April 2018

Hume on the Doctrine of Infinite Divisibility: A Matter of Clarity and Absurdity

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
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Date of Approval:
March 27th, 2018

Keywords: Hume, Space and Time, Infinite Divisibility, Ideas

DEDICATION

I dedicate this dissertation to my Grandmother Joan Underkuffler whose gusto for life,

perseverance, work ethic, and kindness is a continual source of inspiration.

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ABSTRACT

I provide an interpretation of Hume's argument in *Treatise* 1.2 that finite extensions are only finitely divisible (hereafter Hume's Finite Divisibility Argument). My most general claim is that Hume intends his Finite Divisibility Argument to be a demonstration in the Early Modern sense as involving the comparison and linking of ideas based upon their intrinsic contents. It is a demonstration of relations among ideas, meant to reveal the meaningfulness or absurdity of a given supposition, and to distinguish *possible* states of affairs from *impossible* ones. It is not an argument ending in an inference to an *actual* matter of fact. Taking the demonstrative nature of his Finite Divisibility Argument fully into account radically alters the way we understand it.

Supported by Hume's own account of demonstration, and reinforced by relevant Early Modern texts, I follow to its logical consequences, the simple premise that the Finite Divisibility Argument is intended to be a demonstration. Clear, abstract ideas in Early Modern demonstrations represent *possible* objects. By contrast, suppositions that are demonstrated to be contradictory have no clear ideas annexed to them and therefore *cannot* represent possible objects—their 'objects,' instead, are "impossible and contradictory." Employing his Conceivability Principle, Hume argues that there is a clear idea of a finite extension containing a finite number of parts and therefore, finitely divisible extensions are possible. In contrast, the supposition of an infinitely divisible finite extension is "absurd" and "contradictory" and stands for no clear idea. Consequently, Hume deems this supposition "impossible and contradictory," that is, without meaning and therefore, descriptive of no possible object. This interpretation allays concerns found in the recent literature and helps us better understand what drives Hume's otherwise perplexing argument in the often neglected or belittled.

INTRODUCTION

In what follows, I interpret and defend Hume's argument in Part II *Of the Ideas of Space and Time* that finite extensions are only finitely divisible (T 1.2.1.1-2.2, SBN 26-30; hereinafter Hume's Finite Divisibility Argument).[1] This argument establishes Hume's Minimism as it relates to space, the thesis that finite spatial extensions are only finitely divisible and composed of indivisible minima.[2] Minimism was important to Hume's system. He devoted thirteen pages to establishing it and twenty-seven pages to defending it (T 1.2.4, SBN 39-65). His Idea Minimism, that the *ideas* of space and time consist of separate and distinct parts underlies his argument against any necessary connexion between a cause and its effect: because any effect can be conceived as spatially and temporally distinct from its cause, the two are not inextricably linked (T 1.3.3, SBN 78-82). Moreover, Hume utilizes Idea Minimism in T 1.4.5 *Of the modern philosophy* in his Berkeleyan argument that the conception of primary qualities reduces to that of mental, secondary qualities (1.4.5.8, SBN 228). In the *Enquiry*, Hume continues to maintain his spatial Minimism, reiterating his claim that infinite divisibility is contradictory and absurd (E 12.2). That his *Enquiry* discussion presupposes the reader's familiarity with the Finite Divisibility Argument indicates its lasting importance to Hume.

Despite its very significant role in his system, Hume's spatial Minimism attracted few followers and, in the 20th century, was generally ignored or condemned by the commentators. For example, C.D. Broad writes: "[T]here seems to me to be nothing whatever in Hume's doctrine of space except a great deal of ingenuity wasted in recommending and defending

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[1] David Hume, *A Treatise of Human Nature*, 2nd ed. (New York: Oxford University Press, 1978). References to this work indicate Book, Part, Section, and paragraph numbers as given in the Norton and Norton editions, followed by the page numbers as given in the Selby-Bigge and Nidditch edition (prefaced by 'SBN').

[2] I borrow the term "Minimism" from Don Garrett, *Hume* (London and New York: Routledge, 2015), 61.

palpable nonsense."[3] Broad is wrong that Hume's argument is nonsense. Once situated in its

proper philosophical context, its structure and principles fully exposed, the argument actually

makes *a lot* of sense. Ironically, it may well be *Hume* who is defending the meaningful

doctrine—that of finite divisibility—and his opponents who are defending "palpable nonsense."

Two classic lines of criticism haunt any atomistic theory of extension. Naturally, these were

resuscitated and aimed at Hume's spatial Minimism. The first is the mathematical objection that

infinite divisibility involves proportionally smaller parts, e.g., 1/2 , 1/4, 1/8… of a whole.[4] Hume

addresses this criticism in a footnote.[5] His response is that his argument involves reasoning using

ideas of extension derived from sensation. Mathematical models of infinite divisibility are

simply that—mathematical models, they exceed our powers of conception, and they do not bear

on real finite extensions.[6] Because my principal objective is to explain and defend Hume's Finite

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[3] C.D. Broad, "Hume's Doctrine of Space," in *Proceedings of the British Academy*, vol. 37, 1961, 176. Kemp-Smith also writes "Hume's own positive teaching, that space and time consist of physical points is, I think we must agree, one of the least satisfactory parts of his philosophy." Norman Kemp Smith, *The Philosophy of David Hume: With a New Introduction by Don Garrett* (Houndmills, Basingstoke, Hampshire; New York: Palgrave Macmillan, 2005), 287.

[4] Many in the 20th century voiced this criticism of Hume's argument: Robert Fogelin, "Hume and Berkeley on the Proofs of Infinite Divisibility," *Philosophical Review* 97, no. 1 (1988): 47–69. John Laird, Hume's Philosophy of Human Nature (Archon Books, 1967), 65-7; Pressman, Hume on Geometry and Infinite Divisibility in the *Treatise,"* *Hume Studies* 23. (1997): 227-44, 241.; Thijssen, "David Hume and John Keill and the Structure of Continua," *Journal of the History of Ideas* 53 (1992), 271-86, 280.

[5] He writes: "It has been objected to me, that infinite divisibility supposes only an infinite number of *proportional* not *aliquot* parts, and that an infinite number of proportional parts does not form an infinite extension. But this distinction is entirely frivolous. Whether these parts be call'd aliquot or proportional, they cannot be inferior to those minute parts we conceive; and therefore cannot form a less extension by their conjunction" (T 1.2.2.fn 1, SBN 30). Hume's point is that the distinction between aliquot and proportional parts is "entirely frivolous" because the mind has, according to Hume, the idea of a non-extended *partless* minimum which would lack any parts, proportional or not.

[6] Holden summarizes this nicely: "If there is a coherent mathematical model of infinite divisibility, this merely shows that there can be no purely *formal* or *mathematical* complaint against it. It certainly does not show that there could be no *metaphysical* complaint against that model being translated into an actually existing physical structure." Thomas Holden, "Infinite Divisibility and Actual Parts in Hume's Treatise," *Hume Studies* 28, no. 1 (2002), 12.

Divisibility Argument against the charge that it is unsound and ought not to be taken seriously, I

will not be adding to the abundant literature on the "aliquot or proportional" parts debate.[7]

   The second classic criticism is that non-extended points cannot generate a positive

extension.[8] By coloring or solidifying the idea of an indivisible point (hereafter Hume's "least

idea" [T 1.2.2.2, SBN 29]), Hume thinks he can side-step this problem. Because this point is

important to his Least Idea Argument, which is one of the two prongs of his Finite Divisibility

Argument, I will evaluate it in my conclusion.

   The two classic objections have been joined by a wave of criticisms of more recent vintage.

First, scholars have worried that if the finite extensions are objects enjoying continued and

distinct existences, then Hume's Finite Divisibility Argument might be at odds with his

reservations (to put it mildly) about such objects in T 1.4.2 *Of skepticism with regards to the*

senses.[9] Second, Robert Fogelin criticizes Hume for an unjustified "rationalist" inference from

the adequacy of the *idea* of an indivisible minimal part, to the *reality* of such a part.[10] Third,

James Franklin believes that Hume's Finite Divisibility Argument commits the "fallacy" of

inferring "it cannot be" from "it is not conceivable."[11] According to Franklin, Hume finds

himself unable to *conceive of* an infinitely divisible finite extension, and erroneously infers that

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[7]In particularly see 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), 105–46.

[8] Kemp Smith also expresses this criticism writing: "In other words, two *unextended* sensibles, *if contiguous*, will generate what is genuinely extended!" Kemp Smith, *The Philosophy of David Hume*, 300. Henry Allison also remarks it "seems like an attempt to make something out of nothing." Henry Allison, *Custom and Reason in Hume: A Kantian Reading of the First Book of the Treatise* (Oxford: Oxford University Press, 2008), 41.

[9] See especially Dale Jacquette, "Hume on Infinite Divisibility and Sensible Extensionless Indivisibles," *Journal of the History of Philosophy* 34, no. 1 (January 1996): 75. And Donald C. Ainslie, "Adequate Ideas and Modest Scepticism in Hume's Metaphysics of Space," *Archiv Für Geschichte Der Philosophie* 92, no. 1 (2010), 39–67.

[10]Fogelin, "Hume and Berkeley on the Proofs of Infinite Divisibility," 54.

[11] James Franklin, "Achievements and Fallacies in Hume's Account of Infinite Divisibility," *Hume Studies* 20, no. 1 (1994), 93.

no finite extension is infinitely divisible. Franklin finds Hume terribly mistaken in assuming that the limitations of the human mind define the limits of reality.

I address these three criticisms by providing an intellectual-historical interpretation of Hume's Finite Divisibility Argument. That is, I consider Hume's text in light of the relevant historical *philosophical* texts—those that we know he read, and those that articulate doctrines with which he would have been familiar. My approach is different from a 'psycho-historical' interpretation—like that of Russell's *Riddle*—that takes Hume's personal circumstances into account, setting the text against the background of events such as Hume's uncle's personal crises, or Aikenhead's murder.[12] When I say 'historical reading' or 'historical context,' I mean it in the intellectual-historical sense.

What has been underappreciated are the full consequences of Hume's argument being an intended demonstration, not in the contemporary sense of applying rules of inference to a collection of supposedly self-evident axioms, but in the Early Modern sense as involving the comparison and linking of ideas based upon their intrinsic contents.[13] Once Hume's Finite Divisibility Argument is interpreted in light of his own account of knowledge and demonstration, reinforced by an appeal to the Early Modern philosophical tradition, it will be shown that these criticisms are born of a fundamental misunderstanding of the nature and scope of Hume's argument. We will begin by situating Hume's Finite Divisibility Argument within the broader Early Modern debate on the nature of extension.

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[12] Paul Russell, *The Riddle of Hume's Treatise: Skepticism, Naturalism, and Irreligion* (Oxford University Press, 2008).

[13] For this aspect of my thesis I am indebted to David Owen, *Hume's Reason* (New York: Oxford University Press, 1999).

0.1 Infinite Divisibility in the Early Modern Period

In the 17th and 18th centuries there was considerable debate on the ancient question regarding the composition of extension. Fromondous, Pascal, Leibniz, Bayle, and Berkeley (to name a few) entered the fray. There seemed to be three viable options: extension is finitely divisible and composed of non-extended mathematical points, finitely divisible and composed of material atoms, or infinitely divisible. At least three texts with which Hume was familiar discuss the issue in detail: Antoine Arnauld's *Port Royal Logic,* Bayle's *Dictionary,* and Samuel Clarke's *A Demonstration on the Being and Attributes of God.*[14] We will use these texts to set the stage for Hume's debut.

Arnauld discusses the topic of infinite divisibility in section four of his *Logic,* titled "Demonstration." Arnauld admits that demonstrations for infinite divisibility are peculiar. To him, at least, they are clear and certain, yet they lead the mind to the incomprehensible infinite.

Arnauld cites two such demonstrations. The first is the geometrical *reductio* from indivisible minimum parts.[15] The second relies on two assumptions: that two non-extended entities cannot generate a positive extension and that every extension has parts.[16] Granting these two assumptions, Arnauld argues:

> [T]aking two of these parts that are assumed to be indivisible, I ask whether they do or do not have any extension. If they have some extension, then they are divisible, and they have several parts. If they do not, they therefore have zero extension, and hence it is impossible for them to form an extension.[17]

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[14] James A. Harris, *Hume: An Intellectual Biography* (New York, New York: Cambridge University Press, 2015), chap. pursuits of philosophy and general learning.

[15] Geometry shows us that the sides and diagonal of a square are incommensurable in length. Now suppose that the sides of a square are composed of two indivisible minimum parts. According to the Pythagorean Theorem, the diagonal would have a length of $2\sqrt{2}$ equaling 2.82… which would divide an indivisible minimum—a clear contradiction and absurdity—or require more minimal parts, contrary to supposition.

[16] Arnauld writes: "nothing is clearer than this reasoning, that two things having zero extension cannot form an extension." Antoin Arnauld and Pierre Nicole, *Logic or Art of Thinking*, ed. Jill Vance Buroker (Cambridge Texts in the History of Philosophy, 1996), 231.

[17]Ibid, 231-232.

According to Arnauld, being extended implies having parts and having parts means being divisible. If indivisible atoms have extension, then they have parts and are not indivisible. If indivisible atoms have zero extension, so as not to have parts, then they cannot form an extension by their conjunction.

Arnauld considers these arguments to be irrefutable demonstrations for the infinite divisibility of extension, declaring that "We would have to renounce human certainty to doubt the truth of these demonstrations."[18] Yet, despite their certainty, Arnauld admits that the conclusions are dazzling and incomprehensible for the limited human mind. He marvels:

> How to understand that the smallest bit of matter is infinitely divisible and that one can never arrive at a part that is so small that not only does it not contain several others, but it does not contain an infinity of parts; that the smallest grain of wheat contains in itself as many parts, although proportionately smaller, as the entire world…So there is no particle of matter that does not have as many proportional parts as the entire world, whatever size we give it. All these things are inconceivable, and yet they must necessarily be true, since the infinite divisibility of matter has been demonstrated.[19]

Arnauld's commitment to the Actual Parts Principle is apparent (I discuss the Actual Parts Principle in Chapter Three): every part of extension contains an infinite number of *actual*, pre-existing parts. This yields the dazzling conclusion that "there is no particle of matter that does not have as many proportional parts as the entire world." Worlds in worlds, never-ending.

Bayle reiterates these stock arguments against mathematical points and physical atoms in the *Zeno* entry in his *Dictionary*. As for mathematical points, he asserts that "several nonentities of extension joined together will never make up an extension."[20] As for physical atoms, Bayle maintains that "[t]he indivisibility of an [physical] atom is...illusory. If there is any extension then, it must be the case that its parts are divisible to infinity."[21] These arguments seem to leave

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[18] Ibid.
[19] Ibid.
[20] Pierre Bayle, Historical and Critical Dictionary: Selections, ed. and trans. Richard H. Popkin (Indianapolis, Ind.: Bobbs-Merrill Company, Inc., 1965). See esp. the article 'Zeno of Elea', ibid., 350–88. P 359-60.
[21] Ibid, 60.

infinite divisibility as the only viable option. Bayle still maintains, however, that the notion of

infinite divisibility is utterly obscure. He writes:

> But all the trouble [that the Schoolmen] have gone to [inventing jargon] will never be capable of obscuring this notion that "an infinite number of parts of extension, each of which is extended and distinct from all the others...***cannot*** be contained in a space one hundred million times smaller than the hundredth part of a grain of barley"[22]

According to Bayle, the human mind is incapable of comprehending the composition of

extension. This incapacity is, however, of no fundamental concern. Instead, the exposition of

these arguments, and appreciating the futility of either refuting them or comprehending their

consequences, can strengthen ones' faith. Bayle writes that "I am even convinced that the

exposition of these arguments can be of great service to religion" ultimately agreeing with "that

which Nicole [and Arnauld] have said about those concerning infinite divisibility."[23] Bayle

agrees with Arnauld: the wonderment of infinite divisibility can bring one closer to God.

Clarke argues in *A Demonstration on the Being and Attributes of God* that

demonstrations have authority over obscurity, or what he terms "inadequate ideas." Clarke

writes:

> [W]hen once any proposition is clearly demonstrated to be true, it ought not to disturb us that there be perhaps perplexing difficulties on the other side which, merely for want of adequate ideas of the manner of the existence of the things demonstrated, are not easy to be cleared.[24]

Clarke's example is infinite divisibility. That we cannot comprehend how "the smallest grain of

wheat contains in itself as many parts…as the entire world" is a mere conceptual difficulty that

could never undermine the demonstrations for infinite divisibility. The inadequacy of our idea of

infinity is of no concern.

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[22] Ibid, my emphasis.
[23] (fn G p 372) Bayle cites the passage from Logic part 4 chapter 1
[24] Samuel Clarke, *A Demonstration of the Being and Attributes of God And Other Writings*, ed. Ezio Vailati (Cambridge, U.K. ; New York: Cambridge University Press, 1998), 9.

Hume rolls his eyes at Arnauld and Bayle's intellectual prostration. He begins T 1.2 with the following observation:

> Any thing propos'd to us, which causes surprise and admiration, gives such a satisfaction to the mind, that it indulges itself in those agreeable emotions, and will never be perswaded that its pleasure is entirely without foundation…I cannot give a more evident instance [of this] than in the doctrine of infinite divisibility…. (T 1.2.1.1, SBN 26)

The appeal of the doctrine of infinite divisibility lies not in the soundness of its purported demonstrations, but in its emotional appeal, its ability to excite the "agreeable emotions" of wonder and awe.

Sections I, II and IV of *Treatise* 1.2 come into view. Hume does more than tease the adherents of the doctrine of infinite divisibility for their passion. In sections I and II Hume endeavors to provide his own rival demonstration, one of spatial Minimism. Section IV is Hume's attempt to undermine his rivals' favorite weapon—the geometrical demonstration. For the most part, I set this aspect of Hume's project to one side. I will focus on Hume's attempted demonstration of spatial Minimism in sections I and II, i.e. his Finite Divisibility Argument.

0.2 Dissertation Overview

Underappreciated in the literature is that Hume's Finite Divisibility Argument is an intended demonstration (in the Early Modern sense). Interpreting Hume's Finite Divisibility Argument in light of his own account of knowledge and demonstration, enriched by the relevant historical background, confutes many of the criticisms leveled against it and avoids many of the interpretive difficulties it would otherwise face.

Hume's Finite Divisibility Argument can be understood in the following, simple terms. Following his tradition, Hume assumes the question is binary: either finite extensions are only finitely divisible or infinitely divisible. Hume argues that the supposition of an infinitely

divisible finite extension is "absurd" (T 1.2.2.2, SBN 29) and "impossible and contradictory" (T 1.2.2.1, SBN 30). This, according to Hume, leaves finite divisibility as the only meaningful option. Hume's argument depends on the following "chain of reasoning":

> 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)

Hume's Finite Divisibility Argument can be broken into two sub-arguments. The first, which I call Hume's Least Idea Argument,[25] endeavors to prove that the human mind can form a clear *idea* of a finite extension being composed of a finite number of indivisible, colored or tangible minimum parts—Hume's least ideas. By virtue of the Conceivability Principle that "Whatever can be conceiv'd by a clear and distinct idea necessarily implies the possibility of existence" (T 1.2.4.11, SBN 43)[26] the clear idea of a *finitely* divisible finite extension entails its possible existence. However, Hume must rule out the only other option. What I call his Infinite Divisibility Refutation,[27] is intended to demonstrate that the supposition of an *infinitely* divisible finite extension is "absurd", "impossible and contradictory."

Hume's Infinite Divisibility Refutation needs to be understood against the background of Early Modern demonstrative reasoning. Contemporary syntactical inference would structure his argument in the following way:

Suppose P
P→(Q & -Q)
Therefore, -P

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[25] T 1.2.1.2-5, SBN 26-28; from "'Tis universally allow'd..." to "multiplicity of these parts"

[26] See also "nothing of which we can form a clear and distinct idea is absurd and impossible" (T 1.1.7.6, SBN 19-20). See also T 1.2.3.7, 1.2.4.11, 1.2.5.33, T 1.2.5.3, 1.3.3.3, 1.3.6.1, 1.3.6.5, 1.3.9.10, 1.4.5.5, 1.4.5.36, *Abstract*; SBN 32, 43, 53, 54, 79-80, 87, 89, 111, 233, 250, 650

[27] T 1.2.2.2, SBN 29; from "Every thing capable…" to "no finite extension is infinitely divisible"

The contemporary logician would call this a valid inference. However, the Early Moderns did not reason like this. For Hume, demonstrative inference requires the comparison and linking of ideas involving proportions of quantity or number [1.1].[28] Hume and his tradition would frame his argument in the following way, where 'P' stands for an expression, and 'Q' and 'R' stand for ideas that are at odds with one another:

> P invokes (Q & R)
> P stands for no composite idea because it is contradictory.
> Therefore, P is absurd and meaningless

A contradictory expression stands for no composite idea and is therefore absurd and meaningless. No inference can be made from an expression that cannot be ideated because making an inference requires the linking of ideas. This is what I call Inferential Abstinence: no idea, no inference.

What motivates my interpretation of every step in Hume's Finite Divisibility Argument is Hume's own account of knowledge and demonstration, rounded out by the philosophical texts on this topic in Hume's tradition. For my interpretation to gain traction, then, I first need to establish that Hume intends his argument to be a demonstration, and that it meets his requirements for being one. This is the purpose of chapter one. According to Hume, successful demonstrations must have the following features: the intrinsic contents of the ideas must be static; the relations between the ideas must be quantity or number; the ideas must be abstract (they must be concepts and there must be general terms representing idealized revival sets); and the exemplar idea as well as the other ideas in the revival set must be clear.[29] I then evaluate Hume's Finite Divisibility Argument according to these criteria. Hume's argument is riddled with

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[28] The bracketed number indicates the chapter and section where I establish the relevant claim. So [1.1] is chapter one section one

[29] This account of abstract ideas is indebted to the work of Garrett, *Hume*, sec. 2.4 "Abstract Ideas (concepts)."

demonstrative language,[30] and Hume at one point seems to characterize it as a being a

demonstration (T 1.2.2.5, SBN 31). As we have already seen in this introduction, the Early

Modern texts that were generated in the debate over the nature of extension, frequently contained

attempted demonstrations for and against infinite divisibility. Finally, I am not alone in

considering Hume's argument to be an intended demonstration: Don Garrett and Marina Frasca

Spada subscribe to the same view.[31]

Chapter two establishes the relevant context that helps clarify Hume's Finite Divisibility

Argument. In Part II sections I and II, Hume vexes the reader by leaving essentially undefined,

'clear' or 'adequate' idea, 'knowledge', 'impossible', and 'contradictory', all foundational terms

signifying concepts crucial to his argument. By surveying the relevant texts of Descartes,

Arnauld, Leibniz, Locke, Clarke, Berkeley and Hutcheson, we can find the meanings the Early

Moderns gave these important terms. Moreover, I highlight how the argumentative structure of

Hume's Finite Divisibility Argument mirrors the 'demonstrations' found in these texts.

In three successive chapters, I break Hume's Finite Divisibility Argument into three

parts: Hume's Least Idea Argument, Hume's employment of the Adequacy Principle (T 1.2.2.1,

SBN 29), and Hume's Infinite Divisibility Refutation. Each chapter shows how the common

concerns and criticisms are best addressed once it is recognized that Hume's Finite Divisibility

Argument is an attempted demonstration of the Early Modern variety, using Early Modern

terminology and argument structure and resting on fundamental Early Modern principles.

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[30] Hume writes that there is not "any possible means of evading the evidence of [his] conclusion" (T 1.2.1.2, SBN 27); pronounces that his point "[t]is' therefore certain" (T 1.2.1.3, SBN 27); and asserts that his conclusion allows for no "farther excuse or evasion" (T 1.2.2.1, SBN 29).

[31] Frasca Spada writes that "Hume is very explicit in stating that [his argument] is a positive demonstration against the infinite divisibility [of a finite extension]."Marina Frasca-Spada, *Space and the Self in Hume's Treatise* (Cambridge University Press, 1998), 44. And Garrett writes that Hume "claims to have just fully *demonstrated* the truth of Minimism as the first main thesis of his system." Garrett, *Hume*, 65, my emphasis.

Chapter three provides detail and support to Hume's Least Idea Argument, which establishes that any idea of a finite extension formed by the mind must resolve itself into least ideas. Next, I consider whether Hume's least idea is an unnoticed exception to his Copy Principle that all simple ideas are derived directly or indirectly from prior simple impressions (T 1.1.1.7, SBN 4). From the text it might *appear*, to the discomfort of the reader, that Hume's least idea is either the result of an argument, or part of a theory about the imagination. If according to theory it is the minimal idea the *imagination* can form, it seems to lack the lineage— the derivation from an original, simple impression—demanded by the Copy Principle. Baxter's reading could be used to sidestep this difficulty because he maintains that Hume's least idea is derived from the ink spot or analogous experiments.[32] This reading, however, by itself, does not provide the level of generality required by Hume's ultimate conclusion that "no finite extension is infinitely divisible" (T 1.2.2.2, SBN 30), a conclusion that pertains to *all* finite extensions, not just his or the reader's ink blot. Moreover, Hume, with Locke, Berkeley and Hutcheson, maintains that demonstrations employ abstract ideas. Consequently, to do the work it needs to do, Hume's least idea has to be an abstract idea. Under Garrett's analysis, any abstract idea (concept) requires a revival set of ideas.[33] Drawing on Baxter's reading, and showing how the "ink spot" phenomenon, while contrived, actually belongs to a class of common experiences (those of just barely visible objects), I detail how the apparent conflict between Hume's least idea and Copy Principle can be resolved. The memory-idea derived from the ink spot experiment it not itself *the* least idea, but it can serve as the exemplar within the actual revival set.

Chapter four is written in defense of Hume's Adequacy Principle:

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[32] Baxter, "Hume's Theory of Space and Time in Its Skeptical Context," 108.
[33] Garrett equates "abstract ideas" with "concepts" Garrett, *Hume*, 52.

> WHEREVER ideas are adequate representations of t 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)

The Adequacy Principle appears to license claims about "objects" and their "relations, contradictions and agreements" on the basis of ideas that are "adequate representations" of them. I address two concerns voiced in the literature regarding Hume's Adequacy Principle. First, Robert Fogelin argues that Hume provides no justification for this "rationalist principle…that adequate ideas of objects are *eo ipso* true of them." [34] Second, if "objects" are taken as continued and distinct existences, then Hume's Adequacy Principle appears inconsistent with his skeptical arguments in T 1.4.2 *Of skepticism with regard to the senses.*

However, once one appreciates an important ramification of Hume's Adequacy Principle being situated in an intended demonstration, these difficulties are removed. The ideas for which general terms (such as 'extension') in a demonstration stand are abstract ideas (concepts). Clear abstract ideas have revival sets of clear ideas. By the Conceivability Principle, the clarity of the idea of an object entails the *possible* existence of that object. The same goes for the adequacy of an idea: adequate ideas, like clear ideas, entail mere *possible* existence. Consequently, adequate ideas of *external* objects represent *possible* objects. The arguments in T 1.4.2 challenge our ability to establish the *actual* existence of external objects. Because the adequacy of an idea is determined by an examination of the qualitative features of the idea itself, with no need for a direct, unmediated acquaintance with the object of the idea, and because an adequate abstract idea represents the *possible* objects of the adequate ideas within its revival set, Hume's skeptical arguments in T 1.4.2 leave the Adequacy Principle unscathed.

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[34] Fogelin writes: "[T]he transition from claims about our ideas of space and time to assertions about space and time themselves... is a match for anything found in the writings of the rationalists," and that "Hume certainly owes us... a defense of the general rationalist principle that adequate ideas of objects are eo ipso true of them." Fogelin, "Hume and Berkeley on the Proofs of Infinite Divisibility," 54.

In chapter five I supply an account of contradiction that is consistent, both with the tradition and with what little Hume has to say on the subject. I then apply this account to his Infinite Divisibility Refutation. After stating the Adequacy Principle, and arguing that the least idea adequately represents the smallest possible part of extension,[35] Hume utilizes the concept of the least idea to demonstrate that the supposition of an infinitely divisible finite extension is "impossible and contradictory." Here, James Franklin dramatically indicts Hume for committing the "gross" fallacy "It is not conceivable, so it cannot be."[36] According to Franklin, Hume mistakenly infers that no infinitely divisible finite extension exists from his own mental infirmity, that is, his inability to conceive of an infinitely divisible finite extension. Franklin's reading of the Infinite Divisibility Refutation has Hume egregiously overlooking his famous Fork, which calls for the rigid bifurcation of claims based on relations of ideas and claims of matters of fact based on experience. Franklin has Hume inferring a matter of fact (that no finite extension *exists* as infinitely divisible) from a contradictory relation of ideas.

However, once Hume's Infinite Divisibility Refutation is recognized as being part of an intended demonstration, Franklin's interpretation is seen to be misguided. For Hume, as well as his tradition, terms are meaningful when they stand for clear ideas. Contradictory suppositions are expressions that purport to, but do not, stand for composite ideas. A contradictory supposition such as 'an infinitely divisible finite extension' stands for no *composite clear* idea because one cannot combine into one complex idea, the idea of being infinitely divisible, with the idea of a finite extension. For that reason, the phrase "infinitely divisible finite extension" is

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[35] Of course, employing Garrett's account of abstract ideas, we recognize that 'least idea' is a general term that stands for an exemplar and revival set of adequate ideas of barely visible (or tangible) extended objects. This is how "the least idea adequately represents the smallest possible part of extension."
[36] Franklin, "Achievements and Fallacies in Hume's Account of Infinite Divisibility," 93.

meaningless and absurd.[37] Hume practices Inferential Abstinence. He does not, *pace* Franklin, infer the non-existence of any object that is an infinitely divisible finite extension from the meaninglessness and absurdity of that description. Instead, he infers nothing. Because a contradictory supposition stands for no idea, one can infer from it, nothing about any purported object, including the existence or non-existence of any object.

Moreover, Hume's Fork does not pose a problem for the Infinite Divisibility Refutation. Demonstrations, including Hume's, concern relations among abstract ideas, and demonstrated conclusions pertain to the possible objects for which ideas in the revival sets of the abstract ideas stand. When one demonstrates that no triangle can have two right angles, using symbols that stand for triangles, this has no bearing on whether or not any *triangles* exist *as objects that are not symbols or ideas*. But not having two right angles does hold true for all the particular *ideas* of triangles that are members of the abstract triangle idea's revival set. Likewise, when Hume concludes that "no finite extension is infinitely divisible" (T 1.2.2.2, SBN 30) he is not claiming that no finite extension *exists* as infinitely divisible. Existential claims are non-demonstrable, according to Hume. Instead, what he is claiming is that to say that any of the possible objects within 'finite extension's' idealized revival set is infinitely divisible is to utter nonsense. But members of idealized revival sets are only *possible* objects. The claim that finite extensions exist, or exist as finitely divisible, cannot be demonstrated—it is a contingent matter of fact that could only be established through observation and experience.

