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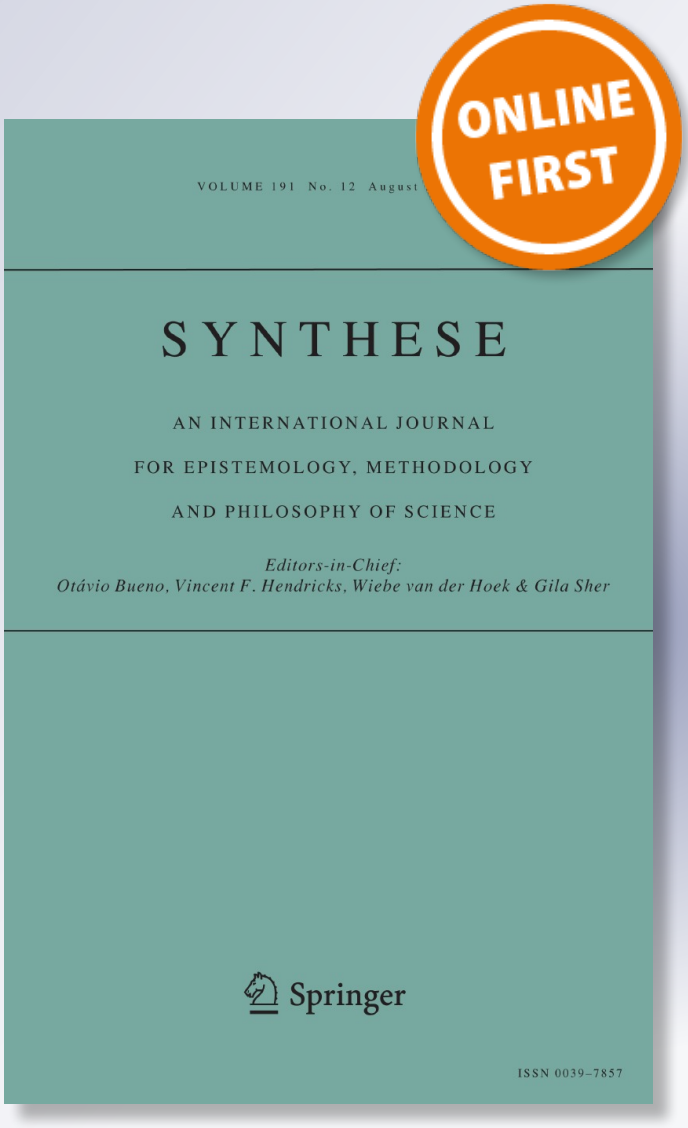

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Hume's definitions of 'Cause': Without idealizations, within the bounds of science

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Abstract Interpreters have found it exceedingly difficult to understand how Hume could be right in claiming that his two definitions of 'cause' are essentially the same. As J. A. Robinson points out, the definitions do not even seem to be extensionally equivalent. Don Garrett offers an influential solution to this interpretative problem, one that attributes to Hume the reliance on an ideal observer. I argue that the theoretical need for an ideal observer stems from an idealized concept of definition, which many interpreters, including Garrett, attribute to Hume. I argue that this idealized concept of definition indeed demands an unlimited or infinite ideal observer. But there is substantial textual evidence indicating that Hume disallows the employment of idealizations in general in the sciences. Thus Hume would reject the idealized concept of definition and its corresponding ideal observer. I then put forward an expert-relative reading of Hume's definitions of 'cause', which also renders both definitions extensionally equivalent. On the expert-relative reading, the meaning of 'cause' changes with better observations and experiments, but it also allows Humean definitions to play important roles within our normative practices. Finally, I consider and reject Henry Allison's argument that idealized definitions and their corresponding infinite minds are necessary for expert reflection on the limitations of current science.

Keywords Ideal observer · Experts · Rule following · Fictions · Garrett · Allison

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1 Introduction

Hume puts forward two definitions of 'cause' in the *Treatise* and in the first *Enquiry.*[1] In the *Treatise,* he maintains that the definitions "are only different, by their presenting a different view of the same object" and that "there is but one kind of cause" (T 1.3.14.31-3). In the *Enquiry*, he claims to consider the *same* relation of cause in "two lights" (EHU 7.29), and indicates that the definitions are "at bottom the same" (EHU 8.27).

> The first *Treatise* definition, (henceforth C1), is as follows:[2]
> 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. (T 1.3.14.31)

The second definition, (henceforth C2), is introduced with the following explanation: "If this [the first] definition be esteem'd defective, because drawn from objects foreign to the cause, we may substitute this other definition in its place, *viz"*:

> 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)

Most interpreters consider the two definitions to be fundamentally different. In a well known paper, J. A. Robinson not only points out that the definitions differ in meaning, but asserts that they are not even extensionally equivalent. As Robinson interprets it, C1 "determines a class of ordered pairs (x, y) of particular occurrences, each pair having the completely objective property of being *an instance of a general uniformity*." C2, on the other hand, "determines a class of ordered pairs (x, y) of particular occurrences by means of a property which is defined quite essentially in terms of certain *mental* phenomena." Because the objects identified in C1 "in no way depend upon anyone's having observed either x or y to have occurred", but the objects identified by C2 are essentially defined in terms of the observed, the definitions fail to be extensionally equivalent.[3] In other words, the definitions fail to be coextensive because the "all" in C1 includes, according to Robinson, both observed and unobserved regularities. But the scope of C2 cannot extend beyond the observed because it makes an essential reference to an observer. In turn, unrepresentative regularities or observed constant conjunctions that fail to instantiate a universal generalization might be included under C2, but not under C1, since C1 only includes instances of exceptionless regularities. Robinson's own position, like that of many others, is that only the first is the definition

[1] References to the *Treatise* are to Hume (2011), hereafter cited as "T" followed by Book, part, section, and paragraph numbers. References to the first *Enquiry* are to Hume (2006), hereafter cited as "EHU" followed by section and paragraph.

