attitude to scepticism in due course ...

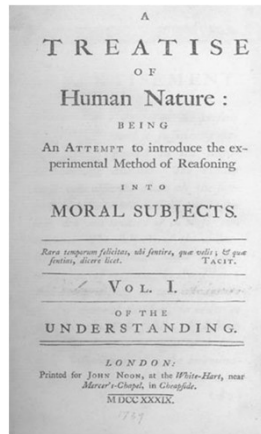
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More on Belief, Association, and Probability



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Custom and Belief

- We have already seen (in Lecture 2) some of how Hume proceeds after *Treatise* 1.3.6, having identified *custom* as the crucial mechanism that determines our belief in the unobserved.
 - Paradigmatically, having seen *A* followed by *B* repeatedly, when we next see *A*, we automatically expect *B*. The *force and vivacity* of the *impression* of *A* is communicated through the customary associational link from *A* to *B*, thus changing our idea of *B* into a *lively idea* (i.e. a belief that *B* will occur).
- *T* 1.3.7.5 defines belief accordingly, after which Section 1.3.8 discusses “the causes of belief”, and presents Hume’s hydraulic theory (slides 44, 46).

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- In the *Treatise*, Hume expresses the upshot of his theory in terms that are (misleadingly) hyperbolic:

“Thus all probable reasoning is nothing but a species of sensation. ... When I am convinc’d of any principle, ’tis only an idea, which strikes more strongly upon me. When I give the preference to one set of arguments above another, I do nothing but decide from my feeling concerning the superiority of their influence.” (*T* 1.3.8.12)

- The *Enquiry* also stresses the involuntariness of belief:

“belief is the necessary result of placing the mind in such circumstances. It is an operation of the soul, when we are so situated, as unavoidable as to feel the passion of love, when we receive benefits; ... All these operations are a species of natural instincts, which no reasoning ... is able, either to produce, or to prevent.” (*E* 5.8)

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A Puzzle in *Treatise* 1.3.9

- At *T* 1.3.9.2, Hume notes that *causation* is not the only associative relation that conveys force and vivacity to a related idea: *resemblance* and *contiguity* do too (cf. *T* 1.1.4.1). And he asks why only *causation* – of the three – generates *belief*.
- Hume proposes a neat associative answer:
 - §3-4: causal inference enables us to construct a *system of realities* that we combine with the realities that we perceive or remember.
 - §6-7: *resemblance* and *contiguity* lead our minds capriciously in various directions; causation presents objects that “are fixt and unalterable” (quotes follow).

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“There is no manner of necessity for the mind to feign any *resembling* and *contiguous* objects; and if it [does], there is a little necessity for it always to confine itself to the same, ... [N]othing but pure *caprice* can determine the mind to form it; and that principle being fluctuating and uncertain, ... it [cannot] operate with ... force and constancy. The mind forsees and anticipates the change; and ... feels the looseness of its actions, and the weak hold it has of its objects.” (*T* 1.3.9.6)

The relation of *cause and effect* has all the opposite advantages. The objects it presents are fixt and unalterable. The impressions of the memory never change in any considerable degree; and each impression draws along with it a precise idea, which takes its place in the imagination, as something solid and real, certain and invariable. The thought is always determin’d to pass from the impression to the idea, and from that particular impression to that particular idea, without any choice or hesitation.” (*T* 1.3.9.7)

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Religion and the Imagination

- *T* 1.3.8.4 The “mummeries” of Roman Catholicism enhance belief in saints (etc.) by perception of statues and associational *resemblance*.
- *T* 1.3.8.6 Relics have a similar effect, associated to saints through *causation*.
- *T* 1.3.9.9 *Contiguity* enhances the belief of pilgrims to Mecca or the Holy Land.
- *T* 1.3.9.12 *Credulity* of others’ testimony is based in custom (cf. *Enquiry* 10, “Of Miracles”).
- *T* 1.3.9.13-15 Lack of *resemblance* undermines belief in the afterlife; “in matters of religion men take a pleasure in being terrify’d”, showing it’s not really believed.
- *T* 1.3.9.16-19 *Custom* can create beliefs by “education” (i.e. repetitive indoctrination). “As liars, by the frequent repetition of their lies, come at last to remember them”.