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[37] Baxter makes a similar point when he writes "Talk by Hume's critics of infinitely divisible space as a set of points ordered as a continuum would for him amount merely to empty words. Given the copy principle, since there could be no impression of such a set with its elements ordered in such a way, there could be no idea of it." However, Baxter only identifies the Copy Principle as the reason why there is "no idea" of infinite divisibility, while I explain that there is no idea of infinitely divisibility because it is, according to Hume, a contradictory supposition. Baxter, "Hume's Theory of Space and Time in its Skeptical Context," 119.

I conclude with a summary of my dissertation, an enumeration of the philosophical difficulties facing Hume's Finite Divisibility Argument, and I raise some questions for further research.

0.3 Justification of Texts

In a famous letter in Hume Scholarship, Hume wrote to Ramsay urging him to read Malebranche's *Search for Truth*, Berkeley's *Principles,* Bayle's *Dictionary* and Descartes' *Meditations* in preparation for his *Treatise*.[38] Additionally, in his *Treatise,* Hume cites Locke's *Essay* four times.[39] He cites the following once: Arnauld's *Port Royal Logic*,[40] Barrow's *Mathematical Lectures,*[41] Shaftsbury's *Moralists;*[42] and he cites Berkeley,[43] Hobbes,[44] and Clarke[45] without indicating the work. The letter to Ramsay, coupled with these citations, makes these texts important references.

I also utilize Leibniz's *Meditations on Knowledge, Truth and Ideas.* There is no definitive evidence that Hume read this. However, in the *Abstract* Hume indicates familiarity with Leibniz's work (*Abstract,* SBN 646-7), and Leibniz's *Meditations on Knowledge, Truth and Ideas* was published in the well-circulated November 1684 issue of the Leipzig journal *Acta*

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[38] Hume writes: "I shall submit all my Performances to your Examination, & to make you enter into them more easily, I desire of you, if you have Leizure, to read once over La Recherche de la Verite of Pere Malebranche, the Principles of Human Knowledge by Dr Berkeley, some of the more metaphysical articles of Bailes Dictionary, such as those […of] Zeno, & Spinoza. Des-Cartes Meditations would also be useful but don't know if you will find it easily among your Acquaintances[.] These Books will make you easily comprehend the metaphysical Parts of my Reasoning…" Included in Richard H. Popkin, "So, Hume Did Read Berkeley," *Journal of Philosophy* 61, no. 24 (1964): 775.

[39] T 1.1.1.1, 1.2.3.7, 1.3.3.7, 1.3.14.5; SBN 2, 35, 81, 157

[40] T 1.2.4.12, SBN 43

[41] T 1.4.2.21, SBN 46

[42] T 1.4.6.6, SBN 254

[43] T 1.1.7.1, SBN 17

[44] T 1.3.3.4, SBN 80

[45] T 1.3.3.5, SBN 80

Eruditorum, which Leibniz often cites in his later writings. It is therefore plausible that Hume was familiar with this work, or at least the philosophical doctrines contained within it.

I also appeal to Hutcheson's *Logic* and *Metaphysics* for clarification of key terms. It is highly unlikely that Hume read this work, as it was published in 1756 (seventeen years after the *Treatise*). However, Hutcheson wrote his *Logic* and *Metaphysics* in the 1720's to serve as a textbook to prepare his Dublin academy students for University studies in Glasgow, Scotland. [46] Consequently, there is very good reason to believe that Hutcheson's *Logic* and *Metaphysics* reflects the 'standard' philosophical views found at Scottish Universities, and might closely resemble the philosophical system Hume would have been taught at Edinburgh. It is likely that, in Hume's text, "adequate representation" and "impossible and contradictory" have the meanings spelled out in Hutcheson's definitions of those terms.

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[46]Francis Hutcheson, *Logic, Metaphysics, and the Natural Sociability of Mankind*, ed. James Moore and Michael Silverthorne (Liberty Fund, 2006), chap. introduction p xxiii.

One

Hume's Finite Divisibility Argument is an Intended Demonstration

In this chapter I defend my general claim that the Finite Divisibility Argument is an intended demonstration (in the Early Modern sense). No one, to my mind, has sufficiently taken this into account. If I am correct that Hume's argument is meant to be a demonstration, then his account of knowledge and demonstration and the relevant historical context will act as important interpretive guides.

First I briefly sketch Hume's account of how knowledge is acquired through demonstration. Then I provide the reasons I believe Hume considers his Finite Divisibility Argument a demonstration that produces knowledge of extension and address the most obvious counterargument, which is based on the structure of Hume's presentation. Hume titles Part II, Section I, "Of the infinite divisibility *of our ideas* of space and time" (emphasis added) and Section II "Of the infinite divisibility of space and time." These headings suggest that Hume is moving from our *ideas* of space and time to space and time *themselves*. This transition from ideas to the objects of those ideas might signal a move from the relations of ideas to matters of fact and existence, making Hume's Finite Divisibility argument in Section II probable reasoning and not a demonstration. I respond to this objection by explaining that the "objects" of Hume's Finite Divisibility Argument should be interpreted as "possible objects." This subtle (but nevertheless important) qualification removes the difficulty.

1.1 Hume on Knowledge and Demonstration

Hume devotes a brief section to "knowledge" (*Of knowledge* T 1.3.1, SBN 69-73). Hume explains that knowledge arises when one compares ideas and, in virtue of the content of those ideas, becomes aware that they stand in a relation. This can happen 'at first sight' in what Hume calls an "intuition." As noted by David Owen, "[i]ntuiton is the direct awareness that two ideas stand in a certain relation."[47] Such an awareness constitutes immediate, intuitive knowledge. Knowledge can also be acquired through a "chain of reasoning" (T 1.3.1.5, SBN 71). This is "the process whereby we become aware that one idea stands in a relation to another, not directly, but via a chain containing one or more intermediate ideas such that the relation between each idea and its neighbor is intuitively known."[48] Hume calls the latter "demonstration" or "demonstrative reasoning" (T 1.3.1.7, SBN 72), epitomized in "algebra and arithmetic" (T 1.3.1.5, SBN 71).

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

1. The content of the ideas cannot change in the course of the demonstration. For example, if the content of the idea 'three' were to change, then one could not reason demonstratively to the conclusion that two plus three equals five. Throughout their employment in the demonstration, the ideas must be *static*.

2. The only qualities that can be related amongst such static ideas are quantity and number (T 1.3.3.2, SBN 70). Hume argues that the other natural relations, those of resemblance, contrariety and quality "fall more properly under the province of intuition than demonstration" (T 1.3.1.2, SBN 70) because these relations are "discoverable at first sight" (ibid). Demonstration requires the inter-positioning of one or more intermediate

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[47] Owen, *Hume's Reason*, 91.
[48] Ibid.

ideas between the initial idea and the idea of interest before the relation between the initial idea and the idea of interest becomes apparent, which means that, prior to that inter-positioning, the relation between the two is known neither immediately nor intuitively. Despite the necessity of having intermediate ideas, certainty is possible, with respect to quantity or number, thanks to the employment of the idea of a unit. The unit provides a "precise standard, by which we can judge of the equality and proportions of numbers" (T 1.3.1.5, SBN 71). Significantly, Hume remarks that, if geometricians incorporated Humean points into their model of extension, they too could claim theirs to be an exact science: "'tis for want of such a standard of equality [provided by the unit] in extension, that geometry can scarce be estseem'd a perfect and infallible science" (ibid).

3. The ideas used in the demonstration must be abstract. Hume writes that knowledge arises from "abstract reasoning" and that demonstration regards the "abstract relations of our ideas" (T 2.3.3.2, SBN 413). As Garrett observes, Hume's "tendency to use 'abstract reasoning' as an alternative term for what he officially calls 'demonstrative reasoning' seems to presuppose that such reasoning makes essential use of abstract ideas"[49] adding that "successful demonstrative reasoning typically involves recognizing relations among abstract ideas by way of successful or unsuccessful efforts operations of inclusion, exclusion, combination, and intersection of their revival sets."[50] An abstract idea's (concept's) "revival set" is, roughly speaking, the collection of particular ideas (including the particular idea that serves as the collection's exemplar[51]) associated with that abstract idea (concept). Garrett further distinguishes between the "*actual* revival set (either

[49] Garrett, *Hume*, 58.
[50] Ibid, 92.
[51] Ibid, 55.

ordinary or expanded) that is associated with a general term in a given person's mind at a

particular time" and the "*idealized* revival set that *would* result from an indefinite

extension of veridical experience concerning the…character of objects."[52] As Garrett

notes, "without such a distinction, it is not possible to explain the full range of possible

truths and errors in judgment using abstract ideas."[53] In the case of demonstrations

involving quantity or number the abstract idea presumably represents the *idealized*

revival set.

4. The abstract ideas must be clear. According to Hume, abstract reasoning requires the

employment of clear ideas. He writes:

> [W]herever we reason, we must antecedently be possest of clear ideas, which
> may be the objects of our reasoning. The *conception* always precedes the
> understanding; and where the one is obscure, the other is uncertain; where the
> one fails, the other must fail also (T 1.3.14.17, SBN 164, emphasis added).

Note Hume's use of the term 'conception'. Conceptions are abstract ideas. "Clear ideas,"

for Hume, are those ideas unmistakably "copy'd from" identifiable sense-impressions:

"since all impressions are clear and precise, the ideas, which are copy'd from them, must

be of the same nature" (T 1.3.1.7, SBN 72).[54] Presumably, an abstract idea (conception)

will be clear when its actual revival set consists of ideas that are unmistakably copied

from identifiable impressions.

5. Knowledge arises from the comparison of ideas—it depends "solely upon ideas" (T

1.3.1.2, SBN 70). The conclusions reached through demonstrative reasoning concern

relations among ideas. Neither the clarity nor the adequacy of an idea entails that its

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[52] Garrett, *Hume*, 56.
[53] Ibid.
[54] T 1.1.6.1, 1.2.3.1, 1.3.2.4; SBN 15, SBN 33, SBN 74-5

object exists. Therefore, matters of fact, which concern "the existence of objects or of their qualities" (T 1.3.7.2, SBN 94), are never demonstrated. As Hume succinctly puts it, the "province" of knowledge and demonstration is "the world of ideas" (T.2.3.3.2, SBN 94).

So long as the foregoing limitations and rules are properly recognized and observed in the course of the demonstration, any conclusion that is reached will necessarily be true. Hume writes "A demonstration, if just, admits of no opposite difficulty" (T 1.2.2.5, SBN 31). The certainty of a conclusion reached through its demonstration means that the denial of that conclusion implies a contradiction. Hume writes: "wherever a demonstration takes place, the contrary is impossible, and implies a contradiction' (A 650). This contradiction consists of one holding that one or more ideas is and is-not something, simultaneously.[55]&[56] More will be said on contradiction in chapters two and five.

Demonstrative reasoning contrasts sharply with probable reasoning. Demonstrative reasoning reveals relations among ideas, not relations among ideas and actual objects or relations

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[55] See also SBN 87, A 653, EHU 26, 35, 164.

[56] One may wonder how exactly the denial of the conclusion of a demonstration implies a contradiction. We can appeal to the work of David Owen for answers.

Owen writes: "The point is the denial of an intuitive or demonstrative truth implies a change in one or both of the ideas so related. So one is holding that an idea both is and is not something: that is the contradiction." Owen, *Hume's Reason*, 109. Owen explains that to deny an intuitively true proposition linking two ideas—idea[1] and idea[2]—would require a change in idea[1], idea[2], or both. For example, attempt to deny that 4 is *greater-than* 3 (that is, deny this intuitive proposition). Justifying this denial would require changing the number 4 to the number 2 ('idea[1]'), or the number 3 to the number 5 (idea[2]): "a change in one or both of the ideas so related." Consequently, to deny that 4 is *greater-than* 3 would be to hold that idea[1] is the number 4 (itself) and the number 2 (not itself), simultaneously, which is a contradiction. But remember, drawing on the tradition, a contradiction is a thing and that thing's negation. Therefore, technically speaking, denying that 4 is *greater-than* 3 implies a contradiction because it would be to hold that idea[1] is 4 (itself) and not 4 (not itself) simultaneously, because 2 falls within the range of being not 4.

Importantly, a change in the ideas does not necessarily imply a contradiction. Idea[1] could be changed from the number 4 to the number 5 and the proposition idea[1] is *greater-than* idea[2] would still be true (that is, 5 would still be *greater-than* 3). The contradiction necessarily arises if and only if one denies an intuitive proposition. The denial is key. The denial, of course, requires changing one or more of the ideas, and the change sufficient to ground the denial leads to a contradiction.

among actual objects. The conclusions one reaches through demonstrative reasoning remain in the "world of ideas." In contrast, probable reasoning directly concerns the actual existence of objects and their qualities. And unlike demonstrative reasoning, probable reasoning utilizes the relation of cause and effect. Hume writes: "all reasonings from causes or effects terminate in conclusions, concerning matter of fact; that is, concerning the existence of objects or of their qualities" (T 1.3.7.2, SBN 94). Those objects and their qualities are *not* static. Hume writes "two objects may be chang'd merely by an alteration of their place" (T 1.3.1.1, SBN 69).

To summarize, the important features of Hume's account of knowledge and demonstration are as follows: knowledge arises from the comparison and linking of clear abstract ideas. An abstract idea is clear when its revival set consists of ideas unmistakably copied from identifiable impressions. The ideas must be static through the course of the demonstration and the relation between them must be that of proportion in quantity or number. As Garrett points out, the relations of agreement and difference, and the association of ideas based upon them, are best understood as the inclusion and exclusion of the relevant revival sets of the abstract ideas (concepts) employed in the demonstration. The relations of quantity or number admit of long "chain[s] of reasoning" because the ideas of quantity or number utilize the precise idea of the unit. The ideas employed in demonstration, importantly, remain "in the world of ideas." That is to say, no conclusions about the existence or nonexistence of objects or of their qualities (that is, no matters of fact) are demonstrated. And finally, the conclusions of demonstrations are certain and their denial implies a contradiction. This contradiction consists of one holding that one or more ideas is and is-not itself, simultaneously.[57]

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[57] See note 56 above.

1.2 Why Hume's Finite Divisibility Argument is an Intended Demonstration

I should make plain that, by contemporary standards, Hume's Finite Divisibility Argument may not *qualify* as a demonstration, let alone a *successful* demonstration. By those standards, to be considered the result of a formal demonstrative proof, a conclusion must be a statement traceable back to self-evident statements (axioms) and be reached from those axioms through the use of accepted rules of inference. First of all, as we shall see, Hume's Finite Divisibility Argument requires, as one of its premises, the Actual Parts Principle. To many, that principle would hardly qualify as a self-evident axiom, even though Hume seems to treat it as such. More importantly, as Owen points out, "our concept of a deductively valid argument, even one with necessarily true premises, has little to do with Hume's conception of demonstration."[58] An idea employed in what *Hume* would consider a demonstration may or may not have the propositional form *we* would require of each statement in a formal demonstrative proof. Hume's example of a single idea possessing propositional form is the idea of God (T 1.3.7.5 fn 1, SBN 96-7). Perhaps Hume would consider a clear abstract idea like "triangle" or "extension" or "one" to be a proposition as well. If so, the linking of one of those clear abstract ideas in a chain containing other clear abstract ideas could constitute a demonstration by his standards, even if not by contemporary standards. And for Hume, a conclusion is demonstrated when one clear abstract idea (the conclusion) is intuitively linked to a clear abstract intermediary idea which is in turn intuitively linked to another clear abstract idea. Notwithstanding any superficial resemblance to syllogistic form, this process of linking ideas has less to do with the observance of formal rules than it does with the psychological tendency to associate one idea with another based on their contents. (As Owen puts it, "Humean demonstration is a matter of content, not form."[59]) Hume does not say

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[58] Owen, *Hume's Reason,* 9.
[59] Ibid.

that, in the course of a demonstration, we link ideas according to formal rules of inference. Formal rules may or may not fully capture how and when we find ourselves linking our thoughts together. So all I will be claiming is that Hume's Finite Divisibility Argument is a demonstration by Early Modern standards, *or at least Hume considers and presents it as such.*

Hume's tone throughout the argument is that of necessity and certainty: "…nor are there any possible means of evading the evidence of this conclusion" (T 1.2.1.2, SBN 27); "[t]is' therefore certain" (T 1.2.1.3, SBN 27); and "whatever *appears* impossible and contradictory upon the comparison of these ideas, must be *really* impossible and contradictory, without any farther excuse or evasion" (T 1.2.2.1, SBN 29). One may worry how seriously we are meant to take such language, given Hume's famous caveat at the end of Book I that expressions such as "*tis evident, 'tis certain, 'tis undeniable*" were "extorted from [him] by the present view of the object, and imply no dogmatical spirit" (T 1.4.7.14, SBN 274). Prudence dictates that we not treat his tone of necessity and certainty as alone dispositive of whether he intends his Finite Divisibility Argument to be a demonstration, so we will look elsewhere for clues.

The strongest piece of textual evidence is that Hume claims that his Finite Divisibility Argument is not a "difficulty" for the doctrine of infinite divisibility, but a demonstration against it (T 1.2.2.5, SBN 31). To be fully appreciated, this important passage must be given some historical context. In *Demonstration*, Clarke admits that conclusions reached through demonstration may be subject to "metaphysical difficulties" but he considers such difficulties to be of no account. He considers the demonstration of infinite divisibility to be one such case. He asserts that it is "demonstrable that quantity is infinitely divisible."[60] However, he acknowledges that arguments in favor of "aliquot parts" pose "metaphysical difficulties" for that position. It is

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[60] Clarke, *A Demonstration of the Being and Attributes of God And Other Writings*, 9.

just that, in the face of geometrical demonstrations, such difficulties "ought to be esteemed vain and of no force."[61]

Hume thinks the balancing of proofs is hogwash. With respect to Malezieu's argument, (T 1.2.2.3, SBN 30), his own argument for discrete moments of time, and his Finite Divisibility Argument, each of which, presumably, Clarke would consider a harmless "metaphysical difficulty," Hume writes:

> I doubt not but it will readily be allow'd by the most obstinate defender of the doctrine of infinite divisibility, that these arguments are difficulties, and that 'tis impossible to give an answer to them which will be perfectly clear and satisfactory. But here we may observe, that nothing can be more absurd, than this custom of calling a *difficulty what pretends [claims]*[62] *to be a demonstration*, and endeavoring by that means to elude its force and evidence. 'Tis not in demonstrations as in probabilities, that difficulties can take place, and one argument counter-balance another, and diminish its authority. A demonstration, if just, admits of no opposite difficulty; and if not just, 'tis a mere sophism, and consequently can never be a difficulty. 'Tis either irresistible, or has no manner of force (T 1.2.2.5, SBN 31, emphasis added).

According to Hume, the relation between a successful demonstration and a failed demonstration is binary. A successful demonstration produces a conclusion that is true and has maximal force of persuasion. If a demonstration is unsuccessful it has zero force. There is no middle ground. Therefore, to Hume's way of thinking, it would be absurd for any Clarkean opponent to admit that arguments like Hume's pose mere "difficulties." As pretended demonstrations, such arguments are either fatal or vain. The counterbalancing of force takes place in the context of "probabilities," not demonstrations. Hume's characterizing as "absurd," his opponents' deeming his Finite Divisibility Argument a mere "difficulty" only makes sense if Hume very much "claims" it to be a demonstration.

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[61] Ibid.

[62] As Millican indicates, in the 18th century "pretends" meant "claims." Peter Millican, ed., *Reading Hume on Human Understanding: Essays on the First Enquiry*, 1 edition (Oxford : New York: Clarendon Press, 2002), 64.

As noted in the introduction, others also consider Hume's Finite Divisibility Argument to be an attempted demonstration. Frasca Spada, citing the passage above, writes that "Hume is very explicit in stating that [his argument] is a positive demonstration against the infinite divisibility [of a finite extension]."[63] And Garrett writes that Hume "claims to have just fully *demonstrated* the truth of Minimism as the first main thesis of his system."[64]

There is, however, a major objection to my claim that Hume intends his Finite Divisibility Argument to be a demonstration. Hume titles Part II, Section I, "Of the infinite divisibility *of our ideas* of space and time" (emphasis added). In contrast, he titles Section II of the same Part II "Of the infinite divisibility of space and time." From these headings alone, one would gather that Hume is moving from a discussion of our *ideas* of space and time in Section I, to space and time *themselves* in Section II. An apparent move from ideas to the objects of those ideas that might signal a departure from the "world of ideas" and a foray into nature itself. Indeed, Hume begins Part II with a recitation of the Adequacy Principle: "Wherever ideas are adequate representations of objects, the relations, contradictions and agreements of the ideas are all applicable to the objects…." The Adequacy Principle seems to warrant claims, not about ideas, but about objects, and in particular, relations among objects. Would not claims about relations among objects be only probable, mere contingent matters of fact, incapable of demonstration? In what sense is Hume using "knowledge" when describing the Adequacy Principle?

Hume has told us that knowledge is the product of demonstration. In the same breath he states the Adequacy Principle, Hume calls it "in general . . .the foundation of all human *knowledge*" suggesting that he does believe that the Adequacy Principle, or reasoning based

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[63] Frasca-Spada, *Space and the Self in Hume's Treatise*, 44.
[64] Garrett, *Hume*, 65, my emphasis.

upon it, would belong in a demonstration. In T 1.3.11.2, reflecting on what he has done so far, Hume informs us that when he has referenced "knowledge," he has meant knowledge in the strict sense. He observes that "in the precedent part of this discourse, I have follow'd [the] method of expression" employed by "t]hose philosophers, who have divided human reason into *knowledge and probability*, and have defin'd the first to be *that evidence, which arises from the comparison of ideas.*" (T 1.3.11.2, SBN 124). This suggests that in T 1.2.2, where he states that the Adequacy Principle is "in general . . . the foundation of all human knowledge," he means *demonstrative* knowledge. Note also that "arises from" is vague enough to accommodate the Adequacy Principle, in which "knowledge" of object-relations "arises from" the comparison of ideas.

However, Garrett notes that Hume features two senses of "knowledge" in the *Treatise*. First, he uses "'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" (i.e. the account of demonstrative knowledge sketched above). He also uses "'know' and 'knowledge' in a looser and more colloquial way."[65] If 'knowledge' in his comment about the Adequacy Principle being "in general … the foundation of all human knowledge" is meant only loosely, the problem of purportedly demonstrated relations among objects (if those relations are matters of fact, which they seem to be), goes away, but so does the claim that the Adequacy Principle (or reasoning in accordance with it) belongs in what is meant by Hume to be a demonstration. For my claim, that the Finite Divisibility Argument is a demonstration, to remain plausible, I have to establish that in his comment about the Adequacy Principle being "in general, the foundation of all human knowledge," Hume means 'knowledge' in his strict technical sense, notwithstanding his use of the term in a looser sense, elsewhere in the *Treatise*.

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[65] Garrett, *Hume,* 42.

So, is the Adequacy Principle, in general, the foundation of all human *demonstrative* knowledge, and does reasoning according to it, belong in a pretended demonstration?

To answer these questions, we must begin by considering the views of Hume's tradition. For neither Hume, nor, as we will see, for the philosophers of his time—Descartes, Arnauld, Hutcheson and so forth—do any of the *intrinsic* qualities of an idea (its clarity, distinctness, force, adequacy, or vivacity) entail the *positive, actual existence* of its object (the one possible exception, for some, being the idea of God). Or to put it another way, existence is not a predicate, for Hume. That is to say, none of the intrinsic qualities of any idea entails the existence of whatever the idea represents (T 1.3.7.2, SBN 94). If clarity or adequacy entailed existence Hume would be contradicting this (infamous) doctrine. Instead, the clarity of the ideas with which we reason, including those with which we reason demonstratively, entails only the *possible* existence of the objects of those ideas, by way of Hume's Conceivability Principle [0.2].

Hume's apparent endorsement of the Adequacy Principle can be taken to suggest that he *does* assume that, when *all* of the criteria for a demonstration are satisfied, what is demonstratively true of the ideas subject to the demonstration, would also true of the objects of those ideas, *were those objects to exist.* While the limited "province" of knowledge and demonstration is "the world of [clear] ideas," this "world of [clear] ideas" consists of *ideas of possible objects.* If the Adequacy Principle is read this way, its appearance in the Finite Divisibility Argument is understandable and does not make the Argument fail as a demonstration. By warranting claims about *possible* objects, and in particular, relations among those possible objects, it does not warrant claims of matters of fact, which once again, according to Hume, assert the *actual existence* of objects or of their qualities. Asserting that a mountain of

gold is possible and that it would have a valley is not to assert a matter of fact, as Hume would define a matter of fact.

1.3 Conclusion

I will attempt to show that there is no aspect of Hume's Finite Divisibility Argument—not even Hume's recourse to the Adequacy Principle—that is inconsistent with his account of knowledge and demonstration. While not all of the criteria of demonstrative reasoning are *readily* apparent, with some searching, all are found in Hume's Finite Divisibility Argument. Hume's least ideas will serve as the units required for certainty in calculation and, through simple addition, these units will be used to construct the complex idea of a finite extension. Furthermore, the relations that are demonstrated to obtain among the least ideas of extension, insofar as they bear on the extension of an object, and not its other properties, are those of quantity and number. This will all serve as additional support for my claim that Hume's Finite Divisibility Argument is meant to be a demonstration.

Hume's section on *Knowledge* and what he has to say about demonstration in the *Treatise* are admittedly quite limited. Consequently, it is worthwhile to turn to other Early Modern texts to get a fuller account of knowledge and demonstration before turning our view to Hume's Finite Divisibility Argument.

Two

Knowledge and Demonstration: The Philosophical Tradition

In presenting the Adequacy Principle, which warrants claims about relations among objects, based on relations among the "adequate" ideas of them, Hume calls it "in general" "the "foundation of all human knowledge." In accordance with the Adequacy Principle, he will consider his "clear ideas" and, "whatever *appears* impossible and contradictory upon the comparison of these ideas, must be *really* impossible and contradictory." Ultimately, he will conclude that the infinite divisibility of a finite extension is "utterly impossible and contradictory." Elsewhere in the *Treatise,* Hume has something to say about knowledge and the comparison of ideas, precious little to say about adequate ideas, clear ideas, impossibility, and contradiction, and nothing at all to say about the Adequacy Principle. We will look to other philosophical writings of the time, and in particular, at how other Early Modern philosophers practiced demonstration, and what they had to say about demonstrative knowledge, adequacy, clarity, impossibility, and contradiction, for clues as to Hume's own meaning when he uses those terms.

Moreover, having, it is hoped, made a compelling case for Hume having intended his Finite Divisibility Argument to be a demonstration [1.2], I will examine demonstrations attempted by other Early Modern philosophers, namely, Descartes' refutation of the thesis that there could be a most perfect corporeal being, Leibniz' refutation of the thesis that there can be a greatest possible speed, Clarke's refutation of the thesis that something can be created out of

nothing, and Berkeley's refutation of the thesis that sensible objects can have an absolute existence in themselves. It will become evident that the argumentative structure of these refutations is very similar to that of Hume's Finite Divisibility Argument. I will sketch the background from which the Argument emerged, gleaning from that background, what other philosophers of his day thought could be demonstrated and the concepts and principles they used in their demonstrations. In making his Finite Divisibility Argument, Hume could use the same style of argumentation, employ the same concepts, and make the same assumptions, without risk or pain of controversy. This methodology will help provide an interpretation of Hume's Finite Divisibility Argument that defends him from prominent criticisms in the literature [chapters 3-5].

From a survey of these works, we learn that Early Moderns held that knowledge results from the comparison and linking of ideas. Moreover, clear or adequate ideas of objects entail only the *possible* existence of those objects. By *thinking* clearly or adequately about objects, we gain only *conditional* knowledge of them, that is, knowledge conditioned on the objects' actual existence. As we will see from Leibniz's text, an idea can be shown to refer to a possible object through *a priori* conceptual analysis or an *a posteriori* appeal to experience.[66]

Also common to the tradition is that a contradiction amounts to the claim that an idea or object is and is not something (such as itself) simultaneously. Clarke, Berkeley and Hutcheson explicitly hold that if a supposition is demonstrated to be contradictory, that supposition is an unintelligible and meaningless expression—a string of empty words. As there is *no* complex idea invoked by a contradictory description of an object, consisting of the successful combination of the ideas invoked by that description, let alone a complex *clear* idea, one cannot infer that that object is possible. With no composite complex idea there can be no inference whatsoever—this

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[66] We shall see that for Leibniz, an actual idea or object is also a possible idea or object.

is what I call Inferential Abstinence. I conclude the chapter with an enumeration of seventeen distinct (shared, background, Early Modern) principles that undergird the Argument.

2.1 Descartes

i.   Clear Ideas and Possible Existence

Descartes endorses what became known as the "Cartesian Axiom." In *Meditations Five* he writes that "all that I clearly and distinctly perceive to belong to that thing really does belong to it" (AT VIII 65).[67] However, for Descartes, the clear and distinct ideas of a thing or its properties only imply the *possible* existence of that thing. He asserts: "*possible* existence is contained in the concept or idea of everything that is clearly and distinctly understood" (AT VIII 117, emphasis added). Descartes' example is the clear and distinct idea of a mountain. He writes that "the idea of a valley can[not] be separated from the idea of a mountain" (AT VIII 66), but "it certainly does not follow from the fact that I [clearly conceive] a mountain with a valley that there is any mountain in the world" (AT VIII 67). Descartes' point is that, given the clear idea of a mountain, there is the clear idea of a valley next to it. It is known that the relation of contiguity, which obtains between the ideas, would be applicable to those things as well, *were* they to exist, but the clarity of the idea of the mountain or of the valley does *not* guarantee that such a mountain/valley combo, bearing the relation of contiguity, *does* exist. The only exception is the idea of God which, according to Descartes, contains the idea of necessary existence (ibid).

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[67]All Descartes quotes are taken from Rene Descartes, *Philosophical Essays and Correspondence*, trans. Roger Ariew (Hackett Publishing Company, 2000), 128.

ii.   Adequacy, Mental Incapacity, and Contradiction

First, we will pay close attention to the *Objections and Replies*, and in particular, to what is said

regarding Descartes' 'ontological argument.' In these dialectical exchanges we find more on

inferences from ideas to objects, accounts of adequate ideas, the impossibility of forming an idea

of the infinite, and demonstration's limits.

