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http://epublications.marquette.edu/dissertations_mu/59

HUME’S CONCEPTION OF TIME AND ITS IMPLICATIONS FOR HIS THEORIES OF CAUSATION AND INDUCTION

by

Daniel Esposito, B.A., M.A.

A Dissertation submitted to the Faculty of the Graduate School, Marquette University, in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

Milwaukee, Wisconsin

August 2010

ABSTRACT

HUME'S CONCEPTION OF TIME AND ITS IMPLICATIONS FOR HIS THEORIES OF CAUSATION AND INDUCTION

Daniel Esposito, B.A., M.A.

Marquette University, 2010

I begin the dissertation by elucidating Hume's conception of time as a compound abstract idea and explain why Hume believes time must be discrete and atomistic. I then explore the ways in which Hume's theory of causation rests upon this atomistic conception of time, and place special emphasis on Hume's argument that all causes qua causes must precede their effects in time. I claim that this argument is inconsistent with Hume's critique of the causal maxim, a principle which states that whatever begins to exist must have a cause. After exposing and examining this inconsistency, I investigate the degree to which Hume's account of the process of induction also depends upon his discrete, discontinuous conception of time. I end the dissertation by summarizing what I accomplished in earlier chapters, and by discussing potential areas for future research.

ACKNOWLEDGEMENTS

Daniel Esposito, B.A., M.A.

I could not possibly have completed a project of this magnitude without the various people who helped me along the way. My director, Dr. William Starr, has given me excellent suggestions on earlier versions of every chapter, which have helped me become both a better writer and a better thinker. The other members of my committee – Dr. Michael Wreen, Dr. Noel Adams, and Dr. Timothy Crockett – have, through their discussions with me, their feedback on my writing, and their words of encouragement to me, enabled me to greatly enhance the quality of my dissertation. My parents and my brother never stopped providing the emotional support I needed to finish this dissertation. I also wish to thank all my friends, both in the Midwest and in New England. Without the motivation and encouragement they provided me, I would not have been able to complete my dissertation so quickly. Finally, I must thank my Aunt Nancy as well, since I would never have become interested in philosophy without her. I know that she would have been thrilled to read my dissertation if she were still alive. All of these people have, in multiple ways, helped me move

my dissertation from potentiality to actuality, and for that I will always be grateful.

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Chapter One

The Nature and Existence of Time in Hume's *Treatise*

Introduction

Hume's critiques of causation and inductive reasoning are some of the best known – and most widely studied – aspects of his philosophy. In contrast, his views of the existence and nature of time are perhaps the most obscure and least studied aspects of his philosophy. The primary purpose of this dissertation is to prove that Hume's theories of causation and induction presuppose and require a certain conception of time, and that a thorough understanding of the former necessitates a solid grasp of the latter.

I will present my argument for this claim over the course of five chapters.[1] The current chapter, Chapter One, will explore what exactly time is for Hume, and whether the process by which we form the idea of time violates the Copy Principle, one of the most important principles in Hume's epistemology. Throughout this chapter, I will argue that time for Hume is a compound abstract idea, and that all

[1] My sixth chapter will consist in a brief summary of the previous chapters.

concerns that this idea violates the Copy Principle are unfounded.

A compound idea for Hume is an idea that contains other ideas as its parts. This means that the idea of time as Hume describes it consists of parts. Hume insists that these parts are not and cannot be infinitely divisible. In my second chapter, I will analyze the arguments Hume provides to support this claim, and defend them from the various objections that have been raised against them in the literature on this subject. These objections reveal significant misunderstanding not only of Hume's arguments themselves, but also of his overall purpose in developing them. According to my interpretation, this overall purpose is primarily phenomenological. In other words, Hume is far more interested in studying the experience of time than he is in engaging in metaphysical speculation about the nature of time, although some consideration of the latter is obviously unavoidable.

Hume's phenomenological approach to time leads to what I call the Temporal Priority Argument, the argument by which Hume attempts to prove that all causes must precede their effects in time. My third chapter will consist in a thorough explanation as to why Hume thinks "the utter

annihilation of time” results from a denial of the temporal priority of causes to their effects. I will argue that some of the reasoning Hume employs in his arguments against the infinite divisibility of time also plays a key role in the Temporal Priority Argument, and that the latter argument depends upon the former.

While my third chapter will focus on the Temporal Priority Argument, my fourth chapter will concentrate on another aspect of Hume’s theory of causation – his critique of the causal maxim. The causal maxim states that whatever begins to exist must have a cause. Hume rejects this maxim by making a strong distinction between the idea of a beginning of existence and the idea of a cause of existence. I will argue that Hume’s rejection of the causal maxim is logically inconsistent with his Temporal Priority Argument.

One of the consequences of the Temporal Priority Argument is that distinguishing between causes and effects requires temporal minima. Hume’s reason for thinking so, if followed to its logical implications, allows one to conclude that Hume’s account of induction also requires temporal minima. The purpose of my fifth chapter is to

explain why the process of induction as Hume characterizes it necessitates the discreteness of time.

The only Humean text I will discuss throughout my entire dissertation is *A Treatise of Human Nature* (hereafter referred to as *Treatise*).[2] This is because *Treatise* is the only text out of all of Hume's published works that contain detailed and in-depth discussions of time. Hume wrote next to nothing about the topic in all of his subsequent works. Hume's most extensive discussions about time appear in Book One, Part Two of *Treatise*, but he does briefly mention time again sporadically in later sections of that work, such as when he explains what effect time has on the passions in Book Two, Part Three, Section Seven. Even his comments there, however, are based upon his arguments featured in Book One, Part Two. Any thorough exploration of Hume's theory of time, therefore, must clearly focus on Book One, Part Two of *Treatise*. According to my interpretation, this part of *Treatise* describes time as a compound abstract idea.

[2] Hume, David. David and Mary Norton, ed. *A Treatise of Human Nature*. New York: Oxford University Press, 2000.

Necessary Preliminaries

Before attempting to prove that time for Hume is a compound abstract idea, however, I must briefly summarize what Hume thinks impressions and ideas are, and how they relate to each other. For Hume, the term "impression" includes "all our sensations, passions, and emotions, as they make their first appearance in the soul" (T 1.1.1.1)[3]. These impressions are strong, vivacious, and lively. Ideas, in contrast, are much weaker. Ideas are "the faint images" of impressions "in thinking and reasoning" (T 1.1.1.1).

Hume claims that both impressions and ideas can be further divided into simple and complex. The latter are divisible into smaller, distinct parts; the former are not. Complex impressions and ideas are composed of simple ones. For example, perceiving or experiencing an apple involves experiencing its color, taste, smell, and texture. Each of these alone is a simple impression, but all of them

[3] The "T" in this citation stands for *A Treatise of Human Nature*, the only work in which Hume discusses time. Each citation of a passage from the *Treatise* in this dissertation will consist of four numbers: the first is the book number, the second is the part number, the third is the section number, and the fourth is the paragraph number. This is the standard method of citing the *Treatise*, and is used by most Hume scholars.

combined constitute the experience of the apple as a whole (T 1.1.1.2).

Because complex ideas and impressions are composed of simple ideas and impressions, the mind cannot experience complex ideas and impressions unless it first experiences simple impressions and ideas. Hume believes that the mind cannot form a simple idea until it first perceives a simple impression that corresponds to and resembles that idea. The idea copies, or resembles, the simple impression, and is derived from it. Every simple idea has a correspondent impression, and vice-versa. This principle, which Hume scholars call the “Copy Principle,” is an essential aspect of Humean epistemology, and presupposed throughout the *Treatise*. Hume formulates the Copy Principle in this way: “all 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).

When providing arguments to convince readers that the Copy Principle is true, Hume discusses the fact that impressions are both temporally and causally prior to ideas, meaning that they always precede ideas in time, and cause the ideas that resemble them. People always experience impressions before they experience ideas; they

never experience ideas prior to experiencing impressions. Whereas experiencing impressions always involves experiencing their corresponding ideas, merely thinking of the ideas will not cause one to experience the impressions they resemble. If one wanted to give a child an idea of the color orange, for example, one must actually show the child something that is orange, so that the child can have an impression of the color orange. If the child has never perceived the color orange before, it would obviously be absurd to attempt to make the child perceive orange merely by discussing the idea of orange with the child (T 1.1.1.8). Likewise, “we cannot form to ourselves a just idea of the taste of a pine-apple, without having actually tasted it” (T 1.1.1.9). Hume thinks these examples clearly show the causal dependency of ideas on impressions. The causal relationship between impressions and ideas is strictly unidirectional, with impressions serving as the cause, and ideas serving as the effect.

Thus there is a causal and a temporal relationship that obtains between impressions and ideas – impressions cause ideas and always precede them in time. There are also specific causal and temporal relationships that obtain between two different types of impressions, which Hume

refers to as “impressions of sensation” and “impressions of reflection.” Hume describes the relationships between these two kinds of impressions by providing a more detailed account of how the process mentioned in the Copy Principle works:

> An impression first strikes upon the senses, and makes us perceive heat or cold, thirst or hunger, pleasure or pain of some kind or other.[4] Of this impression there is a copy taken by the mind, which remains after the impression ceases; and this we call an idea. This idea of pleasure or pain, when it returns upon the soul, produces the new impressions of desire and aversion, hope and fear, which may properly be call’d impressions of reflection because deriv’d from it. These again are copy’d by the memory and imagination, and become ideas; which perhaps in their turn give rise to other impressions and ideas. So that the impressions of reflection are only antecedent to their correspondent ideas; but posterior to those of sensation, and deriv’d from them (T 1.1.2.1).

As described above, the process mentioned in the Copy Principle clearly involves a temporal sequence. The mind experiences impressions of sensation first, which lead to corresponding ideas of sensation. These ideas of sensation then produce impressions of reflection, which in turn generate corresponding ideas.

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[4] These are impressions of sensation.

While explaining and defending the Copy Principle, Hume thinks of a counterexample to it. Suppose a man, who has seen multiple colors of various shades throughout his thirty years of life, encounters an arrangement of several shades of blue with one particular shade missing – a shade of blue that this man has never previously seen. Hume claims that, despite never having perceived any impression of this shade of blue, the man's imagination can still form of an idea of what that missing shade of blue must look like. Hume believes this counterexample is too trivial to cast the Copy Principle into doubt (T 1.1.1.10).

In addition to explaining what ideas are and describing the processes by which they are formed, Hume also discusses what the possible content of ideas could be. He firmly believes "*that the mind cannot form any notion of quantity or quality without forming a precise notion of the degrees of each*" (T 1.1.7.3)[5]. The arguments Hume uses to defend this claim employ two other principles that play a crucial role in his thought.

One of these principles is often called the Separability Principle. This principle states "that

[5] This passage is italicized in the original text.

whatever objects are distinguishable are separable by the thought and imagination……these propositions are equally true in the *inverse*……whatever objects are separable are also distinguishable, and that whatever objects are distinguishable are also different" (T 1.1.7.3). This principle challenges the Lockean theory of abstract ideas. Locke's view is that we form an abstract idea by encountering many things that are similar, determining what they all have in common, and then developing an idea which has only those features and not the ones which distinguish them from each other. For Locke, abstraction involves separation; it involves forming an idea that has only the common qualities that enables it to represent other particular things that have the same features, and separating these common qualities from all the features that distinguish the thing in question from all of the other things which share the common qualities.[6] Hume, following Berkeley, argued that it is impossible to form an idea of an object that has *only* those qualities it has in common with other objects, and *none* of the qualities that distinguish it from those other objects. The distinguishing

[6] Locke discusses his theory of abstract ideas in his *An Essay Concerning Human Understanding*, particularly at 2.11.9, 2.12.1, 3.3.6-9, and 3.6.32.

qualities an object possesses, argues Hume, cannot be separated from it, and so any idea of that object must contain those qualities as well.

Another principle that plays a crucial role in Hume's thought is often known as the Conceivability Principle. According to the Conceivability Principle, what is conceivable is possible. If something is conceivable, then it is possible. When Hume applies this principle to abstract ideas, he puts a Cartesian spin on it. He claims that if something is "absurd in *fact and reality*, it must also be absurd in *idea*; since nothing of which we can form a clear and distinct idea is absurd and impossible" (T 1.1.7.6). It is not possible for an object with only indeterminate qualities to exist. Therefore, it is not possible to conceive of such an object. Since abstract ideas as Locke describes them are ideas of objects with only indeterminate qualities, it is impossible for such ideas to exist or to be conceived. This is especially the case since, as Hume argues, forming an idea of an object and forming an idea are one and the same act; there is no distinction between them (T 1.1.7.6).

The Conceivability Principle and the Separability Principle are closely connected. For example, Hume claims

that a line cannot be separated from its particular length. A line and its precise length are indistinguishable; they cannot exist separately in reality. Consequently, it is also impossible to conceive of a line that has no determinate length (T 1.1.7.3).

It is important to note, however, that none of the arguments Hume advances against the Lockean conception of abstract ideas prove that abstract ideas are impossible *simpliciter*. Hume does believe that abstract ideas exist; he just does not think it is possible to form abstract ideas that imply a separation from distinct, determinate qualities. Hume, following Berkeley,[7] says that "all general [abstract] ideas are nothing but particular ones, annex'd to a certain term, which gives them a more extensive signification, and makes them recall upon occasion other individuals, which are similar to them" (T 1.1.7.1).

Hume has a theory to explain how we are able to form ideas of things that represent many other things. We experience many particular things that share certain qualities. We form a habit of using the same term to refer to all of these particular things, even though they differ

[7] For more information on Berkeley's theory of abstract ideas, see his introduction to his *A Treatise Concerning the Principles of Human Knowledge.*

in some ways. When the habit becomes strong enough, merely hearing the term generates an idea of one of these objects, and the mind quickly recalls other particular things that share the same qualities (T 1.1.7.7).

If one uses the term “triangle,” for example, one might think of an equilateral triangle. The distinguishing characteristic of an equilateral triangle is that all of its angles are equal. If the mind attempts to identify this characteristic as one that belongs to all triangles qua triangles, it will also recall scalene and isosceles triangles, which lack this property yet are still triangles. This process causes one to use the same term “triangle” to refer to those kinds of triangles as well (T 1.1.78). In order for the mind to think of a triangle, it must think of a particular kind of triangle, one that will have features that distinguish it from all other kinds of triangles. The mind is aware of these distinguishing features, but ignores them whenever it thinks of a triangle qua triangle. Under a Lockean conception of abstract ideas, however, the abstract idea of a triangle qua triangle lacks any characteristics that distinguish it from any other kind of triangle; these distinguishing characteristics are separated from the common properties that all triangles

share, and the idea of triangle qua triangle contains only these common properties. Hume thinks the distinguishing characteristics cannot be separated from the common properties; instead of separating the distinguishing characteristics, the mind simply chooses not to pay attention to them (Baxter 18-19).

Three Different Definitions of Time

After discussing abstract ideas, Hume dedicates Part Two of the first book of the *Treatise* to the ideas of space and time and how we form them. Many of his comments regarding time strongly suggest that time is an abstract idea. Consider, for example, the following passage:

> The idea of time, being derived from the succession of our perceptions of every kind, ideas as well as impressions, and impressions of reflection as well as sensation, will afford us an instance of an abstract idea, with comprehends a still greater variety than that of space, and yet is represented in the fancy by some particular individual idea of a determinate quantity and quality (T 1.2.3.6).

Hume reinforces this view of time in the very next paragraph:

> As ‘tis from the disposition of visible and tangible objects we receive the idea of space, so from the succession of ideas and impressions we form the idea of time, nor is it possible for time alone ever to make its appearance, or be taken notice of by the mind……whenever we have no successive perceptions, we have no notice of time, even tho’ there be a real succession in the objects……time cannot make its appearance to the mind, either alone, or attended with a steady unchangeable object, but is always discover’d by some *perceivable* succession of changeable objects (T 1.2.3.7).

Notice the use of the Separability Principle here; time cannot be separated from particular successions. It is just as impossible to conceptualize time without successive perceptions as it is to conceptualize a line without any particular length.

Thus far, Hume is characterizing time as an abstract idea derived from succession of impressions of every kind. This is not the only way he describes time, however. Some of his comments cast doubt on the notion that time is an abstract idea at all. While he repeatedly insists that the idea of time cannot be separated from successive perceptions, he also claims that “The idea of time is not deriv’d from a particular impression mix’d up with others, and plainly distinguishable from them; but arises

altogether from the manner, in which impressions appear to the mind, without making one of the number [of impressions]" (T 1.2.3.10). To clarify in what sense time can be conceived of as a "manner," Hume uses an example that is very well known to those who study Hume's theory of time:

> Five notes play'd on a flute give us the impression and idea of time; tho' time be not a sixth impression, which presents itself to the hearing or any of the senses. Nor is it a sixth impression, which the mind by reflection finds within itself……here it [the mind] only takes notice of the *manner*, in which the different sounds make their appearance; and that it may afterwards consider without considering these particular sounds, but may conjoin it with any other objects. The ideas of some objects it certainly must have, nor is it possible for it without these ideas ever to arrive at any conception of time; which since it appears not as any primary distinct impression, can plainly be nothing but different ideas, or impressions, or objects dispos'd in a certain manner, that is, succeeding each other" (T 1.2.3.10).

Here Hume clearly identifies time with the manner in which ideas, impressions, and objects appear to the mind, a manner which is successive. Later, Hume makes the same point even more bluntly when he asserts that "time is nothing but the manner, in which some real objects exist" (T 1.2.5.28).

The passages quoted above pose considerable interpretative difficulties for scholars attempting to study Hume's theory of time, because Hume appears to work with three different definitions of time. He seems to believe that all of the following definitions of time are correct:

1. Time is an abstract idea derived from successions of every kind.
2. Time is different ideas, impressions, and objects appearing in a certain successive manner.
3. Time is the manner in which some real objects exist.

Hume scholars tend to argue that one of these definitions articulates Hume's conception of time more effectively than the others, but as one would expect, they disagree as to which definition is the best one.

Baxter's Interpretation of Hume

In what is probably the most extensive and detailed study of Hume's theory of time to date, *Hume's Difficulty: Time and Identity in the Treatise*,[8] Baxter mentions these disagreements, and then argues that conceptualizing time as

[8] Baxter, Donald. *Hume's Difficulty: Time and Identity in the Treatise*. New York: Routledge, 2008.

an abstract idea comes closer to capturing Hume's thought than conceptualizing time as a manner.

According to Baxter, many well-known Hume scholars, such as Kemp Smith, tend to describe the idea of time as the idea of "the manner in which successions are arrayed" (Baxter 21).[9] Baxter claims that viewing time as "the idea of succession in general" is more consistent with Hume's theory of abstract ideas than viewing time as a manner (Baxter 21).

Baxter writes,

> For Hume, time is an abstraction from the successions we experience (T 1.2.3.6-11, 1.2.4.2). That is to say, the idea of time is an abstract idea of any succession qua many things in succession. Likewise I will propose that the idea of a moment is the idea of a member of a succession qua member (Baxter 17).

We develop the idea of time the same way we develop abstract ideas about anything. We encounter many particular successions, and we use the term "succession" to refer to them. Whenever we hear the term "succession," we call to mind many other particular successions. We can use the Separability Principle and the Conceivability Principle to

[9] See Kemp Smith, Norman. *The Philosophy of David Hume*. New York: Palgrave Macmillan, 1941, p. 274.

show that time cannot be separated from the idea of successiveness. Just as it is impossible to form an idea of a line with no particular length, so it is impossible to conceptualize time in isolation from a particular succession (Baxter 19).

In addition to claiming that viewing time as an abstract idea "of any succession qua many things in succession" is more consistent with Hume's theory of abstract ideas, Baxter also argues that his interpretation has an additional advantage over the more common view that time for Hume is best thought of as the manner in which perceptions appear to the mind. Baxter's interpretation enables time to consist of parts, but other interpretations do not. This is important because, according to Hume, "'tis evident, that time or duration consists of different parts: For otherwise we cou'd not conceive a longer or shorter duration" (T 1.2.3.9). Baxter claims that successions have parts called moments (Baxter 20), but manners do not have parts (Baxter 21). Thus viewing time primarily as a manner – any kind of manner – makes it difficult to conceptualize time consisting of parts[10]. Conceptualizing time as the

[10] I think Baxter is wrong about this. Hume can very easily explain how manners can have parts. The parts of a manner are the objects arranged in that manner. I am surprised that Baxter does not consider

abstract idea of any succession qua successiveness, which Baxter's interpretation requires, can easily enable one to form ideas of parts of time.

When Hume asserts that "time or duration consists of different parts," he seems to be using the terms "time" and "duration" interchangeably. He continues to use these terms synonymously in several places in Part Two as well. Baxter also uses them synonymously, with one minor qualification:

> Hume seems to use "time" and "duration" interchangeably within T 1.2.3.6-11……This makes sense when speaking of *a* duration. Thus "time," "a succession," and "a duration," when used generally, are interchangeable for Hume. However "duration" can also be used to convey more the manner than the sort, more successiveness than a succession. Hume tends not to use it in this sense but commentators often read it this way, perhaps influenced by Kemp Smith (Baxter 19).

Whenever the mind thinks of a succession, it is thinking of something that has duration. Based on the way both Baxter and Hume conceive of duration, it follows from this that

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this possibility, since he claims, "For Hume, there is no distinction between the idea of a manner and the general idea of objects arrayed in that manner" (Baxter 21). Such a distinction would violate Hume's theory of abstraction. Claiming that the parts of a manner are the objects arrayed in that manner, however, would be perfectly consistent with Hume's notion of abstract ideas. Hence Baxter needs a stronger argument against the "time is a manner" interpretation that he opposes.

all successions are temporal. After all, “since the idea of duration is the idea of a succession qua successive,” says Baxter, “it applies to any succession” (Baxter 21).

This idea of duration also implies that nothing can have duration except for successions. Anything lacking successiveness cannot be said to have duration. Consequently, unchangeable objects, which Hume calls steadfast objects, cannot and do not serve as the basis for the idea of duration. Unlike changeable objects, which are really multiple things in succession, steadfast objects are just single objects that only exist for one moment. Since they are not successions themselves and lack successiveness, steadfast objects lack duration, and the idea of duration can never be derived from or applied to them (Baxter 21). Hume goes so far as to say that applying the idea of time to a steadfast object involves a fiction (T 1.2.3.11).

The problem, however, is that we very often do apply the idea of duration or time to steadfast objects. Whenever we make mistakes of this sort, we confuse two similar ideas and apply the wrong idea to the object we perceive or contemplate. In this particular case, Baxter thinks the two ideas that get confused are the idea of the

steadfast object and the idea of “a succession of things exactly resembling the steadfast object” (Baxter 44). Only successions of changeable objects can have duration (T 1.2.3.11), so to attribute duration to steadfast objects, which are unchangeable by definition, always involves a mistake.

“Because we are constantly experiencing succession,” Baxter claims, “we tend to think of an object experienced at one time……and that object experienced at a later time……not as one steadfast thing but as many things in succession” (45). No steadfast object can be many things in succession, however, because that would make the steadfast object a changeable object, which it cannot be by definition. Baxter thinks that what we really experience is a single steadfast object coexisting with several moments of a succession, not a succession of objects that exactly resemble this steadfast object. The act of experiencing a single steadfast object coexisting with some or all of the members of a succession of changeable objects is phenomenologically very similar to experiencing a succession of changeable objects, and the failure to distinguish between these two types of experiences leads to

the misapplication of the idea of duration to a steadfast object (Baxter 44-45).

Baxter is well aware that the idea of a steadfast object coexisting with some or all members of a succession is esoteric, so his book contains lengthy and detailed explanations of and defenses for this position. His overall argument appears to be as follows. Steadfast objects, by definition, do not change. All changeable things are many things in succession. Since only successions can have duration, and steadfast objects are not successions, steadfast objects do not and cannot have duration. Hume believes that both successions and steadfast objects exist. Therefore, successions coexist with steadfast objects.

Baxter expands upon this basic argument to arrive at far more radical and counterintuitive conclusions, namely, that moments of time can coexist with other moments of time, and that a single moment of a certain length can coexist with several briefer moments. These counterintuitive notions are consequences of his claim that successions coexist with steadfast objects. After all, anything that exists in time must exist at least one moment. Since steadfast objects are not successive, they cannot exist at more than one moment. Thus they only can

only exist at a single moment. Once one adds the premise "if things coexist, then the moments they exist at coexist," one must conclude that the single moment at which a steadfast object exists happens to coexist with several distinct successive moments (Baxter 31). Put simply, the crux of Baxter's interpretation of Hume's theory of time is that moments of varying lengths of time can coexist with each other.

