Inferences, External Objects, and the Principle of Contradiction: Hume's Adequacy Principle in Part II of the *Treatise*

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Hume's *Treatise* has been considered by some to be an immature and obscure text,[1] and there is no doubt that T 1.2, *Of the Ideas of Space and Time,* has contributed to such views. T 1.2 presents a number of interpretative challenges but here I concentrate on one in particular.

In his lead argument for the finite divisibility of a finite extension (hereafter Hume's Divisibility Argument), Hume invokes an inferential principle—the "Adequacy Principle"—that seems inconsistent with his statements about external objects in T 1.4.2 "*Of scepticism with regard to the senses*" (hereafter T 1.4.2). Here is the Adequacy Principle:

> WHEREVER ideas are adequate representations of objects, the relations, contradictions and agreements of the ideas are all applicable to the objects; and this we may in general observe to be the foundation of all human knowledge (T 1.2.2.1; SBN 29)[2]

The Adequacy Principle allows us to make claims about "objects" on the basis of "adequate" ideas. However, in T 1.4.2 Hume calls external objects "fictions" (T 1.4.2.36, T 1.4.2.43; SBN 205, 209) and argues that because we only "observe a conjunction or a relation of cause and effect between different perceptions," but never "perceptions and objects," "'tis impossible" "from any qualities" of perceptions "we can form any conclusion" regarding objects (T 1.4.2.47; SBN 212). Here is the quote in full from T 1.4.2:

> But as no beings are ever present to the mind but perceptions; it follows that we may observe a conjunction or a relation of cause and effect between different perceptions, but can never observe it between perceptions and objects. 'Tis impossible, therefore, that from the existence or any of the qualities of the former, we can ever form any conclusion concerning the existence of the latter (T 1.4.2.47; SBN 212)

Let us call this Hume's "skeptical causal argument." The Adequacy Principle appears to state that we can form conclusions about objects through the comparison of our ideas of them, while

Hume's skeptical causal argument asserts that we cannot form any conclusions about objects using ideas. Is Hume being inconsistent?

This is Dale Jacquette's concern. He writes:

> From a Kantian perspective, [adequate ideas]…seems hopelessly naive. It may even be inconsistent with Hume's philosophical scepticism about the existence and nature of the external world. What Hume proposes is that adequate ideas are those that agree with their objects. But what access can we possibly have to the objects themselves independently of our impressions and ideas?[3]

Jacquette's solution is to argue that "adequacy" must be in terms of correspondence with visual or tactile sense-impressions and not external objects. He argues that immediate impressions are "as close as [we] can get to the object itself."[4] Jacquette wants the empirically verifiable resemblance thesis between ideas and impressions (Hume's "copy principle" T 1.1.1.7; SBN 4) to transfer over to ideas and "objects." But how are sense impressions the "closest" we can get to external objects? If this is Hume's account of adequacy then he surely *is* being inconsistent. The very point of Hume's skeptical causal reasoning is that it is impossible to compare *any* perceptions—impressions or ideas—with external objects because such a comparison is only possible between perceptions. Two questions thus remain: first, what makes an idea an "adequate representation" for Hume? Second, what kinds of "objects" do they represent?

My paper has three parts. First, I give a *general* reading of the Adequacy Principle in light of Hume's claim that it is "the foundation of all human knowledge", situating the principle within Hume's account of knowledge and demonstration. I then explain why the Adequacy Principle itself is not inconsistent with Hume's skeptical causal argument. Second, I sketch Hume's employment of the Adequacy Principle in his Divisibility Argument, explaining how Hume's pattern of reasoning is not at odds with Hume's skeptical causal argument. While neither my general reading of the Adequacy Principle nor Hume's reasoning in his Divisibility Argument are inconsistent with his skeptical causal argument, Hume's Divisibility Argument does ultimately concludes that "no finite extension is infinitely divisible" (T 1.2.2.2; SBN 30). Are "finite extensions" external objects? If so, does Hume's conclusion ultimately conflict with his skeptical causal argument? In the fourth and final section I explore various interpretations in the literature and consider whether "finite extensions" need necessarily be read as external objects.

The Adequacy Principle as the Foundation of Human Knowledge: A General Reading

To understand the Adequacy Principle I want to focus on Hume's claim that it is the "foundation of all human knowledge." As far I am aware no one has yet squarely addressed this question. First we must ask in what sense Hume is using the term "knowledge" here. As Don Garrett notes Hume features two sense of "knowledge" in the *Treatise*: "First…'knowledge' in [a] strict technical sense…[that] depend[s] solely upon unchangeable 'relations of ideas' themselves, so that the denial of what is known is absurd and inconceivable" and "'know' and 'knowledge' in a looser and more colloquial way."[5] I would argue that with respect to the Adequacy Principle that Hume is using "knowledge" in his strict technical sense. What exactly is this kind of "knowledge" for Hume?