[2] In the *Treatise,* Hume offers two definitions twice, within a few pages of each other, and in the *Enquiry* he puts forward a very similar version of the *Treatise* definitions. In this paper, I assume, as most scholars do, that the variations in the different versions are not significant. Because the *Treatise* is the central text of this paper, I employ in my discussions the (first) *Treatise* version of the definitions.

[3] Robinson (1966), p. 131.

of 'cause' and the one that Hume endorses.[4] Others favor the second definition because it accommodates the element of necessity, which Hume explicitly identifies as essential to the idea of cause.[5] And yet others reject both, arguing that Hume endorses neither of the definitions.[6]

Don Garrett, however, has offered an influential defense of the definitions as necessarily extensionally equivalent. Garrett argues that Hume's definitions only fail to be extensionally equivalent because we are giving C1 an *absolute* reading and C2 a *subjective* reading. We tend to read C1 as including both observed and unobserved regularities, whereas we are inclined to read C2 subjectively by indexing the determination of the mind to a particular individual, one who responds only to observed regularities. But if we read both definitions in the same way, either subjectively or absolutely, they *are* extensionally equivalent. Thus C1 read subjectively includes only the regularities observed by a particular individual who is the subject of C2. C2 read absolutely calls for an *ideal observer* that observes *all* representative instances of constant conjunctions. Garrett further defends the view that the *absolute* reading, the reading that calls for an ideal observer, is the one Hume would endorse.

In this paper, I criticize Garrett's interpretation together with Henry Allison's defense of Garrett's reading.[7] The core of my criticism concerns the appeal to idealizations in the reading of Hume's definitions of 'cause.' I argue that Garrett's ideal observer must be unlimited or quasi-infinite to render the definitions coextensive within the absolute reading. I argue also that the absolute reading of the *first* definition is an idealized concept of definition. Relying on a number of crucial texts from the *Treatise,* I conclude that Hume does not endorse the employment of idealizations in general within the sciences. Thus Hume would reject *both* the idealized, unlimited observer, and the idealized concept of definition that generates the theoretical demand for an unlimited observer. Finally, I defend a subjective, but in particular, an *expert-relative* reading of the definitions. The expert-relative reading allows Humean definitions to play important roles within our normative practices, and, contra Allison, it also makes room for the possibility of the reflection of experts on the limitations of their concepts.

2 The meaning of 'Cause'

Garrett's interpretation of Hume's definitions of 'cause' relies centrally on *Treatise* 1.1.7, "Of abstract ideas". In that section, Hume explains that the human mind is only

[4] The actual definition of 'cause', according to Robinson, says that two objects are causally related when they instantiate event types which are universally connected. The second definition, according to Robinson, is merely a *statement* of an empirical psychological thesis that the observation of pairs included in the first definition is sufficient to induce their association in the mind. For Hume's explicit endorsement of the first definition see T 1.3.6.14-15; EHU 7.27.

[5] See, for instance, T 1.3.2.9-10.

[6] In the *Treatise* Hume seems sympathetic to the objection that both definitions are "defective" because "drawn from objects foreign to the cause" (T 1.3.14.32). Both definitions seem also incompatible with Hume's references to "secret powers" or "ultimate principles [that] bind causes and effects together," of which we are forever ignorant. See, for instance, T 1.3.14.8-9; T 1.3.14.29-31; T 1.4.7.6-9. For a helpful discussion of all of these different positions, and their problems, see Garrett (1997), pp. 96–117.

[7] Allison (2008).

capable of forming *particular* ideas and that therefore, generality cannot be explained as a function of general terms standing for abstract ideas. Instead, Hume explains that when we employ a general term there is a particular idea before the mind, plus what Garrett has helpfully dubbed the "revival set", which includes other particular ideas that the general term is associated with and can be prompted by the mind when needed.

In Hume's account, revival sets are subject-relative: what goes into a given revival set depends on whose revival set we are talking about. The revival set associated with a four year old's term 'dog' is quite different from that of a cynologist. The objects that the four year old considers to be dogs differ widely from the objects that the cynologist identifies as dogs. The same is true of 'cause'. Consider what an ordinary individual, Steve, takes to be instances of causal relations. The objects in Steve's revival set of 'cause' will be regularities that he has learned about, either through personal observation or testimony. According to Hume's account, exposure to regularities leads the mind to cognize the objects as causally connected, a process which involves the projection of necessity onto the regularities. Thus the objects in Steve's revival set of 'cause' are all pairs that Steve takes to be necessarily connected. Two features of Steve's revival set of 'cause' are important for our purposes: First, it includes only objects Steve knows about, either through direct observation or through testimony. It does not include regularities which he has neither observed nor learned about. Second, it (likely) includes non-representative samples, or instances of regularities, which, unbeknownst to Steve, fail to be universal.

Garrett maintains that we can give a reading of both C1 and C2 that is relative to a particular individual like Steve. This is the *subjective* reading of the definitions. Understood subjectively, the definitions are extensionally equivalent. C1 refers to the regularities that Steve has encountered, and C2 refers to the necessity that Steve projects onto (only) those regularities. Although the notion of a "subjective" definition sounds odd to our ears, Hume's account of meaning in *Treatise* 1.1.7 is indeed subject-relative. *Treatise* 1.1.7 does not offer what we might call a *theory of meaning,* or a theory of the meaning or reference of *terms*. The account put forward in that section is instead an account of what human *speakers* or *thinkers* mean, in terms of what goes on in their minds, when they employ a general term. Hume openly admits that his account is "imperfect [but] may serve all the purposes of reflection and communication" (T 1.1.7.2). Thus given the nature of Hume's account in *Treatise* 1.1.7, what is awkward is not Garrett's proposal of a "subjective" reading, but his suggestion that *Treatise* 1.1.7 can ground an absolute reading of the definitions.