To clarify his ideas, Baxter provides several examples of steadfast objects coexisting with successions. For Hume, the term "object" often includes perceptions. Hence "steadfast object" can easily mean "steadfast perception." Baxter thinks there are many places in the *Treatise* where Hume discusses steadfast perceptions coexisting with a succession. One such place is T 1.2.3.7, where Hume says that a man preoccupied with a single thought is not aware of the passage of time. This must mean that the man is not aware of any successions. Baxter claims that successions are still occurring, however – the man just is not aware of them. These successions coexist with the single thought, which entails that the moment at which the thought exists happens to coexist with the moments of all of the successions taking place at the same time (Baxter 32).

Baxter also believes that successions themselves, and not just the moments that compose them, can coexist as well. He claims that “a temporal succession coexists with another just in case each moment in one coexists with some moment in the other, and vice versa” (Baxter 41). As an example of coexisting successions, he invites the reader to imagine Hume experiencing a change in mood while he listens to a bird singing (Baxter 38). The sounds of the bird singing constitute one succession; the various moods Hume feels constitute another, and he experiences both successions simultaneously.

Coexistent successions play such an important role in Baxter’s interpretation of Hume that he claims they are the source of the idea of time. He states that “we experience time by experiencing various coexistent successions of objects. It is the ideas of these we use to form the abstract idea of time” (Baxter 37).

I strongly disagree with this claim, for two main reasons. I very highly doubt that we do, in fact, experience coexistent successions. Even if we do, I think one can argue, on Humean grounds, that we can never derive the idea of time from them.

Hume's description of coexistence, and the process by which the mind experiences coexistent things, lead to a problem for Baxter's belief that we experience coexistent successions. At T 2.3.7.5, Hume contrasts the process of experiencing space with the process of experiencing time, and asserts,

> ……space or extension consists of a number of co-existent parts dispos'd in a certain order, and capable of being at once present to the sight or feeling. On the contrary, time or succession, tho' it consists likewise of parts, never presents to us more than one at once; nor is it possible for any two of them ever to be co-existent. These qualities of the objects have a suitable effect on the imagination. The parts of extension being susceptible of an union to the senses, acquire an union in the fancy, and as the appearance of one part excludes not another, the transition or passage of the thought thro' the contiguous parts is by that means render'd more smooth and easy. On the other hand, the incompatibility of the parts of time in their real existence separates them in the imagination, and makes it more *difficult*[11] for that faculty to trace any long succession or series of events. Every part must appear single and alone, nor can regularly have entrance into the fancy without banishing what is suppos'd to have been immediately precedent.

[11] This word is italicized in the original text.

I will discuss this passage in more detail in later chapters. For my purposes here, however, I will concentrate on Hume's claim that the experience of coexistent things is easier for the mind than the experience of successive things. The nature of coexistence makes whatever is coexistent easier to experience than something which is not coexistent.

Consequently, if Baxter is right, coexistent successions must be easier to experience than ordinary, non-coexistent successions. Unfortunately for Baxter, this is not the case. An examination of some very common kinds of experiences shows that the more intensely the mind focuses on one succession, or member(s) of a succession, the less aware it becomes of any other members of any other successions. Many people have had the experience of driving to a familiar location, one they have driven to countless times, and arriving at their destination without remembering the drive there. While they were driving, they obviously experienced a constant succession of impressions from the other cars on the road, traffic lights, road signs, and all of the other myriad impressions necessarily associated with the act of driving. Yet, because they were preoccupied the succession of thoughts or feelings they had

while driving, they were not fully aware of those impressions; if they were, they would have been able to remember the trip.

A similar phenomenon is well known to students of all ages, and often occurs while reading a page from a textbook or some other material required for class. Students frequently engage in a train of thought as they begin to read the page, and then arrive at the bottom of that page without knowing or remembering anything that they read. In this case, the sequence of thoughts students engage in as they read constitute one succession, and the perceptions of the words they read constitutes another. If people can experience coexistent successions, it is hard to understand why these types of examples – the one discussed here and the driving example discussed above – occur at all, let alone why they occur so often. A much more plausible explanation for these very common phenomena is that the mind's concentration on one succession prevents it from experiencing other successions.

Hume's remark that "A man in a sound sleep, or strongly occupy'd with one thought, is insensible of time" (T 1.2.3.7) strongly suggests he would deny the possibility of experiencing coexistent successions. If it were truly

possible to experience coexistent successions, then there is no reason why being preoccupied with a single thought or a succession of thoughts would prevent a person from being aware of a temporal succession. Obviously, if preoccupation with one thought makes awareness of a *single* succession difficult, then it would make awareness of *two or more* coexistent successions even more difficult.

People in sound sleep are not conscious, and hence cannot have any successive perceptions. Concentration on a single thought precludes one from perceiving, or even being aware of, any succession. If it were truly possible to experience coexistent successions, then the mind must be able to experience at least two moments simultaneously, as well as the thoughts, impressions, ideas, or perceptions which exist at those moments. Obviously, if the mind could accomplish such a feat, contemplating just *one* item in consciousness – which it does whenever it becomes preoccupied with a single thought – would not prevent it from also being aware a part or multiple parts of a succession which coexists with it. Hume’s denial that the mind can be aware of successions while it focuses on a single thought strongly suggests, therefore, that Hume would also deny the possibility of experiencing coexistent

successions. It also strongly suggests that experiencing coexistent successions is much more difficult than Baxter seems to think it is.

Another problem facing Baxter follows from his description of coexistent successions. Recall that, according to Baxter, "a temporal succession coexists with another just in case each moment in one coexists with some moment in the other, and vice versa" (Baxter 41). Thus if X and Y are distinct coexistent temporal successions, it is impossible for some moments of one succession to fail to coexist with any moment or moments of the other succession. This means that only completed successions can coexist. A succession is complete when its last moment will not be followed by another moment; no more moments can be added to a complete succession.[12] If a moment is added to succession X, for example, and that new moment does not coexist with any of the moments in Y, then X and Y are no longer coexistent successions.

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[12] To clarify this notion of a completed succession, consider the years 2009 and 2010. Since it is currently August of 2009 as I write this, there are several more days, weeks, and months left to 2009. At the time of this writing, the temporal succession that we refer to as the year 2009 has not yet been completed. Once December 31st of 2009 ends, however, the year 2009 will be complete, and there will be no more days, weeks, and months left to 2009, since all of them would have already transpired. Once December 31st 2009 ends, the temporal succession we refer to as the year 2010 will begin. The year 2010 will not be complete until December 31st 2010 ends, at which point 2010 would become a completed succession.

Incomplete successions lack some of their moments. For this reason, such incomplete successions fail to conform to Baxter's definition of coexistent successions. Since they lack some of their moments, it is obviously not the case that "each moment in one [succession] coexists with some moment in the other, and vice versa."

The problem, however, is that whether or not one can be accurately described as experiencing completed successions depends upon how one interprets one's experience. Consider Baxter's example of Hume experiencing a change in mood as he listens to a singing bird. Suppose for the sake of argument that one bird chirps for a while, flies away, and is replaced by another bird that chirps for a while. Is that one succession of birdsong, or two? Should we consider the song of each bird as a completed succession in itself, or is only the singing of both birds taken together a completed succession? Clearly, similar questions could be raised about virtually any succession.

By acknowledging that successions are able to have sub-successions (Baxter 46), Baxter unknowingly strengthens this objection to his own position. It is very easy to conceive of many, if not all, successions as being members of a larger succession. A succession that lasts a minute,

for example, could be part of an hour-long succession, which could be part of a day-long succession, etc. Baxter leaves himself vulnerable to this possibility when he claims that, although “all coexistent successions flow relative to each other……we can take some external successions, like the ticking of clocks, to be the standard by which we judge the rate of other successions” (Baxter 42). The “ticking of clocks” involves an intersubjective standard consisting of measurable units of time. Since for any finite, measurable unit of time that humans can experience it is possible to conceive of a longer unit of time (a century is longer than a decade which is longer than a year, etc) the length of time for which a certain set of coexistent successions exist can be considered part of a much longer succession, meaning those coexisting successions would be members of a single, longer succession.

If sets of coexisting successions are all members of a larger succession, however, they cannot be coexistent. This consequence follows from Hume’s insistence that the parts of time cannot be coexistent, since coexistence is the distinguishing characteristic of extension, not

duration.[13] Baxter acknowledges this fact, but claims Hume only prohibits members of the same succession from coexisting with each other, not one succession coexisting with another (Baxter 43).[14] Obviously, then, if all coexistent successions are actually members of a single, longer succession, then they would be moments of that single succession, and hence could not coexist with anything.

While Baxter does directly address the issue of the means by which one can determine which moments belong to which succession, his comments on the subject fail to liberate him from the possibility of interpreting any pair of coexistent successions as constituting a part of a larger succession, which would preclude them from being coexistent. After posing the question, "What makes moments members of the same succession of moments?" Baxter claims,

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[13] I will explore Hume's reason for thinking this way in my next chapter.

[14] See also page 41, where Baxter writes, "A succession of moments is several moments such that for any two, one of them is later than the other, and such that for any two, either no moment is between them or any moment between them is one of the several. Thus distinct coexistent moments are not in the same succession, though in principle they could be in different successions which otherwise have all the same moments."

> The experienced unity of successions of objects is a result of the principles of associations of ideas……In all cases, temporal contiguity plays a role. Sameness of place helps unify some successions. The successions of things in no place, however, must be united by the help of resemblance or causation. So, if Hume enjoys the succession of tastes in a sip of a complex claret, their resemblance as tastes and their having a common cause helps unify the succession. If Hume simultaneously listens to a birdsong and feels a change in mood, each of these two successions of perceptions likewise are unified without appeal to sameness of place. (Though, it must be said, Hume will naturally attribute place to each to 'compleat the union' [T 1.4.5.12; SBN 237]-he will hear the song as in the bird's throat and feel the moods as in his own breast.) The abstract idea of time abstracts from the particular natural relations unifying a succession, just retaining their being unified some way or other (Baxter 37 -38).

In the passage from the *Treatise* that Baxter references, Hume claims that the taste, smell, color, and tangibility of a fruit are inseparable qualities, and always coexist in their appearance to the mind. These qualities are related to the fruit via the relations of causation and contiguity in the time and place of their appearance, but the qualities themselves do not exist in any place. The fruit exists in a particular place, of course, but the qualities do not. Hume thinks that the coexistent qualities of any extended object should not be attributed to the extended

object.[15] Although the coexistent qualities do not exist in any part of the extended object, or in any place at all, we have a tendency to attribute a new relation, a "conjunction in place" to the other relations, to make it easier for us to transition from the thought of the extended object to the thought of the qualities. It is much easier for the mind to understand how the coexistent qualities of the extended object relate to the extended object if it conceptualizes the qualities as belonging to, that is, contained in, the extended object.

Hume claims "'tis a quality, which I shall often have occasion to remark in human nature……that when objects are united by any relation, we have a strong propensity to add some new relation to them, in order to compleat the union" (T 1.4.5.12). The mind's experience of the qualities of a fruit, mentioned above, is one example of this principle. As another example, Hume says that "from the relations of causation and contiguity in time betwixt two objects, we feign likewise that of a conjunction in place, in order to strengthen the connexion" (T 1.4.5.12). Based upon these comments, it seems that Baxter's speculation as to how Hume would opt to unify the succession of birdsong and the

[15] For his arguments in support of this position, see T 1.4.5.13-14.

succession of moods – by somehow attributing place to them – is plausible.

There are other ways of unifying the successions, however. By using the philosophical relations Hume discusses,[16] one can compare the length of the coexistent successions to a longer succession. Some of Hume's comments enable one to unify the successions in this manner. Consider, for example, Hume's remark that "'Tis evident, that time or duration consists of different parts. For otherwise we cou'd not conceive a longer or shorter duration" (T 1.2.3.8). The coexistent successions of birdsong and moods obviously have a particular duration. One can surely conceive of a duration being longer than the duration of those coexistent successions. One can also say that the moments of the successions resemble each other insofar as they all belong to the same succession – the longer succession.

Suppose, for instance, that Hume really did hear birds singing one day, and also felt a simultaneous change in mood. Obviously, if Hume did have an actual experience like

[16] According to T 1.3.1.1, the seven philosophical relations are resemblance, identity, relations of time and place, proportion in quality or number, degrees in any quality, contrariety, and causation. The natural relations Baxter mentions in the passage I quoted are resemblance, contiguity, and causation (T 1.1.4.1). I will mention these relations again briefly in Chapter Four.

that, then it must have occurred during one of the years he was alive. Suppose that Hume had this experience in the year 1737. The year 1737, like any year, is clearly a temporal succession; it is temporal succession of 365 days. As Hume himself makes clear, the year 1737 cannot coexist with another temporal succession:

> ‘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. For the same reason, that the year 1737 cannot concur with the present year 1738, every moment must be distinct from, and posterior or antecedent to another” (T 1.2.2.4).

The year 1737 cannot coexist with the year 1738 because 1738 cannot begin to exist until 1737 is complete, and therefore no longer existent; the very existence of any part of 1738 presupposes that every part of 1737 has already passed. The “parts” of a year are the days, weeks, and months which compose the year. In the above passage, Hume explicitly denies that the parts of time can ever be coexistent. I have shown above how one can “unify” coexistent successions by conceiving a longer duration which contains both successions, thus making both

successions components of that longer succession. One way to do this is to interpret one's experience as occurring within a specific year, but in principle the longer succession could be much, much shorter as well. In all cases, the parts of the longer succession – which would include the successions Baxter would label as coexistent – cannot coexist.

Even if Baxter could successfully defend himself from these objections, and could prove that we do experience coexistent successions, he would still need to provide a Humean explanation of how we derive the abstract idea of time from these coexistent successions. I am not confident that any such Humean explanation can be provided. Hume believes the idea of time cannot be divorced from the idea of a succession. The idea of time can easily be separated from the idea of coexistence, though, because coexistence is a feature of extension, not time. If the mind repeatedly experiences many particular coexistent successions, however, what will prevent it from focusing on the coexistence of the successions instead of their successiveness? All coexistent successions would exhibit both coexistence and successiveness, yet only the latter is necessary for the idea of time; the former is not necessary

for the idea of time at all, and is far more likely to make the mind think of extension instead of time. While the mind can easily form the idea of time even if no coexistent successions ever existed, it could never form the idea of time if no successions of any sort existed. Thus it is very difficult to understand how the mind could ever form the idea of time from the experience of coexistent successions.

Despite my criticisms of Baxter's position, I agree with him that Hume's conception of time is best thought of as an abstract idea. Even in the passages where Hume defines time as a manner, he emphasizes that the idea of time cannot be separated from a succession of changeable objects. Merely thinking of a manner in which something exists will not generate the idea of time unless that manner is successive in nature. Hume equates time with "the manner in which some real objects exist" because he thinks real objects exist in succession. It seems to be impossible to avoid the conclusion that the idea of time for Hume must be the idea of a particular succession that brings to mind other successions one has experienced, with a special emphasis placed on what these successions have in common – successiveness.

I also agree with Baxter that Hume uses the terms "time" and "duration" interchangeably. Many commentators, however, claim not only that "duration" has some meanings that are not synonymous with "time," but also that the very idea of duration is itself a fiction for Hume!

McRae and the Two Types of Fictions

One of these commentators is McRae. McRae's "The Import of Hume's Theory of Time"[17] mentions some of the difficulties involved with determining precisely what Hume means by "duration" and whether or not "duration" is synonymous with "time." Whereas Baxter argues for conceiving time as an abstract idea, McRae thinks it is more accurate to view time as "the manner in which impressions appear to the mind" (McRae 26). He bases his interpretation on the well-known passage from the *Treatise* in which Hume discusses the five musical notes of a flute, a passage which McRae thinks also proves that the idea of time violates the Copy Principle (McRae 26). As for "duration," McRae claims that Hume sometimes treats "time" and "duration" as synonyms, and sharply distinguishes them at other times. When duration is thought to be "an object

[17] McRae, R. "The Import of Hume's Theory of Time" *Hume Studies* 6,2 (1980) in Tweyman, Stanley (ed). *David Hume: Critical Assessments* vol. III. New York: Routledge, 1995, pp. 25-34.

qua continuing or persevering or enduring, whether or not undergoing successive changes," duration is not a synonym for time. Instead, that understanding of duration involves a fiction (McRae 26).

McRae devotes the rest of his essay explaining precisely how duration is a fictitious idea, and what implications this idea has for the rest of Hume's philosophy. For Hume, time consists of parts. These parts are not and cannot be coexistent, because coexistence of parts is a feature of extension, not duration. Therefore, the idea of time cannot come from unchangeable objects. The idea of duration (understood in its correct sense) can only be produced by "a succession of changeable objects" (McRae 26). It cannot ever be applied to or derived from unchangeable objects. Applying the idea of duration to unchanging and unchangeable objects always involves a fiction.

There are two kinds of fictions. The first occurs when the mind confuses one idea with another and then incorrectly applies it to an object. It consists in "the misapplication of an idea derived from some original impression to something other than its proper object" (McRae 29). The second type of fiction is "a pure invention

of the imagination designed to resolve a contradiction – a contradiction to which the first type of fiction gives rise" (McRae 29).

According to McRae, duration is a fiction of the first type. The two ideas that are confused are number and unity. Recall that the idea of duration can only be derived from a succession of changeable objects. There are two ways the mind can interpret its experience of this succession (McRae 29). First, the mind can interpret the succession as consisting of multiple changeable objects – i.e., as there being a changeable object at each moment, with there being as many objects as there are moments in the succession. This way of interpreting the succession of changeable objects produces the idea of number (McRae 30). The mind can also interpret the succession as there being only one object that continues to exist unaltered at each of the moments in the succession. This gives us the idea of unity (McRae 30).

The idea of duration results from the failure to distinguish between these two ways of interpreting the experience of a succession of changeable objects. The mind actually experiences multiple changeable objects during the succession, but thinks it is experiencing a single object

existing unaltered at each moment in the succession. Obviously, however, no object can exhibit both number (plurality) and unity simultaneously, and thinking otherwise leads to a contradiction. The mind attempts to reconcile this contradiction by inventing the idea of identity, which is a fiction of the second type (McRae 30).

McRae then explains how the fictitious idea of identity generates the idea of substance. He interprets Hume as claiming the mind encounters an interrupted succession of appearances of an object and applies the idea of identity to it. The idea of substance arises when the mind confuses a succession of changeable objects and an interrupted succession of appearances of an object. The mind thinks that the object that appears at a certain moment after the interruption is the same as – that is, identical to – the object that appeared prior to the interruption. A contradiction arises between the identity of an object and the interrupted appearances of it. In other words, the mind experiences a contradiction between number and identity. To resolve this contradiction, the mind forms the idea of substance (McRae 31-32). The idea of substance is a fiction of the second type.

McRae argues that the same kind of process from the first type of fiction to a contradiction to the second type of fiction back to the first type again leads to the ideas of soul, self, power, necessary connection, and agency. All of these fictions, McRae claims, derive from the idea of duration (McRae 34). McRae seems to think that there is a steady progression in the *Treatise* from one fiction to the other, and that each fiction is derived from the previous ones, with duration being the very first and primary fiction. For example, the contradiction between the fictitious ideas of simplicity and identity give rise to the fictions of soul and self, and the same sort of process through various fictions causes the mind to interpret power "as a *quality* in a *substance* which *endures* as the *same* substance, through *undergoing change*" (McRae 34). Based on the way McRae uses the italicized terms, he clearly interprets them as being Humean fictions, hence showing how one fictitious idea – in this case, power – arises out of many others. McRae goes so far as to say that if we eliminated all these fictions, all that would be left would be perceptions (McRae 34).

Pappas' Response to McRae

In "On McRae's Hume," Pappas raises three objections to McRae's arguments.[18] The first objection is that, on McRae's interpretation of Hume, Hume is not consistent. According to this interpretation, Hume claims that we have an idea of time, but not an idea of duration. We cannot have an idea of duration because it cannot be derived from any impression. Yet the idea of time, according to Pappas, cannot be derived from an impression either. "To be consistent," Pappas writes, "Hume would have to conclude either that there is not an idea of time after all, or that the reason for the lack of an idea of duration would have to be withdrawn" (Pappas 36-37). Pappas claims that time, along with the well-known missing shade of blue example, is another exception to Hume's Copy Principle. The idea of time is invented by the imagination; it is not derived from any impression (Pappas 37).

While the first objection Pappas raises reveals an inconsistency in McRae's interpretation of Hume, his second objection exposes an apparent inconsistency in McRae's own position regarding the two types of fictions. McRae claims

[18] Pappas, G.S. "On McRae's Hume" *Hume Studies* 7,2 (1981) in Tweyman, Stanley (ed). *David Hume: Critical Assessments* vol. III. New York: Routledge, 1995, pp. 35-38.

that duration is a type one fiction, in which one idea is incorrectly applied to another. McRae also claims that we have no idea of duration. If we have no idea of duration, how can we confuse the idea of duration with another idea? McRae cannot consistently assert both that we have no idea of duration and that duration is a type one fiction (Pappas 37).

Pappas' third objection is that there is no room in Hume's ontology for the second type of fiction. Such fictions cannot be ideas, impressions, mental acts, or dispositions. There is nothing else that Hume could possibly allow them to be, so Hume would have to deny that they exist (Pappas 37).

A closer examination into the reasoning Pappas presents to support this argument reveals a flaw that undermines the argument's effectiveness. When Pappas constructs this argument at the very end of his paper, he uses duration as an example of a second kind of fiction, because he thinks it is impossible for it to be a type one fiction. A second type fiction cannot be an impression, since impressions are not invented, and the second type of fiction as McRae describes it is something that is invented. It is very difficult to understand how duration

can be construed as a mental act or disposition. Pappas also claims – and this is where he makes a mistake – that duration cannot be an idea, because Hume denies that there is an idea of duration. Both McRae and Pappas are wrong to think that Hume believes we lack an idea of duration. As I will argue later in this chapter, duration itself is not a fiction; the fiction consists in believing steadfast or unchanging objects have duration.

Miller's Interpretation of Hume

In "Hume's Impression of Succession (Time)," Miller also responds to McRae, and does so in a way that attempts to render the idea of time consistent with the Copy Principle.[19] When discussing the five notes of the flute passage, Miller claims McRae failed to understand a very important aspect of that principle. Most commentators on Hume, McRae included, interpret Hume as asserting merely that every simple idea derives from a simple impression, and that for every simple impression, there is an idea that corresponds with it. Miller argues that "not only do all simple ideas derive from simple impressions, but that both the idea and the impression are also always present in the

[19] Miller, Jon. "Hume's Impression of Succession (Time)" *Dialogue* XLVII (2008): 603-617.

mind as successive *pairs*" (Miller 605). He calls this principle the "Pair Principle" (Miller 605).

Miller elucidates the Pair Principle and its implications by examining the process by which Hume thinks ideas are formed. Hume's remark that an idea "remains after the impression ceases" (T 1.1.2.1) seems to suggest that impressions and ideas cannot exist together, that the impression must perish before the idea can come to be. This would seem to falsify the Pair Principle.

Miller disagrees. He bases his defense of the Pair Principle on Hume's insistence that the only significant distinction between impressions and ideas is that the former are much stronger and more vivid than the latter. At T 1.1.7.5, Hume claims that "an idea is a weaker impression." These types of comments lead Miller to conclude that it is not necessary for the impression to cease *simpliciter* for an idea to form, but only that the *vivacity* of the impression cease. The idea that is retained in memory "is one in which the impression has remained with the idea to form a successive couplet with a shared level of vivacity. Consequently the impression ceases only in the sense that it stops being a fully vivacious uncopied perception" (Miller 606).