Hume devotes a brief but important section to "knowledge" (*Of knowledge* T 1.3.1). Hume explains that knowledge arises when one compares ideas and, in virtue of the content of the ideas, observes a necessary relation to obtain amongst the ideas.[6] Importantly, as contrasted with contemporary logics, form is irrelevant. The validity of the inference depends solely on the content of the idea. For example, when I relate the content of the number "two" with the content of "addition," with the content of "three," I necessarily infer, based upon the relations amongst these ideas, that 2+3=5. This can either happen "at first sight" in what Hume calls an "intuition," or can be carried in a "chain of reasoning" (T 1.3.1.5; SBN 71). Hume calls the latter "demonstration" or "demonstrative reasoning" (T 1.3.1.7; SBN 72) which is epitomized in "algebra and arithmetic" (T 1.3.1.5; SBN 71).

Now, Hume claims that two conditions must be satisfied for a chain of reasoning to count as a demonstration and thus yield knowledge:

1. The content of the idea cannot be subject to change. For example, if the content of the idea "three" were able to change, then it could not necessarily be the case that 2+3=5. That is, the ideas must be *static*.

2. The only qualities that can be related amongst such static ideas are the ones that admit of the following four relations: resemblance, contrariety, degrees in quality, and proportions of quantity or number (T 1.3.3.2; SBN 70).

Insofar as the ideas being compared are static any inference drawn using these four relations will necessarily be true. Hume writes "A demonstration, if just, admits of no opposite difficulty" (T 1.2.2.5; SBN 31). For example, three will always be greater than two, and deep purple with always resemble, but have a darker shade than, mauve. These claims, in Hume's words, admit of no opposite difficulty. Moreover the denial of such claims is "absurd and impossible."

We are in a better position now to understand the Adequacy Principle's key terms, the first of which is "**adequate representation**." Hume follows Locke and others that an adequate idea exhaustively represents its object.[7] Locke writes that "Those [ideas] I call *adequate* perfectly represent those archetypes which the mind supposes them taken from" (ECHU 2.26).[8] Garrett explains that "[Hume's]…views about 'adequate' conception as requiring an isomorphism between an idea and what is conceived through it."[9] An idea has an "isomorphism" with the object "conceived through it" when every element of the idea has a one-one correspondence with every element of the object. I use the term "element" instead of "part" because, as we will see, Hume's idea of a non-extended minimum part (the idea of a colored or tangible mathematical point (T 1.2.2.1, T 1.2.4.14-15; SBN 29, SBN 28) is adequate in virtue of the fact that it has no "parts." This isomorphism is consistent with Hume's strict criterion for knowledge and certainty. If one were reasoning using an inadequate idea that lacked an isomorphism with its object, how could one know with certainty that the relations obtain? The ideas might be missing some important elements. Inevitably, the inadequacy of the idea generates the possibility of error and thus could not be knowledge in Hume's strict sense.

Second, what does Hume means by "**object**" in the Adequacy Principle? Now, as it is expressed in the Adequacy Principle ("WHEREVER ideas are adequate representations of *objects*"), I would argue that "object" is the most general of terms, used with little ontological commitment. It should be seen to mean no more than "the object of inquiry" or even "the matter under consideration," for at times, the "object" is no more than that.[10] Moreover, if by "foundation of human knowledge" Hume means demonstrative reasoning, then we need an interpretation of "objects" in the general reading of the Adequacy Principle that allows for patently non-external things such as mathematical objects (T 1.3.1.7; SBN 72) to nevertheless be "objects" in some important sense.[11] Thus, as we can see, "object" in the Adequacy Principle need not be interpreted as an external object.

That concludes a general reading of the Adequacy Principle: "WHEREVER ideas are adequate representations of objects, the relations, contradictions, and agreements are all applicable to the objects." This is a principle of demonstrative reasoning that involves the comparison of two or more ideas to determine the relations that obtain between said ideas. The ideas must be static and the relations between them must be resemblance, contrariety, degrees in quality, and proportions in quantity or number. *If* the ideas are "adequate representations" of objects—that is, have an isomorphism with the objects that are conceived through them—then the ideal relations obtain for the objects in question.

The General Reading of the Adequacy Principle and External World Skepticism

As explained, Jacquette voices concern that "from a Kantian perspective" the Adequacy Principle "seems hopelessly naïve" and perhaps "inconsistent with Hume's philosophical scepticism about the existence and nature of the external world." However, under my general reading of the principle there is no inconsistency.

First, the "Kantian perspective" is misleading. Instead, as I have argued, understanding the Adequacy Principle requires focusing on Hume's claim that it is the foundation of "knowledge." Consequently, on my general reading "objects" need not be external. Instead, they are no more than "the object of inquiry," which includes things like numbers and colors (T 1.1.6.7; SBN 15).

But what if the "objects" of inquiry were external objects? Would such an investigation yield knowledge? The answer is no. This is because none of the conditions required for the successful application of the Adequacy Principle can be met by supposed external objects. "Knowledge" is only possible if (1) the ideas being compared are static, and (2) the relations that hold between the ideas is one or more of resemblance, contrariety, degrees in quality, or proportions of quantity or number. However, in In T 1.3.2 *Of Probability* Hume argues that causation is the only relation that could inform us of external objects. While these four relations of knowledge depend upon "the mere ideas, the only one, that can be trac'd beyond our senses, and informs us of existences and objects, which we do not see or feel, is *causation*" (T 1.3.2.3; SBN 74). Moreover, all arguments involving causation Hume calls "probabilities" in contradistinction to "knowledge." He writes: "*knowledge* and *probability*…the first to be that evidence, which arises from the comparison of ideas" and the latter "all our arguments from causes or effects" (T 1.3.11.2; SBN 124). As causation is not one of the four relations suitable for knowledge, then there can be no "knowledge" (in the strict sense) of supposed external objects. All arguments regarding external objects are probabilities and are unrelated to the Adequacy Principle, which is the foundation "knowledge."