Hobbes, the 3rd objector, challenges Descartes' ontological argument with two theses

regarding demonstrations: First, that demonstrations require the employment of ideas. Second,

that all ideas are corporeal images. Because there is no corporeal image-idea of God, there can be

no demonstration of God's existence (AT VIII 180).

The 2nd objector challenges Descartes' ontological argument on the grounds that no

human mind can have an *adequate* idea of God. Consequently, one cannot rule out the possibility

that such an idea of God (were the idea to exist) would necessarily contain a contradiction. For

Descartes and his interlocutors, an adequate idea is an idea that completely or fully represents all

of the aspects of the object the idea is of. The 2nd objector writes:

> For since our intellect does not comprehend the entire universe all at once in a single
> grasp, the intellect divides and separates every good; and thus, what it cannot bring forth
> whole it conceives by degrees, or, as they also say, 'inadequately.' (AT VIII 93)

An entire comprehension of the universe, in all of its aspects, constitutes an "adequate" idea of it.

This sense of adequacy reappears in Descartes' discussion of "infinite" and "indefinite":

> But as to the thing itself which is infinite, although our understanding of the thing is
> surely positive, still it is not adequate, that is, we do not comprehend all that is capable of
> being understood in it. (AT 113)

And 'adequate' is used by Descartes in the same sense in his replies to the 4th objections:

> *[A]dequate* knowledge of the thing necessitates there being contained in that knowledge
> absolutely *all the properties that are in the thing known.* And thus God alone knows that
> he has an adequate knowledge of all things. (AT 220, emphasis added)

The 2nd objector uses 'adequate' similarly, arguing that, because the limited human mind cannot form an "adequate" idea of God's infinite attributes, one cannot be sure that the idea of God does not contain a contradiction. Descartes responds to this objection by conceding that our idea of God may be inadequate, but he argues that the mind does not need an adequate idea of God in order to affirm His existence. Descartes asserts:

> [W]hen it is said that God "cannot be thought of," this is understood with respect to the sort of thought that adequately comprehends God, but not with respect to the sort of inadequate thought that is in us and that suffices for knowing that God exists. (AT 140)

Descartes concludes that "the existence of God can be demonstrated" (AT 114). Our limited, inadequate idea of God, is sufficient to demonstrate His existence, according to Descartes.

Descartes' response to the 2nd objection reveals his understanding of contradiction. Descartes asserts that contradictions are necessarily confined to human minds because contradictions occur when human minds try to combine ideas that cannot be combined. Consequently, insofar as none of *our* ideas about God are contradictory, we can rest assured that there is no contradiction, notwithstanding the inadequacy of those ideas. Descartes explains:

> However, even if we conceive God only inadequately, or, if you wish, most inadequately, this does not prevent it being certain that his nature is possible or is not self-contradictory. Nor does it prevent our being able to affirm truly that we have examined his nature with sufficient clarity (that is, with as much clarity as is needed to know this and also to know that necessary existence belongs to this same nature of God). ***For every self-contradiction or impossibility consists in our own conception, which improperly combines ideas that are at odds with one another***; nor can it reside in anything outside the understanding, it is obvious that it is not self-contradictory but is possible. However, self-contradiction in our concepts arises solely from the fact that they are obscure and confused; ***but no self-contradiction can ever be found among clear and distinct concepts***. And thus it suffices that we understand clearly and distinctly those few things that we perceive about God, even if in a completely inadequate fashion, and that, among other things, we notice that necessary existence is contained in our concept of God, inadequately as it is, in order to affirm that we have examined his nature with sufficient clarity and that it is not self-contradictory. (AT 152)

Descartes maintains that contradictions can only be found in the mind: they cannot "reside in anything outside the understanding." For Descartes, a contradiction "consists in our own

conception, which improperly combines ideas that are at odds with one another." Moreover, "no self-contradiction can ever be found among clear and distinct concepts." The clarity and distinctness of a concept guarantees that that concept is not contradictory.

Other passages in the *Objections and Replies* provide us with evidence bearing on Descartes' views on contradictions with respect to things. He asserts that a "manifest contradiction" is when "something is different from itself or that it simultaneously is and is not the same thing" (AT 242). To reconcile this with Descartes' remarks that a contradiction is a strictly *mental* phenomenon, and that it consists of "our …conception, which improperly combines ideas which are at odds with one another," we may say that a contradiction is the ill-fated attempt to combine the *idea* of a thing being itself and not itself simultaneously.

Descartes' example of a contradiction is consistent with this account. He argues that the "expression" a "most perfect corporeal being" is contradictory. He writes:

> So here, when you speak of a "most perfect corporeal being," if you take the expression "most perfect" in an absolute sense (the sense in which a corporeal thing is a being in which all perfections are to be found), then you are uttering a contradiction, because the very nature of a body entails many imperfections, such as that a body is divisible into parts, that each of its parts is not another part, and the like, for it is self-evident that it is a greater perfection not to be divided than to be divided, and so on. (AT 138)

"Most perfect corporeal being" is what we would call a contradiction in terms because "corporeal" means *not* perfect. Tying this to his other remarks, the attempt to form the idea of a "perfect corporeal being" is the ill-fated attempt to combine the idea of a thing being perfect at a given time with the idea of that same thing being corporeal and therefore, *not* perfect at that time: two ideas "at odds with one another." No composite complex idea is formed. The mind effectively short-circuits. What we will learn from the survey of other texts is that such a contradictory expression (lacking no composite idea) is meaningless or 'absurd.'

2.2 **Arnauld**: **Demonstration and Clear Ideas**

From Arnauld's *Logic*, we can construct an account of demonstration as being the acquisition of knowledge through the comparison of ideas. Arnauld explains that a "demonstration consists not of a single argument, but of a series of several inferences by which some truth is conclusively proved" and that "the aim of demonstration is scientific knowledge."[68]

In Cartesian fashion, Arnauld asserts that the soundness of an assertion about an object depends upon whether the idea of that object is "clear and distinct":

> I believe that the certainty and evidence of human knowledge of natural things depends on this principle: *Everything contained in the clear and distinct idea of a thing can be truthfully affirmed of that thing.*[69]

This is Arnauld's restatement of the "Cartesian Axiom."

The examples Arnauld provides give us a better sense of his version of the Cartesian Axiom. He writes "Because having all its diameters equal is included in the idea of a circle, I can affirm of every circle that all its diameters are equal" and "Because having all its angles equal to two right angles is included in the idea of a triangle, I can affirm it of every triangle."[70] Through the analysis of a clear and distinct idea—conceptual analysis—we find the ideas contained within that idea. For Arnauld, then, the knowledge of an object begins with a clear and distinct complex idea of that object that can be broken down into the simpler ideas that compose that complex idea. If the complex idea of the object is "clear and distinct," the ideas that are found to be included in the complex idea of the object are true of the object.

However, Arnauld (like Descartes) asserts that the clear and distinct idea of an object only entails the *possible* existence of that object. Arnauld writes: "*possible existence is contained*

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[68] Arnauld and Pierre Nicole, *Logic or Art of Thinking*, 227.
[69] Ibid, 247.
[70] Ibid, 247.

in the idea of everything we conceive clearly and distinctly. From the fact that something is

clearly conceived, we cannot avoid viewing it as being *able* to exist."[71] Moreover, the Cartesian

Axiom distinguishes between ideas and the "things" the ideas are about. Importantly, the

ontological status of the "things" Arnauld uses as exemplars (triangles and circles) is that of

mathematical entity, whatever that might be. This suggests that the "things" or "objects" of

knowledge (the objects of "clear" ideas) need not possess the externality of 'body.' The "object"

of a clear and distinct idea could be a triangle or it could be God. This permissiveness with

respect to the ontological status of "objects" will become important in Chapter Four when I

provide a reading of "objects" in the Adequacy Principle.

2.3   Leibniz

i.   Demonstration, Contradiction, Possible Ideas, and Possible Objects

In *Meditation on Knowledge, Truth and Ideas* published in the November 1684 edition of the

Leipzig Journal *Acta Eruditorum*, Leibniz cautions the use of the Cartesian Axiom. He phrases it

as "whatever I clearly and distinctly perceive about a thing is true or assertable of the thing in

question."[72] According to Leibniz, the Cartesian Axiom is "useless" unless there is first

established a criterion for clear and distinct ideas. This is because careless philosophers might

count some ideas as 'clear and distinct' when, upon further examination, the ideas turn out to be

obscure and confused, or even contradictory: "[W]hat is obscure and confused seems clear and

distinct to people careless in judgment."[73] When expressions are latently contradictory, there is

no idea annexed to the terms contained in those expressions. In Leibniz's words: "a

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[71] Ibid, 250 (second emphasis added).
[72] G. W. Leibniz, *Leibniz: Philosophical Essays*, "Meditations on Knowledge, Truth and Ideas" trans. Roger Ariew and Daniel Garber, 1st edition (Indianapolis: Hackett Publishing Company, 1989), 26.
[73] Ibid.

contradiction…might be included in a very complex notion [that] is concealed from us."[74]

Leibniz' example is "the greatest possible speed." It would *seem* that this expression could invoke the clear idea of a thing that would, by the Cartesian Axiom, possibly exist. He observes that "we might seem to have the idea of a fastest motion, for we certainly understand what we say."[75] In such a case, "we do understand in one way or another the words in question individually."[76] But although the individual terms *seem* to be clear and understandable and, when those terms are coupled together to create an expression, the expression *seems* meaningful, nonetheless, upon examination, the expression turns out to be contradictory. Leibniz explains:

> For let us suppose some wheel turning with the fastest motion. Everyone can see that any spoke of the wheel extended beyond the edge would move faster than a nail on the rim of the wheel. Therefore the nail's motion is not the fastest, contrary to the hypothesis.[77]

Leibniz's wheel nail/spoke thought experiment yields the conclusion that the nail would be moving at the greatest possible speed and not the greatest possible speed simultaneously. Therein lies the contradiction.

Expressions that contain a contradiction stand for what Leibniz calls "false ideas," while ideas are "true" if their "notion is possible."[78] According to Leibniz, one must *show* that ideas are clear and non-contradictory before employing those ideas in a demonstration. For example, much like Descartes' interlocutors in *Objections and Replies*, Leibniz critiques Descartes' ontological argument by asserting that one must first show that the idea of God refers to a *possible* thing: "Only *if* God is possible, then it follows that he exists."[79] One must show that an idea refers to a

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[74] ibid, 25.
[75] ibid.
[76] Ibid.
[77] Ibid.
[78] Ibid.
[79] Ibid, 25, emphasis added.

possible thing by proving that the terms that purportedly invoke it are non-contradictory.[80] Only

upon such proof may an idea be considered possible and be employed in a demonstration.

Leibniz has drawn our attention to the phenomenon of our thinking we are in possession

of an idea when we really are not. His claim is not that we have an idea of the greatest possible

speed, which refers to an impossible thing, but rather, that we have *no such idea at all*! Leibniz

asserts: "we certainly have no idea of impossible things."[81] The mind tricks itself into thinking it

has an idea when it does not. Instead, there is only an empty expression. Our saying that "it is

contradictory" or "it is not contradictory," with respect to an idea, or saying that an idea is

"false," would be to assume there is an "it" or an idea to begin with. Leibniz's point is that a

phrase that is a contradiction in terms can invoke no idea *at all*. Our saying "the idea of the

fastest motion is contradictory" would be a contradiction in terms. To avoid self-contradiction,

we have to say "the expression 'the fastest motion' is contradictory and stands for no idea."

Leibniz explains that there are two ways a complex idea can be shown to refer to a

possible thing. The first is an *a priori* analysis of the constituent components of the purported

idea. If none of the constitutive ideas is incompatible with any of the other constitutive ideas, that

is, if there would be no internal incompatibility between the simple ideas that would be used to

form the complex idea, the complex idea is deemed possible. If the complex idea is deemed

possible, then its object is deemed possible. Leibniz writes: "The possibility of a thing is known

a priori when we resolve a notion into its requisites, that is, into other notions known to be

possible, and we know there is nothing incompatible among them."[82] This is consistent with

Descartes' claim that "*possible* existence is contained in the concept or idea of everything that is

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[80] Ibid.
[81] ibid.
[82] Ibid., 26.

clearly and distinctly understood," and Arnauld's that "*possible existence is contained in the idea of everything we conceive clearly and distinctly.*" The second way an idea—simple or complex—is shown to be possible is through experiencing the thing the idea is of. Leibniz writes: "The possibility of a thing is known *a posteriori* when we know through experience that a thing actually exists, for what actually exists or existed is at very least possible."[83]

Seven of Leibniz's assumptions underlie Hume's Finite Divisibility Argument: 1) demonstrations employ ideas; 2) every idea employed in a demonstration must be possible; 3) because we may mistakenly assume that an expression refers to a possible complex idea, when it does not, we must take care that every expression in a demonstration that purportedly refers to a complex idea, actually does; 4) a complex idea is possible if its constitutive ideas are compatible; 5) if a complex idea is possible, its object is possible; 6) if an object is possible, its idea is possible; 7) if an object is experienced, it is possible. Hume's assault on 'infinitely divisible finite extension', and his proof that it is an empty expression, closely resemble Leibniz's assault on 'greatest possible speed,' and his proof that it is an empty expression.

ii.   Clarity, Distinctness, and Adequate Knowledge

Leibniz maintains that an idea of a thing is "clear" when it enables one to recognize that thing. A layperson has a clear idea of gold but may still confuse real gold with fool's gold. A "distinct" idea is a clear idea that allows someone to distinguish one thing from another. An assayer has a distinct idea of gold and could readily distinguish real gold from fool's gold. For Leibniz, "[w]hen everything that enters into a distinct notion is, again, distinctly known, or when an analysis has been carried to completion, then knowledge is adequate."[84] Knowledge of an object

[83] Ibid.
[84] Ibid, 24.

is adequate when the complex idea of that object has been successfully analyzed into its constituent ideas and they are found to be clear, distinct, and compatible with one another.

Importantly, there is nothing in Leibniz's *Meditations on Knowledge, Truth and Ideas* that would suggest that the existential inference from an adequate idea (in his sense) is anything different from that of a clear or distinct idea. In fact, it is implied in Leibniz's discussion that a clear, distinct, or adequate idea implies only the *possible* existence of its object. This is borne out by the order of presentation in his article. He first explains the difference between clear, distinct and adequate ideas. He then argues that every idea must be "true" if it is to be employed in demonstration. This can be done either through *a priori* conceptual analysis, or *a posteriori*, by appealing to the actual experience of the object. A purported idea is shown to be "true" when it is fully analyzed into its constituent ideas and those constituent ideas are not incompatible. By definition, an adequate idea will be "true." But the adequacy of an idea, in Leibniz' sense of adequacy, like its clarity, entails only the possible existence of its object.

2.4 Locke

i. Knowledge

Locke argues, very succinctly, that because our thoughts and reasonings have ideas as their immediate object, our knowledge is of our ideas:

> 1. Since *the mind*, in all its thoughts and reasonings, hath no other immediate object but its own *ideas*, which it alone does or can contemplate, it is evident that our knowledge is only conversant about them (ECHU 4.1.1)[85]

Because ideas are the only "objects" with which the mind is immediately acquainted, the mind's knowledge-gathering consists in perceiving how they agree and disagree. Locke writes:

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[85] All Locke quotes are taken from John Locke, *An Essay Concerning Human Understanding*, ed. John W. Yolton (J.M. Dent & Sons Ltd, 1977).

2.   *Knowledge* then seems to me to be nothing but the *perception of the connexion and agreement, or disagreement and repugnancy, of any of our ideas* (ECHU 4.1.2)

Two ideas "agree" with one another when one or more of their qualities falls under the same category: the idea of a "square" and "circle" agree insofar as they are both ideas of shapes. Disagreement is when one or more qualities are contraries: *"white is not black"* (ibid).

Locke characterizes the perception of the relation between two ideas as an "intuition." The mind intuits that "*white* is not *black*…by a bare *intuition*" (ECHU 4.2.1). A demonstration consists of multiple ideas linked when relations are perceived intuitively to hold between them. Locke writes that "*knowledge,* which I call *demonstrative*" requires "intuition…in all the connexions of the intermediate *ideas,* without which we cannot attain knowledge and certainty" (ECHU 4.2.1). For example, to demonstrate the equality of the interior angles of a triangle with two right angles requires the interposition of intermediate geometrical ideas such as that of parallel lines and the perception of their agreements or disagreements with the other ideas.

As Douglas Jesseph notes, Locke maintains that demonstrative ideas are abstract:

> Locke took demonstration to require the framing of the appropriate abstract ideas and then drawing consequences from them. The true task for demonstration, as Locke would have it, involves the formation of the appropriate abstract ideas, from which consequences can be deductively established by means of logic…[S]uch ideas must ultimately come from experience, albeit experience that has been supplemented by the mind's capacity for abstraction and concept formation.[86]

As we have seen, Hume features a similar account of knowledge, intuition and demonstration, and follows Locke in holding that demonstration employs abstract ideas [1.1].

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[86] Douglas M. Jesseph, "Logic and Demonstrative Knowledge," in *The Oxford Handbook of British Philosophy in the Seventeenth Century*, ed. Peter R. Anstey (Oxford University Press, 2013), 373–90.

ii.   Clear and Adequate Ideas

For Leibniz, an idea is clear if it allows one to recognize an object, without concern for the idea's source. As Jesseph notes above, Locke maintains that the abstract ideas used in demonstrations "must ultimately come from experience." Locke writes: "our *simple ideas* are *clear,* when they are such as the objects themselves from whence they were taken did or might, in a well-ordered sensation or perception, present them," and "[w]hilst the memory retains them thus and can produce them to the mind whenever it has occasion to consider them, they are *clear ideas*" (ECHU 2.19.2). In accord with Leibniz, Locke adds that "*Complex ideas*, as they are made up of simple ones, so they are *clear*, when the *ideas* that go to their composition are *clear*" (ibid).

Thus Locke maintains that simple ideas are clear if they faithfully represent the way objects are or were presented in sensation or perception. The clarity of the ideas can be retained in the memory but can also fade over time. Moreover, complex ideas that are composed of clear simple ideas are also clear because that aspect of the parts is retained by the whole. Locke's emphasis on the origin of clear ideas in sense-experience resembles Hume's dictum that clear ideas are traceable, directly or indirectly, to prior identifiable impressions [1.1].

Locke uses the term "adequate" to describe the contents of a mental entity when it fully or completely represents the non-mental thing the idea is of.[87] Locke writes "Those [ideas] I call

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[87]Locke's account, of course, has features unique to (and consistent with) his theory of perception. There are two kinds of ideas that are adequate, for Locke. First he argues that "simple ideas are adequate" because "being nothing but the effects of certain powers in things, fitted and ordained by God to produce such sensations in us, they cannot but be correspondent and adequate to those powers; and we are sure they agree to reality of things" (ECHU 2.15.2). Locke's example is "For, if sugar produce in us the ideas which we call whiteness and sweetness, we are sure there is a power in sugar to produce those ideas in our minds, or else they could not have been produced by it" (ibid). Locke's account depends on the primary/secondary quality distinction that the underlying mathematical arrangement of extension results in a unique *power* to produce a unique idea in the mind.

Locke also argues that *complex* ideas *of modes* are adequate because they are "voluntary collections" of simple ideas that are not "intended for copies of things really existing" (ECHU 2.16.3) and have "nothing to represent but themselves, cannot but be adequate, everything being so to itself" (ibid). The example Locke gives is the idea of a triangle, that is, "the idea of a figure with three sides meeting at three angles" (ibid). This complex idea is not copied from a real existent, nor need it to refer to an existent triangle. The idea of a triangle is adequate, not with reference to ideas of triangles in other minds, or with an eternal Form, but adequate with respect to itself.

adequate perfectly represent those archetypes which the mind supposes them taken from, which it intends them to stand for, and to which it refers them" (ECHU 2.16.1) and he describes inadequate ideas as "but a partial or incomplete representation of those archetypes to which they are referred" (ibid). Included in Locke's account, but absent from Descartes', is the empiricist strand, the origin of ideas as "taken from" the "archetypes." For Descartes, adequate knowledge of a thing is knowledge of "absolutely all the properties that are in the thing known," with no special emphasis on the *origin* of that knowledge. Descartes and his interlocutors could ponder whether they had an adequate idea of God. Had experiential origin been a *requirement* for adequacy, such an exercise would have been pointless. As we shall see in chapter four, for Hume, empirical origin is a necessary, but not sufficient, condition for the adequacy of an idea.

What is not new in Locke's account of adequate ideas, however, is the notion of completeness or fullness. For Locke, as well as for Descartes, an adequate idea is exhaustive in one sense or another—for Descartes adequate knowledge of a thing includes *all of the properties* of the thing, and for Locke an adequate idea of a thing requires *the complete representation* of that thing. The two accounts are quite similar.

2.5   Clarke: Contradiction and Meaning

As the next interpretive aid, there is the work of Samuel Clarke. I will pay particular attention to his popular *A Demonstration on the Being and Attributes of God.* Hume was most likely familiar with this text: he cites Clarke's *a priori* argument for why every existent must have a cause (T 1.3.3.5; SBN 80).

Clarke attempts to demonstrate the truth of the proposition that "something [read, 'God']

has existed from all eternity." Clarke believes that the sole alternative is "something was created

out of nothing." If Clarke can establish that "something has existed from all eternity" is non-

contradictory, meaningful, and possible, and that "something was created out of nothing" is

contradictory (meaningless) and impossible, then he will have succeeded in demonstrating that

'something has existed from all eternity' is a true proposition. What follows is his attempted

demonstration that 'something was created out of nothing' is contradictory:

> For, since something now is, it is evident that something always was, otherwise the things
> that now are must have been produced out of nothing, absolutely and without a cause,
> which is a plain *contradiction in terms*. For, to *say* a thing is produced and yet that there
> is no cause at all for that production, is to *say* that something is effected when it is
> effected by nothing, that is, at the same time when it is not effected at all.[88]

According to Clarke, either "something always was" or "the things that now are must have been

produced out of nothing." How is the latter contradictory? Clarke slides in the assumption that

"the things that now are" can be identified with '*causally* produced things.' That is to say, "the

things that now are" are necessarily 'produced things.' Therefore, to assert that "the things that

now are" are "produced by nothing," is equivalent to asserting that "the things that now are" are

"not the things that now are," which is a "contradiction in terms."

As we have seen, no composite idea can be formed of a contradiction. An expression

standing for two ideas that are at odds with one another cannot invoke an idea that is the

composite of the two. Such an expression is meaningless, what Clarke calls a "contradiction in

terms." Note, however, that Clarke's focus in the passage is on the *language* of contradiction, as

opposed to the *nature of the ideas invoked by* that language.

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[88] Clarke, *A Demonstration of the Being and Attributes of God And Other Writings*, 8, emphasis added.

Clarke's linguistic, as opposed to psychological, account of contradiction, becomes more evident a few passages later. Clarke admits that a human mind cannot form an adequate idea of God's infinite nature. Following Descartes, Clarke argues that the lack of an adequate idea does not preclude the possibility of demonstrating God's existence and many of His attributes. This is because, Clarke maintains, we still understand what a contradiction is. He writes:

> …[A] blind man, though he has *no idea* of light and colors, yet *knows* certainly and infallibly that there cannot possibly be any kind of light which is not light or any sort of color which is not color, so, though we have *no idea* of the substance of God nor indeed of the substance of any other being, yet we are as infallibly certain that there cannot possibly be either in the one or in the other any contradictory modes or properties, *as if* we had the clearest and most distinct idea of them.[89]

Clarke is explicit about what counts as a contradiction: "light which is not light…color which is not color." For Descartes, contradiction is a mental phenomenon, the ill-fated attempt to combine the idea of a thing being itself (light being light, or color being color) with the idea of that thing being different from itself (light not being light, or color not being color) or, otherwise stated, the idea of a thing being itself at a given time and the idea of that thing not being itself at that same time. A contradiction consists of two ideas that are at odds in one mind.

Clarke's account is different. In his hypothetical, if contradiction were a mental phenomenon, it would have to consist of ideas at odds in the mind of the blind man. Because the blind man has no idea of color or of light, the contradiction cannot consist of ideas at odds with one another. Clarke focusses our attention, not on the *content* of the idea of a thing referenced in a contradictory expression, but on the *form* of the expression. His point seems to be that, to know that an expression is a contradiction in terms, one need not form a clear and distinct, nor even any, idea of the thing (light or color) to which the term(s) in the expression refer. Even one forming no idea of color or light knows that to assert that a thing is itself (light or color) and not

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[89] Ibid., 30 (emphasis added).

itself (not light or color) is a contradiction in terms. As we will see, this syntax-oriented view is articulated by Hutcheson, who will say that a contradiction is "a term and its negation."[90]

Descartes and Clarke's views are, nevertheless, compatible. The contradictory *linguistic* form is that of a term and its negation. This is enough for an *expression* to be 'contradictory', as a *linguistic* phenomenon. But two 'contradictory' terms may stand for ideas, as 'light' and 'not light' and 'color' and 'not color' do for the sighted person. To use Descartes' example, the terms 'perfect' and 'corporeal being' in 'perfect corporeal being' stand for ideas. These two ideas, however, through analysis, are revealed to contain the ideas for which 'perfect' and 'not perfect' stand. Thus, even though 'perfect corporeal being' is not in the form of a term and its negation, that is, it is not in contradictory *linguistic* form, it is still a contradiction because the ideas for which it stands are "at odds," the contradictory *mental* phenomenon described by Descartes. The ideas for which the terms 'perfect corporeal being' stand cannot be combined to create a complex idea and thus, no composite complex idea is invoked by the contradictory expression 'perfect corporeal being.' From the standpoint of ideas, 'perfect corporeal being' is every bit as contradictory as 'perfect and not perfect' or 'light and not light'.

For Clarke, what is lost in the contradictory expression is meaningfulness. While the (theologically correct) supposition of "an eternal duration can be now actually past" may be *difficult* "for our narrow understandings to comprehend," its negation implies an "express contradiction" and as such, is downright "unintelligible":

> [T]o deny the truth of the proposition, that an eternal duration is now actually past, would be to assert something still far more unintelligible…a real and express contradiction.[91]

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[90] Hutcheson, *Logic, Metaphysics, and the Natural Sociability of Mankind*, 21.
[91]Clarke, *A Demonstration of the Being and Attributes of God And Other Writings*, 30.

According to Clarke, expressly contradictory propositions are the height of unintelligibility. They are utterly meaningless, absurd. That "something was created out of nothing" is an "absurd supposition."[92] What Clarke does *not* claim is that contradictory *things* cannot exist. In fact, he does not speak of contradictory *things* at all. He speaks only of contradictory suppositions. Clarke's demonstration that something cannot be created out of nothing is not concerned with *a posteriori* matters of fact. Demonstrations are *a priori*. If a supposition is revealed to be contradictory the consequence is that that supposition is unintelligible or meaningless. It is utterly incapable of referring to any *thing* at all.

The structure of Clarke's demonstration is readily apparent. There are two diametrically opposed theses. One thesis is intelligible, the other is contradictory (a contradiction in terms) and unintelligible. Therefore, the intelligible thesis must be true. I maintain that this is the same demonstrative strategy employed by Hume in his Finite Divisibility Argument.

2.6 Berkeley: Abstract Ideas, Contradictions and Inferential Abstinence

Much like Leibniz in *Truth, Meditation and Ideas*, and Locke in his *Essay* (ECHU 3.1-3)**,** Berkeley warns us to be wary of language. To avoid errors caused by the inadvertent use of meaningless expressions, we must pay close attention to the *ideas* invoked by words:

> [S]o long as I confine my thoughts to my own ideas *divested of words*, I do not see how I can easily be mistaken. The objects I consider, I clearly and adequately know…To discern the agreements or disagreements there are between my ideas, to see what ideas are included in any compound idea, and what not, there is nothing more requisite, than an attentive perception of what passes in my own understanding (P 1.22, emphasis added).[93]

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[92] Ibid, 9.

[93] All of the Berkeley quotes are taken from George Berkeley, "A Treatise Concerning the Principles of Human Knowledge," in *Philosophical Works* (Everyman Classics: J.M. Dent & Sons Ltd, 1975), 61–129.

Berkeley asks us to attend to our ideas, looking at how they agree and disagree with each other, and what other ideas are contained in them, because it is *our ideas* that we "clearly and adequately know." For Berkeley, words become meaningful upon the formation and attachment of ideas: "we annex…meaning to our words" when we "speak only of what we can conceive" (P 1.12). This reminds one of Leibniz's observation that "at first glance we might seem to have the idea of a fastest motion, for we certainly understand what we say," followed by his proof that the expression "the greatest possible speed" *cannot* be conceived because it is contradictory. In his *Principles*, Berkeley argues that *material substance* is another such contradictory and empty expression[94] because there is no idea corresponding to the expression "absolute existence of sensible objects in themselves." He writes:

> It is very obvious, upon the least inquiry into our own thoughts, to know whether it be possible for us to understand what is meant, by the *absolute existence of sensible objects in themselves, or without the mind.* To me it is evident those words mark out either a direct contradiction, or else nothing at all. And to convince others of this…[I] entreat they would calmly *attend to their own thoughts*: and if by this attention, the emptiness or repugnancy of those expressions does appear, surely nothing is more requisite for their conviction. It is on this therefore that I insist, to wit, that the absolute existence of unthinking things are words without a meaning, or which include a contradiction (P 1.24, emphasis added).

For Berkeley, words are "without a meaning" or "empty" if "attend[ing] to [our] thoughts," which we "clearly and adequately know," we discover there is no idea annexed to them. Berkeley seeks to convince his reader that the expression "absolute existence of sensible objects in themselves" is contradictory because we find upon "attending to our thoughts" that no clear idea is invoked by it. Contradictory expressions have no composite idea annexed to them and, for that reason, are empty and meaningless.[95]

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[94]Berkeley writes: "So that when I consider the two parts or branches which make the signification of the words *material substance,* I am convinced there is no distinct meaning annexed to…those sounds" (P 1.17).

[95] "Strictly speaking, to believe that which involves a contradiction, or has no meaning in it, is impossible: and whether the foregoing expressions are not of that sort, I refer it to the impartial examination of the reader" (P 1.54).