In general, Miller's interpretation of the Humean idea formation process seems to be as follows. The senses receive an impression. The mind copies the impression, thus causing the impression to lose some of its vivacity. This weakened impression is the idea that resembles the impression. To help illustrate his interpretation of the process, he returns to the musical notes example. Suppose that the first note is C-sharp and the second is B-flat. Obviously, the notes come in a certain order in a succession; C-sharp is first, B-flat is second, et cetera. Miller, however, focuses on the fact that the mind would have *both* an impression *and* an idea of each note within the succession. Thus, the impression of C-sharp gets stored in memory, loses some of its vivacity, and becomes the idea of C-sharp. Likewise, the impression of B-flat weakens and becomes the idea of B-flat, and so on for the other notes. Hence just perceiving a *single* note involves a succession, namely, the succession from the impression of that note to the idea of note (Miller 606).

Miller points out that McRae's interpretation of the musical notes example is not completely wrong:

> McRae is still correct in his observation that individual perceptions do not have successiveness within them. But the *parts* of time of which both Hume and McRae speak are not simply the individual flute notes; they are also the individual impressions and ideas of the flute notes as they are retained within the memory (Miller 607).

In this passage, Miller makes a link between the memory and the parts of time. Miller elaborates on this link in much greater detail in the second half of his paper. Before he does so, however, he tackles another issue that McRae discussed: why Hume uses “duration” and “time” synonymously when he also claims that the idea of duration is fictional.

On McRae’s reading of Hume, time is succession, not duration. They are not the same thing, nor should they be used interchangeably. Why, then, does Hume use the two terms interchangeably? Miller claims Locke’s conception of succession strongly influenced Hume’s. The former conceptualizes duration “as something that *happens* between the parts of succession” (Miller 608). Miller argues that Hume’s ontology has no place for anything that occurs between parts of a succession. The parts of successions are perceptions, and Hume believes that perceptions are the only objects that appear to the mind. The idea of duration cannot be derived from anything, so it is a fiction. The

idea of succession, however, can be derived from the impression of the manner in which perceptions appear to the mind (Miller 608-609).

Miller's interpretation of duration clearly differs from that of Baxter. In fact, Miller raises four objections to Baxter's position.[20] The first of these, unsurprisingly, is that Baxter overlooked the fact that time and duration are two different things for Hume, for reasons discussed earlier. The second objection argues that there cannot be different rates of successions. Because time and succession are one and the same for Hume, different rates of succession necessitates different times that can be used to rate them, which is incoherent. Furthermore, coexistent successions, as Baxter characterizes them, could not exist in Hume's philosophy of time. The only thing Humean ontology would allow them to be is space, since coexistence is a distinguishing property of the parts of space, not of time, which is always successive.[21] Miller's final objection to Baxter follows from the first. One cannot coherently

[20] Miller uses these objections to attack the arguments Baxter develops in an article entitled "Hume on Steadfast Objects and Time," but since they are the same arguments Baxter presents in *Hume's Difficulty* – the latter is actually an expanded and more detailed version of the former – the objections will apply just as well to *Hume's Difficulty* as they do to "Hume on Steadfast Objects and Time."

[21] I will explain Hume's reasons for thinking this way in my next chapter.

speak of steadfast perceptions coexisting with several briefer moments without employing the fictional idea of duration (Miller 612). In other words, Baxter's interpretation of Hume cannot possibly be accurate because his interpretation requires the use of the fictional idea of duration, which renders the idea of steadfast perceptions coexisting with several briefer moments fictitious as well.

The remainder of Miller's article consists in a series of arguments which provide reasons for thinking that the idea of time is consistent with the Copy Principle. Miller mentions some remarks Hume makes in the *Treatise* to the effect that we can perceive extension, but not the countless perceptions that constitute the extension. It is impossible for the mind to perceive the individual parts of extension in isolation from the extension. With time, however, the reverse is true: the mind can perceive the parts of the succession, but not the succession itself in isolation from its parts. The fact that the mind cannot perceive the parts of extension does not mean no impression of the individual parts exists. Simply put, Miller believes Hume argues as follows: the idea of extension is real. The idea of extension is composed of many parts that the mind

cannot divide or perceive. If these parts did not exist, extension, which is real, would be composed of entities which did not exist. This is logically impossible. Therefore the parts of extension (i.e., the individual impressions that compose it) are real. Miller argues that the same reasoning applies to time. Although we cannot perceive succession separated from its parts, there is still an impression of succession (Miller 610).

Miller uses Hume's conception of memory to explain how we can have an impression of succession. According to Hume, "the memory preserves the original form in which its objects were presented……the chief exercise of the memory is not to preserve the simple ideas, but their order and position" (T 1.1.3.3). Of course, the "original form" in which the perceptions appear to the mind is a successive order – a successive order in which ideas follow impressions (Miller 613).

Hume thinks the idea of time is always with us because there is always a constant succession of perception in our minds. Miller, basing his argument on T 1.4.6.20, emphasizes that only memory can make us aware of this constant succession. Miller argues that "the succession of perceptions, when first encountered by the memory, cannot

be a succession of distinct perceptions" because "it is the imagination alone that separates perceptions into distinct entities, not the memory" (Miller 613).[22]

This interplay between the imagination and the memory is crucial for Miller's argument that we can experience impressions of successions. Miller explains the process as follows:

> At the earliest stage of awareness, perceptions are in successive pairs of impressions and their idea copies. The……memory becomes aware of an impression of a succession. The impression of succession is the succession of impressions to ideas. This is possible because the perceptions in succession (the impression and the idea) are not fully distinguished as distinct perceptions. The only fully distinct perception at this early stage of awareness is the impression of the succession of the impressions and ideas. Afterwards the imagination separates the impressions and ideas into distinct perceptions. In this way Hume's empiricism shows how time can exist as a distinct impression of succession (Miller 615).

Based upon how Miller describes it, the "impression of succession" must be a complex impression. The parts of this

[22] Miller interprets several of Hume's comments about imagination – especially T 1.1.3.4, where Hume asserts, "Wherever the imagination perceives a difference among ideas, it can easily produce a separation" and T 1.2.4.3, where Hume writes, "wherever objects are different, they are distinguishable and separable by the imagination" – as supporting the idea that only imagination can separate perceptions into distinct entities.

complex impression are clearly the impressions and ideas that successively present themselves to the mind. It is very unclear, though, whether the impression is an impression of sensation or of reflection. If the simple impressions that compose it are impressions of sensation, then it would have to be a complex impression of sensation. If, however, the simple impressions that compose it are impressions of reflection, then the impression of succession must be a complex impression of reflection.

Clearly, the impression of succession as Miller describes it is indeterminate and non-particular. As his objections to Locke's theory of abstract ideas illustrates, Hume cannot allow such indeterminate, non-particular impressions into his epistemology. Hume thinks it is impossible for the mind to experience unspecified impressions and ideas. The mind always experiences *particular* impressions and *particular* ideas. Miller believes that the imagination separates the perceptions into impressions and ideas. Merely separating them in this way, however, is not sufficient to make them truly distinct; every impression and idea must have particular, specific content. The impression of the succession of the impressions to ideas lacks such specific, particular

content. As Miller explains the process, the members of the impression of succession of impressions to ideas are not distinct, determinate, or particular when the mind becomes aware of them. The mind cannot distinguish between them. This means that the mind has a fully distinct impression of the succession, but no distinct impression of any of the members of that succession. The problem is that the mind's ability to have a distinct, particular impression of a succession without having a distinct, particular impression of the members of that succession is inconsistent with Hume's rejection of the Lockean notion of abstract ideas. Obviously, therefore, the impression of the succession of impressions to ideas is not the kind of impression Hume's philosophy could allow.

Another problem with Miller's position concerns his argument that duration is a fiction. Hume may have received his conception of succession from Locke, but there is no textual evidence in the *Treatise* that he uses "duration" to refer to what happens between the parts of a succession. What Miller – as well as McRae and Pappas – fail to realize is that, whenever Hume speaks of the idea of duration being a fiction in the *Treatise*, the fiction always consists of attributing duration to unchangeable objects. In other

words, the mistake involves thinking that the idea of time can be derived from objects that are not members of a succession, or that the idea of time can be separated from a succession of changeable things. At no point in the *Treatise* does Hume ever claim that duration itself is a fiction. These reflections show that duration and succession are inseparable for Hume. Consequently, every succession has duration, which means that every succession is temporal.[23] This seems to suggest that duration for Hume just *is* succession, since it is impossible to separate them conceptually.

Time and the Copy Principle

As the previous pages have shown, many of the commentators who have written on Hume's theory of time have expressed concern that his conception of time might violate his Copy Principle. I think the best way to respond to this concern in a Humean way is to interpret time as a compound abstract idea. A compound idea seems to be another term for a complex idea, since Hume uses the terms "compound ideas" and "complex ideas" in a way that very strongly suggests

[23] This implication of Hume's conception of duration – that all successions are temporal – will play a major role in the arguments presented in later chapters.

that the two words have exactly the same meaning, and could be used interchangeably.

There are several good reasons for thinking that time is a compound or complex idea. Hume has claimed repeatedly that the idea of time cannot be separated from the idea of a succession of changeable objects. He also claims that time consists of parts. Every succession, by definition, must have more than one member. Having any idea of any succession must involve having an idea of the members of that succession, which are the parts of the succession. Hence the idea of time must be divisible into parts, which would make it a complex or compound idea in Humean terminology. Just as the complex idea of an apple can be divided into the ideas of the apple's color, smell, and taste, so can the compound idea of time be divided into the ideas of the members (parts) of a succession.

While "compound idea" and "complex idea" are semantically equivalent terms, Hume tends to use only the former when discussing the ideas of space and time. In T 1.2.3.12, for example, immediately after explaining why the idea of duration can never be derived from unchangeable objects, Hume writes:

> There is another very decisive argument, which establishes the present doctrine concerning our ideas of space and time, and is founded only on the simple principle, *that our ideas of them are compounded of parts, which are indivisible*.

In the next two paragraphs, Hume explicitly refers to the idea of extension as a compound idea more than once. He then proceeds to argue that the compound impression that represents extension consists of impressions of colored, tangible atoms. After doing so, he claims that "the same reasoning will prove that the indivisible moments of time must be fill'd with some real object or existence, whose succession forms the duration, and makes it be conceivable by the mind" (T 1.2.3.17).[24]

When understood as a compound abstract idea, there is no Humean reason to expect time to show up as a distinct impression or idea distinct from the ideas of the members

[24] Hume does not explicitly write out the argument as it would apply to time. Based upon how he argues for the tangibility and color of the atoms of extension, however, it is clear that "the same reasoning" when applied to time must be something like what follows: The whole of something has the same properties as its parts. The moments which compose the idea of succession must be filled with a real object in order to give us the idea of succession. If moments are not filled with or occupied by a real object, the idea of time would not exist. If the idea of time exists, its parts must also exist. The idea of time exists. Therefore, the ideas of moments, the parts of time, exist. These ideas, the ideas of moments, must be filled with real objects. This argument reinforces the idea that we could never even conceptualize time if we never perceived objects and events occurring within successions, and thus seems to rely on Hume's theory of abstract ideas. Since the argument also requires the idea of time to consist of parts – this is such an essential aspect of the reasoning involved that it must be a feature of any reconstruction of this argument for it to even be intelligible at all – it also reinforces my claim that Humean time is a compound abstract idea.

of the succession, just as there is no Humean reason to expect the idea of an apple to appear to the mind in isolation from the ideas of the apple's color, smell, and taste. There is also no reason to worry about whether such a compound idea violates the Copy Principle, since Hume states that the Copy Principle only applies to simple impressions and ideas. The following passage makes this point explicitly clear:

> ……I must make use of the distinction of perceptions into *simple* and *complex*, to limit this general discussion, *that all our ideas and impressions are resembling*. I observe, that many of our complex ideas never had impressions, that corresponded to them, and that many of our complex impressions never are exactly copy'd in ideas……I perceive, therefore, that tho' there is in general a great resemblance betwixt our *complex* impressions and ideas, yet the rule is not universally true, that they are exactly copies of each other. We may next consider how the case stands with our *simple* perceptions……I venture to affirm, that here the rule holds without any exception, and that every simple idea has a simple impression which resembles it; and every simple impression a simple idea" (T 1.1.1.4-5).

Complex (or compound) impressions and ideas may conform to the principle, but Hume's realization that they often fail to do so compels him to restrict the principle to simple impressions and ideas. The Copy Principle does not apply to time or to any other compound ideas. Hence all concerns

about the idea of time violating the Copy Principle are unnecessary and unfounded.

Concluding Remarks

Obviously, if time for Hume is a compound abstract idea, it must be divisible, since it consists of parts. Hume fiercely insists, however, that these parts are not and cannot be infinitely divisible. The division of time, whether real or imaginary, actual or potential, must eventually stop at brief moments that are indivisible temporal minima. These indivisible temporal minima are so crucial to Hume’s theory of time that it would collapse without them. My next chapter will analyze why and how Hume argues against the infinite divisibility of time and for the existence of temporal minima.

Chapter Two

Hume's Arguments for Temporal Minima

Introduction

As I made clear in the first chapter, successiveness is an essential feature of time for Hume. In the present chapter, I will explore another essential feature Hume attributes to time – its discreteness. Hume believes time must consist of discrete, atomistic moments. Consequentially, he also believes that time cannot be infinitely divisible.

Throughout the second part of the first book of the *Treatise*, Hume employs two main strategies to support his atomistic conception of time. The first involves approaching time from a phenomenological perspective, one that concentrates on our experience of time and the necessary conditions required for this experience. The second strategy defends an atomistic theory of time by proving that the very concept of time as continuous and infinitely divisible leads to logical contradictions. Hume's attempts to derive contradictions from the concept of continuous, infinitely divisible time take the form of *reductio ad absurdums*. He constructs four *reductio ad*

absurdum arguments to prove that space cannot be infinitely divisible. As Hume himself asserts, the first three of these arguments also show that time is not infinitely divisible. Since my project here concerns Hume's theory of time, I will not discuss the fourth *reductio*, which pertains exclusively to space.[25]

Before developing his reductio arguments, however, Hume begins his attack on temporal continuity by introducing two thought experiments, one involving a grain of sand, the other involving a spot of ink. Both of these thought experiments constitute a major component of Hume's phenomenological approach to the divisibility of time.

The Grain of Sand Thought Experiment

The grain of sand thought experiment proceeds as follows:

> 'Tis therefore certain, that the imagination reaches a *minimum*, and may raise up to itself an idea, of which it cannot conceive any subdivision, and which cannot be dimminish'd without a total annihilation. When you tell me of the thousandth and ten thousandth part of a

[25] The fourth reductio argument occurs at T 1.2.2.7-10. Hume uses his Conceivability Principle to argue that mathematical points – here understood to be the most fundamental, indivisible components of extension – are conceivable, and therefore possible. If extension were infinitely divisible, such indivisible points of extension would not be possible. Thus the assumption that extension is infinitely divisible contradicts the fact that indivisible points of extension are possible and conceivable. Dale Jacquette provides a detailed analysis of this argument in the fourth chapter of his *David Hume's Critique of Infinity.*

> grain of sand, I have a distinct idea of these numbers and of their distinct 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, which is suppos'd so vastly to exceed them. What consists of parts is distinguishable into them, and what is distinguishable is separable. But whatever we may imagine of the thing, the idea of a grain of sand is not distinguishable, nor separable into twenty, much less into a thousand, ten thousand, or an infinite number of different ideas (T 1.2.1.3).

Hume does not ask his readers to divide the idea of a grain of sand. Instead, he wants his readers to form an image of a grain of sand, replace that idea with an idea of a smaller part of the grain of sand, replace that idea with an idea of a smaller part of the original grain, and to repeat this process until the mind cannot go any farther.[26] Hume argues that the mind will eventually arrive at an idea of one of the parts of the grain that represents the absolute minimum size of the grain that it can conceive. Any piece of the grain smaller than that minimum will be indistinguishable to the mind from any other piece smaller than that minimum. The mind would not be able to distinguish between a piece a thousand times smaller than the original grain of sand and a piece ten thousand times

[26] For a similar interpretation of this passage, see the footnote on page 47 of Jacquette's *David Hume's Critique of Infinity*.

smaller than the original grain. The mind can obviously understand what the numbers one thousand and ten thousand are, and it can know many mathematical properties that these numbers possess, but it cannot imagine a physical thing that corresponds to them, such as something ten thousand times smaller than a grain of sand.

Although Hume does not explicitly say so, it is easy to see how this argument also applies to time. The mind can easily conceptualize many distinct units of time, such as a second. The mind can even conceptualize and comprehend some units of time shorter than a second, since people consciously experience such short durations.[27] Beyond a certain point, however, the mind loses its ability to distinguish between extremely brief moments of time. For example, it is impossible for the mind to distinguish between a nanosecond (a billionth of a second), a picosecond (a trillionth of a second) and a femtosecond (a quadrillionth of a second). The mind obviously understands what the terms “billionth,” “trillionth,” and “quadrillionth” mean, but it cannot conceptualize or imagine anything corresponding to those numerical values.

[27] For example, many athletic contests – especially at the professional and Olympic levels – are decided on events that occur in a fraction of second. Highly skilled athletes can win or lose competitions based on what they do in a tenth of a second or less.

The Inkspot Thought Experiment

Hume's comments regarding the divisibility of an inkspot in the very next paragraph have very similar implications for the mind's ability to conceptualize and experience extremely brief durations of time. 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. 'Tis not for want of rays of light striking on our eyes, that the minute parts of distant bodies convey not any sensible impression; but because they are reduc'd to a *minimum*, and were incapable of any farther diminution. A microscope or telescope, which renders them visible, produces not any new rays of light, but only spreads those, which always flow'd from them; and by that means both gives parts to impressions, which to the naked eye appear simple and uncompounded, and advances to a *minimum*, what was formerly imperceptible (T 1.2.1.4).

This inkspot discussion has received considerable attention in the literature on Hume's theory of time. Some of the commentators on the passage have misunderstood it. In *Hume's Philosophy of Human Nature*, for example, Laird asks, "What is the 'spot' if the 'impressions' form a series? If the 'image or impression' were perfectly indivisible, how could a pair of binoculars 'spread' it?" (Laird 68-69). In response to Laird's questions, Flew asserts that "quite

clearly the spot is the spot of ink, which is the cause of the whole series of impressions; and the minimum is the last impression in the series" (Flew 261). As for the Laird's question about the binoculars, Flew interprets Hume – correctly, in my opinion – as claiming that physical devices do not act on the impressions, but rather spread or magnify the rays of light that are already there. Doing so makes the impressions visible (Flew 261).

One might be tempted to ask why someone could not just move in closer to get a better look at the spot. After all, it seems that Hume's inkspot experiment only works when one refuses to move in for a closer look. Jacquette explains the problem with this objection:

> The idea is that for the subject to change position defeats the purpose of the inkspot experiment, which is to reveal the existence of sensible extensionless indivisibles in every visual field. Indivisibles are always present, according to Hume, but are ordinarily not discernible, because at certain distances they blend in perfectly with their backgrounds (Jacquette 49).

In other words, the subject would still have the same limitation regardless of how close the subject gets to the inkspot. There will always be minimum sensibilia. There is a sensible threshold that impressions must pass in order to

be sensible or perceived by people. When impressions are at the threshold, they will always appear to the mind as indivisible. Beneath that threshold, they are not sensible or perceivable at all.

Many of Hume's comments about time strongly suggest that there must be a similar threshold for the experience of time. Consider, for example, the following passage:

> It has been remark'd by a great philosopher[28] that our perceptions have certain bounds in this particular, which are fix'd by the original nature and constitution of the mind, and beyond which no influence of external objects on the senses is ever able to hasten or retard our thought. If you wheel about a burning coal with rapidity, it will present to the senses an image of a circle of fire; nor will there seem to be any interval of time betwixt its revolutions; merely because 'tis impossible for our perceptions to succeed each other with the same rapidity, that motion may be communicated to external objects. Whenever we have no successive perceptions, we have no notion of time, even tho' there be a real succession in the objects. Time cannot make its appearance to the mind, either alone, or attended with a steady unchangeable object, but is always discover'd by some *perceivable* succession of changeable objects (T 1.2.3.7).

A contemporary example which illustrates the same point Hume makes here is the act of watching a movie. The movements of characters in motion pictures seem to be

[28] John Locke.

continuous and smooth. In reality, however, a motion picture consists of a succession of individual motionless pictures that are projected onto a screen at a rate too rapid for the mind to notice the individual frames. The mind does not notice the temporal interval between each frame because that interval is too short for the mind to experience. That interval is below the threshold required for the experience of time. The mind cannot distinguish between temporal intervals that occur too quickly to reach the threshold, just as it cannot distinguish between a thousandth and a ten thousandth part of a grain of sand. When one watches a movie, one thinks one perceives continuous motion, not individual frames being projected at a high rate of speed. When one watches a burning coal being spun very rapidly, one thinks one sees a steady wheel of fire, not one burning coal changing location very rapidly. The mind cannot subdivide a movie into its individual frames, or the wheel of fire into the different spatial locations the coal occupies, because these phenomena happen so quickly that they fail to reach the minimum threshold required for the mind to experience them.

That threshold is the temporal equivalent of minimum sensibilia. Due to its very nature, the human mind needs

temporal minima in order to experience time. Experiencing time involves distinguishing between the different parts of time, and the mind's ability to do this is finite and limited. From a phenomenological standpoint, it is impossible for the mind to divide time infinitely; it will inevitably encounter temporal minima. Clearly, then, temporal minima must exist for the experience of time to be even remotely possible.[29]

The arguments presented up to this point only establish that a cognitive, or phenomenological, kind of temporal minima exist. Merely proving that the mind cannot be aware of or experience any duration that is briefer than a certain perceptual and cognitive threshold, however, is not sufficient to construct the robust refutation of the infinite divisibility of time that Hume desires. In T 1.2, Hume also provides purely logical reasons for holding that time must be only finitely divisible, and that the very concept of time being infinitely divisible leads to

[29] Various scientific studies have confirmed that there is indeed a minimum threshold for any conscious experience. These studies have shown that this minimum threshold is roughly between 100 and 200 milliseconds, or thousandths of a second. The human brain cannot be consciously aware of, or consciously process information about, any duration briefer than this 100 – 200 millisecond threshold. For detailed discussions of these experiments, please see chapter 13 of Paul Davies' *About Time: Einstein's Unfinished Revolution* and chapter 9 of Jeffrey Schwartz's *The Mind and The Brain: Neuroplasticity and the Power of Mental Force*.

contradictions. These reasons take the form of three reductios, to which I now turn.

First Reductio

Hume's first reductio argument appears at T 1.2.2.2. There he writes:

> Everything capable of being infinitely divided contains an infinite number of parts; otherwise the division wou'd be stopt short by the indivisible parts, which we shou'd immediately arrive at. If therefore any finite extension be infinitely divisible, it can be no contradiction to suppose, that a finite extension contains an infinite number of parts: And *vice versa*, 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. I first take the least idea I can form as 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. I then repeat this idea once, twice, thrice, &c, and find the compound idea of extension, arising from its repetition, always to augment, and become double, triple, quadruple, &c, till at last it swells up to a considerable bulk, greater or smaller, in proportion as I repeat more or less the same idea. When I stop in the addition of parts, the idea of extension ceases to augment; and were I to carry on the addition *in infinitum*, I clearly perceive, that the idea of extension must also become infinite. Upon the whole, I conclude, that the idea of an infinite number of parts is individually the same idea with that of an infinite extension; that no finite extension is capable of containing an infinite number of parts; and consequently that no finite extension is infinitely divisible.

For Hume, a finite extension is one that contains a finite number of parts. An infinite extension is one that contains an infinite number of parts. Anything that is infinitely divisible must contain an infinite number of parts, according to his conception of infinite divisibility. If a finite extension is infinitely divisible, then it must also have an infinite number of parts, which is a contradiction. Therefore, no finite extension can be infinitely divisible. Another way of stating Hume's insight here is that it is impossible to distinguish between an infinite extension that is infinitely divisible and a finite extension that is infinitely divisible. Both of them have an infinite number of parts, so what distinguishes them? If Hume's reasoning in the first reductio is sound, the answer is that nothing distinguishes them.

Hume explicitly claims two paragraphs later that the reasoning he employs here and in the second reductio apply directly to time,[30] but he never gives the temporal version of this argument. Clearly, however, the temporal equivalent of the argument must be something like this:

[30] "All this reasoning takes place with regard to time" (T 1.2.2.4).