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T 1.3.10: “Of the Influence of Belief”

- §3: A belief (unlike “an idle fiction”) has a strong influence on our passions and actions, like that of an impression, which corroborates Hume’s claim that belief is characterised by greater force and vivacity.
- §4: This also explains why the passions often enhance our beliefs (e.g. people are more likely to believe “quacks” if they present their claims dramatically).
- §§5-7: Poets give their work “an air of truth”, and make reference to familiar myths “to produce a more easy reception in the imagination”. Vividness is “convey’d, as by so many pipes or canals”, to related ideas.
- §11-12: *General rules* can help to prevent our credulity being carried away by lively eloquence. [Added 1740]

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T 1.3.11: “Probability of Chances”

- §2: Locke divides “human reason into *knowledge* and *probability*”. But “One wou’d appear ridiculous, who wou’d say, that ‘tis only probable the sun will rise to-morrow, or that all men must dye”. So it fits better with common language if we talk of “probability” only in cases of genuine uncertainty (e.g. where the evidence is mixed), and use the word “proof” to talk of “those arguments, which are deriv’d from the relation of cause and effect, and which are entirely free from doubt and uncertainty”.
- §§9-13: Gives the most detailed account of Hume’s hydraulic theory of probabilistic judgment.

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T 1.3.12: “Probability of Causes”

- §1: “what the vulgar call chance is nothing but a secret and conceal’d cause”. *Hume is a determinist*.
- §2: Probable judgment is derived from custom, i.e. “the association of ideas to a present impression”. Strength of association builds up gradually as more instances are observed, even if *A* is always followed by *B*.
- §§8-12: The hydraulic theory again – after inconstant experience, the force and vivacity of our inductive expectation (on seeing *A*) is divided between the ideas of the various experienced effects (*B*, *C*, *D* etc.) in proportion to their past observed frequencies.
- §25: Reasoning from *analogy* involves weakening of *resemblance* (rather than of the *union*, i.e. constancy).

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- If people find this theory hard to accept ...

“Let men be once fully perswaded of these two principles, *That there is nothing in any object, consider’d in itself, which can afford us a reason for drawing a conclusion beyond it*; and, *That 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*; I say, let men be once fully convinc’d of these two principles, and this will throw them so loose from all common systems, that they will make no difficulty of receiving any, which may appear the most extraordinary.” (T 1.3.12.20)

- This may suggest that Hume has belatedly noticed the potentially dramatic sceptical impact of his argument concerning induction!

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Science: Seeking Hidden Causes

“The vulgar ... attribute the uncertainty of events to such an uncertainty in the causes, as makes them often fail of their usual influence, ... But philosophers observing, that almost in every part of nature there is contain’d a vast variety of springs and principles, which are hid, by reason of their minuteness or remoteness, find that ‘tis at least possible the contrariety of events may not proceed from any contingency in the cause, but from the secret operation of contrary causes. This possibility is converted into certainty by farther observation, when they remark, that upon an exact scrutiny, a contrariety of effects always betrays a contrariety of causes, and proceeds from their mutual hindrance and opposition. ... From the observation of several parallel instances, philosophers form a maxim, that the connexion betwixt all causes and effects is equally necessary, and that its seeming uncertainty in some instances proceeds from the secret opposition of contrary causes.”

(T 1.3.12.5; E 8.13 is almost *verbatim*)

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T 1.3.13: “Unphilosophical Probability”

- Some types of reasoning from “the same principles” (i.e. custom) are viewed with less respect:
 - §§1-2: Giving recent instances (which can be either observed *causes* [1] or *effects* [2]) more weight than remote instances, because they are more vivid in the memory;
 - §3: Fading of conviction through lengthy reasoning;
 - §7: “General rules” leading to PREJUDICE, e.g. continuing to believe “An *Irishman* cannot have wit, and a *Frenchman* cannot have solidity”, even given clear counterexamples.
 - §§9-12: We can avoid such prejudice by using higher-level *general rules* (which are “attributed to our judgment; as being more extensive and constant”) to counter our prejudices (which are attributed “to the imagination; as being more capricious and uncertain”, T 1.3.13.11).

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