Importantly, Berkeley does not infer the nonexistence of any *thing*, from his proof that an expression is contradictory. Instead, he infers nothing—Inferential Abstinence. Without any idea at all, let alone a clear idea, one cannot affirm or deny *anything* of any object, including its existence or nonexistence: no idea, no inference. Berkeley makes this explicit when he addresses the claim that "finite extension" refers to a non-perceptual object. He writes: "If by *finite extension* be meant something distinct from a finite idea, I declare I do not know what that is, and so cannot affirm or deny anything of *it*" (P 1.124, emphasis added). For Berkeley, the expression "finite extension" is only meaningful insofar as the expression refers to a finite extension-*idea*. Otherwise the expression is meaningless. Nothing can be affirmed or denied of some *other* 'it' because there is no idea of that other 'it.'

2.7 Hutcheson

i. Consistent Ideas and Possible Existence

Hutcheson also provides a criterion by which one can infer possible existence. Hutcheson maintains: "*Possibles* are *terms or complex ideas whose parts are consistent with each other.*"[96] For Hutcheson, if the simple elements of any complex idea are *consistent* with one another, then the complex idea is of a possible object.

Why do clear and distinct ideas, for Descartes, Arnauld, Berkeley, and Leibniz, and possible complex ideas for Hutcheson, entail the possible existence of their objects? Hutcheson bluntly answers: "there is every power in God."[97] According to Hutcheson, God could will any idea into objective existence. Isaac Barrow also features a Conceivability Criterion grounded in God's omnipotence: "Imaginability…at most only proves the Possibility of a real thing, but no

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[96] Hutcheson, *Logic, Metaphysics, and the Natural Sociability of Mankind*, 71.
[97] Ibid.

where its actual existence."[98] The reason an imaginable object enjoys possible reality is that "God has given us the Power of creating innumerable imaginary Worlds in our Thoughts, which himself, if he pleases, can cause to be real."[99] The same justification is suggested in the *Objections and Replies* (AT 419). Simply put, if we can clearly conceive it, God can make it happen simply by willing it.

ii.   Clear, Distinct and Adequate Ideas

Hutcheson distinguishes between clear ideas and distinct ideas. He writes that "a clear idea is one which "vividly affects the mind.""[100] A distinct idea is one "which is easily told apart from others."[101] Adequate ideas are "those which represent the whole nature of an object."[102]

iii.   Contraries and Contradictories

In his own textbook, Hutcheson offers the same description of contraries and contradictories as is found in Arnauld's *Logic* textbook. Hutcheson writes that "Contraries are 'true opposed qualities,' such as *pain and pleasure*" while "Contradictories are 'a word and its negation,' such as *learned* and *not-learned* or *man* and *not-man.*"[103] Moreover, contradictory terms "cannot be predicated of each other, or of the same thing, in the same respect, and at the same time."[104]

Hutcheson asserts that "demonstrations only deal with abstract propositions, especially in arithmetic and geometry."[105] Presumably, "abstract propositions" are those that employ abstract

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[98] Isaac Borrow, *The Usefulness of Mathematical Learning Explained and Demonstrated: Being Mathematical Lectures Read in the Publick Schools at the University of Cambridge* (London: Frank Cass & Co. LTD., 1970), 168.
[99] Hutcheson, *Logic, Metaphysics, and the Natural Sociability of Mankind* , 111.
[100] Ibid, 13.
[101] Ibid.
[102] Ibid, 14.
[103] Ibid, 21.
[104] Ibid.
[105] Ibid, 46.

ideas (concepts). Thus Hutcheson also maintains that demonstration requires the discernment of

the agreement and disagreement of *abstract* ideas. He provides an account of the formation of

abstract ideas based upon resemblance, citing Locke's *Essay* bk. 2, chap 12 and Arnauld's *Port*

Royal Logic part 1 chapters 5 and 6.[106] Hutcheson explicitly calls abstract ideas "terms."[107]

      Putting this all together, a contradiction, according to Hutcheson, is the predication of a

term (abstract concept) and its negation "of the same thing, at the same time."

iv.   Contradictories and Inferential Abstinence

Hutcheson also discusses the perils of language. He cautions that some complex terms may have

latent contradictions that are difficult to detect. He writes that "we may be unaware of those

contradictions between highly complex terms which would not be hidden from one who has a

fuller knowledge of things."[108] (We are reminded of Leibniz's similar warning and uncovering of

a latent contradiction between 'greatest' and 'speed.') According to Hutcheson, contradictions

exist as expressions only: there are only contradictory *terms*. Contradictory *terms* such as 'man

and not-man' are empty, stand for no idea, and refer to no object. Hutcheson explains:

> If [terms] are *impossible*…the terms signify nothing. It is pointless to ask whether there
> might be a thing that would be subject to such a term, since terms have meaning only by
> the intervention of an idea, and there is no complex idea subject to such a term.[109]

Contradictory terms are meaningless. The expression 'man and not-man' is patently

contradictory and 'greatest possible speed' is latently contradictory. Both expressions "signify

nothing." They are but words only. 'Man' is a "real word" and 'not-man' is a "real word." These

real words "*separately* signify real ideas," but they are "ideas so contrary one to another that they

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[106] Ibid, 14.
[107] Ibid.
[108] Ibid., 72.
[109] Ibid., 72.

cannot be combined."[110] There are no composite complex ideas annexed to them, and therefore, together they cannot refer to *any* object whatsoever. As we have seen, when an expression such as 'object that is a golden mountain' stands for a composite clear idea (a complex idea composed of two or more compatible ideas), the expression refers to a possible object. However, in the case of contradictory terms such as 'an object that is man and not-man' there is no composite idea, just separate, incompatible ideas (of object, of man, and of not-man), and therefore the expression 'an object that is man and not-man' is meaningless and cannot refer to a possible object.

2.8   Conclusion

The material we have examined will help us identify the *form* and better understand the *content* of Hume's Finite Divisibility Argument. The *form* of Hume's Infinite Divisibility Refutation will resemble that of 1) Descartes' refutation of the thesis that there could be a most perfect corporeal being; 2) Leibniz' refutation of the thesis that there can be a greatest possible speed; 3) Clarke's refutation of the thesis that something can be created out of nothing; and 4) Berkeley's refutation of the thesis that sensible objects can have an absolute existence in themselves. Each of these refutations is an attempted demonstration. Each attempts to establish that the thesis under attack is contradictory. If the supposition is shown to be contradictory, it is meaningless. If its opposite, that is, the logical alternative, is meaningful and possible, the demonstration is successful. What Hume endeavors to show in his own demonstration is that 'all finite extensions are infinitely divisible' is contradictory and meaningless because 'infinitely divisible finite extension' is

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[110] Ibid., 71 (emphasis added).

contradictory and meaningless. If the only alternative, 'all finite extensions are finitely divisible' is non-contradictory, meaningful and possible, his demonstration will be successful.

Seventeen Early Modern assumptions underlie these attempted demonstrations: 1) demonstrations employ terms and expressions that stand for abstract and complex ideas; 2) in the course of a demonstration, those ideas are examined and compared with one another; 3) every idea for which a term or expression (including a general term or expression) in a demonstration stands must be clear, distinct, and possible; 4) because we may be mistaken in assuming that an expression stands for a clear, distinct, and possible complex idea, when it does not, we must take care (employing what we would now call conceptual analysis) that every expression in a demonstration that purportedly refers to such a complex idea, actually does; 5) in the course of a demonstration, a relation of agreement or disagreement (or possibly some other relation) is perceived intuitively to hold between an idea and a second idea, and a relation of agreement or disagreement (or possibly some other relation) is perceived intuitively to hold between that second idea and a third idea, forming a chain of reasoning from the first idea to the third idea; 6) a complex idea is possible if the ideas that would have to be combined to form that complex idea are not too much at odds with, and are compatible with, one another; 7) a complex idea is impossible if the combination of the ideas that would serve as its components is not possible because those ideas are too much at odds with, that is, too contrary to, one another; 8) expressions that are contradictions in terms do not stand for complex ideas that are composites of the ideas for which the terms stand because those ideas are at odds with, and are not compatible with, one another, such as the ideas of a thing being itself and the idea of that thing being different from itself or, otherwise stated, the idea of a thing being itself at a given time and the idea of that thing not being itself at that same time; 9) such contradictory expressions are

meaningless, unintelligible, and absurd, mere empty phrases that assert nothing at all and therefore, one must refrain from making any inference from such an expression, at all (Inferential Abstinence); 10) if an object is possible, the idea of that object is possible; 11) if a clear and distinct complex idea is possible, the object of that idea is possible; 12) no clear and distinct idea of the infinite is possible; 13) if an object is experienced, it is possible; 14) a clear idea of an object allows us to conceptualize that object clearly and distinctly, that is, it allows us to place it under a general term (add it to the idealized revival set); 15) if the complex idea of an object is clear and distinct, the ideas that are found through analysis to be included in the complex idea of the object would be true of the object, were the object to exist; 16) an adequate idea of an object is a full or complete idea of all of the aspects or properties of the object; and 17) the object of an adequate idea is possible.

This is not to say that there is complete unanimity among the philosophers we have considered. For example, Descartes and Clarke present slightly different accounts of contradiction. Nevertheless, everyone (including Descartes and Clarke) seems to agree that a contradictory expression invokes no *composite* idea, proposition 8 above. Despite such differences, there does not seem to be any controversy over the foregoing seventeen principles. In demonstrating that every extension is only finitely divisible, Hume could draw on them, without the risk of losing his audience, and we shall find that is exactly what he did.

Three

Hume's Least Idea: An Unnoticed Exception to Hume's Copy Principle?

This chapter is comprised of two parts. The first provides a reading of Hume's Least Idea

Argument and subsequent Grain of Sand Thought Experiment[111] and Ink Spot Experiment[112] in

light of the Early Modern concepts and assumptions described in chapter two. Hume's Least Idea

Argument turns on four propositions: first, that the limited human mind cannot form a "full and

adequate conception of infinity" (T 1.2.1.2, SBN 26); second, that whatever is extended is

capable of being divided into parts; third, that whatever is capable of being divided into a certain

number of parts must consist of the same number of actual, pre-existing parts; and fourth, that

ideas of extended objects are themselves extended. It follows from the third proposition that

"whatever is capable of being divided into an infinite number of parts, must consist of an infinite

number of [actual, pre-existing] parts" (ibid).[113] Therefore, the *idea* of an infinitely divisible

extended object, if such were possible, would have to be composed of an infinite number of pre-

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[111]Hume writes: "Tis therefore certain, that the imagination reaches a minimum, and may raise itself an idea, of which it cannot conceive any sub-division, and which cannot be diminished without a total annihilation. When you tell me of the thousandth and ten thousandth part of a grain of sand, I have a distinct idea of these numbers and of their different proportions; but the images, which I form in my mind to represent the things themselves, are nothing different from each other, nor inferior to that image, by which I represent the grain of sand itself" (T 1.2.1.3, SBN 27).

[112]Hume writes: "Put a spot of ink upon paper, fix your eye upon that spot, and retire to such a distance, that at last you lose sight of it; 'tis plain, that the moment before it vanish'd the image or impression was perfectly indivisible" (T 1.2.1.4, SBN 27).

[113] I add "actual, pre-existing" to honor Holden's insight that Hume is assuming the actual parts doctrine in his Least Idea argument. The Actual Parts Doctrine will be discussed at length in this chapter. Holden, "Infinite Divisibility and Actual Parts in Hume's Treatise."

existing parts. By the first proposition, this is an idea that the limited human mind cannot form. There must be "an end in the division of its ideas" (ibid) an idea that is "perfectly simple and indivisible" (ibid). This is the least idea, necessarily the smallest part of any idea of an extension.

After completing this first phase of the Least Idea Argument, Hume runs the Grain of Sand Thought Experiment, followed by the Ink Spot Experiment. In Part I of this chapter I appeal to Hume's philosophical tradition, interpreting these experiments as Hume's way of showing that the least idea is clear and non-contradictory and therefore refers to a possible object. Part two considers whether or not Hume's least idea is an unnoticed exception to his Copy Principle. From the text, it appears that Hume's least idea is brought about by *reason*, at arriving via the Least Idea Argument, or that it is the minimal idea the *imagination* can form, in either case, *making its first appearance without the benefit of having been copied from an antecedent original, simple impression, as demanded by the Copy Principle.* Baxter's interpretation sidesteps this difficulty by arguing that Hume's least idea is derived from the ink spot and analogous experiments. This reading, however, does not provide the generality required by Hume's Least Idea Argument. Hume's conclusion that "finite extensions are finitely divisible" pertains to *all* finite extensions. Appealing to Hume's philosophical tradition provides the resources to resolve this problem. Consistent with Locke, Berkeley and Hutcheson, Hume maintains that demonstrations involve the comparison of *abstract* ideas. Hume's least idea is best characterized as an abstract idea. 'Least idea' is a meaningful general term that refers to the members of an idealized revival set of possible objects. This clarification, along with the identification of the other members of the idealized revival set, impart the needed generality. This resolution not only removes the conflict between Hume's least idea and Copy Principle, but also helps clarify the true nature of the memory-idea derived from the ink spot experiment: it

itself is not *the* least idea, but it could have a role as the exemplar conjured up from the relevant revival set.

3.1 Hume's Least Idea Argument and Relevant Principles

The first step in Hume's Finite Divisibility Argument is to establish that under examination, any idea the human mind forms of a finite extension is itself extended, divisible, and when divided resolves itself into clear and distinct, indivisible, minimum ideas—Hume's 'least ideas.' In his proof, Hume needs to establish four propositions. The first is the Limited Mind Principle, that the human mind (as it exists) can never attain a full and adequate conception of infinity (T 1.2.1.2, SBN 26), the twelfth on our list of seventeen Early Modern propositions. The second is that ideas of extensions are themselves extended. The third is the Divisibility Principle, which maintains that whatever is extended is in principle divisible. The fourth is the Actual Parts Principle, which maintains that divisibility into a number of parts presupposes the actual pre-existence of that number of parts. Let us first consider the Limited Mind, Divisibility, and Actual Parts Principles.

i.   Limited Mind Principle:

> Tis universally allow'd, that the capacity of the mind is limited, and can never attain a full and adequate conception of infinity: And tho' it were not allow'd, 'twou'd be sufficiently evident from the plainest observation and experience. (T 1.2.1.2, SBN 26)

Hume's declaration that this principle is "universally allow'd" is not surprising given Hume's tradition. As we have seen, with respect to God's attributes, Descartes asserts that "the nature of the infinite is such that we, being finite, cannot comprehend them" (*Principles* 19, AT 12). Hobbes argues that "Whatsoever we know that are Men, we learn it from our Phantasmes, and of Infinite (whether Magnitude or Time) there is no Phantasme at all; so that it is impossible either

for a man, or any other creature to have any conception of Infinite" (*Concerning Body* 4.26.1,

307).[114] And Arnauld asserts as his 9th axiom "*It is the nature of a finite mind not to be able to*

understand the infinite."[115] We have also seen that the term "adequate conception" is

traditionally used to mean a complete or full idea of its object. Therefore, an "adequate

conception" of infinity would be an idea that completely conceives all of infinity. A limited

mind, obviously, cannot form such a conception. This is the Limited Mind Principle.

ii.   Divisibility Principle:

A premise in Hume's argument is that which is extended is in principle divisible. This principle

was maintained by Arnauld and Bayle [0.2]. Arnauld writes "If they have some extension, then

they are divisible" and Bayle asserts "If there is any extension then, it must be the case that its

parts are divisible to infinity." Bayle and Arnauld do not provide explicit justification for the

Divisibility Principle. Why are indivisible extensions not at least *possible?*

> For Hume, the Divisibility Principle follows from his Separability Principle:
>
> The system of physical points…is too absurd to need a refutation A real extension, such
> as a physical point is supposed to be, can never exist without parts, different from each
> other; and wherever objects are different, they are distinguishable, and separable by the
> imagination. (T 1.2.4.3, SBN 40)

According to Hume, insofar as a 'physical point' is extended in that it has parts, those parts are

"different…distinguishable, and separable by the imagination." One may worry that Hume is

moving from the character of 'objects' to the nature of ideas. However, if my reading is correct,

this section is best understood as a conceptual analysis regarding possible objects. Thus, this

application of Hume's Separability Principle must be read in light of his Conceivability

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[114] Thomas Hobbes, *Elementorum Philosophiae Sectio Prima De Corpore.* (London: Andrew Crookle, 1655).
[115] Antoine Arnauld and Pierre Nicole, *Logic or Art of Thinking*, 251.

Principle. The *concept* of a "real extension" is the concept of having parts: "the idea of extension consists of parts" (T 1.2.3.14, SBN 38). The ideas of these parts are different, distinguishable and therefore separable by the imagination. By way of the Conceivability Principle, the separation or division is therefore *possible* were extensions to exist (Early Modern Principle fifteen: insofar as the ideas of a possible object are clear and distinct, the features of the ideas would be applicable to the object were the object to exist).

One may further wonder how the powers of human conception entail possibility. As I explained in chapter one, the Conceivability Principle was traditionally grounded in God's omnipotence [2.7.i]. As it specifically relates to the Divisibility Principle and the possibility of an indivisible extended 'atom,' Leibniz bluntly writes: "There cannot be [indivisible extended] atoms, since they could at least be divided by God."[116] I will refrain from pressing Leibniz on whether or not God can create an atom he Himself cannot divide.

iii.   Actual Parts Principle:

> 'Tis also obvious, that whatever is capable of being divided *in infinitum,* must consist of an infinite number of parts, and that 'tis impossible to set any bounds to the number of parts, without setting bounds at the same time to the division. (T 1.2.1.2, SBN 26-7).

This expresses the Actual Parts Principle, which as Thomas Holden explains,[117] is metaphysical and not mathematical.[118] The Actual Parts Principle was "overwhelmingly popular in the early modern period" and had "axiomatic status," maintained by "Descartes and the Cartesians …Bayle…Leibniz, and Newton and the Newtonians."[119]

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[116] Leibniz, Gottfried Wilhelm, *The Labyrinth of the Continuum: Writings on the Continuum Problem, 1672-1686*, ed. Richard Arthur (New Haven: Yale University Press, 2001), 25.
[117] See footnote 3
[118] Hence why the distinction between aliquot and proportional parts—a mathematical distinction—is in Hume's words "entirely frivolous" (T 1.2.2.3, SBN 30).
[119]Ibid, 8-9.

The Actual Parts Principle maintains "The parts are already embedded in the architecture of the whole: division merely separates or unveils them, it does not create them anew."[120] This contrasts with the Aristotelian, Potential Parts Principle that maintains "the parts of a given continuant (such as a body) are not distinct existents prior to their being actualized by a positive operation of division. Rather division creates these parts anew—it does not simply separate pre-existing parts."[121] Consider the statue of David. The Actual Parts Principle entails that the figure of 'David' exists prior to the application of Michelangelo's chisel. The 'David' part that is hidden within the marble exists prior to separation. By contrast, the Potential Parts Principle claims that the David statue and its parts have no ontological *reality—no actuality*—only *potentiality*, prior to Michelangelo's handy work.

As we saw in the introduction, Arnauld parades the Actual Parts Principle and its marvelous consequences with gusto [0.1]. According to Arnauld, "there is no particle of matter that does not have as many proportional parts as the entire world."

iv.   Hume's Least Idea Argument and Extended Ideas

Hume uses the Limited Mind, Divisibility, and Actual Parts Principles to argue that an adequate idea of a finite extension must be composed of a finite number of least ideas. There is an oddity in the way Hume uses the Actual Parts Principle. Hume is not making the traditional claim that a composite *material* object is composed of smaller, pre-existing parts, but that the *ideas* in minds—in particular, the ideas of *extensions* in minds—are composed of smaller, pre-existing parts. This is to suggest that our mental ideas are *extended themselves*, which challenges the conception of mind and its contents as being immaterial and non-extended. For a materialist,

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[120] Ibid.
[121] Ibid.

there would likely be structural conformity between extended objects and "minds" because all are made of the same stuff, i.e. matter. It would be natural for a materialist to apply the Actual Parts Principle to both ideas (taken to be one and the same with brain states) and bodies. But few considers Hume to be a materialist.[122] Why do we find him borrowing a principle traditionally applied to matter and applying it to mental contents? Does Hume have a sound reason for this?

Falkenstein explains how Hume's claim that our ideas of extensions are themselves extended follows from Hume's conceptual empiricism in Book I part I.[123] For Hume, complex ideas of extensions are copied in the mind from prior complex impressions of extensions. Ideas "exactly represent" (T 1.1.1.7, SBN 4) prior impressions in every way except levels of "vivacity."[124] Therefore, if ideas of extensions resemble the impressions from which they are derived in *every way* except vivacity, it follows that if the impressions are extended, then the ideas are extended as well.[125] Falkenstein explains, "if what it means for an idea to represent an impression is just that it copies or replicates that impression, then it follows that an idea of [extension][126] is a[n]…extended idea."[127] In support of his claim, Falkenstein cites the following: "the very idea of extension is copy'd from nothing but an impression, and consequently must perfectly agree to it. To say the idea of extension agrees to any *thing,* is to say it is extended" (T

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[122]For example, it does not seem like Hume is a materialist about the mind or its contents when he maintains that "an object may exist, and yet be no where" and that "the greatest part of beings do and must exist after this manner" (T 1.4.5.10, SBN 235) citing "all our perceptions and objects, except those of sight and feeling" (ibid.). For a compelling argument that Hume favors materialism see Russell, *The Riddle of Hume's Treatise: Skepticism, Naturalism, and Irreligion*. Russell focuses on Hume's argument in T 1.4.5 *of the immateriality of the soul* and conclusion that "motion may be, and actually is, the cause of thought and perception" (T 1.4.5.31, SBN 248).

[123] I borrow the term "conceptual empiricism" from Don Garrett, *Cognition and Commitment in Hume's Philosophy* (Oxford University Press, 1997).

[124] Hume writes "any impressions either of the mind or body is constantly followed by an idea, which resembles it, and is only different in the degrees of force and liveliness" (T 1.1.1.8, SBN 5).

[125] Garret also maintains this reading. Garrett, *Hume*, chap. 2.6 Mental Representation.

[126] The original quote has "space" instead of extension, which does not seem quite right given Hume's explicit account of space as an abstract idea. Moreover, the term "extension" is more consistent with the quote (above) that Falkenstein is referencing.

[127] 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), 53.

1.4.4.15, SBN 239-40, emphasis added). Hume's conceptual empiricism resembles that of Locke's [2.4.ii]. Yet while Locke argues that the idea of extension is a simple mode (ECHU 2.13), Hume argues that the idea (concept) of extension must be derived from impressions of extension (that is, extended impressions): "The table before me is alone sufficient by its view to give me the idea of extension" (T 1.2.2.4, SBN 34). So any idea of an extension will be extended like an impression is extended.

So ideas of finite extensions are extended, both in the manner of the impressions from which they are copied, and in the manner of the possible objects they are of. It follows from the Divisibility Principle that an idea that is extended is in principle divisible. According to the Actual Parts Principle, the *condition* for divisibility into a number of parts is the actual pre-existence of that number of parts. Therefore, by these principles, applied to ideas, the extended idea (the idea of an extended object) that is divisible into a given number of parts, is antecedently composed of that number of actual, pre-existing parts. For example, one could not in thought cut the idea of piece of paper in half unless the mental halves existed to make possible the mental division. One division requires the pre-existence of two idea parts, and the infinite division of the idea of a piece of paper would require the actual pre-existence of an infinite number of idea parts. If an idea of extension were infinitely divisible, then there would have to exist, in the mind having that idea, an infinite number of pre-existing ideas.[128] But, as Hume assumes with other Early Moderns, the mind is finite and cannot have a "full and adequate conception of infinity." Therefore, any complex, extended, divisible idea of an extended object *must* resolve itself into a finite number of least ideas.

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[128] Note the assumption that the actual pre-existing idea "parts" must themselves be ideas. This is in keeping with Hume's ontology of impressions and ideas being the only mental entities.

### v.	Grain of Sand Thought Experiment and Ink Spot Experiment

In the next two paragraphs Hume appeals to experience to confirm that the human mind has a

least idea (T 1.2.1.3-4, SBN 27). These arguments *a posteriori* are cases of Hume's

"methodological empiricism."[129] Hume argues that the mental "image" of the 1,000[th] and

10,000[th] part of the grain of sand are indistinguishable, reaffirming Hume's principle that the

mind is limited and confirming that it reaches a minimum, mental threshold.

The second empirical argument is Hume's Ink Spot Experiment. He enjoins us to:

> Put a spot of ink upon paper, fix your eye upon that spot, and retire to such a distance,
> that at last you lose sight of it; 'tis plain, that the moment before it vanish'd the image or
> impression was perfectly indivisible (T1.2.1.4, SBN 27)

This experiment purportedly confirms that "impressions of the senses as with ideas of the

imagination" reach a threshold, and at that threshold, the mind has an idea copied from an

indivisible, minimum colored impression. The results of Hume's Ink Spot Experiment have been

disputed.[130] Such is the way of science. Most interesting about the Grain of Sand Thought

Experiment and the Ink Spot Experiment is Hume's methodology of experimental reasoning to

confirm whether the mind does or does not have the idea in question. This approach to the

question of infinite divisibility is wholly absent from Arnauld, Bayle, or Clarke's text. But if

Hume's Finite Divisibility Argument is a demonstration, why appeal to experience in this way?

An answer emerges from a consideration of the expectations placed on demonstration

within Hume's tradition. As Leibniz argues in *Meditation on Knowledge, Truth and Ideas,* a

principle of human knowledge, such as the Cartesian Axiom ("*Everything contained in the clear

and distinct idea of a thing can be truthfully affirmed of that thing*") is useless unless one first

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[129] Garrett, *Cognition and Commitment in Hume's Philosophy*, 30.

[130] For example, C.D. Broad writes "so long as I am sure that I am seeing the [ink] spot at all, I am fairly sure that the sense-datum which is its visual appearance is extended, and not literally punctiform. So I very much doubt whether there are punctiform visual sense-data. The case for punctiform tactual sense-data would seem to be still weaker." Broad, "Hume's Doctrine of Space," 161.

establishes a criterion for clear ideas. Leibniz criticizes Descartes Ontological Argument, much like the 2nd Objector, on the grounds that Descartes does not *first* show that his idea of God is possible, let alone clear. If the idea is latently contradictory, it is impossible [2.3.i] and not clear. If the idea of God *is* latently contradictory, then the 'idea' of a Perfect Being is not clear after all—it would just be an empty, meaningless term standing for no actual idea [2.3.ii]. Positive demonstrations require the employment of clear ideas, not meaningless expressions. This is why Hobbes argued that Descartes' Ontological Argument is a non-starter. As all ideas are corporeal images, and as there is no corporeal image-idea of God, there can be no demonstration of God's existence [2.1]. Berkeley also implores any reasoner to first attend to those ideas one "clearly and adequate know[s]" "divested of words." Putting these observations in a more general form, we have our third Early Modern Principle: every idea for which a term or expression in a demonstration stands must be possible, clear, and distinct [chapter 2.8(3)]. Granted, Early Moderns disputed what ideas count as "clear." What was not disputed is that only clear ideas can be employed in a positive demonstration [2.6]. Moreover, clear ideas refer to possible objects [2.8(11)].

Leibniz explains that there are two ways to show that an idea is clear and consequently, employable in a demonstration. For a complex idea, one may perform complete conceptual analysis to determine if the constituent ideas are not inconsistent or contradictory with one another. If they are not, then the complex idea refers to a possible object [2.8(11)]. The other begins with an appeal to experience: if an object is experienced, it is possible,[131] and if an object is possible, the idea of that object is possible [2.8 (13,10)]. Once an idea of an object is found to

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[131] As Leibniz remarks, "when we know through experience that a thing actually exists, for what actually exists or existed is at very least possible" [2.3.i].

be possible *and* clear, it may be used in a demonstration. Following in this tradition, Hume first endeavors to show that his least idea is possible and clear (non-contradictory) and therefore, refers to a possible object. 'Least idea' cannot be an empty, meaningless term that stands for no real idea. Under my interpretation, the purpose of Hume's Grain of Sand and Ink Spot Experiments is to show through an appeal to experiences of objects (a grain of sand and an ink blot)[132] that the least idea is clear and refers to a possible object.

3.2 Hume's Least Idea: Unnoticed Exception to his Copy Principle?

Hume's least idea is a simple, indivisible idea identified at the end of his Least Idea Argument. However, if the Least Idea Argument, as opposed to an impression, is the *ultimate source* of the least idea, that is, if it were *not* an idea of which we (or for that matter, Hume) were "antecedently possest," we would have a possible counterexample to both the Copy Principle, that all ideas are derived from impressions (T 1.1.1.7, SBN 4) and its corollary that no reasoning can produce a new idea (T 1.3.14.17, SBN 164). While Hume is explicit that any *complex* idea of extension—that of a table being his exemplar—is derived from a prior impression (T 1.2.3.4, SBN 34), nowhere does he expressly state that all least ideas—the smallest parts of *any* ideas of complex extensions—are copied from prior impressions. On the contrary, he notes that the 'least impressions' that are the individual parts of typical impressions of extension are not separate and distinct from each other, strongly suggesting that they could not serve as the source of least ideas (T 1.2.4.19, SBN 45). Is Hume's least idea a glaring exception to his Copy Principle?

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[132] One could describe either experience as being the experience of an object, without making an ontological commitment as to whether it constitutes the experience of an object that has the attributes of a body or of external object. That is, in each case the experience is of the object of the idea, whatever that object might possibly be.

In Section one of what follows, I first present in harsh outline, the threat Hume's least idea poses to his Copy Principle, a threat different in kind, and potentially more serious, than that posed by the missing shade of blue. I consider Newman's reading that Hume's least idea is the minimum idea the imagination can form through mental division. I argue that her reading, on its face, does no service to the Copy Principle. Then, I look to Baxter's reading that least ideas are derived from the 'least impressions' had under contrived conditions such as the Ink Spot and analogous experiments. Perhaps least ideas could be reasoned to, and assigned their explanatory role, after the fact of their origination from impressions occurring under experimental conditions. However, least ideas being memory-ideas derived from the Ink Spot and similar experiments is not enough to guarantee they will adequately fill the broad theoretical role assigned to them by Hume. In Section two, I consider Hume's least idea in light of the fact that Hume's Finite Divisibility Argument is an attempted demonstration, which means that it uses abstract ideas to draw a general conclusion, with Hume's least idea the key concept employed in that demonstration. Utilizing Garrett's account of Hume's theory of concepts, I explain how the minimum ideas of the imagination (Newman), and minimum memory-ideas derived from experiments (Baxter), can serve as the exemplar members of the revival set for a general term naming the *already-familiar* but Hume-named-and-described concept of the "least idea."

i.   Hume's Least Idea and Copy Principle

Hume's Copy Principle:

> [A]*ll our simple ideas in their first appearance are deriv'd from simple impressions,*
> *which are correspondent to them, and which they exactly represent.* (T 1.1.1.7, SBN 4)

Hume's least idea is a simple, indivisible idea resulting from the Least Idea Argument. What sort of idea is a *result* of an argument from principles? From what simple, indivisible impression

is this *result* derived? What impression does it "exactly represent"? No principle employed in the Least Idea Argument itself—neither Limited Mind, nor Divisibility, nor Actual Parts—confers upon the least idea, or attributes to it, any color, solidity, or other sensory quality.