Indeed, the goal of providing an absolute interpretation of both definitions of 'cause' with the tools designed for a subject-dependent account of meaning can only be satisfied by postulating an *ideal observer.* The ideal mind will observe exactly the objects that the first definition of 'cause' includes when understood absolutely: *all* instances of exceptionless regularities, observed and unobserved. This is the way Robinson interprets C1, as identifying pairs that have "the completely objective property of being *an instance of a general uniformity*."[8] According to Garrett, this is the way most of us understand C1, and the interpretation of C1 that Hume would endorse.

[8] Robinson (1966), p. 131.

In Garrett's account, it is the theoretical tools of *Treatise* 1.1.7, in particular, the tool of a revival set, that do the work of rendering the definitions coextensive, either subjectively or absolutely. In the subjective reading, C1 is adjusted to the "natural" subject of C2, namely any one person; the objects in C1 are the objects that the subject of C2 observes. In the absolute reading, it is C2 that has to be adjusted to comprehend the objects of C1, namely all instances of general uniformities, observed and unobserved, as Garrett puts it, at "*all* times and *all* places".[9] Now, who could this "subject" be? Garrett characterizes this observer or ideal mind as "one who accurately views all and only representative samples, has a well-developed human inferential mechanism, and suffers from no interfering bias, such as those deriving from religion or eccentricities of the imagination."[10] With the ideal observer in place both definitions can be read absolutely, and are also extensionally equivalent.

Thus, we have not one but *two* solutions to the problem of extensional equivalence that has afflicted Hume's definitions of 'cause'. Which, if any, is Hume's? Garrett claims he has "little doubt that he [Hume] would ultimately prefer the absolute reading, at least for most purposes".[11] Henry Allison, who aligns himself with Garrett's overall interpretation, rejects altogether the subjective reading as Hume's and insists on the absolute one. The reasons they cite for attributing the absolute reading to Hume are similar. Garrett first motivates the absolute reading by noting that Hume is, after all, offering *definitions* of 'cause'. Consider the following passage:

> I have argued that when one seeks to provide a Humean definition of a term signifying an abstract idea, one seeks to convey the ability to call up any of the members of the appropriate set of ideas associated with that term. And I defined the "revival set" of a term as the set of ideas that is appropriate to convey for a successful Humean definition. But what exactly is the membership of that set? Is it the set of ideas that I, as the definer, am actually accustomed to revive when I hear the term in question—a set that thus constitutes my own present representation of the causal relation—even though there are members in that set that I would delete and other ideas that would add, upon greater experience and reflection? Or is it rather the set of ideas that I *would* revive if I actually had **greater or unlimited** experience and reflection?[12] (my boldface)

Garrett then defends the absolute reading by pointing out three of its advantages:

> […] on the absolute reading, C2 implies neither (i) that objects observed to be conjoined in unrepresentative samples are always real causes, nor (ii) that the existence or non-existence of a causal relation is relative to individual minds, nor (iii) that there would be no causation at all unless there were minds. However, these are all implications of the subjective reading of C1, just as much as they are implications of the subjective reading of C2. Thus, what originally appeared as objections to the view that Hume endorses C2 now become, instead, reasons

[9] Garrett (1997), p. 109.

[10] Garrett (1997), p. 108.

[11] Garrett (1997), p. 109.

[12] Garrett (1997), pp. 109–110.

> to think that he would ultimately prefer the absolute readings of both definitions over their subjective counterparts….[13]

I shall return to a discussion of the second passage in the third section of this paper where I defend my own interpretation of the definitions. But the central issue in the first passage above is Hume's concept of definition. As Garrett understands it, the revival set of a Humean definition would not be the revival set of a definer like himself because his current revival set contains errors and is incomplete. Instead, the revival set of a definition is the set that the definer *would* revive with greater or unlimited experience and reflection. But, of course, there is fundamental difference between *greater* and *unlimited* experience and reflection, and for reasons that will emerge shortly, Garrett is forced to choose an *unlimited* ideal observer over one with simply *greater* experience and reflection.

Allison insists that the absolute reading with its ideal observer is necessary for two reasons: first, to accommodate unobserved regularities; second, as Allison writes, to "judge reflectively that the revival set that one happens to connect with a given term, for example, 'insect' is incomplete or otherwise defective, since it includes only the species that one has happened to encounter and, therefore, cannot encompass all insects." And he continues:

> To be sure, the need for something like an infinite mind does not arise at this point, since that of an entomologist would do quite nicely. Nevertheless, this is merely a stopgap, since the same problem will arise for the entomologist, and the idealizing process would seem to end only with the now familiar idea of a complete science, which again seems to require an idealized observer for whom this science exists.[14]

The theoretical concept of a "complete science" or the absolute concept of definition is necessary, Allison argues, for expert-reflection, for cognition of the limitations of our current concepts. Allison suggests that the possibility of this sort of reflection is crucial for science. My relation to an expert endows a non-expert like myself with the conceptual room necessary for consciousness of the limitations of my concept of 'insect'. But what conceptual space is there for the expert to reflect on and recognize her own limitations? Appealing to yet another expert, say a future one, only pushes the question. For Allison, only the absolute notion of a "complete science" can put an end to "the process of idealization." And given Hume's account of meaning, a complete science calls for "something like an infinite mind."

Although Garrett does not explicitly characterize his ideal observer as "something like an infinite mind", his reason for dismissing the revival set of a definer like himself commits him to such an idealized observer. If his own revival set is inadequate for conveying what he takes to be a Humean definition because it is defective and incomplete, appealing to the revival set of someone with *greater* experience and reflection leaves the original problem untouched. It seems that only a being with *unlimited* experience

[13] Garrett (1997), p. 112.