While my general reading of the Adequacy Principle assuages Jacquette's concern, maybe Hume's use of the principle in his Divisibility Argument generates an inconsistency? I argue that nothing about Hume's pattern of *reasoning* in his Divisibility Argument violates his skeptical causal argument.

Hume's Divisibility Argument

Hume's Divisibility Argument is seven paragraphs (T 1.2.1-T 1.2.2) and is comprised of two sub-arguments. The first proves that the mind has an idea of non-extended minimum part of extension (following Baxter I call this Hume's Minimal Ideas Argument[12]). The second employs the Adequacy Principle and argues that the idea of an infinitely divisible finite extension is contradictory.

The most basic structure of Hume's Divisibility Argument is a disjunctive syllogism:

> (P1) Finite extensions are either only finitely or infinitely divisible
> (P2) Finite extensions are not infinitely divisible
> (C) Therefore, finite extensions are only finitely divisible.

The reason why finite extensions are not infinitely divisible (P2) is because, according to Hume, the idea of an infinitely divisible finite extension is "impossible and contradictory." In the following quote we can tease out the disjunctive form in Hume's Divisibility Argument:

> The capacity of the mind is not infinite; consequently no idea of extension or duration consists of an infinite number of parts or inferior ideas, but of a finite number, and these simple and indivisible: 'Tis therefore possible for space and time to exist conformable to this idea: And if it be possible, 'tis certain they actually do exist conformable to it; since their infinite divisibility is utterly impossible and contradictory. (T 1.2.4.1; SBN 39)

According to Hume, the finite divisibility of a finite extension is conceivable and therefore possible. Meanwhile, infinite divisibility is "contradictory." Moreover, for Hume, contradiction entails impossibility: a "formal contradiction...'tis impossible not only that it can exist, but also that it can be conceiv'd" (T 1.3.9.10; SBN 111). Because a finite extension is either only finitely or infinitely divisible, because infinite divisibility is "impossible," the possibility of finite divisibility becomes actuality, that is to say, finite extensions "actually do exist" as only finitely divisible.

Does this pattern of reasoning conflict with Hume's skeptical causal argument? In T 1.4.2. Hume argues that we can never use reason to determine that external objects are the *cause* of impressions and ideas. This is because causation can only be established through the observation of a constant conjunction, but "we may observe a conjunction…between different perceptions, but…never…between perceptions and objects." However, the kind of reasoning Hume employs in his Divisibility Argument is not this kind of "causal" reasoning. So far, we see that Hume reasons using (1) the disjunctive form and (2) infers impossibility from a contradiction.

Kantians, of course, would throw a red flag over the disjunctive form citing Kant's antinomies of pure reason.[13] Others have criticized Hume's account of contradiction.[14] But I am not concerned with the philosophical correctness of Hume's Divisibility Argument, but only if his use of the Adequacy Principle therein contradicts his skepticism. So far, neither the disjunctive form nor the principle of contradiction conflicts with Hume's skeptical causal argument.

Hume argues that infinite divisibility is "impossible" by comparing his idea of a finite extension with his idea of an infinitely divisible extension. Yet how does Hume form his idea of a finite extension in the first place? Does it not utilize the mechanism of causal reasoning depicted in T 1.4.2? That is to say, is the veracity of his idea of a finite extension established on the basis of comparing the idea with an external object to note the resemblance? Not at all. Instead, Hume maintains that the idea of extension is derived from prior impressions (T 1.2.3.1-4; SBN 33-4) and not external objects. Nevertheless he does utilize this impression-derived idea to demonstrate that an infinitely divisible finite extension (whatever that may be) is contradictory.

Hume's Minimal Ideas Argument

Hume first argues that any idea the human mind forms of a finite extension is composed of a finite number of parts (following Baxter I call this Hume's Minimal Ideas Argument[15]). This argument is a deduction from two principles. The first is that the mind is finite and can never attain a full conception of infinity (T 1.2.1.2 SBN 26). The second principle is the actual parts doctrine that maintains that the divisibility of a finite extension *into certain parts* presupposes the actual pre-existence of *those* parts.[16] From these two principles it "requires scarce any induction" that our ideas of finite objects resolve into "simple and indivisible"—that is, non-extended—parts (T 1.2.1.2; SBN 27). Hume identifies this as an "adequate representation of the most minute parts of extension" (T 1.2.2.1; SBN 29); hereafter Hume's "least idea" (T 1.2.2.2; SBN 29).

How is this "least idea" an "adequate representation" of the smallest possible part of extension? The simple answer is that nothing could be spatially smaller than what is non-extended (it is basically the idea of a colored or tangible mathematical point). Consequently, Hume's "least idea" is "adequate" because its simplicity and irreducibility entails that it is an idea that fully represents the smallest possible part of extension. There is an isomorphism of the idea with the "object" that is "conceived through it." Moreover, conceiving an array of these "least ideas," coexistent and contiguous, generates an "adequate idea" of a finite extension (T 1.2.3.12-17; SBN 38-9), as the adequacy of the parts is bestowed upon the whole.[17] Hume then introduces his adequacy principle: "WHEREVER ideas are *adequate* representations of objects, the relations, contradictions and agreements are all applicable to the objects…" to argue that the idea of an infinitely divisible finite extension is contradictory.