Hume could just accept that his least idea *is* an exception to his Copy Principle. He admits that the Copy Principle is a "general maxim" (T 1.1.1.10, SBN 6) that admits of counterexamples. Famously, he identifies the missing shade of blue as one such exception (T 1.1.1.10, SBN 6). Hume queries whether a person, given proximally adjacent shades of blue, could imagine a missing shade. Hume answers in the affirmative. As Garrett notes, there are many analogous counterexamples along all five sense-modalities.[133] The mind might similarly be able to form the least idea from something other than a preceding impression.

However, no useful analogy can be drawn between the missing shade of blue and the least idea. The conditions under which the imagination can form the idea of the missing shade of blue in no way resemble the conditions under which the Least Idea Argument produces the idea of an indivisible minimum. The idea of the missing shade of blue is formed when a qualitative gap between adjacent shades is filled by the imagination. The idea of an indivisible minimum featured in the Least Idea Argument, devoid of any quality at all, does not fill a qualitative gap.

What is more, its appearance at the conclusion of the Least Idea Argument seems to provide a counterexample to Hume's dictum that reasoning cannot produce a new idea:

> No kind of reasoning can give rise to a new idea…[W]herever we reason, we must **antecedently be possest** of clear ideas, which may be the objects of our reasoning. (T 1.3.14.17, SBN 164 emphasis added).

In his Grain of Sand Thought Experiment, Hume appears able to reason *to* the least idea, in the absence of any antecedent least impression. What are we to make of this difficulty?

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[133] Garrett, *Hume*, 45.

Newman argues that Hume's least idea is the minimum idea arrived at through the process of mental division—the least extensive idea that the *imagination* can form. She writes:

> It [the least idea] is the minimal image reached by the imagination when it seeks to repeatedly divide a finite idea of extension (including an idea of the threshold of sight) which must be the idea corresponding to a minimal part of extension.[134]

By her account, Hume's least idea is the idea formed when the limit of mental division is reached. This is based in part on Hume's Grain of Sand Thought Experiment. This introspective empirical inquiry, according to Hume, proves that the mind reaches a minimum idea, and according to Newman, this minimum idea *is* the least idea.

Newman's reading by itself, however, does not alleviate the concern that the least idea may be an exception to Hume's Copy Principle: if Hume's least idea is produced by a process of mental division—the mind imagines smaller and smaller objects, like grains of sand, until it forms the idea of an indivisible minimum—this minimum, simple idea is not "derived from" a prior simple impression in the sense required by the Copy Principle. It is only "derived from" an impression in the weak sense that one begins the thought experiment with the impression of a grain of sand. Unfortunately, the simple least idea one forms at the conclusion of the experiment is not copied from, and cannot be said to exactly represent, a preceding, identifiable, individual *simple* impression, a part of the grain-of-sand impression that is separate and distinct, in a visible or tangible way, from the grain-of-sand impression, itself. Simple ideas, *in their first appearance*, are said by Hume to be derived from impressions. Hume is very clear that any "change" undergone by an idea is a succession from that idea to another, new idea.[135] Under Newman's reading, which emphasizes Hume's Grain of Sand Thought Experiment, we seem to

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[134] Rosemary Newman, "Hume on Space and Geometry," *Hume Studies* 8, no. 1 (1982), 11.
[135] Hume writes: "If you make any other change on [the idea], it represents a different **object or impression**" (T 1.3.7.5, SBN 96, emphasis added).

have a simple idea that makes its first appearance when a preceding idea is divided in thought,

not when a new preceding impression is had and copied.

The difficulties in reconciling Hume's least idea with his Copy Principle are aggravated

by his failure to incorporate, or mention, his Copy Principle in the context of his Minimism in T

1.2 part I or II. The Copy Principle *is* asserted at the beginning of Part III, but only, it would

seem, to account for the source of the *complex* idea of extension, not necessarily for the simple,

minimum ideas of which any complex idea of extension is said to be composed. Hume writes:

> The table before me is alone sufficient by its view to give me the idea of extension…my
> senses convey to me only the impression of colour'd points, dispos'd in a certain
> manner...the idea of extension is nothing but a copy of these colour'd points, and of the
> manner of their appearance. (T 1.3.2.4, SBN 34)

Some scholars interpret Hume's theory of extension as a form of pointillism regarding extended

impressions.[136] If Hume *is* a pointillist about visual impressions then perhaps the least idea is

copied from simple "colour'd points" provided in any complex visual impression, such as a

table. His repeated use of the phrase "colour'd points" in the passage—as opposed to 'colored

patches' or 'colored areas' suggests this.

However, the pointillist reading conflicts with other passages where Hume says that the

particular Minima that compose extension are *not* discernable in visual impressions because they

are "...are so minute and so confounded with each other, that 'tis utterly impossible for the mind

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[136]Flew writes: "'Anyone familiar with the theories and paintings of Seurat might also mischievously characterize the Hume of this Section as "the Father of Pointillisme"…'."Antony Flew, "Infinite Divisibility in Hume's *Treatise*," in *Hume: A Re-Evaluation*, ed. Donald Livingston and James King (New York, NY: Fordham University Press, 1976), 256. And Jacquette writes: ""The constructive synthesis of extension out of its elements is explained in Hume's theory of extension by the perceivability of sensible extensionless indivisibles as the individual building blocks of spatial extension. Sensible extensionless indivisibles, as opposed to Euclidean points, can be experienced by vision and touch. When juxtaposed in aggregates of two or more they constitute extension in the phenomenal field, like a distantly viewed pointillist canvas." Dale Jacquette, *David Hume's Critique of Infinity* (Leiden ; Boston: Brill Academic Publishers, 2000), 117.

to compute their number" (T 1.2.4.19, SBN 45). Graciela de Pierris maintains that Minima are imperceptible or non-impressional in homogenous extensions. She writes:

> [T]he simple (unextended) minima whose confounding results in a homogenous appearance of extension at a given time (the darkly colored "points" of which the ink spot is composed) are not separately perceived as minima at this time, for they constitute the appearance of extension only by being confused or confounded with one another.[137]

If De Pierris is correct, there is no basis for claiming that homogeneous appearances of extension are combinations of Humean atomistic impression-parts or that every copied idea of homogeneous extension is composed of individuated, separate and distinct least ideas.

Perhaps the process is this: we derive complex ideas of extension from complex impressions, as Hume indicates. In the case of the homogenous table-top impression, the "minute" parts of the complex table-top idea are "confounded with each other" and individually indiscernible. However, we then mentally divide the idea of the table over and over until, at some point, the mind reaches a minimum. The idea used to represent the 1,000th part of the idea of the table is indistinguishable from the idea used to represent the 10,000th part of the idea of the table; "they" are one and the same. Unfortunately, we are still left with the least idea being a simple idea that makes its first appearance when a preceding idea (the idea of the homogeneous larger extension) is divided in thought, not when a preceding impression of a least idea is had and copied. This path has taken us right back to the Grain of Sand Thought Experiment, and we have a simple (minimum) idea that seems not to have made its "first appearance" as a copy of a discrete, identifiable simple impression—a glaring exception to Hume's Copy Principle.

But what about Hume's Ink Spot Experiment? This experiment seems to reveal that a simple, indivisible impression can, under the right circumstances, be given in sense-experience, and copied into a least idea. De Pierris argues:

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[137] Graciela De Pierris, "Hume on Space, Geometry, and Diagrammatic Reasoning," *Synthese*, 2012, 174.

> In my view, Hume is here not primarily interested in the question whether there are minima independently of what an observer can perceive, but in what, at a given time and under specific circumstances, a perceiver apprehends after a series of diminutions or divisions, just before the impression is annihilated.[138]

This means that Hume would freely allow that, in the majority of visual and tactile sense experiences, Minima are insensible, that is, minimum impressions are rarely to be had. Complex impressions of extension only provide complex ideas of extension. However, he is still free to consider special cases, and to point out that, under contrived conditions, such as the Ink Spot Experiment, a least idea can be copied from an impression it resembles and exactly represents, that is, a simple, indivisible impression, one without parts, that is visible or tangible. If Hume's least idea is sourced in that manner, then Hume's least idea would not be an exception to Hume's Copy Principle after all.[139] This reading could be gathered from Baxter's text. He writes:

> Just before the spot is too far away to cause any image at all, it causes an image that cannot be further diminished – one with no parts. This last image is indivisible; it is a minimal impression. Minimal ideas are simply less vivid copies of such minimal impressions…Armed with [these] minimal ideas Hume proceeds in Treatise 1.2 to argue confidently that space, (or as he calls it) "extension" is not infinitely divisible.[140]

If Hume is correct that such experiments *do* provide minimum impressions, and if least ideas have their source as copies of such impressions, then in acknowledging that minimum impressions and minimum ideas do occur, we have no troublesome exception to Hume's Copy Principle per se. However, a serious problem remains.

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[138] Ibid, 173.

[139] Baxter provides his own minimal-impression generating experiment. He writes: "Put two grains of sand on a contrasting surface. As in the ink spot experiment, get far enough away that the grains each present a minimal, extensionless impression. Take a single bristle from a broom and slowly move one grain adjacent to the other. There will be a point at which you cannot move it any closer and still discern two grains. Any closer and they will appear as a single grain from your remote viewpoint. When they are at their closest approach while still appearing to be two grains, they give you an image with the smallest extension, on Hume's definition, formed from extensionless images" Donald L. M. Baxter, "Hume on Space and Time," in *The Oxford Handbook of David Hume*, ed. Paul Russell (New York: Oxford University Press, 2016), 173–91.

[140] Baxter, "Hume's Theory of Space and Time in Its Skeptical Context," 108.

Hume's theory of extension is general; to support it, he needs to prove that least ideas compose *every* idea of *every* extension. Least ideas cannot be freak occurrences. What evidence do I have that the complex idea I have copied from the complex impression of the homogenous table before me is composed of least ideas that have been copied from least impressions? Placing my table in the yard and retreating from it as it follows the Ink Spot to the point of annihilation might suggest that, under contrived conditions, my table impression can be reduced to a simple indivisible impression without parts, giving me a new (least) idea that is copied from, and exactly represents, that new simple (least) impression. Unfortunately, all I have done, is change the idea under analysis from the complex idea derived from the complex table-impression to the simple idea derived from a table-impression on the brink of annihilation. This experimental procedure has shed no light at all, on the composition of my *original* complex idea of the table, or that it was copied from least impressions. To obtain the sought-for generality, we need the Least Idea Argument to work in harmony with Hume's Copy Principle, and preferably not to end in an idea that has not been copied from an impression.

ii.   Hume's Least Idea is an Abstract Idea (Concept)

I have already argued that Hume's Least Idea Argument is one prong of an attempted demonstration meant to produce knowledge in Hume's strict sense of that term [1.2]. Hume also maintains that demonstrations employ abstract ideas [1.1]. If I am correct that Hume is attempting a demonstration, and if the attempt is consistent with his own account of demonstration, it will contain abstract ideas. We could expect the least idea to be itself an abstract idea.

In an intriguing footnote to his discussion of infinite divisibility in the *Essay*, Hume invokes his account of abstract ideas to offer a possible solution to resolve the "absurdities and contradictions" surrounding infinite divisibility. He writes:

> If [my account of abstract ideas] be admitted (as seems reasonable) it follows that all the ideas of quantity, upon which mathematicians reason, are nothing but particular, and such as are suggested by the senses and imagination, and consequently, cannot be infinitely divisible (ECHU 12.2 fn 1)

As we have seen, many prominent Early Modern philosophers including Arnauld [2.2], Locke [2.4.i] and Hutcheson [2.7.iii] maintain that demonstrative reasoning requires the use of abstract ideas [2.8(1)]. According to Hume, abstract ideas are nothing but particular ideas associated under a certain general term, ideas that become "general" through linguistic custom (T 1.1.7, SBN 17-25). So if Hume's account of abstract ideas is correct, then the abstract ideas employed in demonstrations, "properly speaking," (ibid) are really just particular ideas "suggested by the senses and imagination"—more specifically, ideas copied from impressions and compared and associated or linked with other ideas that are copied from impressions. Hume seems to be suggesting that the mathematicians fail to realize that the ideas they employ in their attempted demonstrations of infinite divisibility are really *his* kind of abstract ideas, dooming their mission from the start. It seems likely he would say much the same thing of his own attempted demonstration of Minimism in the *Treatise*, that is, that it employs general terms standing for particular ideas. The difference, of course, is that his mission is *not* similarly doomed.

A bit more on Hume's account of abstract ideas. Hume maintains that all original impressions are "determin'd in [their] degrees both of quantity and quality" (T 1.1.7.4, SBN 19). As all simple ideas are derived from, and exactly represent, prior impressions in every way but vivacity, it follows that all simple ideas are determinate in degree of quantity and quality as well. This determinacy allows them to be "individual" (T 1.1.7.6, SBN 19). The question then, is how

individual ideas become general in their representation of objects or qualities. Hume argues that this is through a process of abstraction. When the mind is presented with multiple resembling, yet different objects or qualities, the mind notes the resemblance. Through linguistic custom, general terms are coined to signify the way in which the objects or qualities resemble one another. The connection between a general term and a particular idea is one of stimulus and response. The general term 'Dog', summons a particular idea of a dog—furry little Fido. Following Garrett, we can call the first idea raised in the mind when the general term is present, the exemplar idea. All of the ideas stored in the memory that resemble the exemplar idea sufficiently, in common ways—the particular ideas of Clifford, Lassie, or the Crime Dog McGruff—we can call the *actual* revival set of ideas. The *actual* revival set in the memory of a reasoner contrasts with the "*idealized* revival set that *would* result from an indefinite extension of veridical experience concerning the…character of objects." Demonstrations, for Hume, employ abstract ideas (concepts) that are general terms standing for idealized revival sets of objects [1.1].

Hume directs you, the reader, to "put a spot of ink upon paper…and retire to such a distance, that at last you lose sight of it; 'tis plain, that the moment before it vanish'd the image or impression was perfectly divisible." The memory-idea is a particular indivisible, minimum idea that is clearly copied from an impression. Presumably, one could copy a least idea from any impression on the threshold of annihilation, and in fact, that is what has to happen, for us to understand what Hume means, when he describes the least idea as "an idea, of which it cannot conceive any sub-division, and which cannot be diminished without a total annihilation." We know what he is talking about, even without benefit of his Grain of Sand and Ink Spot Experiments, because we have had many least impressions, that is, experiences of things on the threshold of appearing or disappearing as distances and sizes increase and decrease. All of these

experiences form a robust (*actual*) revival set. All the Ink Spot Experiment does, is isolate the experience of something that has just barely appeared or is just about to disappear, so that we take special note of the simplicity and indivisibility of the tiny image. The least memory-ideas in question—the images of the ink spot, and anything else that has just barely appeared or is just about to disappear —resemble each other insofar as they are "simple and indivisible" perceptions; they are quantitatively the same. When the least idea is employed in abstract reasoning, the mind raises up a particular idea, a member of the *actual* revival set of quantitatively-resembling least ideas, to serve as the exemplar. These ideas, which constitute the *actual* revival set, resemble the exemplar summoned by the general term 'least idea.'

The least idea is static; it represents an arithmetic unit and the relations it is perceived to have when it is associated and compared with other least ideas are those of proportion in quantity and number; it is abstract; and it is clear. Therefore Hume's least idea is a concept that may be used in a demonstration that satisfies Hume's four conditions for a successful demonstration [1.1]. Moreover, Hume's least idea not only represents the *actual* revival set of all minimal ideas in the mind of a reasoner, but also represents the "*idealized* revival set that *would* result from an indefinite extension of veridical experience concerning the…character of objects."[141] All possible ideas within the idealized revival set, in virtue of their clarity, are of possible objects (Hume's Conceivability Principle and Early Modern proposition 11 [2.8(11)]). In the case of Hume's least idea, its idealized revival set represents all possible indivisible colored or tangible minima. (More will be said on possible objects in chapter four.)

We may use the foregoing account to alleviate our worries about what Hume's Least Idea Argument or Grain of Sand Thought Experiment holds for his Copy Principle. We were

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[141] Garrett, *Hume,* 56.

concerned that the simple idea derived from the Least Idea Argument, or the least idea one forms at the conclusion of the Grain of Sand Thought Experiment, seems not to have been copied from, and may not exactly represent, a preceding, identifiable, simple impression. Instead, we seemed to have a simple idea that made its first appearance as the result of an argument, or when a preceding idea was divided in thought, not when a preceding simple impression was had.

These concerns disappear once we acknowledge that we were "antecedently… possest of" the clear idea of the least idea. The least idea of the grain of sand emerging at the end of the thought experiment, seemingly as the product of pure thought, was simply being *revived*, that is, was already a member an actual revival set of which copies of other least impressions, are members. We are mistaken when we think we have, at the conclusion of the argument or experiment, created a new idea. The least idea is not a newly invented idea. We have had prior impressions of near and distant objects that are just barely discernible. When Hume describes "an idea, of which [the mind] cannot conceive any sub-division, and which cannot be diminished without a total annihilation," he is describing, not a new idea created at the conclusion of the experiment, but every member of the actual revival set of least ideas we summon when we are given his verbal description. So long as we are as attentive to those ideas, as Hume is to the least idea of the ink blot, we recognize in them, the qualities Hume attributes to it. When Hume, or any reasoner, employs the least idea in a demonstration, the least idea of the ink spot is the exemplar, the first member of the revival set to come to mind. This interpretation also provides the sought-for generality required by Hume's argument and allows his conclusion to pertain to all finite extensions.

3.3 Conclusion

Hume's Least Idea Argument follows from the Limited Mind, Divisibility, and Actual Parts Principles. Interestingly, Hume applies the Actual Parts Principle, not to an extended body, but to the complex *idea* of extension. This is plausible in Hume's system because he maintains that ideas of extension are literally extended themselves. Consequently, if the idea of an extension were infinitely divisible it would have to contain an infinite number of actually pre-existing ideas—making the idea of an extension an idea a limited mind cannot have. Hume concludes, therefore, that any idea of extension formed by a human mind is composed of a finite number of actually pre-existing ideas. Those actually pre-existing ideas are the least ideas. Consistent with the expectations of his tradition, Hume provides the Grain of Sand Thought Experiment and Ink Spot Experiment to show that the concept of the least idea is possible, clear, and non-contradictory. This means that Hume can employ the concept in his positive demonstration.

A difficulty arises, however, from Hume's Least Idea Argument. In part two I considered whether Hume's least idea— a simple idea that seems to arise from an argument, and not from an impression—might be an unnoticed and glaring exception to his Copy Principle. This concern is alleviated once Hume's Divisibility Argument's being a demonstration is fully taken into account. Hume's least idea is not an exception to his Copy Principle. Neither is it a memory-idea derived from a contrived experiment. Hume's least idea is an abstract idea, a general term that stands for the panoply of members of its actual revival set, ideas derived from impressions of just barely visible or tangible objects. When Hume employs 'least idea' in his Finite Divisibility Argument, it is a general term standing for his ink blot exemplar and every other member of the idealized revival set.

FOUR

Reconciling the Adequacy Principle with Skepticism Regarding External Objects

After completing his Least Idea Argument, Hume begins T 1.2.2 by presenting the Adequacy Principle, which licenses claims about "objects" and their "relations, contradictions and agreements" on the basis of similar relations, contradictions and agreements among ideas that are "adequate representations" of them. In this chapter I address two concerns in the literature regarding the Adequacy Principle. First, if "objects" are understood as anything non-perceptual, then any confidence in what we can learn about them from our ideas seems misplaced, given Hume's claim in 1.2.6 that "'tis impossible for us so much as to conceive or form an idea of any thing specifically different from ideas and impressions" (T 1.2.6.1, SBN 67) and the conclusions he reaches in "*Of scepticism with regard to the senses*" (hereafter T 1.4.2). Second, Robert Fogelin argues that Hume provides no justification for this "rationalist principle…that adequate ideas of objects are *eo ipso* true of them." [142] I argue that if we interpret the Adequacy Principle properly, it fulfills the task to which Hume assigns it, and we avoid Fogelin's problem entirely.

I first consider two different readings of "adequate representation." I endorse the reading current in Hume's time that, to be an adequate representation, an idea must be isomorphic,

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[142] Fogelin writes: "[T]he transition from claims about our ideas of space and time to assertions about space and time themselves... is a match for anything found in the writings of the rationalists," and that "Hume certainly owes us... a defense of the general rationalist principle that adequate ideas of objects are eo ipso true of them." Fogelin, "Hume and Berkeley on the Proofs of Infinite Divisibility," 54.

accurate, and complete with respect to whatever the idea is of. Then I explore the tension between the apparent optimism implicit in the Adequacy Principle and the pessimism in T 1.2.6 and T 1.4.2, deeming this a *Humesproblem* in need of a solution.[143] Interpreting the Adequacy Principle in light of the Early Modern background on demonstrative reasoning resolves this difficulty. I argue that Adequacy Principle-based reasoning is not designed to be dispositive of the ontological question of whether there *are* external objects. The adequate ideas with which one reasons need only be of *possible* objects, and the conclusions one reaches are true of those objects on condition that those objects actually exist. Seen in this light, the Adequacy Principle becomes quite suitable for use in conjunction with demonstrative reasoning [1.2]. As interpreters, it is unnecessary to provide any further ontology of the "objects" of the Adequacy Principle. Stipulating that "objects" are neither private ideas nor private impressions—but some other kind of *possible* object—is sufficient to refute the criticisms and allay the concerns typically associated with Hume's Adequacy Principle.

4.1 Two Readings of Adequate Representation

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, emphasis added)

The phrase least familiar, and quite puzzling, is "adequate representations of objects." Our first task in solving our *Humesproblem* will be to determine what Hume means by that.

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[143] I inherit the term *Humesproblem* from Richard Popkins who smartly observes that "The constant stream of radical reinterpretations of Hume…gives witness to the existence of a *Humesproblem*… Problems are solved at one point, only to be declared insoluble elsewhere." Richard Popkin, "Hume's Intentions," in *The High Road to Pyrrhonism*, ed. Richard Watson and James Force (Hackett Publishing Company, 1980).

There are two potential readings of "adequate representation." The first requires that isomorphism, completeness, and accuracy obtain between the idea and its object. The second reading is that by "adequate representation," Hume means simply a "clear idea" of the object, without the imposition of additional requirements. In construing the Adequacy Principle, we have to decide between these two readings.

i.   Adequacy as Requiring Isomorphism, Accuracy, and Completeness

One would look to Hume's philosophical tradition to support the accuracy and completeness requirements in the first reading of adequacy, with the important qualification added by Hutcheson to the completeness requirement. As we have seen, the Early Modern tradition maintained that adequacy, whether it be said of an idea, or of knowledge, signifies completeness and accuracy [2.1; 2.3.ii; 2.4.ii; 2.8(16)]. Hutcheson defined adequate ideas as "those which represent the whole nature of an object, *or at least all of it that we want to conceive in our minds*" [2.7.ii] thereby qualifying the requirement of completeness. Perhaps in assessing the adequacy of an idea, one must consider the task at hand and the use to which the idea is being put. That is, an accurate mental visual image of a mite might be an adequate representation of the mite if we are concerned with what the mite looks like and not with what it weighs or who its friends might be. If "adequate representation" is to mean something other than accuracy and completeness, Hume would be breaking with this tradition.

Don Garrett points out that for Hume, a "'full and adequate conception of infinity' requires an idea with infinitely many parts."[144] Garrett calls this relation between an adequate

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[144] Don Garrett maintains that Hume's views about 'adequate" conception require "an isomorphism between an idea and what is conceived through it." Garrett, *Hume*, 62.

idea, and what the adequate idea is of, "isomorphism."[145] An idea "adequately represents" an object only if they share the same structure, complexity, and number of parts. If a mite is gray, has eight legs and a body, and eats fungi, the adequately representative idea would have those eleven components. However, to require *only* isomorphism, would mean that my idea of the mite could be adequate even if I mistakenly think the mite is brown. To address this, one needs to add to isomorphism, the requirement of accuracy: my idea of an object would be inadequate if my idea of it were incorrect in some (Hutcheson might add, important) respect. Adding these ingredients together, one would say that to be an adequate representation of an object, an idea must be isomorphic with the object and be accurate and complete.

There is strong textual evidence that Hume considers isomorphism to be a requirement of "adequate representation," as a step towards accuracy and completeness. In the paragraph immediately prior to the Adequacy Principle, he describes forming a "just notion" of a mite:

> For in order to form a just notion of these animals, we must have a distinct idea representing every part of them; which, according to the system of infinite divisibility, is utterly impossible, and according to that of indivisible parts or atoms, is extremely difficult, by reason of the vast number and multiplicity of these parts (T 1.2.1.5, SBN 28)

In this passage a "just notion" would be a complex idea "representing every part" of what the idea is of. The fact that this paragraph appears right before the Adequacy Principle suggests that "just notion" in his mite discussion and "adequate representation" are to be assigned the same meaning, notwithstanding the terminological change. For one to *know* that a mite resembles a tick, one's complex idea of each must include the complex idea of having eight legs, and each creature must have eight legs. So interpreted, the Adequacy Principle says that, to know the relations between two objects, one must be careful not to overlook parts of either. To *know* the

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[145] Ibid.

mite and tick objects, one has to think of each as having eight legs and be *correct* in thinking of each as having eight legs.[146]

The isomorphic, accurate, and complete formula for "adequate representation" is consistent with Hume's account of why demonstrative knowledge is attainable in algebra and arithmetic, but not in geometry. As Owen notes, demonstrations consist of a chain of ideas extending to a conclusion. An "adequate representation" in a chain of ideas constituting an algebraic or arithmetic demonstration would be an idea that accurately exemplifies each and every feature of the mathematical unit being ideated. In algebraic and arithmetic demonstrations, "we are possest of a precise standard" of "an unite *answering to* every unite of the other" [1.1]. To allow of an arithmetic or algebraic demonstration identified by Owen, there would have to be an isomorphism between each "unite" and the idea of it, and each idea of each unit would also have to be complete and accurate. By contrast, the so-called "demonstrations" of geometry are to Hume "not properly demonstrations, being built on ideas, which are not exact, and maxims, which are not precisely true" (T 1.2.4.17, SBN 45). Instead of conceiving of the dimensions and proportions of figures "justly," geometers conceive of them "roughly" (ibid). These adjectives— 'exact', 'precise[ly]', 'just'—suggest that the adequacy of ideas is conditioned on their accuracy with respect to their objects and without it, demonstrative knowledge is not possible.

Hume states that "our ideas are adequate representations of the most minute parts of extension" (T.1.2.2.2, SBN 29). The isomorphic, accurate, and completeness reading is further supported by the fact that Hume's least idea *is* an adequate representation of its object in this

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[146] Hume also uses "adequate" to describe the idea of decimals. His point seems to be that there is no adequate idea of any very large number, but only of "the decimals, under which the number is comprehended" (T 1.1.7.12, SBN 23). He does not explain what he means when he says that our idea of a decimal is "adequate." However, his claim that we can have no adequate idea of a very large number is compatible with requiring isomorphism. Under the isomorphic interpretation, having an adequate idea of an object consisting of a thousand of something, would be conditioned upon the ability to form a complex idea having a thousand parts, a task well beyond the human mental capacity.

sense. Hume's least idea is the idea of a single indivisible colored or tangible minimum [3.1].

Such a "part of" extension, that is, such an object—unlike a very large number or the city of

Paris—is not going to frustrate efforts to conceive it isomorphically, accurately, and completely.

ii.   Alternate Reading of Adequate Representation

There is support for an alternate reading of "adequate representation." The most obvious

objection to the isomorphism, accuracy, and (especially) completeness formula for adequacy is

the consequent rarity of adequate ideas. If this adequacy formula were correct, we could only

infer object-relations when we are pre-possessed of ideas that are 'whole' and 'perfect'

representations of the objects. This is a nearly impossible standard for ideas to meet. If "just

notion" and "adequate representation" are interchangeable terms, for Hume, then he himself

observes that an adequate representation is "extremely difficult" (e.g. "just notion of a mite").

We are also reminded of Leibniz's comments that "I don't know whether humans can provide a

perfect example of [adequate knowledge], although the knowledge of numbers certainly

approaches it" [2.3.ii]. If an adequate idea must fully represent its object, then there would be

few, if any, adequate ideas, and few, if any, objects of knowledge. Hume's assertion that we can

have knowledge based on the relations of resemblance, contrariety, degrees in quality, and

proportions in quantity or number among ideas, (T.1.3.1, SBN 70), certainly suggests that

knowledge *in general* is not *that* difficult to come by. Is knowledge *of objects* to be that limited?

      This problem could be avoided if 'adequate' is not a strict, technical term for Hume.

Hume never uses the phrase "adequate representations of objects" except in the Adequacy

Principle, and rarely employs the term "adequate" elsewhere. Hume remarks that, in the modern

system that distinguishes between primary and secondary qualities, it is not the ideas of

secondary qualities, but the ideas of *primary* qualities that are (ironically, in Hume's view) supposedly "adequate notion[s]" (T 1.4.4.5, SBN 227). There is no suggestion that Hume expects us to give "adequate" a technical meaning in this context.

Moreover, there is textual evidence to suggest that "adequate representation" is just another name for "clear idea"—a far more common term for Hume. Directly after introducing the Adequacy Principle, Hume writes "by the consideration of my **clear** ideas" (T 1.2.2.2, SBN 29, emphasis added) and subsequently describes the least idea as "clear." He then "clearly perceives" that the unlimited addition of such 'parts' "must also become infinite" (T 1.2.2.2, SBN 30). This claim, which comes a mere six pages after he has told us that we have no "adequate" ideas of large numbers, gives us pause. Hume "clearly" perceives that an infinite number of contiguous least ideas would generate an infinite extension. The implication is that Hume has an idea of an infinite number of contiguous least ideas that is clear enough for its use in a demonstration. But if clarity means or entails adequacy *in the isomorphic sense*, Hume would not be implying that we have an adequate idea of an infinite extension of least ideas. It seems at first blush that he is using 'clearly' in a less technical sense.