[14] Allison (2008), pp. 201–202.

and reflection can successfully convey what Garrett takes to be a Humean definition, namely an error-free and complete set.

Moreover, Garrett's characterization of his ideal observer as one that views "all and only representative samples" also commits him to an *unlimited* ideal observer. To observe all and only representative samples one first has to select, out of *all* samples, *only* the representative ones. But only "something like an infinite mind" could observe all samples. Perhaps the proposal is, however, that the set of "all and only representative samples" and its corresponding ideal observer are *postulations*. Thus we simply stipulate that the ideal mind observes all and only representative samples without having to select these samples from all the others. But then we would also have to postulate a different, un-Humean mechanism by which the mind projects necessity onto its objects, for in Hume's account such projection requires *repeated* exposure to conjunctions. Or if we don't want to postulate a different projective mechanism, we could instead, I suppose, postulate that this ideal observer just happens to project necessity onto the set that we postulate is available to him or her or it.

The fundamental problem with these postulations is not that we might be postulating our way out of a challenging interpretative problem; it concerns, instead, the question of *our representation* or cognition of these postulations. What in our mental geography corresponds to these postulations? Do we have an *idea,* a Humean idea, of the set of all and only representative samples, a set whose scope extends to "*all* times and *all* places"?[15] No, because if we did have an idea of this set, there would be no need to posit an *ideal* observer. Likewise, we fail to have an idea of this ideal observer. Indeed, as Allison openly acknowledges, the complete science and its corresponding ideal observer are the end products of *idealizing processes.*

It seems to me, then, that if we are going to attribute to Hume a reading of his definitions of 'cause' that essentially relies on the idealizations of a complete science and its corresponding ideal observer we ought to inquire into how Hume understands the processes or mechanisms that generate such idealizations. Most importantly, however, we ought to ascertain Hume's position or attitude towards the employment of such processes and their products. In particular, does Hume endorse the appeal to idealizations in the sciences?

3 Hume on idealizations

Allison maintains that Hume holds the theoretical resources to accommodate the idealization involved in the notion of an *infinite* mind. He writes: "in spite of its apparent incompatibility with the Copy Principle, there are precedents in Hume's thought for admitting such idealizations by viewing them as products of a propensity of the imagination".[16] Allison offers two examples. The first is from the *Treatise* and it concerns "the mathematician's futile quest for a standard of equality that transcends any sensible measure". The other is the idea of God Hume discusses in the *Enquiry*. There Hume writes: "The idea of God, as meaning *an infinite intelligent, wise, and good*

[15] Garrett (1997), p. 109.

[16] Allison (2008), p. 202.

Being, arises from reflecting on the operations of our own mind, and augmenting, without limit, those qualities of goodness and wisdom" (EHU 2.6-7). Commenting of this passage, Allison remarks: "setting aside the moral qualities, this augmentation gives us our idealized observer."[17]

I want to examine closely the texts Allison appeals to, starting with the *Treatise*. Allison claims that Hume "admits" of such idealizations. And it is true that Hume *acknowledges* the phenomenon of idealizations and their use in the sciences, in particular, in geometry; indeed he explains them in terms of certain mechanisms and propensities of the mind. But if we are going to employ idealizations to make sense of Hume's treatment of causation, if we are going to attribute to him the implicit reliance on the idealization of a quasi-infinite mind in his definitions of 'cause', then what we require is evidence that he *endorses* the use of idealizations in the sciences, that he considers idealizations as legitimate scientific tools. In fact, however, what we find is quite the opposite.

The tendency of the mind to idealize is a phenomenon that Hume recognizes as "very natural." He remarks: "nor is any thing more usual, than for the mind to proceed after this manner, with any action, even after the reason has ceas'd, which first determin'd it to begin" (T 1.2.4.24). And he illustrates with several examples, including the following:

> A musician finding his ear become every day more delicate, and correcting himself by reflection and attention, proceeds with the same act of the mind, even when the subject fails him, and entertains a notion of a compleat *tierce* or *octave,* without being able to tell whence he derives his standard. (T 1.2.4.24)

The continuous practice of correction leads the mind to posit an *end state* in which correction is no longer needed because it is perfect or complete. In his discussion of geometry, Hume describes the mental processes that terminate with the standard of perfect equality. The original source of our idea of equality is, he explains, a "particular appearance corrected by juxta-position or a common measure." Thus we start with the senses—say with two lines that appear equal in length. Closer inspection reveals that the lines are not exactly equal, one is slightly longer than the other, and thus we correct the difference. After a few corrections we suppose that "better magnifying instruments" would render the two lines even more equal, and this process leads ultimately to the supposition of absolute or perfect equality. "More equal" is merely a *stopgap* for the mind, as Allison put it, and the mind has a tendency to suppose the completion of the process, which, in this case, terminates with the notion of perfect equality.

The crucial question, however, is: what is Hume's attitude toward these very natural idealizations? In the case of equality, the case Allison appeals to, Hume refers to the perfect standard of equality as an "imaginary standard of equality", remarking that "the notion of any correction beyond what we have instruments and art to make, is a mere **fiction** of the mind, and **useless** as well as **incomprehensible**" (my boldface) (T 1.2.4.24). Commenting on geometry as a whole, Hume remarks: "the ideas which are

[17] Allison (2008), pp. 201–202.

most essential to geometry... are far from being exact and determinate". We correct our judgments by a "compass or common measure". And he continues:

> And if we join the supposition of any farther corrections, 'tis of such-a-one as is either **useless** or imaginary. In vain shou'd we have recourse to the common topic, and employ the supposition of a **deity, whose omnipotence** may enable him to form a perfect geometrical figure, and describe a right line without any curve or inflexion. As the ultimate standard of these figures is deriv'd from nothing but the senses and imagination, 'tis **absurd** to talk of any perfection beyond what these faculties can judge of; since the true perfection of any thing consists in its conformity to its standard. (my boldface) (T 1.2.4.29)

It appears that Hume does not endorse the employment of idealizations in the sciences. He refers to them as "mere fictions", as "useless as well as incomprehensible", as "useless or imaginary". He calls talk of perfection beyond what our faculties can judge of "absurd". And he explicitly rejects the supposition of a *deity* whose omnipotence will ground the perfect standards.