What exactly is a contradictory idea for Hume? Owen explains that a contradiction for Hume is when "one is holding that an idea both is and is not something: that is the contradiction."[18]

For example, it is a contradiction to hold the idea that a shape is both square and not-square simultaneously. What Hume argues is that to hold the idea of an infinitely divisible finite extension is to hold the idea that a finite extension is both composed of a finite and not-finite number of parts simultaneously. As we have seen, the idea of a finite extension contains a finite number of parts (Minimal Ideas Argument). Meanwhile, because the divisibility of parts requires the pre-existence of those parts (actual parts doctrine), infinite divisibility requires the pre-existence of an infinite number of parts. Therefore, according to Hume, to hold that a finite extension is infinitely divisible is to hold that it is composed of a finite and not-finite number of parts simultaneously—a manifest contradiction and absurdity.

Hume's use of the Adequacy Principle in his Divisibility Argument is consistent with my general reading of the principle. I argued that the Adequacy Principle, as the "foundation of all human knowledge," must be understood in light of Hume's account of knowledge and demonstration. The conditions for a successful demonstration are that the ideas are static and that the relations are of resemblance, contrariety, degrees in quality, proportions in quantity, or number. Moreover, if the ideas being compared are adequate, then the ideal relations obtain for the objects. In Hume's Divisibility Argument the "least ideas" are adequate, and Hume uses these ideas to construct an idea of a finite extension (which is composed of only a finite number of parts) and an infinitely divisible extension (which is composed of an infinite number of parts). These are the ideas being compared. The relation between these ideas is one of proportion in quantity or number (one finite, the other infinite). For Hume, the combination of these two complex ideas yields the idea of an extension that has both a finite and not finite number of parts simultaneously. From this contradiction Hume concludes that "no finite extension is infinitely divisible."

The Divisibility Argument and External World Skepticism

With my interpretation there is no inconsistency between Hume's use of the Adequacy Principle and his skeptical causal argument. There, Hume argues that no *causal* relation can be established between a perception and its supposed cause because only perceptions are ever present to the mind (T 1.4.2.47; SBN 212). Importantly, this difficulty pertains to adequate ideas if (1) adequate ideas were *caused* by non-perceptual objects and (2) a resemblance between an adequate idea and the object it represents requires that both are contemporaneously available for mental comparison. However, Hume holds neither of these conditions for the adequate idea of the least part of extension. Hume's "least idea" is deemed "adequate" not *because* it is caused by a real non-extended minimum (the ink spot is still an impression [T 1.2.1.3; SBN 27]), nor because Hume observes a resemblance between the idea and corresponding external object. As I explained, Hume's "least idea" is adequate in virtue of the idea that it is. As it is an idea that literally has no parts, Hume reasons that no part of extension could be smaller. Hume then uses this "least idea" to demonstrate that the idea of an infinitely divisible finite extension is contradictory concluding that such a thing is "impossible." Finally, he infers that finite extensions are only finitely divisible because of the disjunctive form.

There is no doubt that Hume's Divisibility Argument features complicated philosophical reasoning involving principles with a range of credibility[19]: limited mind, actual parts doctrine, Adequacy Principle, part/whole principle, principle of contradiction, and the disjunctive form: but nowhere does Hume compare his perceptions with external, non-perceptual objects and note a causal relationship or resemblance. Thus, on my reading, there is no inconsistency between Hume's Divisibility Argument and skeptical causal argument in T 1.4.2.

Are Finite Extensions External Objects?

One question still remains: what exactly are finite extensions? While nothing about Hume's pattern of reasoning conflicts with his skeptical reflections in T 1.4.2, Hume does ultimately conclude using his disjunctive syllogism that "finite extensions" are composed of only a finite number of non-overlapping coexistent and contiguous colored or tangible non-extended parts: "like pearls on a necklace"[20] (hereafter "Humean points"). What exactly are finite extensions and how do they fit into Hume's ontology? This is a vexing question to say the least. In this final section I consider various possibilities from the text and the literature before finally recommending my cautious reading that argues Hume is not committed to an ontology regarding finite extensions.

The first possibility we can reject is that "finite extensions" are ideas. This is because the Adequacy Principle, to be coherent, requires an important difference between ideas and the "objects" they represent. Could finite extensions be collections of visual and tactile impressions? Hume argues that the idea of extension is derived from impressions (T 1.2.3.4; SBN 34). Perhaps conclusions yielded from the comparison of ideas of extension obtain for the "objects" from which they were derived (i.e., impressions)?

However, the text does not support this reading. Hume is clear that "a real quality of extension" (T 1.2.2.2/SBN 29) and "quantity itself" (T 1.2.4.31/SBN 52) is something other than impressions. In the paragraph just before the Divisibility Argument Hume makes a sharp distinction between "impressions" and "objects vastly more minute" (T 1.2.1.5; SBN 28). This paragraph is coherent only if we distinguish between impressions and objects.[21] Moreover, if visual and tactile impressions just *are* finite extensions, then this sounds like the "vulgar" view (who do not think of sense-impressions as mental entities but as objects) that Hume describes as a "false opinion" and a "fiction" that is "really false" (T 1.4.2.43; SBN 209).