1. Anything that is infinitely divisible contains an infinite number of parts.
2. If any finite duration is infinitely divisible, then the assertion “this finite duration contains an infinite number of parts” must not involve a contradiction.
3. If the assertion, “this finite duration contains an infinite number of parts” does entail a contradiction, then no finite duration can be infinitely divisible.
4. I can start with the shortest moment of duration I can think of, and then think of the other parts of the duration, adding the ideas of them to my original idea.
5. If I repeated this process *ad infinitum*, I would end up with the idea of an infinite number of moments.
6. The idea of an infinite number of moments is identical to the idea of infinite duration.
7. Supposing that a finite duration consists in an infinite number of moments entails a contradiction.
8. No finite duration is infinitely divisible. (3,7)

In this argument, Hume claims that it is not possible to distinguish between a finite duration being divided

infinitely and an infinite duration being divided infinitely, because they are the same concept. This is why the contradiction arises. The finitude or infinitude of a duration depends upon the number of parts it has; if a duration has a finite number of parts, it is a finite duration, and if it does not have a finite number of parts, it is an infinite duration. Since dividing something involves dividing it into parts, dividing a finite duration infinitely implies that it contains an infinite number of parts, which would make it an infinite duration by definition.

Many commentators think the first reductio is flawed on multiple levels. Flew strongly disagrees with the first premise, which both the spatial and temporal versions of the argument share. Flew thinks this principle is false for several reasons:

> First……to say that something is divisible into so many parts is not to say that it consists of – that it is, so to speak, already divided into – that number of parts. A cake may be divisible into many different numbers of equal slices without its thereby consisting in, through already having been divided into, any particular number of such slices. Second……to say that something may be divided *in infinitum* is not to say that it can be divided into an infinite number of parts. It is rather to say that it can be divided, and sub-divided, and sub-sub-divided as often as anyone wishes: infinitely, without

> limit. That this is so is part of what is meant by the saying, ‘Infinity is not a number!’ (Flew 259-260).

Jacquette criticizes Flew’s objection. Jacquette claims that Hume’s first reductio does not require anyone to regard infinity as a number (Jacquette 139). The division process is purely abstract, not something done in real time to an actual entity, so Flew’s discussion of the cake is irrelevant. The mathematical process of dividing space or time is not the same kind of division that is involved with dividing an actual physical cake.

According to Jacquette, Flew’s description of infinite divisibility suffers not only from a failure to appreciate the abstract nature of the divisibility process, but also from a faulty conception of infinity. Flew’s assertion that an infinitely divisible thing can be subdivided “as often as one wishes” is inaccurate, says Jacquette, because

> The wishes of finite beings in dividing physical things in real finite time cannot approximate the infinite divisibility of extension in the abstract sense to which traditional mathematics is committed. The added clause that these wishes may extend ‘without limit’ also falls short of infinity, since that description applies as well to indefinite, indeterminate, or inexhaustible, but still finite moments of time or wish-instances, yielding at most indefinite,

> indeterminate, or inexhaustible, but still finite sets and series of mathematical objects (Jacquette 140).

Jacquette could have made his argument more persuasive if he had provided examples of truly inexhaustible, limitless things that are still finite. It appears that the “finite moments of time or wish instances” to which he refers are inexhaustible only insofar as they lack any *known* limit, but this is not the same type of inexhaustibility exhibited by infinity.

Jacquette also claims that Flew does not completely understand Hume’s conception of infinite divisibility. The belief that infinite divisibility involves sub-division into an infinite number of parts did not originate with Hume, but was an assumption held by the mathematicians of Hume’s day. Hume directed his first reductio proof against these mathematicians (Jacquette 140). This does not mean that Hume rejects that understanding of infinite divisibility – his claim at T 1.2.1.2 that this principle is “obvious” indicates that he agrees with it – but the fact that his philosophical opponents accept the principle demonstrates that Flew clearly misunderstood a crucial aspect of Hume’s argument.

Baxter also challenges Flew's argument. Baxter calls the idea that divisibility entails having parts the "Divisibility Assumption" and the idea that infinite divisibility entails possessing an infinite number of parts the "Infinite Divisibility Assumption." The Divisibility Assumption implies the Infinite Divisibility Assumption; if the former is true, the latter must also be true (Baxter 23-24).

Baxter argues that there is a difference between something having numerically distinct parts and something being divided into parts. Flew's objections to Hume fail to acknowledge the possibility that "undivided parts can be numerically distinct" (Baxter 24). These undivided parts are not just potentially numerically distinct, but actually numerically distinct. Baxter supports this claim by starting with an idea he got from Bayle, which is that it is possible to predicate something about one side of an undivided whole that can be denied about the other. Baxter asserts that if one divided a whole in half, some of it would become the left half of the whole; the rest would be the right half. The left half is actually on the left and the right half is actually on the right. What can be asserted about one half can be denied about the other and

vice-versa. This means that they must be actually numerically distinct from each other; otherwise, a logical contradiction would result. The two halves are actually parts of the whole. Consequently, the Divisibility Assumption is true (Baxter 23).[31]

I agree with Baxter's criticisms of Flew. I also have my own objection to Flew that resembles Baxter's, but goes a step beyond it. As the above passage from Flew indicates, Flew's premises presuppose that "consists of x number of parts" and "already divided into x number of parts" are equivalent concepts. In other words, claiming that F consists of x number of parts implies that F has already been divided into x number of parts, and vice-versa. Flew clearly thinks that the parts something has result from the process of division. This is not correct, however. It is much more accurate to claim that having parts is a necessary condition for the possibility of being divided. If something does not have certain parts, it cannot be divided into those parts. For example, if I never had any arms or legs, it would be impossible to divide my body into my arms and legs. Also, because I am a human being and not

[31] In "Hume on Infinite Divisibility," Baxter provides a much shorter defense of the Divisibility Assumption that uses "the difference between the top half and bottom half of a whole piece of paper" as an example of the same type of reasoning employed here. See page 136.

a tree, I cannot be divided into roots, leaves, and branches; human beings do not possess such parts, which properly belong to plant life. If something never had any parts at all, it is extremely difficult to understand how it would be possible to divide it into anything, even if the division process is purely abstract and not one that occurs in real time. Parts do not result from a process of division; they make that process possible. Consequently, Flew's argument against the Divisibility Assumption rests upon a faulty understanding of the relationship between parts and the process of dividing something into parts.

Clearly, the reasons Flew provides for rejecting Hume's Divisibility Assumption leave much to be desired. Since the first reductio relies upon that assumption, and the rest of the argument follows if that assumption is true, there is good reason to accept Hume's conclusion that no finite duration can be infinitely divisible. Hume's second reductio, however, cannot be defended as easily as the first – in fact, the reasoning it employs suffers from a significant fallacy!

Second Reductio

The second reductio appears at T 1.2.2.3, where Hume argues

> ‘Tis evident, that existence in itself belongs only to unity, and is never applicable to number, but on account of the unites, of which the number is compos’d. Twenty men may be said to exist; but ‘tis only because one, two, three, four, etc are existent; and if you deny the existence of the latter, that of the former falls of course. ‘Tis therefore utterly absurd to suppose any number to exist, and yet deny the existence of the unites; and as extension is always a number, according to the common sentiment of metaphysicians, and never resolves itself into any unite or indivisible quantity, it follows that extension can never at all exist……the unity which can exist alone, and whose existence is necessary to that of all number……must be perfectly indivisible, and incapable of being resolv’d into any lesser unity.

Norton provides a concise explanation as to how this particular argument is a reductio. According to Norton, “Hume claims that many metaphysicians hold, at the same time and inconsistently, that extension is an aggregate of units and that, because any putative unit is divisible into further units, there are no such units” (Norton 436).

The contradiction Norton articulates arises out of an important assumption Hume makes in this reductio: whatever

is divisible is many things, not one.[32] For something to be truly unitary, it must be indivisible. Whatever is divisible is a plurality of things, not just one single, unitary thing. Unitary, single, indivisible things are ontologically basic; pluralities of things are dependent upon unitary things for their existence. Given this assumption, it is easier to understand why Hume thinks his philosophical opponents hold inconsistent beliefs regarding extension. They claim that extension is always a plurality of units and that these units are infinitely divisible, but units by definition are indivisible, and are ontologically prior to any plurality of anything. Hence extension cannot consist of a plurality of infinitely divisible units. Hume's opponents cannot consistently assert both that extension exists as a plurality of units and that no indivisible units exist, not only because units are indivisible by definition, but also because all pluralities are ontologically dependent upon indivisible units.

Hume believes that his second reductio, like the first, is directly applicable to time as well (T 1.2.2.4). Precisely how it does so, however, is not entirely clear,

[32] In *Hume's Difficulty*, Baxter phrases this assumption as "anything with parts is many things, not a single thing" and refers to it as the Plurality Assumption. See page 25.

and requires some degree of speculation. I propose that a temporal version of this reductio would look something like this:

1) Only indivisible things exist.
2) Pluralities depend for their existence on the indivisible parts which compose them.
3) Duration exists as a plurality of infinitely divisible moments.[33]
4) If duration exists as a plurality of infinitely divisible moments, then no indivisible moments of time exist.
5) Duration does not exist as a plurality of infinitely divisible moments. (1,3,4)
6) Duration both exists and does not exist. (3,5)

Of course, the idea that duration both exists and does not exist is contradictory. Because this absurd conclusion is a consequence of the idea that duration is infinitely divisible, it follows that time is not infinitely divisible.

[33] This is an assumption made by the metaphysicians and mathematicians whom Hume opposes.

In “Achievements and Fallacies in Hume’s Account of Infinite Divisibility,” Franklin disagrees with Hume’s reasoning in the second reductio because

> Hume’s bottom-up perception of the world as a heap of atoms blinds him to the opposite possibility. This mistake vitiates the whole section. The possibility that the world is a whole arbitrarily divided by the mind into parts is symmetrical in all *a priori* respects with Hume’s opinion that the world consists of particles arbitrarily grouped into wholes……his [Hume’s] *a priori* atomism is wrong, since its consequence, the denial of even the possibility of infinite divisibility, provides a reductio of it (Franklin 96).

In other words, Hume begs the question by presupposing the very atomism he needs to prove. The reductio requires the premise that only indivisible things exist, yet this is the same claim Hume wishes to defend. According to Franklin, while it is logically possible that only indivisible things exist and wholes are fictitious, it is equally possible that only wholes exist and indivisible things are fictitious. Hume assumes the former obtains without even considering the latter. Such question-begging undermines his argument, thus rendering the second reductio ineffective.

While Hume's third reductio does not commit the same fallacy the second does, it preserves a crucial assumption of the second reductio: the idea that no unitary, single things are divisible, because whatever is divisible is a plurality of things, not a single thing. In the third reductio, Hume uses this assumption to argue that infinite divisibility is logically and phenomenologically inconsistent with successiveness, which is essential to time.

Third Reductio

The third reductio occurs at T 1.2.2.4, where Hume asserts

> All this reasoning [from the first two reductio arguments] takes place with regard to time; along with an additional argument, which it may be proper to take notice of. '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. For the same reason, that the year 1737 cannot concur with the present year 1738, every moment must be distinct from, and posterior or antecedent to another. 'Tis certain then, that time, as it exists, must be compos'd of indivisible moments. For if in time we cou'd never arrive at an end of division, and if each moment, as it succeeds another, were not perfectly single and indivisible, there wou'd be an infinite number of co-existent moments, or parts of time; which I believe will be allow'd to be an arrant contradiction.

Immediately after this passage, Hume claims that “the infinite divisibility of space implies that of time, as is evident from the nature of motion. If the latter, therefore, be impossible, the former must be equally so” (T 1.2.2.5).

Very few commentators even mention Hume’s odd remark that the nature of motion proves that the infinite divisibility of space implies the infinite divisibility of time. Jacquette not only mentions it, but also offers a plausible explanation of it:

> Hume is unclear about why or how ‘the nature of motion’ proves that the infinite divisibility of space implies the infinite divisibility of time. Here he need have nothing more in mind than the fact that in classical kinematics motion, time, and distance are mathematically interdefinable. If distance or extension is infinitely divisible, and if time is determined by the equations of physics as distance divided by velocity as the metric of extension in space, then the infinite divisibility of time is equally logically implicated (Jacquette 156).

Jacquette interprets the third reductio as ultimately attempting to prove that *space* cannot be infinitely divisible by proving that time cannot be infinitely divisible. If space is infinitely divisible, so is time,

but time is not infinitely divisible, so neither is space. Jacquette's interpretation seems to me to be very faithful to Hume's original intentions. Since my task in this chapter concerns only why Hume thinks time is not infinitely divisible, I will focus only on that part of the third reductio. Hume's comment about the nature of motion is not directly relevant to my project here.

The one aspect of the third reductio that has received the most attention is Hume's insistence that the infinite divisibility of time implies an infinite number of coexistent moments. Why would these moments have to be coexistent? A passage that appears later in the *Treatise* helps shed some much-needed light on this obscure component of Hume's argument.

In T 2.3.7, Hume discusses the effects space and time have on the passions. Many of his comments in this section are highly relevant for understanding Hume's denial of the possibility of the infinite divisibility of time. Consider, for example, the following passage:

> ……space or extension consists of a number of co-existent parts dispos'd in a certain order, and capable of being at once present to the sight or feeling. On the contrary, time or succession, tho' it consists likewise of parts, never presents to us more than one at once; nor is it

> possible for any two of them to ever be co-existent……The parts of extension being susceptible of an union to the senses, acquire an union in the fancy; and as the appearance of one part excludes not another, the transition or passage of the thought thro' the contiguous parts is by that means render'd more smooth and easy. On the other hand, the incompatibility of the parts of time in their real existence separates them in the imagination, and makes it more *difficult* for that faculty to trace any long succession or series of events. Every part must appear single and alone, nor can regularly have entrance into the fancy without banishing what is suppos'd to have been immediately precedent (T 2.3.7.5).

Later Hume asserts that it is natural for the imagination to pass "from one point in time to that which is immediately posterior to it" (T 2.3.7.8).

Hume seems to be saying that time would cease to be successive if it is infinitely divisible. It would cease to be successive because the process by which the imagination traces all of the subdivisions of a single moment would never end, and hence the imagination could not pass from that moment to the one immediately following it. A moment must be completed before the next moment can appear, but if the first moment is infinitely divisible, the second moment would never occur, since the first moment would never end.

As shown in Chapter One, successiveness is an essential component of time as Hume understands it. All successions have parts. The passages quoted above indicate that parts of successions must be distinguishable from each other; otherwise, the imagination could not pass from one part to the next, and the mind would not experience the succession.

These reflections show that time could not be successive if it were infinitely divisible. The infinite divisibility of time entails that between any two moments, there are an infinite number of other moments. If there are an infinite number of moments between any two moments, then no moment would have an immediate predecessor or immediate successor. Succession could not be possible unless each moment has an immediate predecessor and immediate successor. Thus time cannot be successive if it is infinitely divisible.

Consider, for example, moment A. If moment A is part of a temporal succession, then there must be a moment that immediately succeeds it, moment B. If time is infinitely divisible, then there would be an infinite number of moments between A and B, thus precluding B from being the

immediate successor of A.[34] It is impossible to identify any moment as the immediate successor of A (or as the immediate predecessor to B) because between A and the moment identified, there would be an infinite number of moments. As we saw above, the infinite number of moments into which time would be divisible could not possibly exist successively. If they exist at all, they would have to coexist, since Hume's ontology does not allow the parts of any compound thing to be neither successive nor coexistent.

Hume's assumption in the second reductio – that single, unitary things are indivisible, and divisible things are a plurality of things – provides another way to explain the above arguments. The infinite divisibility of time implies that each moment of time is infinitely divisible into briefer moments. No moment could appear "single and alone" to consciousness as T 2.3.7.5 requires, because there would be no moments which were single and alone; each moment would actually be a plurality of an infinite number of briefer moments, each of which would also be a plurality of an infinite number of briefer moments. Moment A could not possibly immediately precede moment B because, strictly speaking, there would be no

[34] The same reasoning also shows that A cannot be the immediate predecessor of B.

moment A; there would be an infinite number of moments. Asserting that one moment precedes or follows another presupposes that each of the moments in that relationship is single and distinct, but no moment could be single and distinct if every moment could be divided infinitely. Since Hume believes that moments cannot succeed each other unless they are single and distinct, and the infinite divisibility of moments entails that moments cannot be single and distinct, it is not hard to understand why Hume argues that infinite divisibility is incompatible with successiveness.

At this point, one might raise an objection to the third reductio.[35] Is the crucial issue the idea that time cannot consist of *coexistent* moments, or the idea that time cannot consist of an *infinite* number of coexistent moments? In other words, if it could be shown that a finite number of moments could coexist, would this refute the argument? Based on Hume's remark above that even two moments could not coexist, it seems that the primary concern Hume has is the coexistence of moments, not the number of coexistent moments. If so, the finite divisibility of time may not be permitted either, because a finite number of moments succeeding each other too quickly for the mind to

[35] I wish to thank Dr. Tim Crockett of Marquette University for pointing this objection out to me.

experience will also appear to be coexistent to the mind. This is what happens in the burning coal example.

Developing a strong defense to this serious objection requires one to realize that infinite divisibility has a special feature that finite divisibility does not – with the process of finite divisibility, the mind reaches a limit both because of the number of parts, and because of the natural limitations of the mind. If the mind were structured differently, it is conceivable that the mind might have been able to distinguish between moments at a much higher rate of speed. With infinitely divisible durations, however, the mind could never, even in theory, be able to distinguish the temporal location or ordering of the moments. This is because, for any two moments X and Y, there are an infinite number of moments between X and Y. Thus infinite divisibility necessarily entails coexistence, but finite divisibility does not.

The claim that infinite divisibility necessarily entails coexistent moments requires comment, not only because it is hard to grasp in and of itself, but also because it is absolutely crucial for Hume’s third reductio. Hume’s third reductio contains many implicit premises, which make the argument more complicated than the other

two. In an attempt to comprehend and articulate Hume's thinking process in the third reductio as lucidly as possible, I organized a 14 step proof showing how I think Hume derives the concept of an infinite number of coexistent moments from the concept of infinite divisibility. Of course, there is an unavoidable level of speculation here, but I am basing this argument off of Hume's own comments. The remainder of the argument consists of premises that Hume needs in order for his reductio to work. What follows is my interpretation of the kind of reasoning Hume employed to arrive at the conclusion that if time is infinitely divisible, an infinite number of moments would coexist:

1. The parts of something either coexist or exist successively.
2. Time consists of parts called moments.
3. These moments either coexist or exist successively. (1)
4. For moments to exist successively, each moment must have an immediate predecessor and successor.

5. If time is infinitely divisible, then there is no briefest moment.

6. If there is no briefest moment, then any moment can be subdivided into briefer moments.

7. If any moment can be subdivided into briefer moments, no moment can have an immediate predecessor or successor.

8. If no moment can have an immediate predecessor or successor, then the moments of time cannot exist successively. (4)

9. If time is infinitely divisible, its moments cannot exist successively. (4-8)

10. If time is infinitely divisible, then its moments coexist. (3,9)

11. To divide something is to divide it into parts.

12. To divide something infinitely is to divide it into an infinite number of parts.

13. If time is infinitely divisible, then time consists of an infinite number of parts. (12)

14. If time is infinitely divisible, then an infinite number of moments coexist. (10,13)

If the interpretation I proposed above is accurate, Hume has a possible way of responding to the objection I discussed earlier. That objection claimed that, since the same psychological and cognitive limitations that prevent us from experiencing time successively if it is infinitely divisible also, in some cases, prevent us from experiencing time successively if it is finitely divisible, Hume should reject the finite divisibility of time as well as the infinite divisibility of time. In other words, Hume should deny the finite divisibility of time as well as the infinite divisibility of time because the same cognitive, psychological, and phenomenological limitations that preclude us from experiencing infinitely divisible time as successive also preclude us from experiencing finitely divisible time as successive. Burning coal scenarios – situations in which time is finitely divisible, but successions occur too rapidly for the mind to distinguish the individual parts which compose them – would be phenomenologically equivalent to our experience of time if time is truly infinitely divisible. In both cases, the mind

could not be aware of the passage of time because it would not be able to experience time successively.

The objection is correct insofar as burning coal scenarios and infinite divisibility would both prevent the mind from experiencing time successively and, consequently, would prevent the mind from experiencing time at all. From a phenomenological standpoint, infinitely divisible time and burning coal scenarios would be equivalent.

The objection ultimately fails, however, because it does not consider the fact that the two situations are not *logically* equivalent. In all burning coal scenarios, the inability to experience time results directly from the psychological and cognitive limitations of the mind. If the human mind could process information faster, it could experience time successively even in burning coal scenarios. The limitations of the human mind are the *only* reason why the finite divisibility of time would prevent the experience of time; without these limitations, no degree of finite divisibility would make the experience of successive time impossible.

The mind’s inability to experience time successively if the latter is infinitely divisible, however, is *not* due

solely to the limitations of the mind. There are purely logical reasons – reasons I summarized earlier in my fourteen-step argument above - why the infinite divisibility of time entails the coexistence of moments, and, therefore, the non-successiveness of time. These logical reasons are not dependent upon any limitations of the mind or the means by which it experiences time. Nothing could experience infinitely divisible time as successive because the infinite divisibility of time makes it impossible for it to be successive. Time can be successive if and only if it is finitely divisible.

Hence the objection fails to challenge the third reductio because it erroneously assumes that the only factors that would prevent the mind from experiencing infinitely divisible time as successive would be the same psychological limitations that obtain in burning coal scenarios. Such scenarios only prevent the mind from *experiencing* time as successive. If time is infinitely divisible, however, time could not *be* successive.

These reflections show why Hume needs the reductios to provide a strong defense of his discrete view of time. The phenomenological approach he employs only proves that there are psychological temporal minima – in other words, that

there is a minimum temporal threshold which moments must reach in order for the mind to be aware of them and to experience them. This fact alone, however, is insufficient for proving that time cannot be infinitely divisible, because the existence of distinct, successive moments briefer than the minimum threshold – and hence impossible to experience as successive - is consistent with the finite divisibility of time. Hence if his only reason for rejecting infinite divisibility is that it renders the experience of time impossible, he would also have to reject the finite divisibility of time in burning coal scenarios. To avoid doing so, Hume must have critiques of infinite divisibility that do not concentrate on the experience of time.

The temporal minima argued for by the grain of sand and inkspot experiments are phenomenological and cognitive in nature. If the infinite divisibility of time is logically consistent with the existence of these phenomenological temporal minima, then Hume fails to adequately refute the mathematicians whom he opposes. To successfully refute them, Hume must show how the infinite divisibility of time is not logically consistent with the existence of the temporal minima, and he attempts to do

this with the third reductio. The third reductio accomplishes this task by demonstrating that finite divisibility is a necessary condition for temporal successiveness. For time to be successive at all – whether it is perceived as such or not – it must be finitely divisible. If time is truly successive, there must be temporal minima of a logical sort as well, even if these logical temporal minima are much briefer than the perceptual, phenomenological minima established by the grain of sand and inkspot experiments.

Concluding Remarks

As we saw above, Hume defends the existence of temporal minima in two different ways. His phenomenological approach involves showing how the experience of time requires temporal minima. His logical approach involves the use of three reductios, each of which provides reasons for thinking that the concept of time being infinitely divisible is contradictory. Given the fact that Hume devotes much more attention in T 1.2 to the arguments he develops for the phenomenological approach, it is clear that Hume is more interested in discussing the experience of time than he is in speculating on the metaphysical nature of time.

Despite his greater interest in the phenomenology of time, Hume's attempts to prove the existence of temporal minima require him to take a purely logical approach to the issue as well, which he does in the form of the three reductios. Without these reductios, Hume would, at best, only be able to prove that the experience of time requires temporal minima. Without the reductios, Hume has no way of countering the possibility that his philosophical opponents can consistently agree with the claim that the experience of time requires temporal minima and still remain committed to the infinite divisibility of time. In other words, his opponents could agree that the mind experiences time successively, and yet still insist that time is infinitely divisible. To truly refute the continuous view of time espoused by his opponents, Hume must provide reasons for thinking that no finite duration could be infinitely divisible. He attempts to do this via his three reductios.