I should add that in the background of these *Treatise* passages stands Hume's resolute rejection of the doctrine of infinite divisibility of extension and time. Hume attacks this doctrine on several grounds. One such ground is the finitude of the human mind: "the capacity of the human mind is limited, and can never attain a full and adequate conception of infinity" (T 1.2.1.2). Hume also argues that we reason *falsely* when we judge that there are objects *infinitely* more minute than the ones that appear to the senses. He writes: "For as sound reason convinces us that there are bodies *vastly* more minute than those, which appear to the senses… false reason would perswade us, that there are bodies *infinitely* more minute" (T 1.2.4.24). What makes our reason *false* in this case is that "we clearly perceive, that we are not possess'd of any instrument or art of measuring, which can secure us from all error and uncertainty" (T 1.2.4.24).

Even if Hume did not explicitly criticize the employment of idealizations in the sciences, his undeniable rejection of the doctrine of infinite divisibility constitutes sufficient grounds for abandoning the interpretation that attributes to him reliance on an "unlimited" or quasi-infinite being. Hume cannot consistently endorse the appeal to an unlimited mind in the context of his definitions and at the same time deny the defender of infinite divisibility the use of this most convenient theoretical instrument. Armed with such a conceptual tool, however, the defender of infinite divisibility can grant Hume his observations concerning the limitations of the *human* mind and human instruments, which cannot secure us from all error and uncertainty. Such arguments don't apply to the unlimited mind.

The *Treatise* passages we have considered afford a plausible interpretation of Hume's claims in the *Enquiry* concerning the idea of God. This was the second textual evidence Allison put forward as support for the ideal observer he attributes to Hume. Hume seems to be saying that the idea of God is an idea that is grounded in impressions plus the belief that we can augment human features without limit. But Hume himself does not endorse this belief. Instead, he considers this belief to be the product of a certain propensity of the mind, namely the same propensity that leads us to believe that there are infinitely smaller objects. This propensity Hume calls "false reason" (T 1.2.4.24).

It is clear that without the idealization of an unlimited mind we cannot interpret C2 absolutely. The absolute reading of C2 just is the reading that posits such a mind. But our discussion in this section also suggests strongly that C1 cannot be understood absolutely either. For at the core of the absolute reading of C1 is an idealized concept of definition. The absolute reading of C1 posits a set of all and only representative samples, "at *all* times and *all* places"; it posits a "complete science." Two specific features of this reading are objectionable. First, the idea of a perfect, error-free, complete set. It is this concept of definition that motivates Garrett's claim that his own personal revival set of 'cause' is not suitable as a definition *because* it is defective and incomplete. According to Garrett's Hume, then, a definition is perfect, without errors, complete. But this notion of definition appears to be the product of *false* reason. Recall that we reason falsely when we stretch our concepts beyond the "instrument[s] or art of measuring" we can possibly attain, when we posit instruments that "secure us from all error and uncertainty" (T 1.2.4.24). Second, as Allison explicitly acknowledges, a "complete science" is the end product of a process of idealization. But for Hume the process that terminates with a complete science is a case of proceeding "with the same act of the mind, even when the subject fails him" (T 1.2.4.24). When the musician proceeds in this way he supposes a complete tierce or octave; when the geometer engages in the idealizing process he supposes a state of perfect equality, or a perfect straight line. For the theologian, the process ends with the notion of God. These are all idealizations that Hume refers to in very negative terms. Hume, it seems, would reject the absolute reading of his definitions of 'cause' as a whole.

4 Hume's definitions of 'Cause' within the bounds of science

Are we then forced to embrace the subjective reading of definitions of 'cause'? Are all *definitions* subjective for Hume? As *Treatise* 1.1.7 makes evident, for Hume all meaning is subject-relative. Moreover, as Garrett himself indicates, there are good reasons to assume that Hume follows Locke in understanding *definitions* in terms of the ideas that speakers/thinkers associate with a certain term.[18] Thus Humean definitions in general, and his definitions of 'cause' in particular, are indeed subjective or subject-relative. However, this does at all imply that for Hume definitions are relative to *any* subject. For surely Hume may acknowledge the plain fact that there are *better* and *worse* revival sets. Hume can indeed recognize that the revival set of a four year old's 'dog' is not as good as the revival set of a cynologist's 'dog'. And if Hume recognizes these obvious facts, then the possibility is open for him to identify definitions with the best of the better revival sets, that is, with the revival sets of experts. My proposal is, then, that we understand Hume's definitions of 'cause' as subjective, but also as expert-relative. Indeed, recall that Garrett himself offers the apparent choice between "greater" or "unlimited" experience and reflection when he is attempting to identify the most suitable revival set for a Humean definition.[19] However, Garrett's reasons for

[18] Garrett (1997), pp. 102–103.

[19] Garrett (1997), p. 110.

rejecting his own revival set of 'cause' as definitional, namely that it contained errors and was incomplete, forced on him the *unlimited* option.