Perhaps a table, separate and distinct from impressions and ideas, is a finite extension? That would be to say: there is a complex table-impression, copied ideas, and then the table. The table is the "finite extension" under question. However, this sounds like the philosophical hypothesis of perceptions and external resembling objects that Hume calls a "monstrous offspring" (T 1.4.2.52, SBN 215) that "contains all the difficulties of the vulgar system, with some others, peculiar to itself" (T 1.4.2.46; SBN 211).

The ontology of 'finite extensions" is a puzzle for Hume interpreters. Here are a few viable options. The first is mine. Interestingly enough, Hume writes nothing in T 1.2 that commits him to asserting what finite extensions are (besides their finite divisibility). Finite extensions *could* be anything: independent and enduring tables; material substances; perceptions implanted in minds by God; ideas conjured by minds[22]—who knows, who cares! Nevertheless, Hume's assertion is that finite extensions, whatever they may be, are only finitely divisible and composed of Humean points. Hume can argue about the divisibility of finite extensions without making an ontological commitment about what finite extensions are. I will call this the "cautious reading" of finite extensions. While the cautious reading may feel like a bit of interpretive sophistry, it elegantly resolves any tension between T 1.2 and T 1.4.2.

Recent commentators take a different approach. Donald Ainslie distinguishes between "perceptual" or "vulgar objects" formed on the basis of prior perceptions through Humean associative rules and "non-perceptual" objects supposed "specifically different" (T 1.2.6.9; SBN 68). That is, the difference between objects as the vulgar (and philosophers most of the time) naturally conceive them versus objects in themselves. For Ainslie, Hume's claims about the finite divisibility of a finite extension merely applies to "vulgar objects."[23] Ainslie's strategy is to draw on Hume's treatment of continued and distinct "objects" in T 1.4.2 to explain what Hume must mean by "finite extension."

Ainslie's interpretation has its strengths and weaknesses. Its strength is that it couches Hume's myriad examples of external objects surrounding Hume's Divisibility Argument in terms of Hume's naturalistic mental mechanisms. Presumably, grains of sand (T 1.2.1.3; SBN 27); ink spots (T 1.2.1.4; SBN 4); and mites (T 1.2.1.5; SBN 29)—these things Hume describes as divisible and having parts—are finite extensions? Ainslie asks: what are these things *really*, according to Hume? Following Hume's analysis in T 1.4.2 they are the objects of the vulgar, formed on the basis of associative mechanisms: "what any common man means by a hat, or shoe, or stone" (T 1.4.2.31; SBN 202). Ainslie concludes that these "vulgar objects" must be the finite extensions in T 1.2.

The first difficulty facing Ainslie's reading is that Hume describes the vulgar view of objects as a "false opinion" and a "fiction" that is "really false" (T 1.4.2.43; SBN 209). Second, there is an important distinction in Hume's Divisibility Argument between the *ideas* of finite extensions and finite extensions. Consequently, whatever finite extensions are, they are not ideas. However, Hume's analysis in T 1.4.2 upon which Ainslie's reading depends reveals that "vulgar objects" (that is, objects that resemble prior perceptions) are really, at the end of the day, conceptions or ideas formed in the mind. Therefore, under Ainslie's reading, "finite extensions" are rendered complex conceptual constructs, that is to say, ideas. But this violates the fundamental structure of Hume's Adequacy Principle (and Divisibility Argument) that requires a distinction between ideas and non-ideal things. Instead of Hume writing that "whatever *appears* impossible and contradictory upon the comparison of these ideas, must be *really* impossible and contradictory" (T 1.2.2.1; SBN 29), Ainslie wants Hume to mean that "upon the comparison of these ideas, it must be really impossible and contradictory for complex ideas (of such objects) formed by the minds of non-philosophical folks," which is to say that the Adequacy Principle moves from the comparison of ideas to a related set of ideas. It is hard to imagine that this is what Hume meant; instead, Hume seems to be making a claim about *real* finite extensions, whatever those may be.

Baxter argues that Hume, as Pyrhonnian skeptic, confines his speculation to the way objects appear to the senses. Consequently, Hume's inference in T 1.2.2 is only to "objects" as they appear. Baxter argues that when Hume writes, "For 'tis evident, that as no idea of quantity is infinitely divisible, there cannot be imagin'd a more glaring absurdity, than to endeavor to prove, that quantity itself [*as it appears to the senses*] admits of such a division" Baxter explains that "I have added the phrase *as it appears to the senses* as a reminder of the skeptical context of all such inferences from idea to object."[24] Reading "finite extension" as a "stable appearance" of the senses seems to avoid any conflict with T 1.4.2.

Baxter's position has its strengths but faces subtle difficulties. A strength of his position is that it emphasizes Hume's *methodology*. Importantly, Hume sees two competing methods: his method, which depends on arguments using ideas derived sense experience, and the mathematicians' abstruse geometrical demonstrations. Hume's conviction is that his empirical method is authoritative because it employs ideas derived from sensation, or to use Baxter's terminology, finite extension "as it appears."