In the paragraph after the Adequacy Principle, one of the "clear ideas" to come under Hume's "consideration" is the least idea. "Clear ideas," for Hume, are those unmistakably "copy'd from" identifiable impressions [1.1]. Hume also says "[t]hat all our simple ideas in their first appearance are deriv'd from simple impressions, which are correspondent to them, and which they exactly represent" (Copy Principle), and that "[i]deas always represent the **objects or impressions**, from which they are deriv'd" (T 1.2.3.11, SBN 37, emphasis added),[147] suggesting

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[147] Hume uses this impression or object talk throughout the Treatise: "If you make any other change on [the idea], it represents a different **object or impression**" (T 1.3.7.5, SBN 96, emphasis added). Ideas can be derived from "objects" as well as "impressions" Another instance of objects affecting our senses and, presumably, providing copied ideas: "When any affecting object is presented, it gives the alarm, and excites immediately a degree of its

that ideas can represent impressions *and* that these impressions are the "objects" of the ideas representing them. From this, one could argue that for Hume, an idea is an adequate idea of an object when that object is an impression from which the idea is unmistakably copied. Giving adequacy this meaning dovetails with Hume's conceptual empiricism and theory of verification.[148]

In one instance in particular, "adequate" unmistakably means traceable to an identifiable impression. Hume contends that the Cartesians "have no adequate idea of power or efficacy in any object" (T 1.3.14.10, SBN 160-1) because there is no impression of power or efficacy. Hume writes "All ideas are deriv'd from, and represent impressions. We never have any impression, that contains any power or efficacy. We never therefore have any idea of power" (T 1.3.14.11, 160-1). This is strong textual support for the "clarity" reading of adequacy and that an adequate idea is one derived from a prior, identifiable impression.

iii.   Defending the Isomorphic, Accurate and Complete Reading

None of the reasons for the "clarity" reading of adequacy seriously threatens the isomorphic, accurate and complete formula for adequacy that is supported by Hume's tradition.

First, the worry that the isomorphic, accurate and complete formula would lead to a poverty of knowledge. Following his tradition, Hume maintains a *transparency thesis*[149] with respect to ideas: ideas are what they are, and are adequate with respect to themselves. All mental objects are transparently known—impressions and ideas are conscious, immediately available

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proper passion…This emotion passes by an easy transition to the imagination; and diffusing itself over our idea of the affecting object, makes us form that idea with greater force and vivacity" (T 1.3.10.4, SBN 120).

[148] "But if you cannot point out *any such impression*, you may be certain you are mistaken, when you imagine you have *any such idea*" (T.1.2.5.28, SBN 65).

[149] I borrow the term from Donald Ainslie, *Hume's True Scepticism* (New York: Oxford University Press, 2015), 60.

entities. Hume writes: "all sensations are felt by the mind, such as they really are" (T 1.4.2.5; SBN 189) and that

> every impression, external and internal…are originally on the same footing…they appear, all of them, in their true colours, as impressions or perceptions…they must necessarily appear in every particular what they are, and be what they appear (T 1.4.2.7, SBN 190)

Hume's claim is, at least in part, that impressions lack any intentional content (for Hume, intentional content arises out of the way impressions or ideas are arranged or associated according to general principles of the mind[150]). Impressions are what they are. They have no hidden or occult qualities.

Let us combine Hume's transparency thesis with his Copy Principle. Because all simple ideas "exactly represent" original simple impressions, except with respect to force, liveliness or vivacity, one may infer those simple ideas are "transparent" as well. Copied ideas are what they are, and transparent with respect to themselves ("perceptions [read, 'ideas']…appear in every particular what they are").

The consequence of Hume's transparency thesis is that ideas are necessarily adequate in the isomorphic, complete and accurate sense with respect to themselves. This reading is also supported by the tradition. For example, Locke argues that *complex* ideas *of modes* are adequate because they are "voluntary collections" of simple ideas that are not "intended for copies of things really existing" (ECHU 2.16.3) and have "nothing to represent but themselves, cannot but be adequate, everything being so to itself" (ibid). And Hutcheson agrees with Locke that an idea is *ipso facto* "adequate" with respect to itself. [151]

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[150] For an excellent account of Hume on mental representation see Garrett, *Hume*, chap. 2.6. *Mental Representation*
[151] Hutcheson, *Logic, Metaphysics, and the Natural Sociability of Mankind*, 14.

Any idea, insofar as it is considered alone without reference to any object, is adequate (isomorphic, complete, and accurate) with respect to itself. In this respect, adequate ideas are always employed in the determination of relations of ideas. Ideas can be compared, and relations of resemblance, contrariety, quality and proportions in quantity or number can be found to obtain among the ideas; but the bearing of these relations can only be claimed to be true of the ideas themselves. When an idea purports to represent something other than itself (an "object" of some sort), Hume's strict criterion kicks in: the idea would have to be isomorphic, complete and accurate with respect to the object it represents for that idea to "be applicable to," and to prove useful in attaining knowledge of, that object.

As for Hume's other references to the adequacy of ideas, none of them generates a glaring inconsistency with the isomorphic, accurate, and completeness interpretation. When summarizing the "modern philosophy," Hume says that *within that system*, the ideas of primary qualities are deemed to be "adequate notion[s]". He seems to be saying that ideas of "extension and solidity…figure, motion, gravity, and cohesion" are considered to be adequate representations *within that system* because *within that system* the objects of those ideas— bodies—*really have* those properties, as opposed to sensible qualities such as "sound[], color[], heat, and cold." The suggestion would be that, *within the "modern" philosophical system* (of which Hume is critical), a complex idea of a mite that included the idea of the mite being *actually* gray, would not be an adequate idea of the mite, because *within that system* the mite itself is not actually gray. We may assume from this that Hume considers accuracy to be essential to adequacy.

What about the possibility that, in suggesting that any least idea will be both clear and adequate, Hume is giving 'clear' and 'adequate' the same meaning? I argue that 'clear' and

'adequate' can have two different meanings but, nevertheless, Hume is free to describe the 'least idea' using both terms. This is because the 'least idea' satisfies Hume's criteria for a clear idea *and* for an adequate idea.

Clear ideas are unmistakably copied from identifiable prior impressions, *which they exactly represent.* Ideas that are adequate representations must be isomorphic, accurate, and complete with respect to whatever they represent. Consequently, all simple ideas are "adequate representations" of their prior impressions in the isomorphic, accurate, and complete sense. The ink-spot sense impression, and its copied idea—the idea of the ink spot—are both clear, and the least idea of the ink spot, being the *exact* representation of the diminished ink spot impression, is isomorphic, accurate, and compete with respect to it. But abstract ideas (concepts) can represent more than just prior impressions—they can also represent any members of their revival sets. Moreover, as I will detail later in this chapter, the particular ideas that are the members of revival sets, in virtue of their clarity via their sense-derivation, represent possible objects.

As I have argued, the least idea is an abstract idea [3.2ii]. Simple least ideas, unmistakably copied from identifiable least impressions, can be used, through abstraction, to form the abstract idea (concept) of the least idea. If there *is* a smallest part of an extension (that is to say, a minimum indivisible part of extension is a *possible* object) it would be adequately represented by the least idea. The concept of the least idea has within its revival set of particular ideas one or more members that (1) is clear, in virtue of its sense impression-derivation; (2) is irreducibly simple ("unit"), (3) adequately represents the impression from which it is copied, in the isomorphic, accurate, and complete sense of adequate representation; and (4) adequately represents, in the isomorphic, accurate, and complete sense, its object, *if* it has one, in virtue of its clarity (by Hume's Conceivability Principle).

The ink spot least idea can serve as the exemplar for the concept of the least idea. Any similar idea belonging to the least idea revival set of which the ink spot idea is a member (any idea copied from a just barely visible, or just barely tangible, impression) will have these four characteristics. So even if 'clear' and 'adequate' are assigned two different meanings, deeming any least idea to be clear (unmistakably copied from an identifiable least sense impression) *and* to adequately represent *its object, which is a possible object (the least part of any actual extended object),* would seem sound.

This point is reinforced by Baxter's discussion of clarity.[152] While clarity is an intrinsic quality of an idea, this clarity is the result of mechanism. To verify that an idea is clear requires identifying the impression from which it is unmistakably derived. To establish that that idea also *adequately represents* that impression, or any object the idea possibly has, requires additional argument. This does not present a problem for a particular least idea. Least impressions are on the very threshold—at the minimum limit—of sensibility. An idea unmistakably copied from an identifiable least impression resembles it and thus is on the very threshold—at the minimum limit—of clarity and distinctness (The clarity and distinctness of the ideas copied from least impressions is what allows their placement in the least idea's revival set [2.8(14)]). Any diminution of its clarity or distinctness through forgetfulness would eliminate it. It would seem that no "inadequate least idea of a least impression" would be possible.

The final challenge to my isomorphic, complete and accurate reading of "adequacy" is that Hume says that he "clearly perceives" that the unlimited addition of such 'parts', that is, of least ideas, "must also become infinite." He cannot have a *clear* idea of an infinite collection of least ideas, when he has already told us that he has no clear idea of a large number, unless

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[152] Feedback during Hume Society Meeting July 17th 2017

isomorphism is *not* a condition of clarity or of adequacy. Fortunately, to make his point, all he really needs to be saying is that one "clearly perceives" that one can take one least idea, place another least idea beside it, and keep annexing least ideas, over and over again, without stopping—that an infinite number of least ideas, so annexed, *would* generate an infinite extension. Hume's "clear perception" need only be of the process of addition, that is, of the repeated event of addition, and isomorphism, completeness, and accuracy could obtain between the perception of each event of addition and the event of addition, itself.

Of graver concern is the question of how an idea adequately represents something other than itself—that is, an "object." This was Fogelin's concern—he describes the Adequacy Principle as an "unjustified rationalist inference." In certain instances, including that of the least idea and the impression from which it is copied, the adequacy criteria we have identified—isomorphism, accuracy, and completeness—is met by simple ideas, with respect to the identifiable impressions from which they are copied. However, how does one argue that an idea is isomorphic, accurate, and complete with respect to its *object*, if that object is not an impression? This question is particularly vexing given Hume's skepticism of external objects.

4.2   The Adequacy Principle v. T.1.2.6.9 and 1.4.2: A Knotty *Humesproblem*

Hume's Adequacy Principle might strike one as very un-Humean if (1) by "objects" Hume means *external* objects, (2) he believes there are adequate ideas of such external objects in the isomorphic, accurate, and complete sense, and (3) by "knowledge," he means "knowledge" and not mere opinion or belief. After all, Hume later says, point blank:

> Now since nothing is ever present to the mind but perceptions, and since all ideas are deriv'd from something antecedently present to the mind; it follows that, 'tis impossible for us so much as to conceive or form an idea of any thing specifically different from ideas and impressions. (T.1.2.6.9, SBN 67)

If no idea of an external object is possible *at all*, one surely cannot have an *adequate* idea of one. In T.1.4.2 he 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… between perceptions and objects, '[t]is impossible…from any qualities of [perceptions], "we can ever form any conclusion concerning the existence of [objects.]" (T 1.4.2.47, SBN 212).

It would stand to reason that if, from ideas alone, we cannot determine that external objects exist *at all*, we can hardly expect to determine, from ideas alone, what relations, contradictions and agreements one external object might bear to another. As Jacquette writes:

> From a Kantian perspective, [the very concept of 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?[153]

How can we know that *any* idea is adequate with respect to *any* external object? Jacquette's solution is to argue that adequacy must be in terms of correspondence with sense-impressions and not external objects—that immediate impressions are "as close as [we] can get to the object itself."[154] But if we have no direct access to the external object itself, we cannot know that a sense impression is in fact the 'closest' we can get. If the determination of adequacy between an idea and an external object presupposes a comparison of those entities, and also that it is impossible to compare *any* perception—impression or idea—with anything but another

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[153] Dale Jacquette, "Hume on Infinite Divisibility and Sensible Extensionless Indivisibles," *Journal of the History of Philosophy* 34, no. 1 (January 1996), 75.

[154] 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." (ibid)

perception, one has ruled out the possibility of determining that the adequacy relation—however defined—holds between any idea and an external object.

i.   "Objects": Delving Deeper into the *Humesproblem*

This *Humesproblem* (i.e. the apparent tension between Hume's Adequacy Principle and T 1.2.6.9 and 1.4.2) emerges when we try to ascertain what Hume means by "objects" in the Adequacy Principle. 'Object' is a notoriously ambiguous and exasperating term in the *Treatise*. As Galen Strawson remarks, "What *didn't* he mean by the word 'object'?, some may ask with exasperation."[155] One exasperated commentator is Marjorie Grene, who painstakingly catalogs Hume's uses of the term. She finds that Hume uses "object" within three broad categories: intentional objects, perceptions, and external objects.[156] This classification system is very useful. Within those general categories lie subcategories, making things more complicated for the reader. By my count, in Book I the word "object" has at least twenty-four different meanings.[157] The lesson here is by no means revolutionary: when trying to determine what Hume means by "object," one must focus on what Hume is saying in the very passage in which that use is found.

That being said, our first reaction, based on the context of the Adequacy Principle, might be that by "object" Hume means external objects. Textually, this usage surrounds the Adequacy Principle, itself. Hume refers to "ink spots," "grains of sand," and "mites," and he seems to

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[155] Galen Strawson, *The Secret Connexion: Causation, Realism, and David Hume* (Clarendon Press, Oxford, 1989), 16.

[156] Grene writes: "Objects in Hume's usage come in three varieties. First, there are objects as targets of attention, what would be called nowadays by some people as intentional objects. Second, there are objects as identified with impressions or perceptions…Third, there are objects as non-mental, sometimes, though not always, explicitly referred to as "external objects" Marjorie Grene, "The Objects of Hume's Treatise," *Hume Studies* Volume XX, no. 2 (November 1994), 165.

[157] For a complete list of all twenty-four uses see footnote 10 in Wilson Underkuffler, "Inferences, Objects, and the Principle of Contradiction: Hume's Adequacy Principle in Part II of the Treatise," *Florida Philosophical Review* 16, no. 1 (2016): 23–40.

ascribe externality and a separate existence to each. In the ink spot experiment, the reader is

asked to increase the spatial distance between herself and the object of inquiry. When, in the next

paragraph, he says that we "tak[e] the impressions of those minute objects, which appear to the

senses, to be equal or nearly equal to the objects" (T.1.2.1.5, SBN 28), he does not seem to be

suggesting that such impressions are *one and the same with* the minute objects. Impressions are

of them, and it is the *impressions* that "appear to the senses," suggesting that the objects do not.

Shortly thereafter, he states that "[t]he table before [him] is alone sufficient by its view to give

[him] the idea of extension" (T.1.2.3.4, SBN 34). If he meant by "table," something other than a

table in the external sense, he would not have given it a spatial orientation relative to himself.

Throughout these passages, Hume seems preoccupied with entities that are more than just

perceptions, entities that seem to enjoy external, extra-mental "DISTINCT" and "CONTINU'D"

existences (T 1.4.2.2, SBN 188). All of this suggests that in presenting the Adequacy Principle,

Hume expects us to assign to 'object', the quality of externality.

In T 1.4.2, Hume distinguishes between the "vulgar" view that takes perceptions as their

only objects, but mistakenly attributes to them, "a distinct continu'd existence," and the

"philosophical system" that distinguishes between perceptions and non-perceptual objects, while

postulating a resemblance between them (T 1.4.2.12, 1.4.2.31, SBN 192, 202).[158] Suffice it say,

Hume does not describe either in flattering terms: the vulgar view is a "false opinion," a "fiction"

that is "really false" (T 1.4.2.43, SBN 209) and the philosophical system is a "monstrous

offspring" (T 1.4.2.52, SBN 215) that "contains all the difficulties of the vulgar system, with

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[158] "philosophers may distinguish betwixt objects and perceptions of the senses; which they suppose co-existent and resembling" while "the generality of mankind" take "those very sensations, which enter by the eye or ear, are with them the true objects, nor can they readily conceive that this pen or paper, which is immediately perceiv'd, represents another, which is different from, but resembling it" (T 1.4.2.31, SBN 202).

some others, peculiar to itself" and "*has no primary recommendation, either to reason or the imagination*" (T 1.4.2.47, SBN 212). So much for the vulgar and the philosophical systems.

With this in view, could the "objects" in the Adequacy Principle nonetheless be of the vulgar variety? Donald Ainslie argues that they must be. Ainslie distinguishes between "vulgar objects" formed on the basis of prior perceptions through association, and "non-perceptual" objects supposed "specifically different."[159] That is, objects as the vulgar (and philosophers most of the time) naturally conceive them, versus objects in themselves, as philosophers conceive them when doing philosophy. For Ainslie, the Adequacy Principle concerns "vulgar objects" and not external, non-perceptual objects. Consider again the objects in the text surrounding the Adequacy Principle: the grain of sand; the ink spot; the mite; the mountain and valley; and the table. Ainslie asks: what, according to Hume, do such "objects" turn out to be? Following Hume's remark in T 1.2.6.9 and his analysis in T 1.4.2, Ainslie concludes that they are perceptions naturally bundled by associative mechanisms, "what any common man means by a hat, or shoe, or stone" (T 1.4.2.31, SBN 202).

Ainslie's reading faces a couple of difficulties. The first is the simple fact that Hume describes the vulgar view as a "false opinion" and a "fiction" that is "really false." Second, the Adequacy Principle distinguishes between ideas and objects. This is a distinction that, according to Hume, the vulgar do not make. The vulgar take their perceptions as their only objects. There is no idea-object correspondence—just object. The idea-object distinction is one made by philosophers, not the vulgar. The objects of the Adequacy Principle, if anything, *are* objects of philosophical reflection. As I have argued, Hume's Finite Divisibility Argument is an intended

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[159] Donald C. Ainslie, "Adequate Ideas and Modest Scepticism in Hume's Metaphysics of Space," *Archiv Für Geschichte Der Philosophie* 92, no. 1 (2010): 39–67, 61. In Ainslie, *Hume's True Scepticism*. He changes the term "perceptual object" to "vulgar object."

demonstration [1.2]. Demonstrations are what philosophers do when they are thinking like philosophers, and not like the vulgar. The objects of the Adequacy Principle—whatever they may be—are not properly characterized as "vulgar objects."

In one respect, the Adequacy Principle seems well suited to the philosophical system wherein objects like ink spots, grains of sand, mites, and tables are external, and are merely *represented by* ideas. The "adequate representation" requirement of the Adequacy Principle would seem very dependent, for its fulfillment, on the truth of the resemblance thesis of the philosophical system, for only if sense impressions resemble external objects, will their copies (ideas) resemble those objects, and that resemblance would seem quite necessary for isomorphism, completeness, and accuracy to obtain between the ideas and the objects.

Garrett observes:

> Throughout the *Treatise*...Hume makes innumerable claims that require the existence of bodies for their truth, and many of these require as well a "philosophical" distinction between bodies and impressions of sensation that are caused by them.[160]

The Adequacy Principle may be one such case. This would mean that Hume is working *within* the philosophical system in T 1.2.2 and, for the Adequacy Principle to have lasting importance, the reader has to remain within that system despite Hume's unkind remarks about it in T.1.4.2. According to a Garrettian reading, Hume is operating as a psychologist, explaining and diagnosing the pattern of thoughts that generate the beliefs of his patients, the vulgar and the philosophical alike. Hume would not, in T. 1.4.2, be illegitimating the use of the philosophical system in our reasoning; he would be quite serious when he says that, in practice, the existence

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[160] Garrett continues: "How—or whether—the admittedly inevitable acceptance of a double-existence view can be a philosophically satisfactory state of affairs, however, is a topic not entirely settled until the final sections of Treatise Book 1" and Garrett settles the tension by emphasizing Hume's *Title Principle* that "Where reason is lively, and mixes itself with some propensity, it ought to be assented to. Where it does not, it never can have any title to operate on us" (T 1.4.7.11, SBN 270). According to Garrett, the belief in ordinary common sense objects is one such belief. Garrett, *Hume*, 104–5.

of "body" is "a point, which we must take for granted in all of our reasonings" (T 1.4.2.1, SBN 187). Employing the Adequacy Principle is certainly an instance of "reasoning." Consequently, if we must take body for granted in *all* of our "reasonings," perhaps it follows that we must take body for granted while employing the Adequacy Principle.

However, the difficulty is that Hume's skeptical pronouncements about establishing the existence of body follow from his own, principled *reasoning*. In particular, his view that a causal relation cannot be established between a perception and an unperceived resembling, external object utilizes the "*Rules by which we judge of cause and effect* (T 1.3.15, SBN 173). Entities we determine to be causally related must be *perceived* as being constantly conjoined. However, the attribution of a 'causal' relation between an external object and the perception it (supposedly) occasions cannot satisfy this criterion because the non-perceived object is, perforce, never a perception. Insofar as the employment of Hume's own, core philosophical reasoning leads to the rejection of the philosophical system, one has equally good reason to conclude that skepticism about the existence of external body is—or at least ought to be—Hume's considered view.

If we solve the puzzle of what Hume means by "object" in the Adequacy Principle by explaining that in T 1.2.2 Hume is *assuming* the philosophical system, we read "objects" to mean perception-resembling *external* objects. That makes the meaning of 'object' consistent with the way the term is used in the text in T 1.2, and his discussions of grains of sand, mites, and the tables. However, we must then explain why Hume does not think his arguments at T 1.4.2 against the philosophical system, based on his own principled reasoning, are sound, for if they are sound, neither the Adequacy Principle nor anything else can produce knowledge of the external objects in the philosophical system. If we do think Hume stands behind his reasoning in T 1.4.2, then we have him claiming in T 1.2.2 that we can ascertain the relations among, and gain

knowledge of, "feigned" or "fictive" entities having "no primary recommendation to reason or the imagination." This is a very knotty *Humesproblem*.

In an effort to resolve it, we must delve more deeply into the question of what kinds of "objects" the Adequacy Principle may give us knowledge. If we wish to avoid the *Humesproblem* entirely, its "objects" can be of neither the vulgar nor the philosophical system variety. We must read the Adequacy Principle against the background of Early Modern views on knowledge and demonstration. The key will be letting go of the *externality* and *actual existence* requirements for "objects." The Adequacy Principle's "objects" are *possible* objects. The only ontological requirement its objects must meet, to prevent the Adequacy Principle from being a mere tautology (telling us that relations among ideas are applicable to ideas), is that the "objects" are neither impressions nor ideas. In the case of the Finite Divisibility Argument, the Adequacy Principle is used to draw conclusions about the "objects" in the least idea's idealized revival set. Those objects are the indivisible minimum parts of any *possible* extended object, making their existence *possible* as well. As to whether the objects of Adequacy Principled-based reasoning are *actual,* as well as possible—and whether "least objects" are actual, as well as possible—we must (in view of Hume's skeptical arguments) practice ontological quiescence.

ii.   Adequate Ideas and Possible Existence

Insofar as Hume is acting as a psychologist, describing *how* and *why* his patients reason as they do, he is not concerned with whether their "reasoned" conclusions are sound. If we were to assume that, in presenting the Adequacy Principle, Hume is acting in that capacity, and that his patients in T 1.2.2 are those operating within the philosophical system, we have a possible solution to the *Humesproblem*. The *Humesproblem* would be illusory. By this account, Hume

intends the Adequacy Principle to be descriptive, not normative. Hume would not be concerned with whether conclusions generated by the Adequacy Principle are sound or unsound. The problem is, Hume actually *employs* the Adequacy Principle in his Finite Divisibility Argument, which is to be a demonstration. Finding the Adequacy Principle to be a *meritorious* form of reasoning embraced by Hume helps his cause and is preferable to any naturalistic reading.

With some effort, that can be accomplished. The key is to distinguish between *possible* and *real* existence. As I argue in chapter two, Leibniz, Locke and Hutcheson all maintain that adequate ideas entail *possible* existence [2.3.ii; 2.4.ii; 2.7.iii; 2.8(17)]. Hume, following this tradition, would also infer *possible* existence from adequate ideas. In the Early Modern tradition, a possible object is signified by a clear idea lacking contradictory parts. As we have seen, for Hume, clear ideas are ideas unmistakably copied from identifiable impressions. These clear ideas can be combined to form complex clear ideas. According to Hume's Conceivability Principle, the complex ideas formed of clear and distinct ideas entail the *possible* existence of whatever they are of. Insofar as a clear and distinct idea has the intrinsic properties, such as the structure and complexity, it would need to make it isomorphic, accurate, and complete with respect to its object, *were its object to exist and to have the properties and interactions with other objects we think of it as having,* it is an adequate representation of its (possible) object. Importantly, however, the adequacy of an idea does not interject existence into its object. No idea of existence is contained in an idea, separately and distinctly from the idea. Existence is not a property or predicate, for Hume. None of the intrinsic qualities of any idea *entails* the actual existence of whatever object the idea might represent (T 1.3.7.2, SBN 94). If he thought adequacy *entailed* actual existence, Hume would be contradicting an entrenched Early Modern principle [2.8(17)].

It is unnecessary to commit to any further ontology of the "objects" in the Adequacy Principle than simply stipulating that they are possible objects that are neither impressions nor ideas. This simple requirement prevents the Adequacy Principle from being the senseless tautology that the relations among perceptions obtain among the perceptions, and still allows it to function as it does in Hume's Divisibility Argument. As Garrett says, the object is simply "whatever is conceived through the idea."[161] There are a variety of ontologies that fit this simple criterion. Consider Arnauld's example of the operation of the Cartesian Axiom: "Because having all its angles equal to two right angles is included in the idea of a triangle, I can affirm it of every triangle."[2.2.ii] The Cartesian Axiom contains an important distinction between "ideas" and the "things" the ideas are about. Importantly, however, the ontological status of the "things" in question—triangles and circles—is that of "mathematical entity", whatever that is are. Mathematical entities could be Platonic ideas or some kind of Divine exemplar. Either way, the "things" or "objects" of knowledge (of which our "clear" or "adequate" ideas are about) need not necessarily be external objects, and they certainly do not need to be spatio-temporal material objects. The "object" of demonstration could be a Platonic triangle, the greatest speed, or it could be God. But neither the Cartesian Axiom nor Hume's Adequacy Principle assert that the objects—e.g. triangles, circles, or finite extensions—exist. Only that *if* they were to exist, then they would have a certain set of properties or qualities (the one exception, according to some, is the idea of God, which [purportedly] contains the idea of a necessary existence).

Take Berkeley for another example. Berkeley can "consider" the "objects" he "clearly and adequately" knows and "discern the agreements or disagreements there are between my ideas, to see what ideas are included in any compound idea," (P 1.22) and make a claim about

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[161] Garrett, *Hume,* 62.

the "objects" in question. These objects, of course, are not material objects. For Berkeley, the objects, of which the ideas represent, are the exemplar-ideas in the mind of God. Nevertheless, this is still an idea-to-object inference. The divine exemplars are separate and distinct from the private ideas in one's mind. In fact, this is exactly Berkeley's idea-to-object inference when he argues that finite extensions are finitely divisible (P 1.124). Berkeley is not making a claim about 'body' or extra-mental, external objects—but he is still making a claim about an 'object' separate from his own idea.

I am not arguing that Hume is an idealist. My only point is that the Adequacy Principle can feature an intelligible idea-object distinction without 'objects' necessarily being external existences. The "objects" could be mathematical entities or Divine exemplars. Again, to keep the Adequacy Principle from being a senseless tautology, and for it to serve its purpose in Hume's Divisibility Argument, the Adequacy Principle's "objects" only need to satisfy the following, parsimonious ontological requirement: they must be possible objects (objects of clear and distinct ideas) that are neither ideas nor impressions. A charitable interpreter of Hume need say no more regarding the ontology of "objects" or "finite extensions" to defend Hume from much of the criticism he has drawn. If more is said than is needed to address the *Humesproblem*, we risk reading too much into the text.

iii.   Solving the *Humesproblem*

Now we can address Jacquette's concern that Hume's argument appears inconsistent with T 1.4.2. In T 1.4.2 Hume considers whether reason can establish the *existence* of external objects, and determines that it cannot. If the Adequacy Principle purported to establish the existence of external objects, it would be in conflict with T 1.4.2. Fortunately, the Adequacy Principle, as the

foundation of human knowledge, merely involves the comparison of compresent ideas. Insofar as ideas adequately represent objects, the relations, contradictions and agreements among the ideas would be applicable to the objects, *were the objects to exist.* The Adequacy Principle requires the *actual* existence of the ideas, the compresence of those ideas, the clarity of those ideas (that they be unmistakably copied from identifiable impressions), and the adequate representation of their possible objects. However, the objects of those ideas need only be possible.

In T 1.4.2 Hume argues that no *causal* relation can be established between a perception and any mind-independent source because only perceptions are present to the mind. Hume would face a difficulty if he were committed to the view that, to be an adequate representation of an object, it must be empirically confirmed that an idea was *caused* by an external object. Finding a causal relation between an adequate idea and its external, mind-independent object is an impossibility if only perceptions are present to the mind.

This worry evaporates, however, if the object adequately represented by an idea need only be a *possible* object. To determine whether an idea is "possible," in the Early Modern sense, we need not determine whether a mind-independent object caused it. All we need to know, prior to using an idea in a demonstration, is whether it is clear, distinct, and possible [2.8(3)]. We need to make sure there is no contradiction (in the Early Modern sense) within the complex idea [2.8(6,7)]. Obviously, the more complex the idea of the possible object, the greater the danger that the complex "idea" will turn out to be contradictory, that is, the greater the danger that the terms used to stand for the idea are a contradiction in terms, standing for no idea at all [Leibniz's point: 2.3.i]. However, no external referent is required for an idea to be vetted for adequacy. The analysis of the idea itself is sufficient. Therefore, on my reading, there is no inconsistency

between the Adequacy Principle and Hume's skepticism in T 1.4.2 regarding any attempted proof of the *existence* of body.[i]

There is also no inconsistency between the Adequacy Principle and Hume's remark in T 1.2.6.9 that "'tis impossible for us so much as to conceive or form an idea of any thing specifically different from ideas and impressions." These remarks, again, need to be understood within the context of Section VI titled *Of the idea of existence, and of external existence.* The topic in T 1.2.6 is whether or not an idea can be formed of *external existence.* As I have argued, the objects of the Adequacy Principle are possible objects that are not ideas or impressions, not external existences. Its 'objects' need not necessarily be categorized as 'external,' or 'material,' or 'body.' To worry whether the objects of the Adequacy Principle are external existences misses the bigger picture that the Adequacy Principle—as the foundation of human *knowledge*—is a demonstrative tool, not a device for finding contingent facts about bodies.