The first two of these reductios apply also to space, whereas the third reductio pertains exclusively to time. A crucial theme running through the third reductio is that time must consist of distinct, indivisible moments in order to exist successively. Any number of coexistent moments would preclude time from being successive. Thus coexistence

contradicts the very nature of time. Hume also believes, just as strongly, that coexistence contradicts the very nature of causality. Causes also occur successively. In my next chapter, I will explore the reason why Hume thinks this must be the case.

Chapter Three

The Temporal Priority Argument and its Implications

Introduction

In T 1.3.2, Hume tries to identify the impression that gives rise to our idea of causation. To do this properly, he needs to discover the relations that are essential to causes and effects. As is well-known, the three relations he identifies as essential to causes and effects are contiguity, temporal priority, and necessary connection. Of course, Hume believes the necessary connection relation is much more important for his endeavor than contiguity and temporal priority, because “an object may be contiguous and [temporally] prior to another, without being consider’d as its cause” (T 1.3.2.11). Obviously, Hume is right about that, but he does not seem to realize that necessary connection alone is not sufficient for his task either. The purpose of this chapter is to provide reasons why the temporal priority relation, the relation by which causes precede their effects in time, is far more significant to Hume’s project than Hume appreciates.

The Temporal Priority Argument

At T 1.3.2.7, Hume develops an argument which purports to demonstrate that all causes must precede their effects in time. For the sake of simplicity and convenience, I will refer to this argument as the Temporal Priority Argument (TPA). The TPA appears in the following passage:

> The second relation I shall observe as essential to causes and effects, is not so universally acknowledg'd, but is liable to some controversy.'Tis that of PRIORTY of time in the cause before the effect. Some pretend that 'tis not absolutely necessary a cause shou'd precede its effect; but that any object or action, in the very first moment of its existence, may exert its productive quality, and give rise to another object or action, perfectly co-temporary with itself. But beside that experience in most instances seems to contradict this opinion, we may establish the relation of priority by a kind of inference or reasoning. 'Tis an establish'd maxim both in natural and moral philosophy, that an object, which exists for any time in its full perfection without producing another, is not its sole cause; but is assisted by some other principle, which pushes it from its state of inactivity, and makes it exert that energy, of which it was secretly possest. Now if any cause may be perfectly co-temporary with its effect, 'tis certain, according to this maxim, that they must all of them be so; since any one of them, which retards its operation for a single moment, exerts not itself at that very individual time, in which it might have operated; and therefore is no proper cause. The consequence of this wou'd be no less than the destruction of that succession of causes, which we

> observe in the world; and indeed, the utter annihilation of time. For if one cause were co-temporary with its effect, and this effect with *its* effect, and so on, 'tis plain there wou'd be no such thing as succession, and all objects must be co-existent[36](T 1.3.2.7).

I propose that the best way to decipher this cryptic passage is to treat the "established maxim" (hereafter EM) as a partial definition of a cause. It specifies a necessary condition something must satisfy to be properly referred to as a cause.

There are three main reasons why EM should be construed as definitional. First, Hume's main task in T 1.3.2 is to discover the essential components of the idea of causation. The comments he makes throughout the section strongly suggest that he is aiming to construct a definition of causation. This is especially clear in paragraphs nine and ten, where he argues that contiguity and succession (temporal priority) are not sufficient by themselves for such a definition – because one object may be contiguous and prior to another without being the cause of the latter - and then challenges the reader to

[36] This last sentence supports an argument I made in Chapter 2, namely, that in Hume's ontology, all things are either coexistent or successive.

articulate a better, non-circular definition. Hence the passage in which TPA appears is a part of a section of the *Treatise* in which Hume is clearly investigating a good way to define causation. These considerations provide a good reason to interpret TPA - and hence EM, since EM is the logical basis for TPA - as being a component of that investigation.

The second reason why EM should be read as offering a partial definition of “cause” concerns the use of TPA within the passage itself. Shortly before launching into TPA, Hume makes clear that he intends to challenge those who think “’tis not absolutely necessary a cause shou’d precede its effect,” with TPA. The fact that Hume opposes these people obviously means that he thinks the temporal priority of a cause to an effect *is* absolutely necessary to the concept of a cause, and, consequently, an indispensible part of the definition of “cause.” Hence Hume clearly thinks that the temporal relationship a cause has with its effect must constitute part of the concept of a cause, and since EM asserts that something cannot properly be labeled a cause unless it exhibits a certain kind of temporal relationship with its effect, it is difficult to avoid the conclusion that Hume intended EM to serve as a partial

definition which lays out a necessary condition all causes must satisfy.

The third reason one should interpret EM as a definition is simply that refusing to do so renders the most crucial inference of TPA – the idea that, if any cause can be simultaneous with its effect, then every cause must be simultaneous with its effect – unintelligible. Although the argument cannot work without that inference, the inference can be valid only if one takes EM to be offering a definition of “proper cause.”

With these necessary preliminary remarks about EM out of the way, we can now proceed to the argument itself. In the following paragraphs, I offer my own paraphrase of the TPA in which I include the implicit premises and assumptions that play a crucial role in the argument. I will also expand upon some of the premises that are explicitly stated, in an attempt to elucidate them and make Hume’s reasoning as I understand it more transparent.

My Paraphrase of the TPA

A cause that is perfectly co-temporary (that is, simultaneous) with its effect is one in which both the cause and its effect exist in the same moment. There is no

moment at which the cause exists but the effect does not. The presence of the cause, C, at time t_1, guarantees the presence of the effect, E, at t_1.

A cause that is successive and contiguous with its effect is one in which the cause does not exist in the same moment as the effect. There is at least one moment at which the cause exists but the effect does not. Two moments are required for successive causation to occur, one for the cause and one for the effect. The presence of C at t_1 guarantees the presence of E at t_2. By definition, successive causes precede their effects in time. Obviously, successive causes require more time (two moments) to produce their effects than causes that are perfectly simultaneous with their effects, which only require one moment.

Consequently, if any cause is able to be perfectly simultaneous with its effect, then no successive cause conforms to the definition of cause laid out in EM. Since no cause can produce its effect in less time than a simultaneous cause produces its effect, this must mean that, if any cause can be perfectly simultaneous with its effect, every cause must be simultaneous with its effect.

If all causes are simultaneous with their effects, then causal succession would not exist. Since all successions are temporal, and time is successive, the nonexistence of causal succession implies both the nonexistence of time and the nonexistence of all successions. It is an obvious fact that successions exist, since we observe and experience them. Therefore, it is not the case that all causes could be simultaneous with their effects. It follows that no cause can be simultaneous with its effect. Since causes exist, all causes are successive – they precede their effects in time.

Critical Responses to TPA

In “Hume’s Argument that Causes Must Precede Their Effects,” Munsat sets out to explain precisely why Hume thinks that, if any cause is simultaneous with its effect, then all causes must be. He summarizes Hume’s insight by claiming, “In summary, the argument is this: if a cause could be co-temporary with its effect, then anything short of co-temporary counts as a ‘delay,’ and hence is in violation of the maxim” (Munsat 342). I think Munsat’s interpretation of this inference is correct, but Munsat’s objection to the TPA indicates a lack of understanding on his part of Hume’s theory of time.

Munsat objects to the TPA on the grounds that it fails to demonstrate that there would be no succession at all if all causes were simultaneous with their effects. At the very most, Munsat argues, Hume's premises can only show that there would be no *causal* succession. Munsat does not seem to realize that a consequence of Hume's conception of time – a compound abstract idea of succession qua successive – is that all successions are temporal.[37] This is an implicit assumption in the TPA, and Hume cannot derive his conclusion from his premises without it. This is one way in which Hume's theory of time affects his TPA. There is another, far more significant influence his theory of time has on the TPA, however, and to explore this influence, we must look at a potentially devastating objection to Hume's account of causation as contiguous.

In "On the Notion of Cause," Russell constructed a dilemma which he considered fatal to any theory of causation which holds that causes are contiguous with their effects. The dilemma is as follows:

[37] For more information on this consequence of Hume's conception of time, consult the first chapter of this dissertation.

> No two instants are contiguous, since the time series is compact; hence either the cause or the effect must……endure for a finite time……but then we are faced with a dilemma: if the cause is a process involving change within itself, we shall require (if causality is universal) causal relation between its earlier and later parts; moreover, it would seem that only the later parts can be relevant to the effect, since the earlier parts are not contiguous to the effect, and therefore……cannot influence the effect. Thus we shall be led to diminish the duration of the cause without limit, and however much we may diminish it, there will still remain an earlier part which might be altered without altering the effect, so the true cause……will not have been reached……If, on the other hand, the cause is purely static, involving no change within itself, then, in the first place, no such cause is to be found in nature, and in the second place, it seems strange……that the cause, after existing placidly for some time, should suddenly explode into the effect, when it might just as well have done so at any earlier time, or have gone unchanged without producing its effect. This dilemma, therefore, is fatal to the view that cause and effect can be contiguous in time" (Russell 174-201).

The basic outline of the dilemma is as follows:

1. Time is infinitely divisible.

2. If causes are contiguous with their effects, then the causes are either dynamic and undergo change, or they are purely static and do not change.

3. If causes are dynamic, there must be causal relationships between their earlier and later parts.

4. Only the later parts of the causes can be contiguous with the effects.
5. Only the later parts can be causally relevant to the effects.
6. The duration of the later parts could always be diminished in such a way that the truly causally relevant part will never be identified.
7. No causes are purely static.
8. No causes can exist idly without producing their effects.
9. If causes are contiguous with their effects, then they either could never be identified, or they could not exist as causes.
10. Causes cannot be contiguous with their effects in time.

Since Hume advocates a theory of causation in which cause and effect can be contiguous in time, Russell’s dilemma poses an extremely grave threat to that theory unless Hume has the philosophical resources required to decisively

refute the dilemma. Before exploring possible defenses Hume could use against the dilemma, it is important to dwell on the dilemma to make sure the argument presented therein is clear.

The first horn of the dilemma presupposes the continuity of time. Given this assumption, the time during which any cause that undergoes change within itself (the change here is the act of producing the effect) is infinitely divisible. According to any contiguous theory of causation, the moment in which the effect exists immediately follows and is contiguous with the moment in which the cause exists; in other words, if C is a contiguous cause that produces E, then if C exists at time t_1, then E exists at time t_2. If time is infinitely divisible, however, then there can be no moment which immediately follows and is contiguous with the moment in which C exists. C's duration could always be divided into briefer moments, and a contiguous theory of causation is committed to the idea that only the temporal part of C which immediately precedes E can generate E. Since time is continuous, there is no temporal part of C which immediately precedes E, and consequently the true cause of

E will never be found. If causes are contiguous with their effects and time is continuous, causes cannot exist.

The second horn of the dilemma represents a situation which violates Hume's "established maxim." A static cause is a cause which exists in its full perfection for a certain period of time without producing its effect. Both Hume and Russell think that no such static causes exist.

Since both horns of the dilemma attack the notion of contiguous, successive causes, and both horns purport to prove that no such causes can exist, one might interpret the dilemma as an attempt to prove that all causes are simultaneous with their effects. Beauchamp and Rosenberg, in their extremely detailed analysis of the dilemma, resist this interpretation. They claim:

> The moral Russell and others apparently draw is not that all causes and effects are contemporaneous. Rather, they maintain that Hume's criterion of contiguity and his two assumed axioms[38] are so rigid that, when conjoined with normal assumptions about the continuity of time, they entail that all causes and effects are either contemporaneous or separated by a finite time-interval – the very possibilities that

[38] Given the context of the passage, it seems that the "two assumed axioms" are both components of the established maxim.

> Hume denounces as absurd" (Beauchamp and Rosenberg 196).

Beauchamp and Rosenberg think Russell's dilemma fails to threaten Hume's theory of causation. They employ two different strategies to defend Hume's theory from the dilemma.

One strategy they employ exposes an inconsistency in Russell's reasoning: Russell assumes events exist, "yet one consequence of his argument is a denial that events exist" (Beauchamp and Rosenberg 197). They attempt to prove this inconsistency by replacing the word "cause" in Russell's original argument with "event." Since Russell's dilemma is internally inconsistent, it obviously cannot be used to refute the possibility of contiguous causation.

The second strategy they employ to defend Hume's theory from Russell's dilemma is much more complex and obscure than the first. It involves an attempt to show that successive, contiguous causation is compatible with temporal continuity. The dilemma assumes that a lack of a temporal interval between events makes those events simultaneous. If I understand Beauchamp and Rosenberg's argument correctly, their solution seems to involve proving

that non-simultaneous events can also lack a temporal interval. They suggest that two events can be both contiguous and successive without a temporal interval between them if one event begins at exactly the same moment when the other ends:

> Since the series of point-instants is dense, there exists an infinite number of instants between any two instants. Accordingly, in order to avoid the problem of temporal gaps, it must be maintained that, at a minimum, contiguous causes perish and their effects begin in the *same* instant. That is, the terminal instant and the commencement instant must be identical (Beauchamp and Rosenberg 190).

Suppose, for example, that a cause, C, begins at instant t_1 and ends at instant t_2. C can still be successive and contiguous with its effect, E, if E begins at instant t_2. In that case, C would end at exactly the same instant E begins. C and E would temporally overlap at t_2.

In the above scenario, C and E are both contiguous and successive. They are contiguous and successive in the sense that a part of C happens before E begins at t_2, and both C and E exist for more than one instant. The only instant they have in common is t_2, at which the temporal history of C and the temporal history of E overlap. If C and E were completely simultaneous, all of the instants at which they

exist would temporally overlap. Hence they are not completely simultaneous. Since there is also no temporal interval between C and E, this example illustrates a cause-effect pair which is contiguous and successive, lacks a temporal interval between the cause and effect, and yet is not completely simultaneous.

Closer examination of Beauchamp and Rosenberg's proposal indicates that it fails to defend Hume's theory of causation from Russell's dilemma. For their "solution" to work, both C and E must be divisible into temporal slices. This poses a problem for them because they agree with Russell that time is infinitely divisible. This means that, between any two temporal slices, there are an infinite number of other slices. For their solution to be coherent, it must be possible to distinguish the overlapping slice (in my example above, the overlapping temporal slice is t_2) from the non-overlapping temporal slices. Doing so involves placing the temporal slices into an order such that one can identify which slice precedes or succeeds another. If one were to lay out all of the instants at which C and E exist on a straight line to represent a temporal continuum, how would be able to locate t_2? It cannot be before or after any other instant. It could not be located or identified. What

evidence, then, could Beauchamp and Rosenberg produce to establish that such an instant exists?

These reflections show that, even if Beauchamp and Rosenberg's solution works, it cannot be used as a way to defend Hume, because Hume's understanding of temporal successiveness does not allow the moment at which one event ends and the moment in which an event contiguous to and distinct from the first event begins to be one and the same moment. Recall that at T 2.3.7.5, Hume remarks, "every part [of time] must appear single and alone, nor can regularly have entrance into the fancy without banishing what is suppos'd to have been immediately precedent." Since there can be no moment that is immediately precedent to the overlapping moment, the overlapping moment cannot exist.

The obvious, and easy, way to defend Hume from Russell's dilemma is to deny that time is continuous. Without the assumption that time is infinitely divisible, the dilemma is impotent. As I discussed in Chapter Two, Hume firmly believes that time is not infinitely divisible, and attempted to prove it in multiple ways. By combining Hume's arguments against temporal continuity with his TPA, a defender of Hume's theory of causation can easily defend

that theory against Russell's dilemma and other similar objections.

Ironically, although Beauchamp and Rosenberg are aware that Hume opposed temporal continuity, they completely dismiss Hume's thoughts on the matter as insignificant. In a footnote, they write, "Hume does defend a doctrine of 'indivisible parts' of space and time, though these arguments are weak and hard to understand. The temporal discontinuity thesis would now be almost universally rejected by philosophers……we shall eventually show that nothing of importance turns on these arguments" (Beauchamp and Rosenberg 189, fn 21). Obviously, Hume's arguments supporting discrete time are much more important for his theory of causation than Beauchamp and Rosenberg realize.

Kline also believes that Beauchamp and Rosenberg's solutions do not work. In "Humean Causation and the Necessity of Temporal Discontinuity," he points out that Beauchamp and Rosenberg believe that events take time, which must mean that they have beginnings and endings. If time is infinitely divisible, however, events cannot have beginnings and endings. Russell's argument shows that "the idea of a cause with some particular duration d is not

defensible” because “the duration of the cause is indefinitely diminishable” (Kline 554).

Kline argues that the other approach Beauchamp and Rosenberg take to the dilemma, that of charging it with internal inconsistency, also fails, but his reason for thinking this is very unclear. If I am interpreting Kline correctly, his position seems to be as follows. Russell’s argument entails that events do not exist only because it contains certain assumptions about what contiguity means – assumptions with which Beauchamp and Rosenberg agree. These assumptions, when combined with the presupposition that events exist, lead to the claim that events do not exist. Without these assumptions about contiguity, the argument is not internally inconsistent. Instead of indicating a problem for Russell’s argument, therefore, the conclusion that events do not exist actually threatens the position Beauchamp and Rosenberg defend! The implication that no events exist is “far from being logically pernicious” and is, in fact, “quite an elegant attack on contiguity” (Kline 554).

Kline discusses both horns of Russell’s dilemma and explains how Hume’s view of causation can easily survive both. The first horn only works if one assumes that time is

infinitely divisible. As should be clear by now, Hume does not share this assumption, so the first horn poses no threat to Hume. The second horn focuses on a temporal gap between the cause and the effect. Such a temporal gap violates Hume's "established maxim" and renders any causal theory allowing such a gap vulnerable to Russell's dilemma. If time is discrete, however, there would be no such temporal gap between the cause and the effect, the cause and the effect would be perfectly contiguous, and Hume's theory survives the dilemma (Kline 552-553).

Russell's dilemma is not the only philosophical threat to Hume's insistence that all causes are successive and contiguous. Kant's famous example of a lead ball resting on a cushion, thereby denting the cushion, is often considered to be an example of a situation in which a cause and its effect are completely simultaneous. The ball causes the indentation in the cushion, yet no time elapses at all between the ball's presence on the cushion and the appearance of the indentation. Fogelin analyzes this famous example and investigates the extent to which it undermines Hume's account of causation. Fogelin holds that the possibility of simultaneous causation threatens Hume's position. On a regularity theory of causation, which Hume

maintains, there must be a way of distinguishing causes from effects. Hume distinguishes causes from effects by invoking the notion of temporal priority. All causes always precede their effects. If some causes can be simultaneous with their effects, then there must be another way of distinguishing causes from effects besides temporal priority. Hume's theory of causation cannot introduce anything else to make the distinction possible, thus revealing a weakness in his theory (Fogelin 331).

Fogelin reconstructs Hume's TPA as follows:

> (1) Some causes *are* simultaneous with their effects. – Assumption.
>
> (2) All causes *could* be simultaneous with their effects. – A Generalization Argument.
>
> (3) All causes *are* simultaneous with their effects. – Via the "established maxim."
>
> But since Hume holds (3) is manifestly false, he concludes that we must deny the assumption (1) that leads to it. We may therefore conclude: (4) No cause is simultaneous with its effect (Fogelin 336).

Fogelin raises three objections to the TPA: he asserts that the inference from (1) to (2) is invalid, he claims that (4) is false, and he maintains that Hume was wrong to

accept (2) because it threatens Hume's argument (Fogelin 337).

Fogelin writes:

> The inference from the first claim to the second depends upon the assumption that simultaneous causation and successive causation are conceptually on a par. That is, we are asked to think of two *independent* kinds of causal relations, those where the cause and effect are successive and those where they are simultaneous. It is only on this assumption of conceptual independence that the generalization argument from *some are* to *all could be* is valid. But……this assumption of conceptual independence is false. Furthermore, the notion of a cause simultaneous with its effect is parasitic on the notion of a cause that precedes its effect, and so even if we could have a world where all causes precede their effects, we could not have a world where all causes are simultaneous with them……in such a world there would be no *basis* for distinguishing causes and effects (Fogelin 334).

Fogelin believes very strongly that all causes could *not* be simultaneous with their effects. After constructing and analyzing two theoretical examples in which all causes are simultaneous with their effects, Fogelin concludes that a world in which all causes are simultaneous with their effects is a world in which no causal relations exist.

Understanding this apparently paradoxical conclusion necessitates a close examination of his two examples.

In the first example, Fogelin asks his readers to "take our world – with a lead ball resting on a cushion – and stop all motion" (Fogelin 335). Fogelin argues that, due to the cessation of all motion, "the law of gravity and the laws of elasticity no longer hold in this world, and once we recognize this, we simply give up the idea that the ball causes a depression in the pillow" (Fogelin 335). The physical laws which enable balls to dent cushions would cease to function in the absence of motion.

The second example is also set in this world, with the lead ball resting upon a cushion. Then "eliminate, for all times, everything save the ball, the cushion, and the earth. These three items remain forever in their fixed relative positions. This is the only news concerning this universe……there is nothing *in* this universe that provides a basis for a distinction between cause and effect and, therefore, causal relations do not obtain within it" (Fogelin 335). Causal relations require certain facts about the world to obtain; they presuppose that the world possesses certain ontological features. These features do not and cannot exist in a world devoid of motion.

In both of these examples, Fogelin argues that a world in which only simultaneous causation exists would be so different from our world in terms of the physical laws that obtain in that world that there would be no ontological basis for distinguishing causes from effects. For this reason, causal relations would not exist in such a world.

Fogelin's comments very strongly suggest that successive causation is the paradigm example of causation. If Fogelin's comments are correct, simultaneous causation cannot really be considered 'proper' causation. In both of Fogelin's examples, no time elapses. No temporal succession occurs in either example. His examples support the idea that temporal succession could not exist in a world in which all causes are simultaneous with their effects. Hume, of course, completely agrees, and his TPA makes exactly the same claim!

As Fogelin's examples clearly show, simultaneous causation is not just *conceptually* dependent upon successive causation, but also *ontologically* dependent upon successive causation. More precisely, it is dependent upon the physical features (physical properties, physical laws, etc) of the world which can only exist if temporal successiveness exists. A world without temporal succession

would lack these physical features, thus precluding causal relations from existing.

If Fogelin's examples work, they imply that gravity, elasticity, and other such physical and structural properties of the world cannot function without temporal successiveness. The mere act of removing temporal successiveness from the world (via the "universal freeze") in the first example resulted in the cessation of gravity and elasticity. This seems to suggest that the physical features of the world depend upon temporal successiveness, but not vice-versa.

To understand how this is so, consider a world in which everything that is thrown moves up instead of down everywhere in the universe. Gravity either would not exist or would not function in that world, but temporal succession would clearly still exist, since the thrown objects would move upward successively – the thrown objects would not be able to move at all if temporal succession did not exist.

There is good reason, therefore, to believe that temporal succession is more basic than the other physical laws and properties Fogelin mentions. If Fogelin is right

that a world with only simultaneous causation would have no true causal relations, one can explain this fact by pointing to the lack of temporal succession in that world. Causal power depends on a certain set of physical properties and laws which, in turn, depend upon temporal succession. This means that the causal power of causes that are simultaneous with their effects also depends upon temporal succession. Since simultaneous causes, by definition, are not successive, this is tantamount to claiming that causes simultaneous with their effects are not genuine causes.

This poses a problem for Fogelin who, despite his insistence that the concept of simultaneous causation is dependent upon the concept of successive causation, and his belief that a world in which all causes exist simultaneously with their effects would lack all causal relations, still believes that both successive and simultaneous causation exist in the actual world. If my arguments above are sound, there is reason to doubt that causes simultaneous with their effects can be referred to properly as “causes.” Such causes derive their causal power from temporal succession. It is impossible by definition for them to be successive. Hence they are either not causes

at all, or are not causes the same way that successive causes are. The word “cause” cannot be applied equally to both successive causes and causes simultaneous with their effects. They cannot both be considered proper causes. If the word “cause” has the same meaning when applied to each one, then they cannot both *be* causes.

This is the insight Hume is trying to express with his remark that if any cause may be co-temporary with its effect, every cause must be co-temporary with its effect. If Hume is correct, whatever enables causes to operate as causes – that is, whatever is the source of their causal power – must be described, at least in part, by the temporal relationship causes have with their effects. The established maxim makes a cause’s temporal relationship with its effect part of the very concept of a cause. Since successive causes and causes simultaneous with their effects have temporal relationships with their effects that are mutually exclusive – the former always precede their effects by definition, the latter always exist simultaneously with their effects by definition – it is impossible for both kinds of causes to be proper causes.