But the question remains: what are "stable appearances"? Are they perceptual or non-perceptual? Appearances, understood as complex visual or tactile impressions, would surely be perceptual as impressions are "perceptions of the human mind" (T 1.1.1.1; SBN 1). So if "finite extensions" are "stable appearances," and stable appearances are complex impressions, then finite extensions are complex impressions and thus perceptual, which violates the perceptual/non-perceptual distinction required by Hume's Divisibility Argument. But I take Baxter to mean by "stable appearances" not merely complex impressions. Instead, they are well-formed "views" that stand the test of time.[25] But what exactly are "views?" Are they perceptual or non-perceptual? To

Baxter's credit he is careful not to say. If they are well-formed concepts within a Quinean theoretical web, then they would be ideas. Ultimately, it is difficult to see how "views" could be anything other than some kind of (complex and perhaps intensely vivid) perceptual entity.

Conclusion

Jacquette alerted us to the potential inconsistency between Hume's Adequacy Principle in T 1.2.2 and the skeptical causal argument in T 1.4.2. I provided a general reading of the Adequacy Principle and an interpretation of its use in Hume's Divisibility Argument that removes this potential inconsistency. The Adequacy Principle, as the "foundation of all human knowledge," is a principle of demonstrative reasoning that requires, to be successful, the comparison of ideas that are static with one or more of the relations of resemblance, contrariety, degree in quality, and proportions in quantity or number. Insofar as the ideas being compared are "adequate"—that is fully represent its object—then the ideal relations obtain for the objects in question. This principle by itself does not conflict with Hume's skeptical causal argument.

Neither does Hume's Divisibility Argument conflict with Hume's skeptical principles. Hume's Divisibility Argument employs ideas of extension derived from impressions (and *not* external mind-independent objects). As his idea of extension is formed by a limited human mind, Hume argues that it must resolve itself into non-extended minimum, or "least idea[s]." Hume deems this "least idea" an "adequate representation" of the smallest possible part of extension in virtue of the kind of idea that it is. Hume then features this idea in a demonstration that (supposedly) proves that the idea of an infinitely divisible finite extension is contradictory. From this contradiction Hume finally makes a claim about "real" "finite extensions"—that they are not infinitely divisible. Nowhere does Hume compare a perception (impression or idea) with a non-perceptual external object. Consequently, nowhere in Hume's Divisibility argument does he violate his skeptical principles in T 1.4.2.

Nevertheless, Hume does ultimately maintain that "real" "finite extensions" are finitely divisible and composed of Humean points. What could "real" "finite extensions" possibly be if not external objects? Perhaps they are "vulgar" or "perceptual" objects (Ainslie); or maybe "stable appearances" that comprise some of our most coherent views (Baxter)? "'Inviron'd with the deepest darkness" (T 1.4.7.8; SBN 269) of this interpretive mystery, I recommend my "cautious reading" and perhaps a game of back-gammon.

Notes

[1] Peter Millican, ed., *Reading Hume on Human Understanding: Essays on the First Enquiry* (Oxford : New York: Clarendon Press, 2002).

[2] David Hume, *A Treatise of Human Nature*, 2nd ed. (New York: Oxford University Press, 1978).

[3] Dale Jacquette, "Hume on the Infinite Divisibility of Extension and Exact Geometrical Values," *Rivista Di Storia Della Filosofia* 62.3 (2007): 75.

[4] Jacquette writes:

> One answer is in immediate sense impressions. It has been so long since I have seen the Tower of London, that my idea of the White Tower now is of a round building with three copulas. Is this an adequate idea or not? The best answer is to visit the site again and compare the idea with my immediate sense impressions. That is as close as I can get to the object itself, and the problem no doubt admits of no other kind of resolution...If, on the contrary, my impressions of the Tower reveal it to be a square structure with four copulas, then the first idea must be judged inadequate... When we check the idea of extension as heir to the finite divisibility limitations of its originating sense impressions by comparing it with those impressions, we naturally find it adequate by Hume's [empirical] criterion. (Jacquette, "Hume on the Infinite Divisibility of Extension and Exact Geometrical Values")

[5] Don Garrett, *Hume* (London and New York: Routledge, 2015), 42.

[6] David Owen argues Hume's account of knowledge and demonstrative reasoning follows in the Cartesian and Lockean tradition. David Owen, *Hume's Reason* (New York: Oxford University Press, 1999). Unlike contemporary logics where proper reasoning is merely a function of its formal structure, for Descartes, Locke and Hume it is a matter of whether the relation asserted to hold between the specific contents (or ideas) that the piece of reasoning is about really does hold between those specific contents (or ideas). The difference is between inferences that are formally valid (i.e., valid in virtue of logical form or structure) and those that are materially valid (i.e., valid in virtue of the content). For example, in terms of the adequacy principle, if one has adequate ideas of 5 and 7, then one can relate the intrinsic content of the ideas and deduce that the relation of lesser-than obtains amongst the objects (i.e., that 5 is less than 7).