But Garrett also, as we saw earlier, explicitly details a number of problems with a subjective reading of the definitions; since my expert-relative proposal is still subjective, it will be good now to examine these objections. Garrett points out that, read subjectively, the definitions of 'cause' imply that "the existence or nonexistence of a causal relation is relative to individual minds, [and] that there would be no causation at all unless there were minds."[20] However, this objection, if it is one, may *also* be leveled against the *absolute* reading of the definitions. For the absolute reading is also subject-relative: the subject is, in this case, an unlimited mind. Thus the absolute reading does not at all dispense with the need for minds in Hume's definitions of 'cause'. What it does is simply to substitute an unlimited mind for human, limited minds.

Garrett also complains that, on the subjective reading, "objects observed to be conjoined in unrepresentative samples are always real causes."[21] But what is a "representative sample"? Is a representative sample the sample of the *unlimited* mind only? On the view I am proposing here, when we give up on the ideal of an absolutely perfect representative sample, we are not forced to admit the sample of *any* individual as representative. When we surrender the absolute reading we are not forced to embrace an *indiscriminate* subjective reading. Instead, on my view, Hume may bind the notion of a representative sample to *our best* observations, to the (combined) revival sets of experts. Thus, the problems Garrett identifies with the subjective reading are either not unique to the subjective reading, or they are not really problems at all.

Now we might be inclined to conceive of Hume as *settling* for an expert-relative reading of his definitions, for, after all, the revival sets of experts are more likely to represent the "objective" facts. But here I shall defend a different, more powerful reason for identifying Humean definitions with the revival sets of experts, one that stems from our *normative* practices. We appeal to definitions to correct each other's revival sets; we consider definitions to be authoritative. Your revival set of *vegetable* includes tomatoes, but tomatoes are, according to the (current) definition, *fruits.* Your revival set of *planet* includes Pluto, but Pluto is no longer a planet.

In his discussion of general terms in *Treatise* 1.1.7, Hume maintains that his subject-relative account of meaning is "imperfect [but] may serve all the purposes of reflection and communication" (T 1.1.7.2). I shall argue here that the *expert-relative* reading of Humean definitions, of the definitions of 'cause', in particular, is also very well suited to serve our normative needs. In fact, *only* expert-relative definitions can play these vital normative roles. In the last section of this paper, I discuss Allison's argument concerning the possibility of expert reflection, an argument which is directly leveled against the plausibility of an expert-relative reading of Humean definitions.

The main interpretative question concerning C1, the first definition of 'cause', regards the scope of the "all" (recall that C1 states that A and B are causally connected when *all* As and Bs have been constantly conjoined). Independently of the arguments we have considered against the absolute reading, there are positive reasons for under-

[20] Garrett (1997), p. 112.

[21] Garrett (1997), p. 112.

standing the scope of the "all" as bounded by the *observed*. As Garrett admits, in his discussion of causation, Hume most often refers to constant conjunctions that have been observed. [22] Hume's "constant conjunctions" are observed constant conjunctions, and the reason is that the constant conjunctions that matter for causal reasoning, the constant conjunctions that activate the mechanism of causal reasoning, are observed constant conjunctions. And Hume grounds our *idea* of cause on causal reasoning or experience. Further, consider, for instance, Rule four in *Treatise* 1.3.15, Hume's most important rule: "The same cause always produces the same effect, and the same effect never arises but from the same cause." What is the scope of the "always" and the "never"? Are we to understand them absolutely or as restricted to the observed? If we understand them absolutely, we cannot possibly follow the rule! To follow the rule we must assume the "always" and the "never" to be relative to our observations. Indeed, Hume maintains that Rule four is a "principle we derive from experience, and it is the source of most of our philosophical reasonings" (T 1.3.15.6). Since our experiences are clearly limited, the "always" and the "never" are not absolute. Neither, I contend, is the "all" in C1.

It is also true of C1 that it is a "principle we derive from experience". This is most evident in the *Enquiry* version of C1: "Similar objects are always conjoined with similar. Of this we have experience. Suitably to this experience, therefore, we may define a cause to be *an object, followed by another, and where all objects, similar to the first, are followed by objects, similar to the second*" (EHU 7.29). Here Hume claims that we have *experience* that similar objects are *always* conjoined with similar and that the definition of 'cause' is *suitable* to this experience. This strongly suggests that the scope of the "all" in C1 is not unlimited with respect to time and space; it is, instead, bounded by the observed. However, it does not at all follow from this that the "all" could be bounded by *any* observer, for instance, by the observations of a preschooler.

We may, indeed, identify the scope of the "all" with *our best* observations and experiments. And fortunately for us, Hume himself articulates what "the best" observations and experiments are a few paragraphs after he presents his definitions of 'cause' in the *Treatise*, in a separate section entitled "Rules by which to judge of causes and effects." Hume characterizes these as rules "to direct our judgment, in philosophy" (T 1.3.15.11). And once he discusses the rules, he explicitly remarks on their application in conducting experiments in natural and moral philosophy.

The presence of these rules in the *Treatise* makes sense against the background of Hume's *normative*, foundational project in the *Treatise*: to establish a "compleat system of the sciences, built on a foundation almost entirely new, and the only one upon which they can stand with any security" (T Intro. 6). The foundation of all sciences, Hume makes clear, is his science of man: "the science of man is the only solid foundation for the other sciences" (T Intro. 6-7). And the *Abstract*, written by Hume a few years after the *Treatise,* confirms this project. In its Preface, Hume asserts that if his philosophy were received "*we must alter from the foundation the greatest part of the sciences*." (Abs. 2) And in the *Abstract* itself he concludes: "This Treatise

[22] Garrett remarks that Hume "generally treats 'constant conjunction' as something that an individual person may or will already have observed at a given time." Garrett (1997), p. 109.

therefore of human nature seems intended for a system of the sciences" (Abs. 3).[23] A list of prescriptive rules for judging causes and effects seems of a piece with this project.[24]

Garrett understands the rules as "in part, rules for making oneself more like an idealized mind."[25] The rules, on Garrett's view, bring us closer to the *absolute* definition of 'cause', to the perfect representation of objective facts. On the reading I am proposing here, the rules supply the meaning of 'cause'; they determine the scope of the "all" in C1. On this reading, C1 states that A and B are causally connected when all As and Bs that have been observed *when* following Hume's rules for judging causes and effect properly have been constantly conjoined. On my view, then, the meaning of Humean definitions, the objects that fall under a Humean definition, can change over time. The meaning changes as experts or scientists gather more observations and conduct better experiments.