What if we specify that a current demonstration involves external objects, and not simply mathematical entities or God? What then? If pressed, I am comfortable committing Hume to the following position. We must acknowledge Hume's assertion that the mind can only form clear ideas of external objects that resemble prior perceptions. Ainslie calls these "vulgar objects." However, lacking from Ainslie's view, and critical to avoiding the *Humesproblem,* is that a clear idea of a perception-resembling external object only entails the *possibility* of a (perception-resembling) external object. And the same goes for adequacy. What cannot be inferred, from perceptions alone, is that external objects *exist.* Hume writes "The only existences, of which we are certain, are perceptions" (T 1.4.2.47, SBN 212). The *existence* of external objects cannot be proven by reasoning (or the senses, or the imagination). This is Hume's point when he writes "Tis impossible, therefore, that from the existence or any of the qualities of [perceptions], we can

ever form any conclusion concerning the ***existence*** of [external objects]" (ibid, emphasis added). But, again, I hesitate to adopt Ainslie's classification of the Adequacy Principle's "objects" as "vulgar." This is because the concept of a "possible object" is a philosophical invention utterly foreign to the vulgar mind. But it is right at home in demonstrative reasoning.

Neither does Hume's least idea, nor the object it represents, need to be anything more than a 'possible object' for Hume's Finite Divisibility Argument to work. The least idea is the product of Hume's Least Idea Argument and verification of the sort demanded by Hume generally: particular least ideas are the unmistakable copies of just barely detectable, or least, impressions. No particular least idea will, for its existence or adequacy, depend upon its being caused by a real external indivisible minimum.

The adequacy or inadequacy of an idea as a representation of its object is a worry when there is the possibility that the object has *important* properties that are not included in the idea of it. In the unique case of the least idea and its possible "least" object, that worry is absent. As a consequence, no resemblance between a least idea and its "least object" need be directly observed to establish the adequacy of that idea. The clarity and distinctness of an idea entails the possible existence of its object. [2.8(11)] The concept of the least idea adequately represents the smallest *possible* part (one "unite") of a *possible* extended object. No thing *made possible by the clarity and distinctness of its idea through the Conceivability Principle* can be smaller or simpler than the thing whose possible existence rests on an indivisible, just barely detectable (just barely visible or tangible), but *still clear and distinct*, minimum impression and idea copied from it. To serve as the least part of an extension, all the least object needs to be is what the least idea represents it to be, that is, a simple, smallest, "unite" part and no more. The least object has to be the simplest object, the existence of which is possible according to the Conceivability Principle.

If the possible least object were to have more properties, such that the least idea was not a full or complete idea of all of the least object's aspects or properties [2.8(16)], that is, if the least idea were not isomorphic, accurate, and complete with respect to its (least) object, it would not be the simplest conceivable object, and it could not serve as the *simplest* unit of extension required by the Actual Parts Principle. Any least idea will be an adequate representation of its (possible) object, in virtue of its and its object's simplicity.[162] As an idea with no parts, a least idea adequately represents its possible object, which also has no parts because that object is simple insofar as no part of any real extension *could* be smaller or simpler than it. Therefore, the least idea adequately represents the smallest *possible* real part of any (possible) extension. The isomorphism, accuracy, and completeness necessary to adequate representation are present.

As noted above, the least idea is an abstract idea that features an idealized revival set [3.2.ii]. If my reading is correct, then, the possible objects are represented by the members of the idealized revival set. The clarity and distinctness of the ideas copied from least impressions allows their placement in the least idea's revival set [2.8(14)] and each of those ideas, in accordance with the Conceivability Principle, will adequately represent a *possible* "least object" because every such least object, *if it exists*, will be as simple as the (least) idea of it. As is the case with abstract or demonstrative reasoning generally, however, the "objects" of the revival set, whilst one is reasoning, need only be possible objects. For example, I can utilize my abstract ideas of a mountain and a valley, and reason that every mountain has a valley, regardless of whether or not there is a mountain or valley in the world. The relations, contradictions and agreements that are true for the abstract ideas would hold for the objects represented by the particular members of the revival set, *were* these objects to exist. As Hume maintains, the

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[162]Baxter identifies this fact about Hume's "least idea" but does not draw the same conclusion about it in relation to Hume's skepticism in T 1.4.2. Baxter, "Hume's Theory of Space and Time in Its Skeptical Context."

existence of any object is a matter of fact that can only be determined through observation and experience [1.1]. Abstract ideas refer to possible objects represented by their respective idealized revival sets; but these possible objects can, ultimately, through a species of probable reasoning, be found to exist through observation and experience.

iv.   Unjustified Rationalist Inference?

Hume claims he has an adequate idea of a finite extension being composed of a finite number of least ideas. If from this idea alone he were to infer that there *is* a finite extension and that that *actual, proven-to-exist* finite extension is only finitely divisible, he would, as Fogelin aptly points out, be guilty of employing a "rationalist principle" that adequate ideas of objects are *eo ipso* true of *actual* objects or objects *known to exist.* Without any guarantor, such as a benevolent God, why assume that there are finite extensions, and that our ideas faithfully represent them?

The text certainly does suggest that Hume endorses this inference. He writes:

> I first take the least idea I can form of a part of extension, and being certain that there is nothing more minute than this idea, I conclude, that whatever I discover by its means must be a real quality of extension (T 1.2.2.2, SBN 29)

Yet Hume never infers the *actual* existence of an object from an adequate idea of that object. The road to "discover[y] by its means" is not that straightforward. Instead, after this statement, Hume argues that the idea of an infinitely divisible finite extension is contradictory, a move he foreshadows: "if it be a contradiction to suppose, that a finite extension contains an infinite number of parts, no finite extension can be infinitely divisible" (T 1.2.2.2, SBN 29). Simply put, Hume's talk of contradiction (which we shall turn to in the next chapter) would be superfluous and baffling had Hume intended to rely on the "rationalist" shortcut.

Saying that "adequate ideas of objects are *eo ipso* true of them" may mean that adequate ideas can entail what would be true about their objects, *were their objects to exist*, without entailing that the objects actually exist.

Fogelin writes:

> The resuscitation of this traditional argument against infinite divisibility [Infinite Divisibility Refutation] is unnecessary since Hume could have argued directly that we have an adequate idea of extension as containing only finitely many minimal parts, and therefore extension itself has only finitely many minimal parts.[163]

Because the adequacy of the idea of finite divisibility entails only the *possibility* that finitely divisible finite extensions exist, Hume, as Fogelin points out, avoids making the direct argument from idea of extension to extension itself. Instead, Hume demonstrates the impossibility of the *complex idea* of an infinitely divisible finite extension and determines from that, the meaninglessness of the expression 'infinitely divisible finite extension.' Fogelin also remarks that "Hume certainly owes us a defense of the specific claim that we have an adequate idea of the ultimate parts of extension" (ibid). On my reading, such a defense is not necessary, insofar as it might be taken to require proof that the bodies or material objects of the philosophical system exist. Because adequacy only entails possibility, it is better to characterize the least idea, as it is conceived by Hume, to be an adequate representation of the smallest *possible* part of any *possible* extension. The Adequacy Principle does not take Hume to the ultimate conclusion that there is an actual extended body composed of actual minimum parts. When Hume says, "I first take the least idea I can form of a part of extension" and "whatever I discover by its means must be a real quality of extension," he means that what he *discovers by way of his entire Finite Divisibility Argument (demonstration) including the Least Idea Argument and the Infinite Divisibility Refutation*, is true of any *possibly* real extension. Only after Hume establishes that

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[163] Fogelin, "Hume and Berkeley on the Proofs of Infinite Divisibility," 54.

the supposition of an infinitely divisible finite extension is "impossible and contradictory," does he conclude that "no finite extension is infinitely divisible." Given his determination that "infinitely divisible finite extension" is a contradiction in terms, which I will take up next, his conclusion is akin to saying "no triangle has four sides."

4.3 Conclusion

Hume's Finite Divisibility Argument is an intended demonstration in the Early Modern sense as involving the comparison and linking of ideas based upon their intrinsic features. According to the tradition, an adequate idea of an object is a full or complete idea of all of the aspects or properties of the object [2.8(16)] and the object of an adequate idea, like the object of a clear and distinct idea, is only *possible* [2.8(17)]. It stands to reason that if demonstrations, which produce certain and indubitable knowledge, are to have any applicability to the possible objects of the ideas employed in them, those ideas must adequately represent those possible objects. Hume believes that the adequate idea of a possible object isomorphically, completely, and accurately represent that possible object. As I detailed in chapter three, Hume's Least Idea Argument endeavors to show that the human mind can have an adequate idea of the smallest possible part of extension; an indivisible minimum; Hume's least idea. Having provided what he deems a sound argument for his spatial Idea Minimism, Hume then attempts to vanquish the rival theory of extension by demonstrating that the supposition of an infinitely divisible finite extension is "impossible and contradictory." This last movement of Hume's Finite Divisibility Argument— the Infinite Divisibility Refutation—will be the focus of the next chapter.

In this chapter I addressed two possible problems: first, Jacquette's concern that the Adequacy Principle conflicts with Hume's skepticism with regards to proving the existence of

external objects, and second, Fogelin's concern with the Adequacy Principle calling for an

unjustified "rationalist inference" from ideas to *actual* objects of those ideas. Demonstrations,

however, always use ideas of *possible* objects and never determine actual existences [1.1]. This

simple clarification removes both difficulties.

The existential status of the "objects" referenced in the Adequacy Principle is not readily

apparent from Hume's statement of it. For the Adequacy Principle to avoid being a mere

tautology, the "objects" need to be something other than the ideas or impressions of the reasoner.

As the Adequacy Principle is situated within a demonstration, and demonstrations employ

abstract ideas, an "adequate representation" is an abstract idea as well. Abstract ideas represent

members of their revival sets. The "objects" of Adequacy Principle-based reasoning will be the

idealized members of the revival set for the abstract idea with which the reasoner is concerned.

In the case of Hume's Least Idea Argument, the least idea, which is a concept, is the "adequate

representation," and its "objects" are the members of its idealized revival set, that is, possibly

real least objects, which are the possible indivisible minimum parts of possible real extensions.

Attributing to Hume, any further ontological commitment, needlessly complicates Hume's text.

As sympathetic interpreters, we may without remorse enjoy the luxury of remaining quiescent

with respect to the reality of these possible objects.

Five

Contradiction, Meaninglessness, and Inferential Agnosticism

In chapter one I established that Hume's Finite Divisibility Argument is meant to be a demonstration. In chapter two I provided a historical background on knowledge and demonstration, drawing primarily from texts familiar to Hume. I then began interpreting Hume's Divisibility Argument in light of this context. In chapter three I interpreted Hume's Least Idea Argument and concluded that Hume's least idea is best characterized as an abstract idea. In chapter four I provided a general reading of Hume's Adequacy Principle, defending the stricter reading that an adequate idea isomorphically, completely, and accurately represents its object, which are possible and not necessarily actual. This reading avoids any inconsistency with T 1.2.6.9 and 1.4.2.

This final chapter interprets Hume's Infinite Divisibility Refutation, his attempt to demonstrate that the supposition of an infinitely divisible finite extension is "impossible and contradictory." What I hope to show is that my interpretation most effectively defends Hume from one of his strongest critics, James Franklin. After stating the Adequacy Principle, Hume asserts that:

> Whatever *appears* impossible and contradictory upon the comparison of these ideas, must be really impossible and contradictory, without any farther excuse or evasion (T 1.2.2.1, SBN 29)

Hume then argues that the "supposition" of an infinitely divisible finite extension is "impossible and contradictory" and "absurd." Hume also maintains that if a supposition 'impl[ies] any

contradiction, 'tis impossible it cou'd ever be conceiv'd' (T 1.2.4.11, SBN 43). Therefore, the text suggests that Hume infers from the *inconceivability* of an infinitely divisible finite extension that no infinitely divisible finite extension *exists.*

If this were the case, Hume would be guilty of denying a certain kind of existence based on what the mind can and cannot do. This is Franklin's charge:

> Now if Berkeley is susceptible to the fallacy, "It is not conceivable, so it cannot be," then we are not surprised; it is precisely the grossness of his fallacies that makes Berkeley so useful as target practice for undergrads...But what are we to make of it when Hume, the paragon of rationality in the century of "reason" does the same? *We make nothing of it, because we are too flabbergasted.*[164]

Indeed, most would agree that inferring nonexistence from inconceivability would be a mistake. It seems quite unreasonable to assume, without proof, that reality is constrained by the (seemingly) empirically contingent limits of human conception.

If Franklin's charge is well-founded, Hume would also be guilty of a gross *internal* inconsistency. In the *Enquiry,* Hume says quite succinctly that "enquiries… [that] regard only matter of fact and existence … are evidently incapable of demonstration" (E 12.3.4).[165] How could Hume, consistent with this view, claim that the very *proposition* of a *certain* being—an infinitely divisible finite extension—is "impossible and contradictory"? If Franklin were correct, Hume would be inferring a matter of fact—that no infinitely divisible finite extension *exists* — from a contradictory relation of ideas. Such an inference would violate the most important consequence of Hume's famous fork: the thesis that no matter of fact can be ascertained from a relation of ideas and therefore, no fact about nature can be proven with demonstrative certainty.

I defend Hume by explaining what he means by "impossible and contradictory" within the context of Early Modern demonstrative reasoning. By appealing to Hume's philosophical

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[164] James Franklin, "Achievements and Fallacies in Hume's Account of Infinite Divisibility," 93.
[165] See also T 3.1.1.15, SBN 463

tradition, paying particular attention to the texts of Berkeley and Hutcheson, I defend two theses. First, that by 'impossible' Hume means 'absurd,' 'unintelligible'—'meaningless' in contemporary parlance. Second, I attribute to Hume what I call 'Inferential Abstinence.' Hume does not, *pace* Franklin, infer nonexistence from inconceivability. Instead, he infers nothing. For Hume, an expression has meaning when it stands for, or invokes, a clear idea. An expression containing contradictory terms stands for, or invokes, no clear idea. Hume believes that 'infinitely divisible finite extension' is a contradictory expression, a contradiction in terms. Hume makes no inference from that expression, because demonstrative inference, for Hume and his tradition, requires the linking of ideas [2.4.i; Owen's thesis], and there is no idea signified by that expression to link with another idea. Because that contradictory expression, like all contradictory expressions, supports no inference *at all*, Hume infers from it, nothing about the existence or nonexistence of any object (or any matter of fact): no idea, no inference. This reading, and attribution of Inferential Abstinence to Hume, is the simplest way to acquit Hume of Franklin's charge and removes any potential inconsistency between his Fork and the Infinite Divisibility Refutation within Hume's Finite Divisibility Argument,

5.1   Responses in the Literature

Franklin's bold pronouncement that Hume commits the 'gross' fallacy "it is inconceivable, so it cannot be" received a flurry of responses in the literature. Generally speaking, most commentators defend Hume by situating his Finite Divisibility Argument within one theory or another on what Hume's ontology might be, providing interpretations of what Hume's inference is *to*. Frasca-Spada explains that Hume's inference should be understood in light of his account

of suppositions: whatever we *suppose* about external reality must conform to perceptions.[166] Wayne Waxman argues that Franklin's criticism overlooks 'the subjective, imagination-dependent character of relations'; the production of all perceptions—impressions included—according to psychological relations.[167] Therefore, on Waxman's reading, Hume would never infer from the inconceivability of infinite divisibility that infinite divisibility cannot be true of any existent. Rather, Hume infers from the inconceivability of infinite divisibility to the 'impossibility' that finitely extended visual and tactile perceptions could be bounded and associated by the imagination as infinitely divisible. Jacquette appeals to Hume's naturalism, arguing that nature compels us to believe that external objects exist, resemble impressions and ideas, and are likewise finitely divisible.[168] Jacquette's naturalist solution resembles Ainslie's (whose position we have already visited) who argues that Hume does not infer from ideas to reality-in-itself, but from ideas to 'vulgar objects' formed on the basis of associative mechanisms.[169] And finally, Baxter places Hume's argument in a broader context of Hume's Pyrrhonian skepticism that confines inferences to how objects 'appear to the senses.'[170]

Unfortunately, these interpretations, meant to exculpate Hume from Franklin's charge, open up larger interpretive controversies. According to Russell, the tension between Hume's naturalism and skepticism is the deepest interpretive riddle posed by the *Treatise*.[171] And the role

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[166] Frasca-Spada, *Space and the Self in Hume's Treatise*, 54.
[167] Wayne Waxman, "The Psychologistic Foundations of Hume's Critique of Mathematical Philosophy," *Hume Studies* 12, no. 1 (April 1996), 124.
[168] Dale Jacquette, "Hume on Infinite Divisibility and Sensible Extensionless Indivisibles."
[169] Donald C. Ainslie, "Adequate Ideas and Modest Scepticism in Hume's Metaphysics of Space."
[170] Baxter, "Hume's Theory of Space and Time in Its Skeptical Context."
[171] Russell, *The Riddle of Hume's Treatise: Skepticism, Naturalism, and Irreligion*.

of suppositions and fictions in Hume's philosophy is similarly contentious.[172] And Franklin, in a

way, anticipated these types of ontological solutions. He writes:

> It is to be noted that more is being asserted here than the familiar thought that Hume
> sometimes insists so much on the primacy of experience that he tends to phenomenalism.
> That is a problem in Hume's philosophy, but it is a different one from the strictly logical
> problem being complained of here. In a writer who is trying to reduce everything to a
> single kind of entity, one expects such difficulties as a threatened collapse into a simple
> view like phenomenalism. One does not expect straight fallacies.[173]

Franklin might argue that Frasca-Spada, Waxman, Jacquette, Ainslie, and Baxter's readings

emphasize, in one way or another, Hume's "insistence on the primacy of experience" and

attribute to Hume a view that "tends to phenomenalism," which only opens up deeper

interpretive and philosophical difficulties. My approach appeals to a principle of parsimony: if I

can defend Hume without appealing to a broader, more complex interpretation of Hume's

ontology—especially one that "tends to phenomenalism"—all the better.

Instead of interpreting Hume's ontology (whatever that might be) to qualify the nature of

the 'thing' that Hume deems impossible, I focus on what little Hume says about, and more

importantly, how Hume uses, contradiction. As Franklin says, "we are discussing arguments, not

conclusions."[174] Franklin misjudges Hume's use of contradiction. Hume does not infer

nonexistence from a contradictory idea. Consistent with his tradition, Hume maintains that there

is no clear idea invoked or signified by a contradictory expression. Consequently, contradictory

expressions like 'infinitely divisible finite extension' are *meaningless*—one cannot infer

anything—the existence or non-existence of any object—from them.

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[172]Much of the vaunted 'new Hume debate' discussed the role of suppositions in Hume's philosophy. For a collation
of such articles see Rupert Read and Kenneth A. Richman, eds., *The New Hume Debate: Revised Edition*, 1 edition
(London: Routledge, 2000).

[173] Franklin, "Achievements and Fallacies in Hume's Account of Infinite Divisibility," 93.

[174] Ibid.

5.2   Hume's Account of Contradiction and Inferential Abstinence

Descartes, Arnauld, Leibniz, Barrow, Berkeley and Hutcheson all maintain that clear and consistent ideas entail possibility [2.2; 2.3; 2.6; 2.7]. It was suggested in the works of Descartes and Arnauld, but explicitly found in that of Leibniz and Hutcheson, that one cannot have a clear idea of a contradiction [2.1; 2.2; 2.3; 2.7]. An expression is found to be contradictory by examining the constituent ideas purportedly annexed to it. If, by examination, it is revealed that supposition entails a thing being itself at a given time and that thing not being itself at that same time, then the supposition is 'contradictory' and there was no clear idea after all. Where there is no clear idea, the supposition is not possible. This is because terms are rendered possible and meaningful by the annexation of a clear idea [2.6; 2.7.iv]. Ultimately, then, contradictions are "impossible" in that they are meaningless. The consequence of meaningless expressions is Inferential Abstinence [2.6; 2.6.iv]—no idea, no inference. All of these doctrines are found in Hume's text.

First, that contradictory expressions suppose that a thing is itself and not itself simultaneously. Hume writes that "the flattest of all contradictions" is "the same thing both to be and not to be" (T 1.1.7.19, SBN 19). Hume's example of a 'contradiction in terms' is the expression *indeterminate impression.*[175] To Hume, every impression is determinate by definition. Therefore, to claim that a particular impression is indeterminate is to claim that a thing is simultaneously both an impression and not an impression, a definitional contradiction in terms.

The same account of contradiction underlies Hume's argument that the senses cannot 'produce the opinion of a *continu'd…*existence' (T 1.4.2.2, SBN 188). He writes:

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[175] Hume writes "that no object can appear to the senses; or in other words, that no impression can become present to the mind, without being determin'd in its degrees both of quantity and quality" (T 1.1.7.19, SBN 19). Consequently, to suppose that an impression "in its real existence has no particular degree nor proportion…is a contradiction in terms;…*viz.* that 'tis possible for the same thing both to be and not to be" (ibid).

> To begin with the senses, 'tis evident these faculties are incapable of giving rise to the notion of the *continu'd* existence of their objects, after they no longer appear to the senses. For that is a contradiction in terms; and supposes that the senses continue to operate, even after they have ceas'd all manner of operation (T 1.4.2.3, SBN 188)

Hume considers the supposition that the *senses convey continued existences.* Because the *senses* are faculties that present only immediate objects, it is not possible for them to give rise to the contrary notion of objects that enjoy continued existences. The supposition that the *senses convey continued objects* supposes that the senses present objects while they are not presenting objects, a 'contradiction in terms.' We may restate this by saying that 'continued object of the senses' or 'continued sense object' is a definitional contradiction in terms.

For Hume, as well as for Hutcheson, a term has meaning and reference to an 'object' by the intervention of a clear idea. For example, with respect to the expression *necessary connexion* when "*apply'd*" "betwixt two objects" Hume asserts that "we have really no distinct meaning, and make use only of common words, without any clear and determinate ideas" (T 1.3.14.13, SBN 162).[176] According to Hume, *necessary connexion*, when considered as a relation that stands between two natural objects, is just a meaningless expression.

A constant complaint of Hume's is that metaphysicians employ meaningless, empty words in their reasoning, as opposed to clear ideas: "tis usual for men to use words for ideas, and to talk instead of thinking in their reasonings" (T 1.2.5.21, SBN 61). Words without the annexation of clear ideas are meaningless.

The paradigm cases of empty, meaningless words that signifies no clear idea are contradictory expressions. Hume states: "Tis in vain to search for a contradiction in any thing that is distinctly conceiv'd by the mind. Did it imply any contradiction, 'tis impossible it cou'd

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[176] T 1.2.4.21, 1.4.4.10; SBN 61-2, 224

ever be conceiv'd" (T 1.2.4.11, SBN 43).[177] Hume seems to be saying that no analysis of a clear

complex idea of a thing will reveal that complex idea to contain two or more ideas that contradict

one another. As we saw with Descartes, Leibniz, and Clarke, if a supposition is revealed to

amount to a thing being itself and not itself simultaneously, then, according to these

philosophers, suppositions such as 'a perfect corporeal being,' 'the greatest possible speed,' or

'the things that now are must have been produced out of nothing' are meaningless and absurd. I

contend that Hume argues that 'infinitely divisible finite extension' is another such supposition.

When it comes to a meaningless supposition Berkeley declares that "I do not know what

that is, and so cannot affirm or deny anything of it" [2.6] and Hutcheson observes that "it is

pointless to ask whether there might be a thing that would be subject to such a term" [2.7]. The

same Inferential Abstinence can be found in Hume's *Treatise.* Hume writes:

> [W]herever we reason, we must antecedently be possest of clear ideas, which may be the
> objects of our reasoning. The conception always precedes the understanding; and where
> the one is obscure, the other is uncertain; where the one fails, the other must fail also (T
> 1.3.14.17, SBN 164)

Hume argues that we have no clear idea of *necessary connexion* between two objects (T 1.3.3.26,

SBN 168), of *substance and inhesion* (T 1.4.4.5, SBN 234) and of a *personal identity* (T

1.4.6.20, SBN 262). Consequently, any reasoning using these terms is obscure and uncertain.

This obscurity and uncertainty does not, however, entail that these entities do not exist as a

matter of fact. Hume does not commit Franklin's fallacy and infer nonexistence from the

inconceivability of a *necessary connexion*, of *substance*, or of *personal identity*. Instead, Hume

practices Inferential Abstinence. He is dismissive of any questions or arguments regarding these

meaningless suppositions.

With respect to the supposition of *necessary connexion, power* or *efficacy* Hume writes:

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[177] See also T 1.3.9.10, SBN 111; ECHU 2.13.

> If we really have no idea of a power or efficacy in any object, or of any real connexion betwixt causes and effects, 'twill be of little purpose to prove, that an efficacy is necessary in all operations. *We do not understand our own meaning in talking so*, but ignorantly confound ideas, which are entirely distinct from each other…[when] we make the terms of power or efficacy signify something, of which we have a clear idea, and which is incompatible with those objects, to which we apply it, obscurity and error begin then to take place, and we are led astray by a false philosophy (T 1.3.3.26, SBN 168, emphasis added)

As there is no clear idea of *power* or *necessary connexion* between two objects, these terms, when applied to objects in nature, are meaningless. We may delude ourselves into believing we are theorizing about "*necessary* connexion" by using these terms to signify ideas that are not relevant to the object of inquiry, but in doing so, we are only creating a "false philosophy." Debating about necessary connexions in nature is like a "blind man [finding]…a great many absurdities in the supposition, that the colour of scarlet is not the same with the sound of a trumpet" (ibid). A blind man has no idea of colour and therefore cannot affirm or deny anything about it. Likewise, we do not have a clear idea of a necessary connexion in nature and therefore cannot affirm or deny anything about it as well.

Hume also endorses Inferential Abstinence with respect to the meaningless expression of the *inhesion of perceptions in a substance*. Hume argues that we have no clear idea of either substance or of inhesion. Consequently, no genuine questions can be asked, nor can claims can be made using these meaningless metaphysical expressions. Hume writes:

> We have…no idea of a substance…no idea of inhesion…What possibility then of answering the question, *Whether perceptions inhere in a material or immaterial substance,* when we do not so much as understand the meaning of the question? (T 1.4.4.5, SBN 234)

Nowhere in Hume's discussion of substance does he infer from the inconceivability of substance that substance does not exist. He cannot do so, because the inconceivability of substance entails the meaninglessness of *any* proposition about substance. He only argues that the lack of a clear idea means that nothing be inferred about substance; no intelligible questions about substance

can be asked. Because the supposition of substance is meaningless, the asking of any question or the making of any assertion regarding it is also meaningless and ill-advised. With respect to such 'talk,' Hume practices Inferential Abstinence: no idea, no inference.

Hume makes the same claim regarding *personal identity*. After arguing that he has no such idea, Hume concludes:

> All the nice and subtile questions concerning personal identity can never possibly be decided, and are to be regarded rather as grammatical than as philosophical difficulties…All the disputes are…merely verbal (T 1.4.6.20, SBN 262)

Again, if there is no clear idea annexed to an expression, that expression is meaningless, according to Hume. Any reasoning, or assertions made, with respect to 'personal identity' are a waste of time. It is a grammatical problem; a dispute merely verbal in nature.

Hume will often describe a 'notion' or 'supposition' that lacks a clear idea as 'absurd.' Hume writes that "as to the notion of external existence, when taken for something specifically different from our perceptions, we have already shewn its absurdity" (T 1.4.2.2, SBN 188), citing T 1.2.6. There, Hume argues that there is no clear idea of external objects "suppos'd *specifically* different from our perceptions" (T 1.2.6.9, SBN 68). Such a notion or supposition is absurd.

For Hume, "Whatever is absurd is unintelligible" (T 1.3.7.3, SBN 95). I maintain that what Hume would consider to be an absurd 'notion' or 'supposition,' due to the lack of a clear idea of what is being supposed, we would call a meaningless term or expression. Hume does not, *pace* Franklin, claim that what is absurd, unintelligible, or inconceivable cannot exist. According to Hume, there is no clear idea annexed to a contradictory notion or supposition, by which I believe he means a meaningless expression. As terms are made meaningful by the annexation of clear ideas, contradiction in terms are meaningless and absurd. Consequently, they affirm or deny nothing about the nature of the existence of any object. No idea, no inference.

Hume endeavors to prove that the supposition of an 'infinitely divisible finite extension' is really a contradictory and meaningless expression. He writes:

> 'if it be a contradiction to suppose, that a finite extension contains an infinite number of parts, no finite extension can be infinitely divisible. *But that this…supposition is absurd*, I easily convince myself by the consideration of my clear ideas (T 1.2.2.2, SBN 29, my emphasis).

On my reading, Hume's Infinite Divisibility Refutation is not a demonstration of a matter of fact, or more specifically, of the non-existence of a certain being. Rather, it is a demonstration that the supposition of an infinitely divisible finite extension is absurd and contradictory because 'infinitely divisible finite extension' is a definitional contradiction in terms. It is the 'square triangle' of geometrical reasoning. What is at stake is not the existence of infinitely divisible finite extensions. The question, instead, turns on the meaningfulness of the supposition in question. Thus Hume is not, in the Infinite Divisibility Refutation, purporting to do what his Fork forbids, that is, drawing from an examination of his ideas, a factual conclusion about nature. He merely endeavors to show that the supposition of an infinitely divisible finite extension is absurd and meaningless.

5.3 Explaining an Otherwise Troubling Passage

There is one isolated passage that might seem to conflict with my interpretation that by 'impossible and contradictory' Hume means 'meaningless and absurd,' without any ontological commitment. Hume writes:

> Every effect, then, besides the communication of motion, implies a formal contradiction; and 'tis impossible not only that it can exist, but also that it can be conceived (T 1.3.9.10, SBN 111)

At first blush, Hume may seem to endorse the tying of the impossibility of existence to the impossibility of conception. Were he to believe that the latter actually implies the former, he would be guilty of the mistake Franklin attributes to him.

This interpretation, and its embarrassing consequences for Hume, can be easily avoided. Hume's saying that, with respect to an object that "implies a formal contradiction," "tis impossible…that it can exist" is a rather roundabout way of saying that an object that implies a formal contradiction is not possible. There is an important difference between asserting that an object is 'not possible' and asserting that an object 'does not exist.' The quote above merely asserts the former and not the latter.