[7] Falkenstein puts it well when he explains "Early modern philosophers often drew careful distinctions between the clarity, the distinctness, and the adequacy of conceptions…adequate when all of its features, those features of those features, and so on down to fundamental features could be exhaustively identified." It is not clear if Falkenstein commits Hume to this view on adequacy. When considering Hume's idea of infinity, Falkenstein does seem to attribute this view to Hume. However, he also writes that Hume was "working with the notion that ideas are objects and that they can more

or less adequately represent other objects by more or less closely resembling them" (Lorne Falkenstein, "The Ideas of Space and Time and Spatial and Temporal Ideas in the Treatise 1.2," in *The Cambridge Companion to Hume's Treatise* [Cambridge University Press, 2015], 49). The "more or less" talk of the latter certainly does not jibe with the exhaustive or isomorphic language of the former.

[8] John Locke, *An Essay Concerning Human Understanding*, ed. John W. Yolton (J.M. Dent & Sons Ltd, 1977), 183.

[9] Garrett, *Hume*, 62–63.

[10] Marjorie Grene catalogues each use of "object" in Hume's *Treatise* and resolves them into three types of uses: first, intentional objects; second, objects as perceptions themselves (impression or ideas), and third, non-mental external objects. Marjorie Grene, "The Objects of Hume's Treatise," *Hume Studies* 20.2 (November 1994): 163–77. However, I resist thinking about "objects" in Hume's *Treatise* in terms of these three categories. First, there are obvious anomalous cases. Take for example "Creation, annihilation, motion, reason, volition; all these may arise from one another, or from any object we can imagine" (T 1.3.15.1, SBN 173). Hume describes "reason" here as an "object"—is reason a perception, intentional object, a faculty perhaps? Who knows. Nevertheless, it is still something, that is, an "object."

On one read-through of the Book I of the *Treatise* I tracked the various ways Hume uses the term "object." Below is an enumeration of the fruits of this labour:

Objects in Book I of the *Treatise*

Ordinary Common-Sense objects: trees, moutains, books, etc. (T 12) (T 25) (T 15) (T 28) (T 34) (T 35) (T58) (T 87) (T 112): mountain v. chamber are "objects"; (T 127): dye is described as an "object" ; (T 141): a man has a desire for a "thousand pound," an "object" ; (T 145): each new copy of a historical text is an "object" ; (T 147): man who eats pears and peaches, but when none available, satisfies himself with melons; (T 148): the cage that a man is in when hanging from a high precipice; (T 164): billiard balls ; (T 252): plants and vegetables ; (T 258): a church made out of brick and one made out of free-stone are "objects"; (T 258): river is or is composed of objects; (T 259): animals, ships, and houses

*(T 173): These are all pretty strange "objects": "Anything may produce any thing. Creation, annihilation, motion, reason, volition; all these may arise from one another, or from any object we can imagine."

General term for any perception: (T 2, 4, 107)
Impression or object: (T 36, 37, 70, 84, 96, 98, 157)
Memory idea: (T 8, 85)
Of the Senses: (T 11, 15, 19, 36, 47, 56)
Of the eyes, sees: (T 73, 75, 77, 82, 147, 155, 158, 160)
Imaginary idea/conception: (T 11, 14, 18, 123, 149, 254)
General Sense/non-perception, non-ordinary common sense: (T 12, 75, 76, 80-82, 88-92, 125, 130, 132-4, 153, 155, 173-4, 220)
Idea in general: (T 15, 120, 40, 49, 72, 94)
Abstraction or relation: (T 17, 20, 170)
Objects "having" ideas: (T 69, 157, 169, 184, 185, 233)
As objects "appear": (T 51, 57, 69, 71, 103, 125, 149, 156)
Object or body: (T 59, 76-77, 88, 164, 221, T 245)
Affecting and presented: (T 120, 125, 142, 147, 160, 161)
abstraction or relation: (T 17, 20, 170); object of knowledge (T 70); object or idea (T 71); objects themselves (86, 111); an impression's object: (T 109, 112); facts or object (T 113); "objects" of the understanding (T 158, 164, 182)

[11] Garrett argues that demonstration involves reasoning using abstract ideas and that the "objects" are the abstract idea's revival sets: "successful demonstrative reasoning typically involves recognizing relations among abstract ideas by way of successful or unsuccessful efforts at operations of inclusion, exclusion, combination, and intersection of their revival sets" (Garrett, *Hume*, 92).

[12] Donald Baxter, "Hume on Space and Time," in *The Oxford Handbook of David Hume*, ed. Paul Russell (New York: Oxford University Press, 2016), 175.

[13] For an interesting discussion on the relationship between Hume's theory of space and Kant's second antinomy see Dale Jacquette, "Kant's Second Antinomy and Hume's Theory of Extensionless Indivisibles," *Kant-Studien* 84.1 (1993): 38–50.

[14] James Franklin, "Achievements and Fallacies in Hume's Account of Infinite Divisibility," *Hume Studies* 20.1 (1994): 85–101.

[15] Baxter, "Hume on Space and Time."

[16] Thomas Holden, "Infinite Divisibility and Actual Parts in Hume's Treatise," *Hume Studies* 28.1 (2002): 3–25.