This consequence of the expert-relative reading of Hume's definitions might be unsatisfying, perhaps even unacceptable, to those wedded to notion of absolutely perfect and eternal definitions. But besides the textual problems we have discussed with the absolute reading of Hume's definitions, absolute definitions are also unacceptable to those who insist on a role for definitions within our normative practices. For suppose we turn to Hume's definitions of 'cause' to answer the following questions: When are we properly applying the term 'cause'? When are we justified in judging two objects or events to the causally connected? On the absolute reading of C1, we are justified in judging A and B to be causally connected when *all* As and Bs are constantly conjoined. But, of course, no human being or beings can ever ascertain whether *all* As and Bs are indeed constantly conjoined. Thus either we consider ourselves never justified in issuing causal judgments; we accept that we are never in a position to be sure that we are properly applying the term 'cause', or we altogether extricate *definitions* from our normative practices. The expert-relative reading is, in contrast, nicely suited to meet our normative demands. On the expert-relative reading of C1, we are justified in judging A and B to be causally connected when the As and Bs that have been observed by experts (following Hume's rules for judging causes and effects) have been constantly conjoined. It turns out that what matters for our normative practices, such as the practice of justification, is not Robinson's objective facts, or Garrett's conjunctions at all times and all places, or Allison's complete science, but *our* best observations, the constant conjunctions that *we* have carefully and methodically registered.

The expert-relative reading can also render Hume's definitions of 'cause' extensionally equivalent. As Garrett points out, the definitions are extensionally equivalent when we read both of them in the same way, absolutely or subjectively. My reading meets this condition, for both C1 and C2 are interpreted as relative to experts. The determination of the mind in C2 is, on my account, indexed to experts' minds. However, it seems that C1 is Hume's preferred version of a definition of 'cause'. It appears first in both texts, the *Treatise* and the *Enquiry*. C2, I suggest, accomplishes two things.

[23] I offer an interpretation of Hume's foundational project in Boehm (2013).

[24] For a good discussion on the normative authority of Hume's rules for judging causes and effects see Martin (1993).

[25] Garrett (1997), p. 112.

First, it accommodates the perceived need to include necessity in the idea of cause. But second, the necessity it allows for is specifically indexed to a determination of the mind. In doing so, it makes it absolutely clear that the necessity admitted into the definition of 'cause' arises from *experience*; in particular, it is the mind's response to observed constant conjunctions. Hume also refers to this necessity as "physical necessity" (T 1.3.14.33; T 2.3.1.17) and he endorses the inclusion of physical necessity or the necessity that arises from experience in the definition of 'cause'.

In the final section, I address an objection that challenges directly the plausibility of an expert-relative reading of Humean definitions. Allison maintains that only the absolute reading endows experts with the conceptual space necessary for reflection on the nature and meaning of their science. Allison insists that only the idealization of a "complete science" and its corresponding ideal observer can ground the possibility of expert reflection that is essential to science. I argue that Hume does not need the absolute reading to accommodate expert reflection, and I discuss the conceptual resources available to him.

5 The possibility of expert reflection

I have argued that both the idealized concept of definition and its counterpart, the unlimited mind, are products of idealizing mechanisms of the imagination that Hume rejects. For Hume, idealizations are natural psychological phenomena, but they have no proper room in the sciences. But Allison disagrees with Hume, on my interpretation of Hume, on this fundamental point. For Allison argues that without the idealization of a complete science the expert does not have the necessary conceptual room for reflecting on the limitations of her concepts or the current state of her science. If, once we agree to loosen our standards, we identify definitional terms with the revival set of humans with the greatest experience and reflection, namely experts, then how can the expert reflect on the limitations of her concepts without the contrast with a complete science? How can the expert recognize that her revival set is defective and incomplete? For Allison, the possibility of this recognition is essential to science. Thus Hume would be mistaken to deny idealizations a proper and important role in the sciences.

But, why is the thought that "there is more" or that "there is better" not enough to allow for expert-reflection? The expert may reflect on the limitations of her concepts by appealing to the concepts of future experts, by appealing to those with "greater experience and reflection." If we push the question regarding the possibility of future expert reflection we can then appeal to experts in their future. Allison seems convinced that we *must* go on asking questions about future, future, future experts, that we must do so until we reach the ideal of a complete science. But why *must* we go on? Why must we go further than, say, our future experts?

Granted, this is what idealizing *processes* do. We have considered a number of passages from *Treatise* 1.2 where Hume discusses these processes. Referring to these texts later in *Treatise* 1.4 Hume writes:

> I have already observ'd, in examining the foundation of mathematics, that the imagination, when set into any train of thinking, is apt to continue, even when

> its objects fails it, and like a galley put in motion by the oars, carries on its course without any new impulse. This I have assign'd for the reason, why, after considering several loose standards of equality, and correcting them by each other, we proceed to imagine so correct and exact a standard of that relation, as it is not liable to the least error or variation. (T 1.4.2.22)

The question is: are we obliged to acquiesce, to be carried on by these processes? Hume seems to imply, at least in the context of his discussion of "the foundations of mathematics," that we can refrain, that we may refuse to be *driven* by mechanisms or galleys of the imagination.[26] "The perfect" and "the infinite" are the deliverances of these processes that we should expel from mathematics. Once the *sources* of these "thoughts" are revealed, we are called upon to perform the task of reining in our wild thinking, or to use Hume's more mechanized metaphor, to man the galley. Only then can we become full authors of our thoughts and in turn build a science that is solid and secure.