Let me explain. An object that "implies a formal contradiction" is an object, like an indeterminate impression, a continued sensory object, or a four-sided triangle, that is a contradiction in terms. There is no clear idea of these 'objects' because they are contradictory. Therefore, by Hume's Conceivability Principle, these 'objects' are 'not possible.' 'Does not exist' is a different claim than 'not possible.' 'Does not exist' involves an existential claim about a matter of fact. If Hume had said 'does not exist' in the above quote, then this would suggest that he *is* inferring a matter of fact from an inconceivable relation of ideas. But instead he describes the 'object' as implying a formal contradiction and asserts that "tis impossible that it **can** exist." The "can" indicates possible existence. The phrase could be restated as 'impossible that it is possible' which is equivalent to 'not-possible' or 'impossible.' A redundancy in language, sure, but no egregious philosophical blunder. At the end of the day, all Hume is asserting is that 'objects' that imply formal contradictions are both impossible and inconceivable. And, as I have argued, when Hume deems something 'impossible' he means, consistent with Hutcheson, absurd and meaningless.

Were Hume to infer the nonexistence of an object (a matter of fact) from a relation of ideas, he would be violating his Fork. Someone unsympathetic to Hume's cause might find him doing so on at least three separate occasions. From the contrariety relation between the idea of determinacy and the idea of an impression Hume would be inferring the nonexistence of an indeterminate impression. From the contrariety relation between the idea of a sense object and the idea of a continued object, Hume would be inferring the nonexistence of a continued sensory object. Finally, in the case of most immediate interest, from the contrariety relation between the idea of a finite extension and the idea of infinite divisibility, Hume would be inferring the nonexistence of any infinitely divisible, finitely extended object.

Under my reading, however, Hume makes no such inferences. By 'impossible' Hume means meaningless and absurd. Just as a four-sided triangle can be deemed 'impossible and contradictory' due to the definitional contradiction in terms, without making an existential claim regarding a matter of fact, one may deem indeterminate impressions and sensory objects 'impossible and contradictory' due to definitional contradictions in terms, without making any existential claims regarding matters of fact. Claims regarding matters of fact, according to Hume, are made on the basis of observation and experience. If an impression, object of sensation, or triangle is found to exist on the basis of observation and experience, we know it will not have properties that make it a non-impression, non-sensory object, or a non-triangle. The same, I shall argue, may be said for Hume's Finite Divisibility Argument. Hume can (and I will say that he does) argue, based upon a relation of ideas, that finite extensions are only finitely divisible and he will, consistent with the nature of Early Modern demonstration, deem an infinitely divisible finite extension 'impossible and contradictory,' without making a claim about a matter of fact.[ii]

5.4   The Grand Finale: Hume's Infinite Divisibility Refutation

Importantly, I am not defending the overall soundness of Hume's Infinite Divisibility Refutation. It is, of course, not without its difficulties. Instead, I provide an account of it in light of my interpretation that "impossible and contradictory" means 'meaningless' or 'absurd,' that absolves Hume of Franklin's charge and its unfavorable consequences.

Hume's Infinite Divisibility Refutation employs the same demonstrative technique as Descartes' refutation of the supposition 'most perfect corporeal being,' Leibniz' refutation of a the greatest possible speed, Clarke's refutation that something cannot be created out of nothing, and Berkeley's assault on the supposition that sensible objects can have an absolute existence in themselves. In each case, the constituent ideas that compose the (purported) complex idea are carefully examined. If the constituent ideas are found to entail that a thing is and is not itself simultaneously, then that supposition is viewed as contradictory and absurd. Moreover, in reality, no real or clear idea is annexed to that supposition's expression. For example, Descartes argues that corporeal things are, by definition, imperfect. Therefore the expression 'perfect corporeal being' is tantamount to 'perfect and not-perfect being', which is a contradiction in terms. No clear idea is annexed to this expression. Therefore, the supposition cannot be deemed possible— it is 'impossible and contradictory.'

Hume employs the same argumentative strategy with respect to the supposition of an 'infinitely divisible finite extension.' He writes:

> If it be a contradiction to suppose, that a finite extension contains an infinite number of parts, no finite extension can be infinitely divisible. But that this latter supposition is absurd, I easily convince myself by the consideration of my clear ideas.

Hume endeavors to examine the constituent ideas that comprise the supposition 'infinitely divisible finite extension.' First, the idea of a 'finite extension.' For Hume, the idea of any finite

extension, because it is an idea had by a mind of limited capacity, must be composed of a finite number of least ideas [3.1]. The second idea Hume examines is the idea of an infinitely divisible extension. The idea of an infinitely divisible extension, because of the Actual Parts Principle, would be one with an infinite number of actual, pre-existing parts to make possible each division [3.1]. Thus, the idea of an infinitely divisible extension is the idea of an infinite number of least ideas, and the idea of an infinite number of least ideas is "individually the same" with the idea of an infinite extension (T 1.2.2.2, SBN 30). Hume writes "were I to carry on the addition [of least ideas] *in infinitum,* I clearly perceive, that the idea of extension must also become infinite" (ibid).[178] So, through examination, Hume establishes two clear *and* adequate ideas [4.1.iii]: first, the idea of a finite extension being composed of a finite number of parts. Second, the idea of an infinitely divisible extension as an infinite extension.

It is a contradiction is to suppose that a thing is simultaneously itself and not itself—a "term and its negation" (Arnauld; Clarke; Hutcheson) or "the same thing both to be and not to be" (Hume). To suppose that a *finite extension is infinitely divisible* is to suppose that an extension is simultaneously finite and infinite in extent. No clear idea is invoked by the contradictory expression 'infinitely divisible finite extension.' Therefore, the supposition of an infinitely divisible finite extension is 'impossible and contradictory' in the sense of being meaningless and absurd. The assertion itself is a contradiction in terms, as is one about an indeterminate impression, a continued sensory object, or a four-sided triangle.

Moreover, I have argued that Hume's Finite Divisibility Argument is a demonstration that employs abstract ideas. Hume's conclusion is general and pertains to all finite extensions.

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[178]This is reminiscent Descartes' pronouncement in the *Objections and Replies* that he has a "clear and distinct idea" of the "indefinite" (AT 113) and of Locke's idea of infinity as "a growing and fugitive idea, still in a boundless Progression that can stop no where" (ECHU 2.17.12).

Consequently, the idea of a finite extension and the idea of an infinite extension are abstract ideas. Garrett explains that "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" [1.1]. Contained within the idealized revival set of the concept FINITE EXTENSION are ideas that represent all possible finite extensions—whatever those may be ('possible objects' with the only ontological requirement that they are neither impressions nor ideas). Contained within the idealized revival set of the concept of INFINITELY DIVISIBLE EXTENSION are ideas that represent all possible infinite extensions—whatever those may be. All of the members in one revival set are *excluded* from the other. There is no inclusion, combination or intersection—only exclusion. This what Hume means when he says, with complete generality, that "no finite extension is infinitely divisible." No members of the FINITE EXTENSION revival set is included in the revival set of INFINITELY DIVISIBLE EXTENSION. The two ideas are directly at "odds with one another." The supposition *infinitely divisible finite extension* attempts, and utterly fails, to combine these two revival sets. What is left in the ruins of the ill-fated combination is an impossible and meaningless expression.

If my attribution to Hume of Inferential Abstinence is correct, then no inference can be made to the existence or non-existence of an infinitely divisible finite extension. No idea, no inference. As Hutcheson says, "It is pointless to ask whether there might be a thing that would be subject to such a term." The most that can be said is that it is an absurd and meaningless expression. Those who espouse the doctrine of infinite divisibility, then, according to Hume, "use words for ideas, and…talk instead of think in their reasonings."

5.5 Conclusion

Franklin faults Berkeley and Hume for fallaciously assuming the truth of the proposition "It is inconceivable, so it cannot be." Commentators have defended Hume by qualifying the nature of the 'object' of Hume's inference. Frasca-Spada, Ainslie, Jacquette, Baxter and Waxman argue in one way or another that Hume's inference from his 'clear ideas' is to reality-as-it-appears, reality as humans conceive-it or suppose-it-to-be, or reality as humans-condition-it. If Franklin is correct, such solutions "threaten a collapse into a simple view like phenomenalism." They certainly require elaborate ontology-based interpretations of the most controversial passages like "whatever I discover by [the least idea I can form of a part of extension] must be a ***real*** quality of extension" (T 1.2.2.2, SBN 29, emphasis added). My interpretation avoids any deep ontological dives into what Hume might mean by "real quality."

I appeal to a principle of parsimony. All I have done is provide a historical interpretation of 'impossible and contradictory' based on the reasonable assumption that Hume's use of this phrase is consistent with his tradition, making 'impossible and contradictory' mean absurd, nonsensical, and therefore, meaningless. If I am correct in this, Hume does not reason from 'it is inconceivable' to 'so it cannot be' where 'it' references an object or matter of fact, but from 'it is inconceivable' to 'it is meaningless,' where 'it' refers to an expression that does not invoke a clear idea. Clarifying the phrase 'impossible and contradictory' sufficiently clears Hume of Franklin's charge. As Franklin says, his criticism is a "strictly logical problem."

Establishing that Hume adheres to Inferential Abstinence required additional legwork. There is no question that Berkeley and Hutcheson espouse the doctrine; and Inferential Abstinence is Hume's policy towards other terms and phrases lacking annexed clear ideas such as a '*necessary connexion*,' '*substance*,' or '*personal identity.*' Therefore, it seems reasonable to

assume Hume would say the same for the 'absurd' and contradictory 'supposition' of an infinitely divisible finite extension.

Finally, a virtue of my reading is that it avoids attributing to Hume a gross deviation from the requirements of his Fork. Hume argues that the idea of an infinitely divisible finite extension is 'contradictory and impossible,' concluding that finite extensions are only finitely divisible. But this conclusion is cashed out only in terms of the meaningfulness of a supposition. It does not entail that finite extensions *exist* or that they *exist as* finitely divisible. That finite extensions exist—whatever they may be—is a contingent matter of fact that could only be known on the basis of observation and experience. If a finite extension is found to exist on the basis of observation and experience, then we know, according to Hume's Finite Divisibility Argument, that it will be finitely divisible, just as we know that an impression will be determinate, a sensory object will not be continued, and a triangle will have three sides. My interpretation of Hume's Finite Divisibility Argument, unlike Franklin's, makes it fully consistent with Hume's fork.

CONCLUSION

Understanding Hume's Finite Divisibility Argument as an intended demonstration produces a novel interpretation that is consistent with the text and puts the Argument in its best light, essentially by limiting it to conclusions about *possible* least objects. The only qualities that can be related amongst the ideas in a demonstration are quantity and number (T 1.3.3.2, SBN 70). Despite the necessity of having intermediate ideas, certainty is possible, with respect to quantity or number, thanks to the employment of the idea of a unit, which serves as a "precise standard." (T 1.3.1.5, SBN 71). The ideas used in a demonstration must be clear, that is, unmistakably copied from identifiable sense impressions. An abstract idea's (concept's) "revival set" is, roughly speaking, the collection of particular ideas (including the particular idea that serves as the collection's exemplar) associated with that abstract idea (concept). Presumably, an abstract idea (conception) will be clear when its revival set consists of ideas that are unmistakably copied from identifiable impressions. Hume's least idea is an abstract idea (concept), with a revival set of particular least ideas copied from least impressions, giving it clarity. Those particular least ideas serve well as the simple unit components of ideas of extension. The exemplar, which could be the least idea of the ink spot, and the other members of the revival set feature a one-to-one, isomorphic, accurate and complete representation of their "least" objects, satisfying Hume's strict adequacy criterion. The conclusions reached through demonstrative reasoning concern relations among ideas, in this case, the relations between ideas of extension and the ideas of the unit parts of extension. Neither the clarity nor the adequacy of an idea entails that its object

exists. Matters of fact, which concern "the existence of objects or of their qualities" (T 1.3.7.2, SBN 94), are never demonstrated. Accordingly, actual extensions, composed of least objects that are neither ideas nor impressions, remain only possible. Finally, demonstrative or abstract reasoning involves the comparison of abstract ideas to determine the relevant inclusions and exclusions of idealized revival sets.

Typical of an Early Modern demonstration is the refutation of a supposition through proof that it is contradictory. If a supposition is examined and revealed to suppose that a thing is simultaneously itself and not itself, such as when a thing is supposed simultaneously to both have, and to not have, a property, then the supposition is deemed contradictory. Contradictions are expressions that do not stand for clear or adequate composite complex ideas. They are meaningless and cannot describe or refer to possible objects. In the case of contradictory abstract ideas (concepts), there is total exclusion between their revival sets. This calls for Inferential Abstinence: no idea, no inference.

In chapter three I provided the historical context for Hume's Least Idea Argument and offered the thesis that Hume's Grain of Sand Thought Experiment and Ink Spot Experiment were Hume's attempts to show that the least idea is clear, distinct, and non-contradictory and therefore, represents a possible object. Importantly, the least idea is 'clear' by Hume's criterion, i.e. it is traceable to an identifiable (least) impression. I then considered whether or not Hume's least idea was an unnoticed exception to his Copy Principle and its corollary that no new simple idea is produced by reasoning alone. Newman's assertion that the least idea is the minimum idea the *imagination* can form does not resolve this difficulty. If the least idea was an idea that makes its first appearance through a process of mental division, it would be an idea that was not copied from a prior simple impression. Baxter's claim that the least idea is derived from the ink spot and

analogous experiences removes the tension between Hume's least idea and Copy Principle. However, under Baxter's reading, least ideas could be taken to be particular ideas copied from the ink spot and other least impressions had under controlled, experimental conditions. Hume needs his conclusion to pertain to *all* possible finite extensions. To achieve the generality demanded by his objective, the least idea has to be an abstract idea.

Chapters four and five tackled two serious criticisms and one internal, textual concern: Fogelin's characterization of the Adequacy Principle as an unjustified "rationalist" principle, Franklin's concern with Hume's apparently inferring nonexistence from inconceivability, and Jaquette's concern that Hume's Adequacy Principle and Finite Divisibility Argument might be inconsistent with Hume's skeptical principles in T 1.4.2.

These concerns are allayed when we recognize Hume's Finite Divisibility Argument to be a demonstration according to the Early Modern formula. Demonstrations are of relations among ideas that represent possible objects. Demonstrations are not of matters of fact; matters of fact depend on observation and experience. In T 1.4.2 Hume argues that reason can never ascertain the *existence* of distinct and continued objects as the cause of perceptions. Because Hume's Finite Divisibility Argument is an intended demonstration, none of its claims regard 'matters of fact' or 'existences.' If it did, Hume would be violating his Fork and inferring an existential matter of fact based on relations of ideas. But Hume does not violate his fork. Both the 'objects' of Hume's reasoning and its conclusions pertain to 'possible objects'—consistent with his account of knowledge and demonstration. Hume does not, *pace* Fogelin and Franklin, infer from either the adequacy of his concept of the least idea, or the inconceivability of the supposition that finite extensions are infinitely divisible, to the factual existence of finite extensions that are only finitely divisible. The adequate idea of the simple addition or joinder of

least objects into finite extensions makes it possible for finite extensions to exist and to be composed as such. But we do not know, in virtue of the Least Idea Argument, that finite extensions or their minimum components are real bodies. All that is demanded by the Adequacy Principle, is that the possible least objects of least ideas, and the possible objects they compose, are neither ideas nor impressions. In his Infinite Divisibility Refutation, Hume argues that the supposition of the infinite divisibility of a finite extension is "impossible and contradictory" in the sense of being meaningless. That leaves as the only alternative, his spatial Minimism, as established by his Least Idea Argument. Under my reading, Hume's Adequacy Principle does not require the justification demanded by Fogelin, his Infinite Divisibility Refutation commits no "gross" fallacy, and there is no inconsistency with T 1.4.2.

6.1 Difficulties

Hume's Finite Divisibility Argument is not without difficulties. As I see it these are the challenges it faces.

First, Hume needs the question on the composition of extension to be binary: finite extensions need to be either only finitely or only infinitely divisible. The binary form is what enables him to positively assert finite divisibility because the only alternative is impossible and contradictory. In Hume's defense, Hume inherits the binary form from his tradition [0.2].

Second, ideas of extension need to be *literally* extended so they can fall within the jurisdiction of the Actual Parts Principle [3.1.iii]. However, that ideas of extension are literally extended is a bit odd. The virtue of the position, however, is that it follows from Hume's conceptual empiricism.

Third, there needs to be a least idea. Hume believes he deduces it from his Least Idea Argument [3.1.i-ii]. Moreover, he reinforces this argument by appealing to the Grain of Sand Thought Experiment and Ink Spot Experiment [3.1.iv] and the geometer's idea of a mathematical point (T 1.2.3.14, SBN 38). Hume's least idea generates his meaningful idea of a finite extension having a finite number of parts. He adds to that the claim that an infinitely divisible extension would necessarily have an infinite number of parts. This enables him to argue that the supposition of an infinitely divisible finite extension is the supposition of an extension being simultaneously finite and infinite in extent, and thus contradictory. But his Limited Mind Principle would certainly suggest that we cannot conceive of an infinite or infinitely divisible anything, and he insists that there is a limit to the size of a number we can conceive. One has to question whether the idea of infinity he needs for his argument is possible, let alone clear enough for use in a demonstration. Treating the idea of infinity as being one of a never-ending process of addition of unit after unit, as opposed to one of an amount, seems not to generate the idea of infinity he uses in his argument.

Fourth, the adequate least idea entails that an object of that idea is possible. Basically, Hume's Conceivability Principle needs to be philosophically legitimate. As one would expect, Hume's Conceivability Principle has been the subject of its own analysis.[179] It seems to me that Hume inherited this principle from his theological-philosophical tradition where God's omnipotence underwrites this principle [2.7.i]. However, if Hume's system is one bereft of God, what justification can he have for wielding the Conceivability Principle?

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[179] For an analytic approach to Hume's conceivability criterion see Stephen Yablo, "Is Conceivability a Guide to Possibility?," *Philosophy and Phenomenological Research* 53, no. 1 (1993): 1–42. David and Mary Norton ground this principle in Descartes' philosophy: David Fate Norton and Mary J. Norton, *David Hume: A Treatise of Human Nature: Volume 2: Editorial Material*, Revised ed. edition (New York: Clarendon Press, 2007), "Editors Annotations," 714. And for deeper historical background beyond Descartes: Lilli Alanen and Simo Knuuttila, "The Foundations of Modality and Conceivability in Descartes and His Predecessors," in *Modern Modalities* (Dordrecht: Kluwer, 1988), 1–69.

Fifth, Hume's theory of meaning, which is integral to his argument that contradictory suppositions are meaningless, needs to be correct. For Hume, terms are made meaningful by annexation of clear ideas derived from prior impressions. Because there is no clear idea annexed to a contradictory supposition, such suppositions are meaningless nonsense. However, if meaning is bestowed upon a term, not by the annexation of an impression-derived idea, but by a different mechanism (e.g. that concept's pragmatic role in a theory that works), then it would be invalid for Hume to deem terms lacking an annexed idea—and specifically contradictions—as meaningless. In Hume's defense, he inherited his account of meaning from the same tradition as Berkeley, Clarke and Hutcheson (though his impression-based clarity criterion seems fairly unique and particularly stringent).

6.2 Questions for Further Research

There are, of course, some interesting questions for further research.

Firstly, if I am correct that Hume's Finite Divisibility Argument is an intended demonstration, then its internal, textual threat is not T 1.4.2 but T 1.4.1 *Of Skepticism with Regards to Reason.* There, Hume argues that each link in a chain of reasoning—even basic arithmetic—is susceptible to the possibility of human error and therefore must be checked by a reflective judgment. This reflective judgment is itself prone to human error and must be checked by another reflective judgment, so on and so forth, until there is "a total extinction of belief and evidence" (T 1.4.1.6, SBN 183). Hume's Finite Divisibility Argument is a demonstration that requires a "chain of reasoning" and could be victimized by this skeptical argument. Unpacking the extent to which Hume endorses this skepticism with regards to reason, and the bearing it might have on his own Finite Divisibility Argument, is an intriguing topic for further research.

Secondly, it would be important to cash out Hume's Finite Divisibility Argument in light of his theory that belief is a "LIVELY IDEA RELATED TO OR ASSOCIATED WITH A PRESENT IMPRESSION" (T 1.3.7.5, SBN 96) and that:

> Tis not solely in poetry and music, we must follow our taste and sentiment, but likewise in philosophy. When I am convinc'd of any principle, 'tis only an idea, which strikes more strongly upon me. When I give the preference of one set of arguments above another, I do nothing but decide from my feeling concerning the superiority of their influence. (T 1.3.8.12, SBN 103)

Hume, clearly, gives preference to his Finite Divisibility Argument over purported demonstrations for infinite divisibility. But this preference may not lie in the apodictic certainty of his reasoning. Rather, it may lie in the manner in which this reasoning enlivens the imagination. But how can we reconcile this observation with Hume's assertion that "'Tis not in demonstrations as in probabilities, that difficulties can take place, and one argument counterbalance another, and diminish its authority. A demonstration, if just, admits of no opposite difficulty"?

Another result of his theory of belief is that belief in the *existence* of any object is a just a manner of conception or degree of liveliness. As we have seen, Hume also maintains that there is no composite complex idea annexed to a contradictory expression. Where there can be no idea, there can be no liveliness. Consequently, there is the impossibility of *belief* in a contradictory expression. But there are plenty of delusional mathematicians who believed, and still believe, in the doctrine of infinite divisibility. How can Hume explain this? This question looks like the tip of the iceberg. Squaring Hume's Finite Divisibility Argument with his naturalism of the mind and theory of belief is a separate project in its own right.

Thirdly, it is an intriguing prospect to consider what Hume says in *Enquiry 12.2* on the doctrine of infinite divisibility in light of my interpretation. When considering the "chief objection against all *abstract* reasonings" (EHU 12.2)*,* Hume contrasts *his* argument that

extensions are composed of indivisible Minima, with purported geometrical proofs that extensions are infinitely divisible. He says, in a footnote, that "*nothing appears more certain to reason,* than that an infinite number of [least parts of extension] composes an infinite extension" (ibid). This very much looks like a resuscitation of his *Treatise* argument. However, the matter is muddled because Hume's overarching message in EHU 12.2 is to be wary of *all* abstract reasoning, because an "absurd opinion" like the infinite divisibility of a finite extension can nonetheless be "supported by a chain of reasoning, the clearest and most natural" (ibid). If Hume is saying that *any* pretended demonstration of the nature of extension has to be viewed with suspicion, he would be undercutting his own theory of extension, summarized in the footnote, to the extent to which it is a demonstration of the nature of extension. The relationship between T 1.2.1-2 and E 12.2 is an intriguing one. Specifically, trying to determine if, and to what extent, Hume changes his opinion on the certainty of his Finite Divisibility Argument is one of many interesting questions for further research.

Fourthly, my thesis relies heavily on my claim that, to insulate the Adequacy Principle from the criticisms that have been leveled at it, adequate ideas have to represent possible objects that are neither ideas nor impressions. The ontology of possible objects is, admittedly, terribly obscure. They are not external existences or matters fact. They are something else. But reflecting on where or what this 'place' is that possible objects 'occupy' overheats my brain. One is confronted with Berkeley's assertion that "an idea can be like nothing but an idea" (P 1.8). Is the fact that one moves from a clear and distinct idea to the possible existence of its object make this possible object enough like an idea to reason about it, at all? Can external (material) bodies collectively enjoy a kind of possible existence that is at all meaningful? According to geometers, we have clear and distinct (and probably adequate) ideas of triangles and circles, making them

possibly real objects. Unfortunately, Hume is skeptical of such objects and the geometers' so-called demonstrated truths about them.

Based upon my study of Scholastic and Early Modern texts, it seems to me that possible objects found their ontological home in the mind of God. God's omniscience meant that there exist, in God's mind, all possible ideas, and that God's omnipotence guarantees that the objects of these ideas *could and would* exist so long as he willed it. Any idea clearly conceived by a human mind, therefore, corresponds to the actual, existent idea in God's mind, and God's omnipotence makes this a 'possible object.' For example, Scotus writes: "From this [conceptual] possibility the objective possibility follows, provided that there is Divine Omnipotence to which it would be an object" (Ord. I, d. 36, q. un. n. 60-61).[180] As we have seen in Hutcheson's text and elsewhere, tying possibility to divine omnipotence was still in vogue in the 18th century [2.7.i]. From what I can tell, Hume was certainly right to call the Conceivability Principle an "establish'd maxim in metaphysics" (T 1.2.3.7, SBN 32). However, it would seem Hume's philosophical system in the *Treatise* is bereft of an omnipotent God. So, for Hume, how is it that what is conceivable in idea is possible in reality? Without God, what exactly are possible objects? I see this as a serious question, not only for Hume's Finite Divisibility Argument, but for any of his arguments that employs the Conceivability Principle.

6.3 Conclusion's Conclusion

In the introduction I promised to address the most well-known criticism of Hume's spatial Minimalism offered by Kemp-Smith, Henry Allison, and (probably) anyone else who has

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[180] This quote is taken from Lilli Alanen and Simo Knuuttila, "The Foundations of Modality and Conceivability in Descartes and His Predecessors," 36.

seriously considered T 1.2: how can indivisible, part-less points generate extension?[181] His Divisibility Principle requires him to say that his minimum parts of extension are themselves non-extended. Even *if* Hume's Finite Divisibility Argument works, his conclusion may be so ridiculous and unfathomable that it counts as a *reductio*. Allison writes that it "seems like an attempt to make something out of nothing."[182]

However, would such reasoning not be just another case of the problematic "rationalist" inference of expecting reality to conform to our powers of conception? Just because we cannot comprehend how a finite number of Humean Minima could generate extension does not entail that reality might not be that way. Indeed, we have seen through Falkenstein that it is possible that extension could be discrete or atomic, as evidenced by contemporary geometrical and mereological models.[183] So maybe possibly real extension (whatever that is) exists similarly? As leading mereologist Katherine Koslicki notes "Whether there *in fact* are any atoms is [still] an open question."[184] Even those who find Hume's position bizarre in some respects can still admire him for being a philosopher who is striving for consistency, adhering to his principles, and sticking to whatever conclusions his principled reason leads, however strange or unfamiliar they may be.

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[181] Hume was, of course, well aware of this difficulty and provides a number of rebuttals (T 1.2.3 and T 1.2.4)

[182] Allison, *Custom and Reason in Hume: A Kantian Reading of the First Book of the Treatise*, 41.

[183] Falkenstein, "The Ideas of Space and Time and Spatial and Temporal Ideas in the Treatise 1.2," 37.

[184] Kathrin Koslicki, *The Structure of Objects*, Reprint edition (Oxford University Press, 2010), 14.

ENDNOTES

i. In T 1.4.2 Hume is clear that acquiring the idea of body involves taking numerically distinct impressions to be numerically the same—something he calls a "gross illusion" at 1.4.2.56. So it looks like according to 1.4.2 the idea of body involves a contradiction. So is T 1.4.2 still a problem for my contention that the idea of an extended finitely divisible body is the idea of something possible?

I answer this objection we need to draw an important distinction between 'body' as it is understood in T 1.4.2 and the sense of 'finite extensions' required for Hume's Finite Divisibility to succeed. If by 'body' we mean just a continued, uninterrupted entity (as opposed to continued and distinct), then 'finite extensions' need not have the ontological characteristic of 'continued,' and certainly does not need characteristic of numerical and continued. For example, 'finite extensions' could be ideas that are fleeting, perishing and constantly being replaced by God. All Hume is committed to is that finite extensions are finitely divisible and consistent of contiguous and coexistent minima—minima that coexist (at least) each indivisible moment. Continued identity is not a requirement for Hume's argument to work. Highlighting this ontological quietism with respect to finite extensions relieves any tension with T 1.4.2, including the inability of the senses or reason to establish the continued existence of 'body.'

ii. Hume writes:

> "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 possible, 'tis certain they actually do exist conformable to it; since their infinite divisibility is utterly impossible and contradictory"** (T 1.2.4.1).

Hume asserts that space (that is, extension) "actually" does "exist" conformable to the idea of indivisible minima. One may worry that this statement is contrary to my claim that Hume does make any existential claims regarding matters of fact in the course of his demonstration. However, in this passage it is clear that the Adequacy Principle alone does not take Hume to his conclusion that finite extensions exist as finitely divisible. The Adequate or clear idea of finite divisibility only entails its possibility. It is because the only other alternative—infinite divisibility—is contradictory, does Hume, through an argument by elimination, conclude that finite extensions EXIST as finitely divisible.

However, there is a larger concern that needs to be addressed. I maintain that Hume's finite divisibility Argument is a demonstration that involves the relations of ideas and never ventures into matters of fact or existences. However, here Hume seems to infer, by way of the disjunctive syllogism, that finite extensions "actually do exist."

One simple response is that the 'existence' of finite extensions—whatever they may be (ontological quietism)—is assumed in T 1.2 from the outset. Consequently, Hume's argument

can consider the relations of ideas of extension, determine which ideas are clear or contradictory, conclude that finite extensions 'exist' as finitely divisible, without violating his fork.

Hume maintains that "the real existence or the relations of objects" (T 1.3.2.2, SBN 73) can only be established on the basis of observation and experience. Perhaps the story goes like this. Through observation and experience we establish that finite extensions exist (whatever they may be). Their existence, however, is not necessary but merely probable. Hume argues that it is conceivable that something can come from nothing (T 1.3.2.3, SBN 79), so perhaps it is conceivable that all finite extensions could annihilate as well. Therefore, their existence is merely contingent. However, for the purposes of abstract reasoning, the existence of finite extensions (or time for that matter) is assumed.

That Hume assumes the existence of finite extensions and time becomes more obvious when attending to his discussion of time. Hume's "additional argument" (T 1.2.2.4, SBN 31) is a paradigmatic case of what we would call conceptual analysis. He first analyzes the idea of time ("Tis a property inseparable from time, and which in a manner constitutes its essence, that each of its parts succeeds another, and that none of them, however contiguous, can ever be co-existent" [ibid]) and then demonstrates why supposing that time is infinitely divisible is an "arrant contradiction." (ibid) Yet during the course of this argument, which clearly involves merely the relations of ideas, Hume writes "'Tis certain then, that time, **as it exists,** must be compos'd of indivisible moments." It is clear that the existence of time is simply assumed through the course of this argument.

There is a crucial difference between assuming or supposing the existence of an entity for the purposes of reasoning about its nature and inferring non-existence from inconceivability. Hume assumes the existence of finite extensions for the purposes of reasoning; infers possibility from the clear idea of a finitely divisible finite extension; and infers nothing from the contradictory, non-idea of an infinitely divisible finite extension beyond the simple observation that it is a meaningless and absurd supposition. The choice is a binary one: thus Hume rules out infinite divisibility because it is unintelligible, allowing him to assert that finite extensions exist as finitely divisible insofar as their existence has been established on the basis of observation and experience, or assumed for the purposes of reasoning.

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