[17] We see Hume explicitly depict this principle later in the Part II: "Now such as the parts are, such is the whole. If a point be not consider'd as colour'd or tangible, it can convey to us no idea; and consequently the idea of extension, which is compos'd of the ideas of these points, can never

possibly exist. But if the idea of extension really can exist, as we are conscious that it does, its parts must also exist; and in order that, must be consider'd as colour'd or tangible" (T 1.2.3.1/SBN 39). For a valuable schematic of the philosophical principles at play in part II, see Donald Baxter, *Hume's Difficulty: Time and Identity in the Treatise* (Routledge, 2008).

[18] Owen, *Hume's Reason*, 109.

[19] For an excellent catalogue of the all of the metaphysical principles Hume employs in T 1.2 see Baxter, *Hume's Difficulty: Time and Identity in the Treatise.*

[20] Baxter, "Hume on Space and Time," 173.

[21] "The only defect of the senses is, that they give us disproportion'd images of things, and represent as minute and uncompounded what is really great and compos'd of a vast number of parts. This mistake we are not sensible of; but taking impressions of those minute objects, which appear to the senses, to be equal or nearly equal to the objects, and finding by reason, that there are other objects vastly more minute, we too hastily conclude, that these are inferior to any idea of our imagination or impression of our senses" (T 1.2.1.5; SBN 28).

[22] This is inspired by Hume's famous assertion, with my own wrinkle, that "As to those *impressions*, which arise from the senses, their ultimate cause is, in my opinion, perfectly inexplicable by human reason, and 'twill always be impossible to decide with certainty, whether they arise immediately from the object, or are produc'd by the creative power of the mind, or are deriv'd from the author of our being" (T 1.3.3.4; SBN 84). My wrinkle is that, in this passage, Hume is speaking about the purported "cause" of perceptions, while I am making a claim about potential ontologies of finite extensions.

[23] Donald C. Ainslie, *Hume's True Scepticism* (New York, NY: Oxford University Press, 2015).

[24] Donald Baxter, "Hume's Theory of Space and Time in Its Skeptical Context," in *The Cambridge Companion to Hume*, ed. David Fate Norton and Jacqueline Taylor, 2nd ed. (Cambridge University Press, 2009), 119.

[25] Baxter writes: "Sometimes ideas are imposed on us by principles of reasoning that are "changeable, weak, and irregular." Their influence can be undercut by a due contrast with ideas imposed on us by principles that are "permanent, irresistible, and universal" (T 1.4.4.1). In this way "we might hope to establish a system or set of opinions, which if not true (for that, perhaps, is too much to be hop'd for) might at least be satisfactory to the human mind, and might stand the test of the most critical examination" (T 1.4.7.14). Thus Hume is able to distinguish between, on the one hand, views that would remain stable through time and from place to place, and, on the other hand, views that would vary by time or place. The latter would include superstitions, myths, the fictions of the ancient philosophers. Some of our stable views will be fundamental common sense beliefs, such

as those in the unitary self and the external world, but there is also room for views in philosophy, science, and mathematics. And so Hume makes room for "refin'd reasoning" and "the most elaborate philosophical researches" in his skeptical approach." (Baxter, "Hume's Theory of Space and Time in Its Skeptical Context," 114-15)

Bibliography

Ainslie, Donald C. *Hume's True Scepticism*. New York, NY: Oxford University Press, 2015.

Baxter, Donald. "Hume on Space and Time." In *The Oxford Handbook of David Hume*, edited by Paul Russell, 173–91. New York: Oxford University Press, 2016.

Baxter, Donald. *Hume's Difficulty: Time and Identity in the Treatise.* Routledge, 2008.

Baxter, Donald. "Hume's Theory of Space and Time in Its Skeptical Context." In *The Cambridge Companion to Hume*, edited by David Fate Norton and Jacqueline Taylor, 2nd ed., 105–46. Cambridge University Press, 2009.

Falkenstein, Lorne. "The Ideas of Space and Time and Spatial and Temporal Ideas in the Treatise 1.2." In *The Cambridge Companion to Hume's Treatise*, 31–68. Cambridge University Press, 2015.

Franklin, James. "Achievements and Fallacies in Hume's Account of Infinite Divisibility." *Hume Studies* 20, no. 1 (1994): 85–101.

Garrett, Don. *Hume*. London and New York: Routledge, 2015.

Grene, Marjorie. "The Objects of Hume's Treatise." *Hume Studies* Volume XX, no. 2 (November 1994): 163–77.

Holden, Thomas. "Infinite Divisibility and Actual Parts in Hume's Treatise." *Hume Studies* 28, no. 1 (2002): 3–25.

Hume, David. *A Treatise of Human Nature*. 2nd ed. New York: Oxford University Press, 1978.

Jacquette, Dale. "Hume on the Infinite Divisibility of Extension and Exact Geometrical Values." *Rivista Di Storia Della Filosofia* 62, no. 3 (2007): 81–100.

Jacquette, Dale. "Kant's Second Antinomy and Hume's Theory of Extensionless Indivisibles." *Kant-Studien* 84, no. 1 (1993): 38–50.

Locke, John. *An Essay Concerning Human Understanding.* Edited by John W. Yolton. J.M. Dent & Sons Ltd, 1977.

Millican, Peter, ed. *Reading Hume on Human Understanding: Essays on the First Enquiry*. Oxford : New York: Clarendon Press, 2002.

Owen, David. *Hume's Reason*. New York: Oxford University Press, 1999.