I asked earlier whether the thoughts that "there is more" or "there is better" might not be sufficient for expert-reflection. But this presupposes that Hume holds the theoretical resources to project *legitimately* into the future. Does he even have conceptual room for "more" and for "better"? I submit that he does. Some of these tools can be identified in *Treatise* 1.2, in passages we discussed earlier; others emerge in *Treatise* 1.3. Recall that "sound reason convinces us that there are bodies *vastly* more minute than those, which appear to the senses [while]… false reason would perswade us, that there are bodies *infinitely* more minute." (T 1.2.4.24) *Sound reason* pushes the concept of body beyond what can be perceived by the senses. On one possible interpretation, sound reason only extends our concept of body to what is perceived with our *current* magnifying instruments. Read this way, sound reason countenances only the existence of bodies that can be perceived with our current best instruments. However, on another reading, sound reason projects our concept further. In the sentence following the one above about sound reason Hume says: "we clearly perceive that we are not possessed of an instrument or art of measuring, which can secure us from all error and uncertainty." This passage suggests that we are not reasoning falsely when we postulate bodies much more minute that the ones we are *currently* capable of observing with our best instruments, but only when we posit objects infinitely more minute. Why? What is the boundary between sound reason and false reason? We have crossed the boundary of sound reason when our claims can only be substantiated or supported by *perfect* instruments, instruments that could "secure us from all error and uncertainty". Sound reason allows us to project our concepts beyond the current state of our science. However, it prohibits projection to perfection or completeness. We engage in *false* reason when we attempt to do so.

[26] However, the passage above from *Treatise* 1.4.2.22 continues: "The same principle makes us easily entertain this opinion of the continu'd existence of body." But Hume also makes clear that "the principle concerning the existence of body" is one that we have to assent to (T 1.4.2.1). Thus despite his skeptical doubts, at the end of *Treatise* 1.4.2, Hume indicates that he will proceed by "taking for granted" the existence of "both an external and internal world" (T 1.4.2.57). I suspect that this conflict regarding the mechanisms of the imagination at least partly explains Hume's dissatisfaction at the end of Book 1.

In his discussion of geometry, Hume remarks: "As the ultimate standard of these figures is deriv'd from nothing but the senses and imagination, 'tis absurd to talk of any perfection beyond what these faculties can judge of; since the true perfection of any thing consists in its conformity to its standard" (T 1.2.4.29). There is *true perfection* and there is, to paraphrase Hume, *absurd perfection*. Absurd perfection pushes our standards beyond what *can* be seen or imagined by us.[27] The boundary between true perfection and absurd perfection is not what *is* seen or imagined, but what *can* be seen or imagined.

To understand the principles or the reasons behind these boundaries we need to turn to *Treatise* 1.3 where Hume discusses the conditions under which the mind generates beliefs in the unobserved. Hume endorses these beliefs, or causal beliefs. The judgment or the belief that the sun will rise tomorrow is one that Hume approves of. He points out that arguments derived from cause and effect, such as "all men must die" are entirely free from doubt and uncertainty remarking that it would be ridiculous to consider them merely probable. Hume grants such propositions the title of "proofs" (T 1.3.11.1-2). Causal reasoning licenses the geometer's inference that there are better, straighter lines attainable with the instruments of the future *because* in the past better instruments and measurements have yielded straighter lines. Experience justifies the expert's judgment that there will be better and more complete revival sets of 'cause' in the future. Causal reasoning *is* "sound reason" (T 1.2.4.24). Causal reasoning or sound reasoning justifies the inference that there are *vastly* smaller objects than the ones that appear to the senses because in the past we have discovered smaller and smaller objects with the use of increasingly better instruments. What causal or sound reasoning does not license is the judgment that there are or could be perfect instruments and therefore perfect straight lines or perfect revival sets of 'cause' or infinitely smaller objects: we are not drawing an inference from past experience when we make such judgments. Such judgments are instead the products of *false* reasoning.

Toward the end of his discussion of causal reasoning, Hume puts forward the following corollary: "we can never have reason to believe that any object exists, of which we cannot form an idea" (T 1.3.14.36). Hume's "no reason to believe" principle is obviously negative.[28] Success in forming an idea does not provide positive reason to believe in the existence of anything—I can form an idea of a unicorn, but I do not thereby possess positive reason to believe in its existence. But the "no reason to believe" principle explicitly prohibits us from believing in the existence of anything of which we *cannot* form an idea. It says that we can never have reason to believe in x if we cannot form an idea of x. The "no reason to believe" principle articulates the boundary between "true perfection" and "absurd perfection". Ultimate standards must be, Hume insists, "deriv'd from nothing but the senses and imagination" (T 1.2.4.29). Ultimate standards must be grounded on what we can sense, experience or imagine, in other words: the ultimate standard is the ideas we can form. It is the fancy, which Hume poetically refers to as the "magical faculty of the soul" that "runs from one end

[27] "Imagination" here means the picturing of an object, or the forming of an image.

[28] I discuss this principle in Boehm (2013).

of the universe to the other…collecting ideas" that grounds our standards and renders them *truly perfect* (T 1.1.7.15).

Hume indeed provides the theoretical resources for the expert to reflect on her limitations, for the expert to stretch her concepts beyond the current state of her science. We can avail ourselves of these conceptual resources in a conscious, responsible manner. When we project our concepts into the future, we are not thereby *committed* to do so to completion. Indeed, only unenlightened minds aspire to occupy the view from *sub species eternitatis*.

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