The above reflections indicate that Fogelin’s interpretation of Hume’s TPA is not completely accurate.

Hume does not seriously entertain the possibility that all causes could be simultaneous with their effects. Hume would agree with the arguments Fogelin presents as to why it is impossible for all causes to be simultaneous with their effects, especially since one implication of those arguments is that time would not exist if all causes are simultaneous with their effects, which is one of the very same reasons Hume claims all causes cannot be simultaneous with their effects!

The statement Fogelin interprets as a "generalization argument"- "all causes *could* be simultaneous with their effects"- is actually the consequent of a conditional statement. This is clear not only from what has been said above, but also from the way Hume explicitly stated the premise in question: "If any cause may be perfectly co-temporary with its effect, 'tis certain, according to this maxim, that they must all of them be so" (T 1.3.2.7). Fogelin interprets the premise as expressing two separate propositions: "Some causes are simultaneous with their effects" and "All causes could be simultaneous with their effects." By articulating the premise this way, he turns the antecedent of a conditional statement into a particular affirmative statement with existential import. He then

claims that Hume accepts the second proposition but should not, because it is false.

A more accurate way to read the premise is to construe it as a conditional statement in an argument that takes the form of modus tollens. I propose that the main inference of this part of the TPA should be read as:

1. If any cause can be simultaneous with its effect, then every cause must be simultaneous with its effect.
2. It is impossible for every cause to be simultaneous with its effect.
3. Therefore, it is not the case that any cause can be simultaneous with its effect.

The problems with Fogelin's three objections are now clear. His claim that the inference from "some causes are simultaneous with their effects" to "all causes could be simultaneous with their effects" is invalid presupposes that Hume asserts both propositions and uses them as premises in his TPA. As we have seen, this is not the case. It is just as fallacious to interpret "if any cause can be simultaneous with its effect, then every cause must be

simultaneous with its effect" as asserting both "any cause can be simultaneous with its effect" and "every cause must be simultaneous with its effect" as it would be to interpret the proposition "If I am a mother, then I have children" as asserting "I am a mother" and "I have children." The sentence "If any cause can be simultaneous with its effect, then every cause must be simultaneous with its effect" expresses a single proposition, not two.

Hume never infers the proposition "all causes could be simultaneous with their effects" from any statement in his argument, because no such premise appears in his argument! In fact, a crucial part of the TPA consists in negating that proposition. Obviously, then, the claim that Hume fallaciously inferred that false proposition is mistaken in multiple ways; Hume never uses that proposition as a premise, and therefore cannot be accused either of invalidly inferring it or of assenting to it.

As for the claim that the conclusion of TPA - that no causes are simultaneous with their effects – is false, one must specify what definition of "cause" one is using. One way to paraphrase the conclusion in a very Humean spirit would be to articulate it as "No cause that is co-temporary with its effect can properly be called a 'cause'." As we

have seen, Fogelin’s own arguments lend support to this position!

Lennon criticizes the TPA and makes a mistake similar to Fogelin’s. He thinks Hume’s TPA suffers from two ambiguities which undermine its effectiveness. The first ambiguity concerns the best way to interpret the established maxim. Lennon thinks the maxim can be interpreted in two different ways. It can be interpreted as “an imposition of a priori constraints on what can be constantly conjoined” (Lennon 348), or it can be interpreted as “an a posteriori methodological precept concerning the discovery of what as a matter of fact are constant conjunctions” (Lennon 348). Lennon argues that the first interpretation of the established maxim “is inconsistent with all Hume’s arguments that causal claims are founded only in experience” (Lennon 348), and consequently favors the second interpretation.

When I first discussed my interpretation of the established maxim, I explained why I think the maxim should be read as specifying a necessary condition that all true causes must satisfy. Thus I am much more sympathetic to the first interpretation Lennon mentions than the second. Lennon approaches the established maxim in a way that would

make it a strictly empirical proposition, one that can be denied without resulting in a contradiction. The arguments I presented earlier in this chapter reveal the problems involved with interpreting the maxim that way.

The second ambiguity Lennon finds in the TPA is that it "equivocates on the notions of cause and sufficiency" (Lennon 349). This objection is itself ambiguous, since Lennon never clarifies the distinction between cause and sufficiency, and, in the paragraph in which he introduces this objection, spends far more time discussing Russell's dilemma than he does developing the objection. Despite this, several comments he makes throughout his essay strongly suggest that his objection is as follows. Hume uses interchangeably two rival, incompatible notions of what causal sufficiency entails. The first notion assumes that a cause sufficing for its effect entails that if the cause, C, is at time t_1, then the effect, E, is also at t_1. The second notion assumes that a cause sufficing for its effect entails that if C is at t_1, then E is at t_2.[39]

[39] Lennon's discussion of an objection Stroud raises to the TPA leads me to reconstruct Lennon's equivocation charge this way. The discussion in question occurs on page 350 of Lennon's "*Veritas Filia Temporis*: Hume on Time and Causation."

By insinuating that Hume seriously assented to the first conception of causal sufficiency, Lennon makes a mistake which closely resembles Fogelin's belief that Hume thought all causes could be simultaneous with their effects. Hume does not advocate the first notion of causal sufficiency and cannot, because that notion is identical to the description of a cause that is simultaneous with its effect! If C is a cause that is simultaneous with its effect, then it would be true by definition to claim that, if C is at t_1, then E is at t_1. Claiming that C is simultaneous with E and then denying that E is present whenever C is present would lead to a contradiction.

Consequently, while Hume does not and cannot interpret causal sufficiency as entailing "If C is at t_1, then E is at t_1," anyone who believes that genuine causes truly can be simultaneous with their effects must interpret causal sufficiency in just that way. Analyzing causal sufficiency in this manner, however, leads to a serious problem – the inability to distinguish a cause from an effect.

To see why this is the case, consider this passage from Daniton's *Time and Space*:

> ……in any given concrete situation where a cause *c* produces an effect *e*, if we say that in the given circumstances, *c* is both necessary and sufficient for *e*, then since the relationship "necessary and sufficient" is symmetrical, we are clearly committed to holding that *e* is necessary and sufficient for *c*. For example, suppose a spark ignites a fire. In the circumstances (oxygen present, water absent, no other flames, etc) the fire would not have occurred if the spark had been absent, so *the spark was necessary for the fire*. It is also true that, in the circumstances, *the spark was sufficient for the fire* (nothing else was needed). Now look at the situation in another way. In these circumstances, for the fire to ignite the spark had to occur, so the fact that the fire *did* ignite guarantees that the spark occurred: *the fire is sufficient for the spark*. Also, since the occurrence of the spark guarantees the fire will ignite, the spark couldn't occur without the fire, so *the fire is necessary for the spark*. These two events, the cause and the effect, are thus related to one another in a perfectly symmetrical way. If this applies generally, what could possibly distinguish any cause *c* from an effect *e* other than the fact that *c* occurs *earlier* than *e*? (Dainton 52-53).

Since "necessary and sufficient" clearly is a symmetrical relationship, and Dainton's reasoning is valid if "necessary and sufficient" is a symmetrical relationship, there is good reason to suspect that his arguments do apply generally.

In particular, they would apply especially well to cases where causes are simultaneous with their effects. Consider, for example, the famous Kantian example of a lead ball resting on a cushion. While this example is often

interpreted as refuting Hume's conclusion that all causes precede their effects in time, Dainton's insight regarding the symmetrical nature of the "necessary and sufficient" relationship illuminates key aspects of the example which make it, and all other examples like it, completely unable to threaten Hume's position on successive causation.

The Kantian example is constructed in such a way that the ball is sufficient for the dent in the cushion. In other words, if the lead ball is present, the dent is also present. Nothing else was needed for the dent to appear besides the ball. The ball is also necessary for the dent, since, given the circumstances described in the example, the dent in the cushion could not have formed without the ball. Hence the lead ball is both necessary and sufficient for the dent in the cushion.

Since the necessary and sufficient relationship is symmetrical, however, exactly the same reasoning shows that the dent in the cushion is also necessary and sufficient for the ball. The circumstances described in the example indicate that the very presence of the ball on the cushion guarantees that the dent in the cushion will form. If the ball is present, so is the dent. This means that if the dent in the cushion is not there, the lead ball is not

there either. The ball could not appear without the dent (otherwise, it would be false to say that the presence of the ball guarantees the dent in the cushion). Thus the dent is necessary for the ball. Under the conditions specified by the example, the ball cannot be resting on the cushion without the dent appearing, which implies that the presence of the dent in the cushion guarantees the presence of the ball. If the dent is present, so is the ball. Since the dent is present, the ball is also present. It necessarily follows that the dent is sufficient for the ball. Hence both the ball and the dent in the cushion are necessary and sufficient for each other.

As discussed above, any description of a cause that is simultaneous with its effect necessarily entails that if the cause is present at time t_1, then the effect is present at t_1. This implies, however, that the cause is necessary and sufficient for its effect. Since the necessary and sufficient relationship is symmetrical, if the cause is necessary and sufficient for the effect, the effect is also necessary and sufficient for the cause. If one describes the productive power of a cause solely in terms of sufficiency, it would be impossible to distinguish a cause from its effect. Exactly the same reasons one would use to

argue that a certain object or event is a cause and the other an effect also enable one to argue that the other object or event is the cause and the initial one is the effect. It is very unclear what distinguishing factor one can identify in such a situation that would enable one to identify the cause and the effect. If no such distinguishing factor exists or can be found, there would be no way to differentiate between the relata in a simultaneous causal relationship, and if there is no way to distinguish the relata, what evidence would one have that the causal relation truly is a causal relation?

Obviously, in the absence of any means for distinguishing the relata in a simultaneous causal relationship, there would be no evidence that the relation is a causal relation. Any defender of simultaneous causation, then, must have a way to differentiate causes and effects. Dainton’s analysis of the symmetrical nature of necessity and sufficiency reveals that any attempt to explain causal relationships in terms of necessity and sufficiency will suffer from an inability to distinguish between causes and effects.

Such an inability to distinguish between causes and effects is not restricted just to the necessary and

sufficient relationship, however. It is a problem which affects any theory of causation which attempts to explain causation in terms of any symmetrical relationship. The necessary and sufficient relationship is symmetrical, as Dainton showed, but it is not the only symmetrical relationship, and it is not the only symmetrical relationship philosophers have used to analyze causation. Hence any philosopher who develops a theory of causation that relies solely on symmetrical relationships to explain causation will encounter difficulty in distinguishing between causes and effects. Consequently, even theories which do not allow simultaneous causation will still suffer from that problem, unless they can identify a nonsymmetrical relationship which can serve as the means of distinguishing between causes and effects. As I will now show, Hume does not appear to fully appreciate this fact.

Concluding Remarks

The inability to distinguish between causes and effects poses a particularly severe challenge to accounts of causation which allow causes to exist simultaneously with their effects, because what enables causes to act as causes when they exist simultaneously with their effects can only be explained in terms of symmetrical relationships

that would obtain between the causes and the effects equally. Distinguishing a cause from an effect requires an asymmetrical relationship, one which causes and effects do not partake in equally. The temporal priority of causes to their effects is one such asymmetrical relationship, and it is the factor Hume uses to distinguish between causes and effects. It is extremely unclear what other asymmetrical relationship besides temporal priority Hume or anyone else could use in developing an account of what enables causes to be causes.

Consequently, the temporal priority relation is much more important to Hume's causal theory than he realizes. Hume believes that the necessary connection relation is the most important relation that composes the concept of a cause, and so devotes far more time discussing it and exploring it than he does with the relations of contiguity and temporal priority. The problem, however, is that the necessary connection relation is a symmetrical relation insofar as, for any cause C, and for any effect, E, if C is necessarily connected to E, then E is also necessarily connected to C. Claiming that a cause has a necessary connection with its effect while also claiming that the effect does not have a necessary connection with its cause

results in a contradiction. The necessary connection relation, while obviously crucial to Hume's conception of causation, is not sufficient, because he cannot use it to explain the difference between causes and effects.[40]

Hume's quest to identify the origin of the idea of causation cannot succeed unless he can distinguish between causes and effects. After all, "'Tis impossible to reason justly, without understanding perfectly the idea concerning which we reason" (T 1.3.2.4), and perfectly understanding the idea of causation requires an understanding of the distinction between causes and effects.

These considerations strongly suggest that the Temporal Priority Argument (TPA), the argument by which Hume attempts to establish that all causes precede their effects in time, is much more significant the Hume acknowledges. Immediately after he presents the TPA, he tells the reader, "If this argument [TPA] appears satisfactory, 'tis well. If not, I beg the reader to allow me the same liberty, which I have us'd in the preceding

[40] Contiguity, another relation Hume believes constitutes the concept of causation, is also a symmetrical relation, and therefore cannot be used to distinguish between causes and effects either.

case[41], of supposing it such. For he shall find, that the affair is of no great importance" (T 1.3.2.8). Such a remark clearly indicates that Hume was not aware that he must argue for the temporal priority of causes to their effects, or his project will fail. There are many other reasons why Hume should not dismiss his TPA as nonchalantly as he does.

For example, a crucial implicit premise in the TPA is that all successions are temporal. Without this assumption, he cannot infer the "utter annihilation of time," and of succession in general, from the lack of causal successiveness. The idea that all successions are temporal is a consequence of his conception of time, since he views time as a compound abstract idea of succession qua successiveness. Hume never abandons this conception of time in the *Treatise* or his other texts, so it is obviously important to him.

Russell's dilemma and the challenge it poses to any proponent of successive, contiguous causation – such as Hume himself – reveals yet another reason why Hume should not dismiss his TPA so carelessly. The dilemma clearly

[41] The "preceding case" refers to the argument in which Hume tries to prove that all causes are contiguous with their effects.

shows that if time is continuous, then it would be impossible to distinguish causes from effects. Defending a conception of causes as successive and contiguous – another conception Hume never abandons in the *Treatise* - necessitates advocating a discrete view of time. As we saw in the previous chapter, Hume does exactly that. Hume believes in the discrete view of time so confidently that he thinks denying it leads to contradictions and logical absurdities. His TPA rests upon that discrete view of time.

Clearly, the TPA contains assumptions and concepts that are absolutely crucial to Hume's project regarding the idea of causation and its origin. Far from being "of no great importance," the argument is of the utmost importance!

Unfortunately for Hume, his immensely important TPA suffers from a major problem that has not been discussed by commentators, and appears to have gone entirely unnoticed. This problem is that the TPA is inconsistent with Hume's critique of the causal maxim, which is another crucial aspect of Hume's theory of causation. The next chapter will discuss the ways in which the TPA contradicts the critique of the causal maxim.

Chapter Four

Hume's Critique of the Causal Maxim

Introduction

The last chapter focused on the Temporal Priority Argument (TPA), the argument by which Hume attempts to prove that all causes precede their effects in time. That argument requires time and causation to be very closely connected. This close connection between temporality and causality poses a serious difficulty for Hume's critique of the causal maxim, a principle which states that whatever begins to exist must have a cause. This critique requires time and causation to be separable and distinct in ways that violate Hume's claims in TPA. Understanding the ways in which Hume's critique of causal maxim is inconsistent with his TPA, however, requires a detailed analysis of the critique itself, as well as the epistemic and ontological principles Hume uses to develop it.

Hume thinks the causal maxim is true, but he also thinks it is neither self-evident nor demonstrable, meaning that it can be denied without contradiction. There is historical evidence that Hume agrees with the causal maxim. In 1754, Hume wrote a letter to Dr. John Stewart, a

Professor of Natural Philosophy at the University of Edinburgh. In a volume published by the Philosophical Society of Edinburgh, Stewart accused Hume of arguing that something can begin to exist without a cause. Hume responded:

> Allow me to tell you, that I never asserted so absurd a Proposition as *that any thing might arise without a cause*: I only maintain'd, that our Certainty of the Falsehood of the Proposition proceeded neither from Intuition nor Demonstration; but from another Source. *That Caesar existed*, *that there is such an Island as Sicily*; for these Propositions, I affirm, we have no demonstrative nor intuitive Proof. Would you infer that I deny their Truth, or even their Certainty? There are many different kinds of Certainty; and some of them as satisfactory to the mind, tho perhaps not so regular, as the demonstrative kind.[42]

Hume's critique of the causal maxim, then, does not consist in proving that the maxim is false. It does, however, involve arguing that the concept of a beginning of existence (which is a particular kind of effect) and the concept of a cause of existence are distinct and separable in specific ways. If these concepts are not distinct and

[42] Norman Kemp Smith devotes the Appendix to the eighteenth chapter of his *The Philosophy of David Hume* to a discussion of this letter. The appendix contains the entire letter. The quoted passage appears on page 413 of Smith's text.

separable in the ways Hume thinks they are, Hume's critique of the causal maxim fails. A careful analysis of the critique reveals that the concepts of a beginning of existence and a cause of existence are not separable and distinct they way Hume thinks they are, and if they were, that fact would render his critique of the causal maxim inconsistent with his TPA.

Hume's Critique of the Causal Maxim

There are two main arguments Hume uses to show that the causal maxim is neither self-evident nor demonstrable. The first, much simpler argument begins with Hume's assertion that "All certainty arises from the comparison of ideas, and from the discovery of such relations as are unalterable, so long as the ideas continue the same" (T 1.3.3.2). The relations of which Hume speaks are resemblance, proportions in quantity and number, degrees of any quality, and contrariety.

A natural relation is a quality by which two ideas are connected together in the imagination, and the one naturally introduces the other (T 1.1.5.1). A philosophical relation is "any particular subject of comparison, without a connecting principle" (T 1.1.5.1). The causal maxim does

not imply any of these relations, so it is not intuitively certain (T 1.3.3.2).

The second argument Hume uses to show that the causal maxim is neither self-evident nor demonstrable is much more complex and significant for Hume's overall project, and so has received far more attention from commentators than the first argument. For this reason, I will focus exclusively on the second argument for the remainder of this chapter. This second argument, which I shall call the Critique of the Causal Maxim (hereafter CCM), proceeds as follows:

> But here is an argument, which proves at once, that the foregoing proposition [the causal maxim] is neither intuitively nor demonstrably certain. We can never demonstrate the necessity of a cause to every new existence, or new modification of existence, without showing at the same time the impossibility there is, that any thing can ever begin to exist without some productive principle; and where the latter proposition cannot be prov'd, we must despair of ever being able to prove the former. Now that the latter proposition is utterly incapable of a demonstrative proof, we may satisfy ourselves by considering, that as all distinct ideas are separable from each other, and as the ideas of cause and effect are evidently distinct, 'twill be easy for us to conceive any object to be non-existent this moment, and existent the next, without conjoining to it the distinct idea of a cause or productive principle. The separation, therefore, of the idea of a cause from that of a beginning of existence, is plainly possible for the imagination; and consequently the actual separation of these objects is so far possible, that

> it implies no contradiction nor absurdity; and is therefore incapable of being refuted by any reasoning from mere ideas; without which ‘tis impossible to demonstrate the necessity of a cause (T 1.3.3.3).

When simplified and clarified, Hume’s CCM can be reconstructed as follows:

(1) The truth of the causal maxim can be demonstrated if and only if the impossibility of something beginning to exist without a cause can be demonstrated.

(2) All distinct ideas are separable from each other. [Separability Principle]

(3) The idea of a cause and the idea of an effect are distinct.

(4) It is possible to conceive of an object beginning to exist without a cause.

(5) The imagination can separate the idea of a cause from the idea of a beginning of existence.

(6) Whatever is conceivable is possible. [Conceivability Principle, operating as an implicit premise]

(7) The actual separation of a beginning of existence from a cause of existence is possible. (5,6)

(8) Separating a beginning of existence from a cause of existence implies no contradiction.

(9) The separation of a beginning of existence from a cause of existence cannot be refuted from mere ideas. (8)

(10) The causal maxim cannot be demonstrated.

The CCM employs two principles which are extremely important for Hume's philosophy as a whole: the Conceivability Principle and the Separability Principle. Although I mentioned these principles briefly in Chapter One, the pivotal role they play in the CCM warrants a much more thorough discussion of each principle. Examining each principle in detail will illuminate both how the CCM is supposed to work and why it does not.

The Conceivability and Separability Principles

Hume's first description of the Conceivability Principle occurs at T 1.2.2.8, where he writes,

> 'Tis an establish'd maxim in metaphysics, *that whatever the mind clearly conceives includes the idea*

> *of possible existence,* or, in other words, *that nothing we imagine is absolutely impossible*. We can form the idea of a golden mountain, and from thence conclude that such a mountain may actually exist. We can form no idea of a mountain without a valley, and therefore regard it as impossible.

Hume provides a much briefer description of the Conceivability Principle at T 1.4.5.35, where he claims "'Tis an evident principle, that *whatever we can imagine, is possible*."

These articulations of the Conceivability Principle indicate that there are limitations on what the mind can conceive. The mind cannot conceive of or imagine anything that would involve a contradiction. The very concept of a mountain contains within it the concept of a valley, and consequently it is not possible to conceive of a mountain existing without a valley. According to the Conceivability Principle, this implies that the existence of a mountain without a valley is impossible. Nothing about the concept of mountain requires the mind to imagine it being golden or any other specific color, so it is possible to conceptualize a mountain having whatever color one wishes. Because there is nothing contradictory about the concept of

a golden mountain, it is possible for golden mountains to exist.

Hume formulates his Separability Principle as follows:

> …whatever objects are different are distinguishable, and…whatever objects are distinguishable are separable by thought and imagination. And we may here add, that these propositions are equally true in the *inverse*, and that whatever objects are separable are also distinguishable, and that whatever objects are distinguishable are also different (T 1.1.7.3).

After stating his Separability Principle, Hume provides an example of how it works by invoking it to prove that there is no difference between the length of a line and the line itself. “The precise length of a line,” Hume writes,

> …is not different nor distinguishable from the line itself… nor the precise degree of any quality from the quality. These ideas, therefore, admit no more of separation than they do of distinction and difference. They are consequently conjoin’d with each other in the conception; and the general idea of a line, notwithstanding all our abstractions and refinements, has in its appearance in the mind a precise degree of quantity and quality (T 1.1.7.3).

Hume’s discussion of the precise length of a line indicates that the Separability Principle is closely connected to the Conceivability Principle. Because a line cannot be

distinguished or separated from its particular length, it cannot be conceived without that length. This means that it is not possible for a line to exist separately from its precise length, or from any length at all. A similar situation occurs with mountains and valleys. A mountain cannot be conceived to exist without a valley because the concept of a mountain and the concept of a valley are not separable. These reflections show that, whenever two concepts are separable, it is possible for their referents to exist separately in reality, and whenever two concepts are not separable, it is not possible for their referents to exist separately in reality.

In his discussion of personal identity, Hume uses this consequence of the Conceivability Principle and the Separability Principle to show that perceptions are substances. The passage in which he develops this argument employs both the Conceivability Principle and the Separability Principle in a way that makes their ontological implications clear:

> Whatever is clearly conceiv'd may exist; and whatever is clearly conceiv'd, after any manner, may exist after the same manner. This is one principle [the Conceivability Principle], which has already been

> acknowledged. Again, every thing, which is different, is distinguishable, and every thing which is distinguishable, is separable by the imagination. This is another principle [the Separability Principle]. My conclusion from both is, that since all our perceptions are different from each other, and from everything else in the universe, they are also distinct and separable, and may be consider'd as separately existent, and may exist separately, and have no need of anything else to support their existence. They are, therefore, substances, as far as this definition explains a substance (T 1.4.5.5).

Hume uses the Separability Principle to support his contention that perceptions "may exist separately" and do not require "anything else to support their existence." Thus the Separability Principle clearly entails that if two things are separable, each one can exist without the other. The Conceivability Principle claims that the two distinct things can be conceived to exist separately from each other. Hence both principles have conceptual and ontological implications which can be articulated as follows. If A and B are separate concepts, then:

1. A can be conceived without conceiving B.
2. The referent of A can be conceived to exist without conceiving the referent of B to exist.

3. It is possible for the referent of A to exist without the referent of B.
4. B can be conceived without conceiving A.
5. The referent of B can be conceived to exist without conceiving the referent of A to exist.
6. It is possible for the referent of B to exist without the referent of A.

Understanding these implications of the Conceivability Principle and the Separablity Principle is essential for comprehending not only the CCM itself, but also some common objections to it. Noonan's objection,[43] for example, mentions the two principles explicitly, and argues that they are not sufficient to support the conclusion of the CCM.

Noonan's Objection to the CCM, and Possible Humean Responses

Noonan does not agree with the CCM. He claims that:

[43] The objection appears on pages 61 to 62 of his 2007 book *Hume*.

> The argument is fallacious. Given the Separability and Conceivability Principles any object X, whose coming into existence is the effect of a particular cause C, might have come into existence in the absence of C. But it does not follow that X might have come into existence without any cause. For it is compatible with the argument that in order for X to exist some cause must bring it into existence even if there is no particular cause which must bring X into existence if X is brought into existence (Noonan 61-62).

Noonan's objection can be articulated in a different way. Suppose that X comes into existence by C_1, a specific, particular cause. Noonan interprets the Separability and Conceivability Principles as implying that X can be conceived to exist without C_1, and therefore it is possible for X to exist without C_1. Noonan argues, however, that this does not entail that X could come into existence without any cause at all. At most, Hume's critique of the causal maxim proves that X and C_1 are both conceptually and ontologically separable, but it does not follow from this that X is conceptually and ontologically separable from every cause. Perhaps another cause, C_2, would have brought X into existence if C_1 did not.

For example, suppose I fall off my bike one day and, by doing so, bruise my arm. According to Noonan's objection, Hume's reasoning would allow me to infer that

the bruise on my arm could have come into existence even if I did not fall off my bike, but it would not allow me to infer that the bruise could have no cause at all. The same bruise could have resulted from me being accidentally hit by a bad pitch in a baseball game, for instance. The bruise could have resulted from many different causes. Merely proving that it could have come into existence without one of these causes does not entail that it could have come into existence without any of them. Hume's argument shows only that X could exist and be conceived to exist without the particular cause that actually produced it. It does not show that X could exist and be conceived to exist without any cause whatsoever. Hence insofar as the critique of the causal maxim attempts to prove that any object or event could exist and be conceived to exist without any cause, the critique fails.

Although Noonan is correct that proving that X may exist or be conceived to exist without the cause which actually produced it is not sufficient for proving that X could exist or be conceived to exist without any cause at all, his objection does not successfully refute Hume's critique of the causal maxim. The main problem with Noonan's objection occurs in its final sentence: "For it is

compatible with the argument [the critique of the causal maxim] that in order for X to exist some cause must bring it into existence even if there is no particular cause which must bring X into existence if X is brought into existence." There are two possible ways of interpreting this sentence. The first way is to interpret Noonan as claiming that Hume's critique of the causal maxim (CCM) fails to demonstrate the ontological and conceptual separability and independence of X from each and every particular cause that may have produced it if the cause that actually produced it did not. The second way is to interpret Noonan as claiming both that it is possible to form an idea of "some cause" which is not the idea of any particular cause, and that the existence of this non-particular, indeterminate, "some cause" is compatible with the CCM.

The final sentence in Noonan's objection is false under both possible interpretations. Noonan concedes that, given the Separability Principle and the Conceivability Principle, the CCM shows that the idea of a beginning of existence can be separated from the idea of a *particular* cause of existence. That one concession undermines Noonan's objection. If CCM works, it works when applied to the idea

of any particular cause. If C_1 is the one particular cause which brought X into existence, and C_2 is another particular cause which could have brought X into existence if C_1 did not, the same reasoning which proves the separability of X and C_1 also proves the separability of X and C_2.

My example above about the cause of the bruise on my arm when I fall off my bike makes this point clear. If it is true that the bruise could have existed separately and independently of the event in which I fall off my bike, then it is also true that it could have existed separately and independently of the event in which I get hit by a baseball. In the example, the bruise already comes into existence without the baseball hitting my arm, which obviously shows that that the bruise is both conceptually and ontologically separable from the act of being hit by a baseball. The same reasoning proves the separability of X and C_3, X and C_4, and X and any other particular cause that could have produced X. Since none of them are the actual cause of X, it is obviously true to say that X could exist and be conceived to exist without them. Hence if the CCM successfully proves that X is separable from the particular cause which actually produced it, by that very fact the CCM also successfully proves that X is separable from any other

particular cause. Therefore, if one interprets the final sentence of Noonan's objection as implying that Hume's CCM fails to demonstrate the ontological and conceptual separability and independence of X from each and every particular cause that may have produced it if the cause that actually produced it did not, then the sentence is false.

The sentence is also false if one interprets it as claiming that CCM permits the existence of "some cause" of X that is not any particular, specific cause. Just as, given Hume's Conceivability and Separability Principles, one cannot think of a line without thinking of it having a particular length, one cannot think of "cause" in general, but can only think of a particular cause. The only kind of cause one can conceive is a particular cause. Hume's philosophy does not allow for the idea of a cause in general, considered separately from any determinate qualities. Any cause one conceives must be a particular cause with determinate properties. When Noonan claims that "in order for X to exist some cause must bring it into existence even if there is no particular cause which must bring X into existence," and that this is compatible with the CCM, he clearly assumes that it is possible to form the

idea of “some cause” that is not the idea of any particular cause; this cause would be a non-particular cause with indeterminate properties. The existence of such a cause, as well as the mere idea of such a cause, is not consistent with some of the very same epistemic and metaphysical principles – the Conceivability Principle and the Separability Principle – which serve as the foundation of the CCM. Thus Noonan is clearly wrong to suggest that the existence of such an indeterminate, non-particular cause is compatible with the CCM.

Noonan’s objection uses the Separability and Conceivability Principles, but does not challenge them. Instead, it assumes they are true, and attempts to show that they do not provide sufficient support for the CCM’s conclusion. Other commentators, however, attack the principles directly, often in a variety of ways. Stroud is one such commentator.

Stroud’s Objections to the CCM and Dicker’s Responses

Stroud claims that Hume’s argument is circular. According to Stroud, Hume uses the concept of contradictoriness to explain the distinctness of ideas, but also uses the concept of distinctness to explain

contradictoriness. Hume uses the term “distinct” in a way which suggests that two ideas are distinct if and only if they can be separated without a contradiction. This leads to a problem: when interpreted in this way, Hume’s claim that the idea of a beginning of existence and the idea of a cause of existence are distinct means only that they can separated without contradiction – but that is the very thing Hume is trying to prove! He needs an argument which proves that those ideas can be separated without contradiction; clearly, if the only proof he provides for this assertion is that the ideas are distinct, and if that means the ideas are distinct only because they can be separated without contradiction, then Hume is arguing in a circle (Stroud 47).

Stroud thinks that Hume’s conception of contradictoriness is just as ambiguous as his conception of distinctness. He discusses the example of a proposition Hume thinks cannot be denied without contradiction: “Every husband has a wife.” Stroud acquired this example from T 1.3.4.8, where Hume examines an argument often given to prove the causal maxim. The argument is simply that every event must have a cause because every effect, by definition, must have a cause. Hume agrees that every

effect has a cause by definition, but he argues that this fact does not allow one to infer that every event must have a cause. Hume claims it is true by definition that every husband has a wife, but this truth does not imply that every man has a wife, since not every man is a husband. In the same way, Hume argues, the fact that every effect has a cause by definition does not imply that every event must have a cause. Instead of using the assertion that every husband has a wife to reject attempted proofs of the causal maxim, Stroud explores the reasons why it is impossible to deny this proposition without contradiction, but the proposition “every beginning of existence must have a cause” can be denied without contradiction. “Every husband has a wife” cannot be denied without contradiction because the very concept of a husband must include within it the notion of a having a wife. In other words, the idea of being a husband and the idea of having a wife are not distinct concepts. They cannot be separated, for they are the same concepts. This means, however, that the sameness or distinctness of ideas is being used to explain contradictoriness. The problem with doing so is obvious:

> ……the notion of sameness or distinctness of ideas is being used in the test for contradictoriness, whereas contradictoriness was originally invoked to explain the sameness or distinctness of ideas. Hume really has no non-circular argument on his part at all. He thinks that he can start from the “evident” distinctness of two ideas, but he never says how he can recognize that distinctness (Stroud 48).

After criticizing Hume’s concept of distinctness – which obviously is essential for the Separability Principle - Stroud attempts to show that the Conceivability Principle is false. This particular objection is very common in the literature on Hume’s Conceivability Principle and appears in different versions. All of them use Goldbach’s Conjecture to challenge the Conceivability Principle. Goldbach’s Conjecture asserts that every even number greater than two can be expressed as the sum of two primes. Mathematicians have been unable to either prove or disprove Goldbach’s Conjecture, even after centuries of trying. Due to the kind of proposition it is, however, if the Conjecture is true, it is necessarily true, and if it is false, it is necessarily false.

Stroud’s version of the objection focuses on the provability of Goldbach’s Conjecture. If it is true, then it cannot possibly be false, and hence it would be

impossible to disprove it. If it is false, then it cannot possibly be true, in which case proving it would be impossible. While the truth value of Goldbach's Conjecture is currently unknown, it is possible to conceive of someone proving it to be true, and equally possible to conceive of someone disproving it by finding a counterexample. In one of those instances, however, what one conceives is, in fact, impossible. Thus the idea that whatever is conceivable is possible is false (Stroud 50).

Stroud speculates a possible defense Hume could provide to this objection, and argues that it would not work. Hume might, Stroud claims, plausibly respond that the Conceivability Principle asserts only that whatever can be conceived without contradiction is possible. If Goldbach's Conjecture is true, then conceiving it being disproven would involve a contradiction, and therefore disproving it would not be conceivable after all. Likewise, if Goldbach's Conjecture is false, then conceptualizing it being proven true would involve a contradiction, and therefore could not be conceived. Stroud thinks this approach would not help Hume, because Hume has not provided a non-circular account of contradictoriness (Stroud 50).

In *Hume's Epistemology and Metaphysics*, Dicker attempts to defend Hume's CCM from Stroud's objections. Before he does so, however, he develops his own reconstruction of the CCM. Since he repeatedly refers back to this reconstruction in his responses to Stroud, it is necessary to reproduce Dicker's reconstruction of the CCM here. Dicker interprets the CCM as follows:

(1) All distinct ideas are separable from each other (premiss).

(2) The idea of a cause of existence is a distinct idea from the idea of a beginning of existence (premiss).

(3) We can conceive of something beginning to exist without a cause (from (1) & (2)).

(4) Nothing that we can conceive implies a contradiction (suppressed premiss).[44]

(5) "X began to exist and X had no cause" does not imply a contradiction (from (3) & (4)).

(6) If *p* does not imply a contradiction, then we cannot demonstrate that *p* is impossible (suppressed premiss).

(7) We cannot demonstrate that a beginning of existence without a cause of existence is impossible (from (5) & (6)).

(8) We can demonstrate that whatever has a beginning of existence must have a cause of existence only if we can demonstrate the impossibility of a beginning of existence without a cause of existence (premiss).

[44] This is one way to formulate Hume's Conceivability Principle.

(9) We cannot demonstrate that whatever has a beginning of existence must have a cause of existence (from (7) & (8)).[45]

After reconstructing Hume's argument this way, Dicker proceeds to summarize Stroud's objections to it. Dicker claims Stroud argues both that Hume's reasoning by which he supports (7) is circular, and that (4), the Conceivability Principle, is actually false (Dicker 140). An analysis of Dicker's responses to Stroud indicates that they do not completely succeed in defending Hume from them.

When discussing Stroud's first objection, that Hume's support of (7) is circular, Dicker asserts:

> He [Stroud] has certainly shown that sameness/distinctness of ideas, conceivability, contradiction, and possibility are interdependent notions……it is questionable, however, that there is a vicious circularity in using some of these notions to clarify the others……Hume's case for (7) would be viciously circular only if none of (2) or (3) or (5) had any independent plausibility; but in fact each of them is independently plausible, and so steps (1) – (7) are better seen as exhibiting the interconnections between the notions involved than as a linear defense of (7) (Dicker 141-142).

[45] Dicker, p. 140.

Dicker never explains why he thinks (2), (3), or (5) are independently plausible. Perhaps what he means is simply that Hume has other methods at his disposal to support those problematic premises besides invoking the notion of contradictoriness. If this is what Dicker means, he is correct. Stroud's first objection is based entirely upon a particular interpretation of the Separability Principle. In particular, Stroud interprets the Separability Principle in strictly conceptual terms – two ideas are distinct if and only if conceiving one without the other does not result in a contradiction. By interpreting Hume this way, it is no wonder why he thinks Hume argues in a circle by using the distinctness of ideas to explain contradictoriness and vice-versa. As we have seen earlier, however, the Separability Principle has an ontological component as well. Hume could also claim that two ideas are distinct if and only if their referents can exist separately from each other, or if the existence of either referent does not presuppose or guarantee the existence of the other. The idea of a mountain and the idea of a valley are not distinct in this sense; the actual objects themselves are not separable in reality, so the ideas of those objects are not distinguishable, and therefore not

distinct. This way of characterizing the distinctness of ideas does not involve contradictoriness. Dicker is right, then, that the premises have plausibility which does not rely on the notion of contradictoriness – the ontological aspects of the Separability Principle can be used to support them.

Focusing on the ontological dimensions of the Separability Principle may save Hume's argument from the particular circularity charge that Stroud raises, but only at the cost of making the argument vulnerable to another kind of circularity. How does one know if two objects are separable in reality? If the answer is simply that two objects are separable in reality if and only if the ideas of those objects are distinguishable, the question then becomes how one can tell if the ideas of those objects are distinguishable. Without invoking contradictoriness, the only other option would be to claim that the ideas of those objects are distinguishable only if the objects themselves can exist separately from each other – which, of course, leads to a circularity. Thus even though Dicker is right that Hume can support the problematic premises without using the notion of contradictoriness, the other means Hume

has available to him to do so leads to another kind of circularity.

As with his response to Stroud’s claim that Hume’s justification for (7) is circular, Dicker’s response to Stroud’s attack of the Conceivability Principle is only partially successful. In his response, Dicker argues that Stroud focuses exclusively on conceiving someone claiming to have proven or disproven Goldbach’s Conjecture, and not on the truth or falsity of Goldbach’s Conjecture. There is a difference, Dicker claims, between conceiving someone claiming to have proven Goldbach’s Conjecture and conceiving Goldbach’s Conjecture being true. One can conceive of a person claiming to have proven that 1 + 1 = 3, for example, “but it does not follow that one can conceive that 1 + 1 = 3” (Dicker 142).

Dicker is correct both that Stroud’s objection focuses on the conceivability of someone claiming to have proven Goldbach’s Conjecture true or false, and that there is a difference between conceiving someone claiming to have proven Goldbach’s Conjecture and conceiving Goldbach’s Conjecture being true. In fact, there is a significant difference between conceiving someone claiming to have proven p to be true and conceiving p to actually be true.

Consequently, Stroud's objection does not work. It is perfectly possible, and consistent, to imagine someone claiming to have proven Goldbach's Conjecture to be true and to also conceive of Goldbach's Conjecture being false. The truth value of Goldbach's Conjecture is not dependent upon one's claims to have proven or disproven it. After all, one can claim to have proven it, and be mistaken.

Dicker's response to Stroud's Goldbach's Conjecture argument, however, only works against Stroud's particular version of that objection. Many philosophers have used Goldbach's Conjecture in attempt to refute Hume's Conceivability Principle, and many of their arguments do not focus on one's claiming to have proven or disproven the conjecture at all. Consider, for example, Jacquette's discussion of this method of refuting the Conceivability Principle:

> The standard objections to conceivability or imagination as a test for possibility are those involving *a priori*, and especially mathematical, ideas. In a version of the criticism originally owing to Thomas Reid and revived by Saul A. Kripke, it is supposed to be possible to conceive or imagine both that Goldbach's unproven conjecture that every even number greater than 2 is the sum of two primes is true, and alternatively that the conjecture is false. All that is needed is to imagine both that the

> generalization holds for every such even number, and that somewhere on the distant reaches of the number line there is an unknown even number that is not the sum of two primes. Yet, since presumably either Goldbach's conjecture or its negation is impossible, either the conjecture or its negation is conceivable but not possible. It seems to follow that conceivability or imaginability, especially in mathematical and other synthetic *a priori* matters, is a faulty criterion of possibility (Jacquette 163).

This version of the objection clearly does not rely on any person claiming to have proven or disproven anything, and thus is not vulnerable to Dicker's response to Stroud's version of the same objection. A strong defense of Hume from Stroud's Goldbach Conjecture objection would work against every version of the objection, not just Stroud's. Dicker does not provide such a defense.

Anyone familiar with Hume's epistemology, however, could easily provide this type of defense. Neither the truth nor the falsity of Goldbach's Conjecture are conceivable on Humean grounds. In order to conceptualize the conjecture being false, one must be able to imagine an even number greater than two that cannot be expressed as the sum of two primes. One must have an impression of, or at least form an image of, this special number. To date, no one has ever been able to do this, so Hume would claim that

it is not possible to conceptualize the conjecture being false. Furthermore, the mere ability to imagine a number that contradicts the conjecture would, by itself, be sufficient to actually disprove the conjecture! For that reason, it would be impossible to conceptualize the conjecture being false if it is actually true. Similar reasoning reveals why Hume would doubt that it is possible to conceptualize the conjecture being proven true. How could one conceive of it being proven true without also imagining the actual proof? Since no such proof has ever been developed, there is no way one can acquire the impression of, and therefore the idea of, that proof. Hume's epistemological principles would lead him to deny that it is possible to conceive either the truth or the falsehood of Goldbach's Conjecture, and without granting that possibility, any version of that objection cannot refute the Conceivability Principle.[46]

The above discussion illustrates the ways in which Dicker's responses to Stroud's objections are not fully adequate. Dicker is right that the most important premises

[46] Jacquette develops a simpler, but very similar, defense of Hume. He also suggests that Hume could avoid the objection by adopting an intuitionist approach to mathematics, but mentions that there is no textual evidence that Hume would be amicable to such a strategy. See *David Hume's Critique of Infinity*, pp. 163 – 164.

in the CCM have independent plausibility, but the only Humean way to give them plausibility besides relying on the notion of contradictoriness only leads to a different kind of circularity. Dicker is also correct that Stroud's version of the Goldbach's Conjecture objection centers around the possibility of conceiving someone claiming to have proven the conjecture, but as we have seen, there are versions of the objection which do not suffer from this problem. Hume can be successfully defended against the Goldbach's Conjecture objection, but not through Dicker's response alone. It is very unclear how Hume could defend himself against the modified circularity objection I discussed earlier. Even if Hume can successfully defend his position against that objection and all others like it, however, another major difficulty remains with his CCM that neither he nor any other commentator have even recognized, let alone attempted to resolve – his critique of the causal maxim is inconsistent with his Temporal Priority Argument.

How the Critique of the Causal Maxim is Inconsistent with the Temporal Priority Argument

The Separability Principle and the Conceivability Principle both play an extremely important role in Hume's Critique of the Causal Maxim (CCM). As I have shown

earlier, these principles imply that, if A and B are distinct and separable ideas, then it must be possible to conceive of A without B and vice-versa. If B could not be conceived independently of A, and could not be conceived to exist independently of A, then A and B are not separable and distinct in the Humean sense of those terms.

This simple fact has profound implications for the CCM. That argument focuses on the distinction between the concept of a beginning of existence and the concept of a cause of existence. Hume firmly believes that it is possible to conceptualize a beginning of existence without conceptualizing a cause of existence. He thinks it is logically possible for something to begin to exist without a cause, and that asserting this does not result in a contradiction. In other words, Hume would claim that the following three propositions are consistent with each other:

(1) X did not exist at time t_1.

(2) X began existing at time t_2.

(3) The beginning of X’s existence never had a cause.

If Hume's CCM works, (3) does not contradict (1) and (2). I will assume for the sake of argument that the CCM works. This means that it is possible to conceptualize something beginning to exist without a cause or, in other words, a beginning of existence that is not associated with a cause of existence.

If beginning of existence and cause of existence are truly separable and distinct concepts, however, it must also be possible to conceptualize something being caused to exist without beginning to exist. When applied to the concepts of a beginning of existence and a cause of existence, the Separability Principle and the Conceivability Principle entail that the following three propositions are *also* consistent with each other:

(4) X did not exist at time t_1.

(5) X was caused to exist at time t_2.

(6) The existence of X never had a beginning.

The obvious problem, of course, is that propositions (4) through (6) are clearly not consistent! If X was caused to exist at t_2, then X's existence began at t_2, since it is obviously absurd to suggest that something can remain non-

existent once it is caused to exist. Hence (6) contradicts (5). When Hume discusses the concept of a beginning of existence in his CCM, he describes it in such a way that the contradiction between (6) and (4) and (5) becomes crystal clear and impossible to avoid. Recall that immediately after explaining what the Conceivability and Separability Principles mean, Hume asserts that since “the ideas of cause and effect are evidently distinct, ‘twill be easy for us to conceive any object to be non-existent this moment, and existent the next, without conjoining to it the distinct idea of a cause or productive principle” (T 1.3.3.3). With this remark, Hume obviously identifies a beginning of existence as a process by which an object is non-existent one moment, and existent the next, which is exactly the situation described in (4) and (5).

Hume’s description of a beginning of existence illustrates the way in which his CCM is inconsistent with his Temporal Priority Argument (TPA). For Hume, if something begins to exist, it did not exist at one moment, and then exists at the following moment. In order for an object to be non-existent one moment and existent the next, there must be at least two moments which exist in succession. A beginning of existence requires temporal

succession. The Separability Principle states not only that distinct things can be conceptually separated, but also that they can be ontologically separated as well. If A and B are separable, both can exist completely separately from each other. If Hume is correct that beginnings of existence and causes of existence are separate concepts, then it must be possible for there to be beginnings of existence even if there are no causes of existence. As discussed in chapter 3, for Hume all causes must be successive. One of the crucial premises in the TPA states that the complete absence of causal succession entails “the utter annihilation” of temporal succession. Consequently, if there were no causes of existence, there would be no beginnings of existence either. Obviously, if the TPA is sound, beginnings of existence and causes of existence are not nearly as separable as Hume requires them to be for his CCM to work.

The CCM entails that time and causation are ontologically independent of each other. The TPA entails that they are not. The two arguments are clearly not consistent with each other, but Hume cannot abandon either one without rejecting epistemological principles which are crucial for his entire philosophy.

Clearly, Hume's assertion that "the separation, therefore, of the idea of a cause from that of a beginning of existence, is plainly possible for the imagination" is inconsistent with his TPA. If the premise is true, the TPA must be unsound; if TPA is sound, the premise must be false.

Hume cannot resolve the difficulty by merely rejecting the TPA. In the previous chapter, I presented several reasons why Hume cannot trivialize the TPA as lightly as he does in the *Treatise*. Even if Hume dismisses his own TPA in spite of those reasons, however, another problem remains for his CCM. In the CCM, he describes a beginning of existence in terms of an object being non-existent one moment and existent the next. By interpreting a beginning of existence in this way, he precludes the possibility of conceptualizing a cause of existence without a beginning of existence. The "actual separation" of a cause and a beginning of existence is not "plainly possible for the imagination," because the very concept of a cause of existence as Hume characterizes it contains the concept of a beginning of existence. This would remain true even if Hume completely discards the TPA, or never developed the TPA in the first place.

Concluding Remarks

Hume's critique of the causal maxim relies on the assumption that the idea of a cause and the idea of an effect are distinct from each other. In the context of the causal maxim, the kind of effect Hume is most interested in is a beginning of existence. Hume's critique of the causal maxim stands or falls with his belief that the idea of a cause of existence is distinct from, and therefore can exist separately from, the idea of a beginning of existence. If these ideas truly are as separable as Hume requires them to be for his CCM to work, then his CCM contradicts his TPA. Another problem facing Hume is that he characterizes a beginning of existence in such a way that the concept of a cause of existence necessarily entails the concept of a beginning of existence, making the kind of distinction Hume wants between them impossible. Hence Hume's problematic premise that the idea of a cause of existence is separable from the idea of a beginning of existence is either true but incompatible with his TPA, or false.

While it is true that the idea of a cause and the idea of an effect are not nearly as distinct as Hume thinks they are, the ideas are still distinguishable from each other.

As seen in the previous chapter, all causes qua causes precede their effects in time. All causes exhibit this asymmetrical temporal relationship with their effects. When the effect in question is a beginning of existence, this means that the cause of that beginning of existence must precede the beginning of existence in time. In other words, if a cause, C, causes an object to begin existing at time t_2, then C must have existed at time t_1. This method of distinguishing a cause of existence from a beginning of existence involves placing them within a temporal order. Such an approach does not allow causes of existence and beginnings of existence to possess the kind of separability they would have to have for the CCM to work. Hume was correct that the idea of a cause of existence and the idea of a beginning of existence are distinct, but he was wrong about what that distinctness consists in, and what it entails.

This chapter and the previous chapter investigated the relationship between Hume’s theory of time and his theory of causation. The following chapter will explore the connection between Hume’s conception of time and his theory of induction.

Chapter Five

The Phenomenal Succession of Time and its Influence on Induction

Introduction

Hume's theory of induction is one of the most famous aspects of his entire philosophy. The vast literature on Hume's account of induction tends to focus on his discovery of the problems concerning the epistemic justification of induction. Although such issues are unquestionably important and worthy of study, not enough emphasis has been given to the role Hume's theory of time plays in the formation of inductive inferences. The relationship between Hume's theory of time and his theory of induction is also important and worthy of study, because the mind must experience time in a very specific way in order for it to engage in the mental operations required for induction. More specifically, for the mind to form inductive inferences the way Hume thinks it does, the mind must experience time discretely, successively, and flowing from the past to the present and from the present to the future. This successive, unidirectional manner of experiencing time makes induction possible.

Understanding why the process of induction as Hume describes it requires and presupposes a particular way of experiencing time necessitates an analysis of T 2.3.7 and T 2.3.8, in which Hume discusses the manner in which people experience time, why they experience it that way, and what effects that manner of experiencing time has on the imagination and the passions. For the purposes of clarity and convenience, I will refer to this mode of experiencing time as the phenomenal succession of time (PST) in order to distinguish it from the natural succession of time, the nature of time considered independently of the mind's experience of it. What is important for Hume is not just the fact that people experience time successively, but also that this phenomenal succession of time has a certain direction: it moves from the past to the present to the future. As will become clear later in this chapter, the mental processes employed in induction require PST to have this direction.

The Phenomenal Succession of Time

At T 2.3.7 and T 2.3.8, Hume investigates the effects contiguity in space and time has on the passions. What is contiguous has a stronger impact, in terms of force and vivacity, than what is remote. Remote things exert a weaker

influence on the passions “by reason of the interruption in our manner of conceiving them” (T 2.3.7.3). Observation of human behavior indicates that this is true:

> ...we find in common life, that men are principally concern’d about those objects, which are not much remov’d either in space or time, enjoying the present, and leaving what is afar off to the care of chance and fortune. Talk to a man of his condition thirty years hence, and he will not regard you. Speak of what is to happen tomorrow, and he will lend you attention” (T 2.3.7.3).

When Hume speaks of something being “remov’d either in space or time,” he is referring to something being removed in space or time from one’s present position in space and time. One’s current condition in the present is, for the lack of a better term, the mind’s default mode, and when the mind imagines anything at a certain point in time, it always does so relative to the present.

Many of Hume’s comments illustrate this principle. For example, at T 2.3.7.1, Hume writes:

> There is an easy reason, why every thing contiguous to us, either in space or time, shou’d be conceiv’d with a peculiar force and vivacity, and excel every other

> object, in its influence on the imagination. Ourself is intimately present to us, and whatever is related to self must partake of that quality[47]……where an object is so far remov'd as to have lost the advantage of this relation……[the idea of the object] becomes still fainter and more obscure" (T 2.3.7.1).

Hume makes the same idea even more explicit in the next paragraph, where he claims, "the imagination can never totally forget the points of space and time, in which we are existent; but receives such frequent advertisements of them from the passions and the senses, that however it may turn its attention to foreign and remote objects, it is necessitated every moment to reflect on the present" (T 2.3.7.2).

When the imagination does "turn its attention to foreign and remote objects," it does so successively, in a way which always refers back to the present. Hume describes the process as follows:

> ……in the conception of those objects, which we regard as real and existent, we take them in their proper

[47] By making this claim, Hume reiterates a virtually identical assertion he establishes earlier in Book 2 of the *Treatise*: "'Tis evident, that the idea, or rather impression of ourselves is always intimately present with us, and that our consciousness gives us so lively a conception of our own person, that 'tis not possible to imagine, that any thing can in this particular go beyond it. Whatever object, therefore, is related to ourselves must be conceiv'd with a like vivacity of conception" (T 2.1.11.4).

> order and situation, and never leap from one object to another, which is distant from it, which are interpos'd *betwixt* them. When we reflect, therefore, on any object distant from ourselves, we are oblig'd not only to reach it at first by passing thro' all the intermediate space betwixt ourselves and the object, but also to renew our progress every moment; being every moment recall'd to the consideration of ourselves and our present situation. 'Tis easily conceiv'd, that this interruption must weaken the idea by breaking the action of the mind, and hindering the conception from being so intense and continu'd, as when we reflect on a nearer object. The *fewer* steps we make to arrive at the object, and the *smoother* the road is, this diminution of vivacity is less sensibly felt, but still may be observ'd more or less in proportion to the degrees of distance and difficulty" (T 2.3.7.2).

The fewer steps the mind must pass through to arrive at the object, the closer it is, and the more intense and vivacious the imagination's idea of that object will be. The more steps the mind passes through, the more remote the object is, and the weaker the idea of that object will be. Thus the larger the distance between a person and the object, the fainter the mind's ideas of that object will be.

A great distance in time weakens ideas and passions much more than an equal distance in space. Hume claims that this is due to the different properties of space and time. Since the points of space are coexistent, the mind can

easily experience many of them at once. Temporal parts cannot coexist; they must be successive. The longer the succession, the harder it is for the imagination to trace all of the steps. Each temporal part (moment) must be completed before the next one can appear in the imagination. Hume concludes that “By this means any distance in time causes a greater interruption in the thought than an equal distance in space, and consequently weakens more considerably the idea, and consequently the passions; which depend in a great measure, on the imagination, according to my system”(T 2.3.7.5).

After explaining why a distance in time has a greater effect on the imagination and passions than an equal distance in space, he asserts that that a distance in the past weakens the passions more than a distance in the future does (T 2.3.7.6). The past weakens the passions more than the future because “We always follow the succession of time in placing our ideas, and from the consideration of any object pass more easily to that, which follows immediately after it, than to that which went before it” (T 2.3.7.7). Hume thinks historical narratives illustrate this phenomenon. If event A occurred prior to B in reality,

historians will very rarely “break the order of time” and discuss B prior to discussing A (T 2.3.7.7).

When conceiving any object, the imagination always begins with “the present situation of the person.” If the object the imagination considers is in the past,

> ……the progression of the thought in passing to it from the present is contrary to nature, as proceeding from one point of time to that which is preceding, and from that to another preceding, in opposition to the natural course of the succession. On the other hand, when we turn our thought to a future object, our fancy flows along the stream of time, and arrives at the object by an order, which seems most natural, passing always from one point in time to that which is immediately posterior to it. This *easy* progression of ideas favors the imagination, and makes it conceive its object in a stronger and fuller light, than when we are continually oppos’d in our passage, and are oblig’d to overcome difficulties arising from the natural propensity of the fancy. A small degree of distance in the past has, therefore, a greater effect, in interrupting and weakening the conception, than a much greater [degree of distance] in the future. From this effect of it on the imagination is deriv’d its influence on the will and passions”(T 2.3.7.8).

The above passage implies that temporal succession exists independently of the mind. Hume explicitly acknowledges this at T 1.3.14.28, where he writes, “As to what may be said, that the operations of nature are independent of our

thought and reasoning, I allow it; and accordingly have observ'd, that objects bear to each other the relations of contiguity and succession……and that all this is independent of, and antecedent to the operations of the understanding." The phenomenal succession of time (PST) follows the natural succession of time. Because of this, any mental operation which requires the reversal of PST is inherently more difficult for the mind to execute than a mental operation which conforms to it.

Hume uses this principle to explain why it is the case that, when the mind considers two points in time equally distant from each other, one in the future and one in the past, the point in future will exert greater influence over the imagination than the point in the past. When we imagine ourselves situated at a point between the present and the future, we experience the future approaching towards us and the past retreating from us, and becoming more distant. Since the mind naturally likes to progress from one moment to the next moment following it, "we rather choose to fix our thought on the point of time interpos'd betwixt the present and the future, than on that betwixt the present and the past. We advance, rather than retard our existence; and following what seems the natural succession of time,

proceed from past to present, and present to future" (T 2.3.7.9). Consequently, "we conceive the future as flowing every moment nearer us, and the past as retiring" (T 2.3.7.9). We consider the future as constantly advancing and the past as constantly retreating, becoming more distant. This is because "the fancy anticipates the course of things, and surveys the object in that condition, to which it tends, as well as in that, which is regarded as the present" (T 2.3.7.9).

As shown above, it is more difficult for the imagination to situate itself at a point in the past than at a point in the future, since the natural progression of temporal succession flows from the past, to the present, to the future, and the imagination follows this natural succession of time. A mental operation which opposes this natural order of time will weaken the imagination, as well as the passions. In the very next section, T 2.3.8, Hume adds that this weakening effect is limited to short distances in the past. Very long distances in the past have the opposite effect upon the imagination – they strengthen it![48]

[48] Hume is well aware of the fact that his claim that very long distances in the past strengthen the imagination appears to be inconsistent with his comments in the previous section. When he introduces

Hume explains this unexpected result in terms of people's natural responses to difficult challenges. "'Tis a quality very observable in human nature," he claims, "that any opposition, which does not entirely discourage or intimidate us, has rather a contrary effect, and inspires us with a more than ordinary grandeur and magnanimity." This is because "In collecting our force to overcome the opposition, we invigorate the soul, and give it an elevation with which otherwise it would never have been acquainted" (T 2.3.8.4).

While Hume never explicitly states precisely how one can determine what counts as a small distance in the past and what counts as a great distance in the past, the examples he uses to support his points strongly suggest that, by a great distance in the past, he means antiquity. Hume observed that people tend to venerate ancient artwork and artifacts much more than they do contemporary ones, and he thinks this phenomenon is due to the fact that the sheer difficulties involved with conceptualizing points in time so far removed from the present that the soul is invigorated by the challenge, and rises to meet it. A great

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section 8, he states that he intends to study the "reverse" of the phenomena he explored in section 7. He also remarks that "the curiousness of the subject" – the effects a long distance in the past has on the imagination – allows him to digress and investigate it in more detail.

distance in the past, then, clearly seems to involve a point in the past long before any of one's contemporaries existed.

Veneration for our ancestors and ancient artifacts is not the only psychological process that requires the mind to experience time in a specific way. Induction, as Hume characterizes it, also requires the mind to experience time successively, in a particular order: from the past to the present to the future.

The Relationship between the Phenomenal Succession of Time and Induction

Induction, as Hume describes it in the *Treatise*, is a psychological process that is based upon past experience, and involves inferring the existence or condition of one object that is not present from an object that is present. Hume describes this process and provides an example of it at T 1.3.6.2, where he writes:

> We remember to have had frequent instances of the existence of one species of objects; and also remember, that the individuals of another species of objects have always attended them, and have existed in a regular order of contiguity and succession with them. Thus we remember to have seen that species of

> object we call *flame*, and to have felt that species of sensation we call *heat*. We likewise call to mind their constant conjunction in all past instances. Without any farther ceremony, we call the one *cause* and the other *effect*, and infer the existence of the one from the other. In all those instances, from which we learn the conjunction of particular causes and effects, both the causes and effects have been perceiv'd by the senses, and are remember'd: But in all cases, wherein we reason concerning them, there is only one perceiv'd or remember'd, and the other is supply'd in conformity to our past experience."

There is an undeniable temporal dimension to induction. PST, the property by which the imagination projects itself from the past to the present and from the present to the future, shares many similarities with the psychological process by which the mind makes inductive inferences. In his Abstract to the *Treatise*, Hume claims that "all our reasonings in the conduct of life," and "all our belief in history" as well as "all philosophy," are based upon "the inference from cause to effect" (*Abstract* 10). As mentioned above, Hume argues that historical narratives support his claim that the imagination naturally tends to pass from one object to one that immediately follows it, instead of the object immediately preceding it. This suggests that the inference from cause to effect and the passage of the imagination from an object to its successor are similar processes.

Another similarity consists in the fact that, when engaged in inductive reasoning, the mind “anticipates” the future. As an example, Hume discusses a hypothetical man, such as Adam from the bible, who has never previously experienced a billiard ball colliding with another billiard ball. Upon seeing such a collision for the first time, Adam would not infer that the second ball will move. Only experience could make him expect the second ball to move in such situations. “If he had seen a sufficient number of instances of this kind,” Hume claims, “whenever he saw the ball moving towards the other, he would always conclude without hesitation that the second would acquire motion.” This is because “his understanding would anticipate his sight, and form a conclusion suitable to his past experience” (*Abstract* 12). Hume repeats the same idea three paragraphs later when he remarks, “When I see a billiard-ball moving towards another, my mind is immediately carried by habit to the usual effect, and anticipates my sight by conceiving the second ball in motion” (*Abstract* 15).

In the above examples of induction from the *Abstract*, the mind projects itself into the future by conceptualizing a condition of the second ball that has not yet happened, and hence is not yet perceivable to the senses. PST as Hume

describes it involves exactly the same process. Recall that, when Hume explained why a distance in the past does not have the same effect on the mind than an equal distance in the future, he claimed that “the fancy anticipates the course of things, and surveys the object in that condition, to which it tends, as well in that, which is regarded as the present” (T 2.3.7.9). Obviously, “the course of things” is the future, and the condition to which the object tends will be instantiated in the future, or at least is expected to be instantiated in the future. Thus in both the examples of inductive inferences regarding the billiard balls and PST, the mind directs itself toward the future and conceptualizes an event or condition that is currently inaccessible to the senses.

Such a process, which plays such a crucial role in induction, involves a psychological transfer from the past to the future. Hume explicitly acknowledges this several times. Consider, for example, his remark that “All our reasonings concerning the probability of causes are founded on the transferring of past to future” (T 1.3.12.19). Another example occurs in the section “Of the Probability of Causes,” where Hume writes:

> We may observe, that the supposition, *that the future resembles the past*, is not founded on arguments of any kind, but is deriv'd entirely from habit, by which we are determin'd to expect for the future the same train of objects, to which we have been accustom'd. This habit or determination to transfer the past to the future is full and perfect; and consequently the first impulse of the imagination in this species of reasoning is endow'd with the same qualities" (T 1.3.12.9).

In this passage, Hume claims that the assumption that the future resembles the past results from the process by which the mind transfers the past to the future, which clearly means that the latter is more fundamental and basic than the former.

Transferring the past to the future is the process involved with all inductive inferences, and works as follows. After experiencing multiple instances of A-type objects followed by B-type objects in the past, the mind comes to expect that every A-type object it experiences from that point on will continue to be followed by a B-type object. In the present, an A-type object appears, alone and unaccompanied by a B-type object. The mind will then "anticipate the sight" and believe that a B-type object will appear as well. By doing so, the mind transfers the past to the future – it "transfers" the constant

conjunction of A-type objects and B-type objects it has experienced in the past to the future.

Notice how, in the process described above, the mind progresses from the past to the present to the future. That is the same direction in which PST flows. Clearly, then, inductive reasoning exemplifies and requires PST. It is important to note, however, that while induction exemplifies PST, it is not identical to PST. PST is more basic and fundamental than induction. This is because the mind does not need to experience a constant conjunction of anything, or make any inferences about anything, to experience time successively from the past to the present to the future.

Suppose A occurs at time t_1, B occurs at time t_2, and C occurs at time t_3. When the mind experiences A, B, and C, it experiences A first, then B, then C, in that order. By doing so, it moves from one point in time to the next and then to the one after that, successively. The mind does not need to experience a constant conjunction of A-type objects, B-type objects, and C-type objects for this process to take place. In fact, it can move from A to B to C even if A, B, and C never appear again. Moreover, A, B, and C may not be causally related to each other in any way,

yet the mind can still experience them successively in this manner. This is what makes PST more basic than the mental process of transferring the past to the future, which occurs during induction. Induction is a more complicated process that requires PST but also requires other things besides PST. Hence PST is a necessary condition for induction, but not a sufficient condition. One cannot engage in inductive reasoning without experiencing time successively, but one can experience time successively without engaging in induction.

Careful analysis of Hume's comments regarding induction helps explain precisely why PST is a necessary condition for the possibility of inductive inferences. At its most basic level, induction involves inferring the existence of objects that are not currently present to the senses or the imagination from objects which are. According to Hume, "'tis therefore by EXPERIENCE[49] only, that we can infer the existence of one object from that of another" (T 1.3.6.2). As I discussed in Chapter 2, in Hume's ontology, all existing things either coexist or exist successively. Likewise, our experience of objects also comes in two different modes: we can experience things coexisting, or

[49] This word is capitalized in the original text.

experience them successively. Induction requires us to experience things successively. Hume explicitly acknowledges this fact when he describes the role experience plays in the formation of inductive inferences. He claims that “We remember to have had frequent instances of the existence of one species of objects; and also remember, that the individuals of another species of objects have always attended them, and have existed in a regular order of contiguity and succession with them” (T 1.3.6.2). At T 2.3.7, Hume claims that we experience the points of space as coexistent, but we can only experience time successively. Since every succession, for Hume, is temporal, induction requires a successive experience of time.

Further evidence that induction requires successive experience concerns the fact that the object about which we infer is not currently present to the senses or the imagination. Hume makes this point clear when he writes:

> In all those instances, from which we learn the conjunction of particular causes and effects, both the causes and effects have been perceiv’d by the senses, and are remember’d: But in all cases, wherein we reason concerning them, there is only one perceiv’d or

> remember'd, and the other is supply'd in conformity to our past experience" (T 1.3.6.2)

For the mind to engage in induction, it must experience only one type of object that it has repeatedly experienced being accompanied by another type of object in the past, which means that the accompanying object is not currently present, either to the senses or the imagination. Such a situation could never happen without successive experiences. If the mind experienced all objects as coexistent, there would never be a scenario in which an object typically accompanied by another type of object in the past would fail to accompany it in the present. The act of experiencing any objects or spatial points as coexistent entails that all of the objects or points are present to the mind at once. If the mind's experience of all objects were coexistent, then an object's "usual attendant" must be present before the mind, but if it is, there is no reason for the mind to make any inductive inferences about it!

Induction requires the mind to make an inference about something it has not yet experienced or perceived based upon what it already has experienced or perceived. If A and B coexist, both would be present in the mind at once. That

one single instance of A and B accompanying each other would not be sufficient for the mind to experience a constant conjunction of A-type objects and B-type objects. Such a constant conjunction necessitates repetition of A-type objects and B-type objects. Since repetition of anything obviously requires succession, constant conjunction also requires succession.

The fact that constant conjunction requires repetition and repetition requires succession reveals another way in which induction is dependent upon PST. For the mind to form inductive inferences properly, the objects it repeatedly experiences must be as temporally contiguous to each other as possible. The greater the temporal distance between one pair of accompanying objects and the next pair of similar accompanying objects, the more difficult it is for the mind to experience a constant conjunction between them. Hume recognizes this:

> ……’twill readily be allow’d, that the several instances we have of the constant conjunction of resembling causes and effects are in themselves entirely independent, and that the communication of motion, which I see result at present from the shock of two billiard balls, is totally distant from that which I saw result from such an impulse a twelve-month ago. These impulses have no influence on each other.

> They are entirely divided by time and place; and the one might have existed and communicated motion, tho' the other never been in being (T 1.3.14.18).

In the above example, Hume experiences one billiard ball communicating motion to another, and then has a similar experience a year later. Neither instance could possibly influence the other, due to the temporal distance separating them. This is exactly what one would expect, given Hume's remarks in T 2.3.7 regarding the inherent difficulty of tracing any long succession, and the fact that when tracing any succession of events, the mind must pass through each intermediate step in that succession in sequential order(T 2.3.7.2). Considering the number of intermediate steps Hume's mind would have to pass through in a year-long succession, it is not surprising that he would not consider the two instances of one billiard ball moving another to be conjoined in any way. If the only examples Hume ever experienced of billiard balls moving each other were the two discussed in the above passage; separated by a year-long succession in which many other events occurred, it is clear he would never be able to make any inductive inferences about billiard balls moving each other.

A year-long succession is too far removed from the present to influence the imagination strongly enough for induction to occur. Recall that at T 2.3.7.1, Hume claims that spatially and temporally contiguous objects exert a strong affect on the imagination because they are close to – that is, they relate to or serve as a matter of concern for - our present condition, which is always inevitably something the imagination contemplates. Remote objects have a far weaker effect upon the imagination because they exhibit a much fainter and weaker relation to the present than contiguous objects do. At T 2.3.7.2, Hume claims that the reason for this is that the imagination must not only pass through each intermediate step in a succession, but also relate back to, and contemplate, the present with each intermediate step. Needless to say, the more steps a succession contains, the more difficult it will be for the mind to carry out this process, and so the more remote an object is from the present, the weaker its effects upon the imagination will be. Conversely, the fewer steps a succession contains, the more contiguous it is with the present, and the stronger its influence on the imagination will be.

How this process of constantly tracing each step of a temporal succession and comparing it to the present influences induction should now be clear. “All kinds of reasoning from causes to effects,” Hume asserts, “are founded on two particulars, *viz*. the constant conjunction of any two objects in all past experience, and the resemblance of a present object to any one of them” (T 1.3.12.25). Hume then proceeds to claim,

> The effect of these two particulars is, that the present object invigorates and enlivens the imagination; and the resemblance, along with the constant union, conveys this force and vivacity to the related idea; which we are therefore said to believe……If you weaken either the union or resemblance, you weaken the principle of transition, and of consequence that belief, which arises from it (T 1.3.12.25).

Temporally remote objects weaken both the constant union and the resemblance of the past objects to the present object. The more temporally remote objects are, the harder it is for the imagination to relate the steps of the succession from the present to the objects back to the present, and thus the harder it is for the mind to recognize the resemblance between the past objects and the

present object. The more contiguous objects are with the present, the easier it is for the imagination to identify a resemblance between those objects and an object in the present, and hence the easier it is for the mind to construct inductive inferences.

While analyzing the mental processes required for induction in terms of the mind's experience of time helps illuminate these processes, it also reveals some unresolved tensions in Hume's thought which have not been fully appreciated or recognized. One of these problems involves a potential inconsistency concerning the future's relationship to the present and our attitude toward this relationship. The other concerns an unexpected consequence of Hume's analysis of PST which contradicts some of his beliefs about causal inferences.

Unresolved Tensions

Hume's remarks about our attitudes regarding the future in Book One of the *Treatise* are not always consistent with his claims regarding the same topic in Book Two. An excellent example of this discrepancy concerns the influence a point in time has on the passions by virtue of its closeness or remoteness to the present. In "Of

contiguity and distance in space and time," T 2.3.7, Hume explicitly argues that the more remote something is from the present, the weaker its effect will be on the imagination and the passions:

> Here then we are to consider two kinds of objects, the contiguous and the remote; of which the former, by means of their relation to ourselves, approach an impression in force and vivacity; the latter by reason of the interruption in our manner of conceiving them, appear in a weaker and more imperfect light. This is their effect on the imagination. If my reasoning be just, they must have a proportionate effect on the will and passions. Contiguous objects must have an influence much superior to the distant and remote. Accordingly we find in common life, that men are principally concern'd about those objects, which are not much remov'd either in space and time, enjoying the present, and leaving what is afar off to the care of chance and fortune. Talk to a man of his condition thirty years hence, and he will not regard you. Speak of what is to happen to-morrow, and he will lend you attention" (T 2.3.7.3)[50]

In the above passage, Hume explains our lack of regard and concern for the future in terms of the remoteness of the future relative to the present. The more distant the future date is, the less concern we will have for it, due to its lack of contiguity with the present.

[50] This is a longer excerpt of a passage I quoted earlier in this chapter.

Much earlier in the *Treatise*, at T 1.3.9.13, Hume also discusses people's lack of interest in the distant future, but he provides a very different explanation for this phenomenon:

> As resemblance, when conjoin'd with causation, fortifies our reasonings; so the want of it in any very great degree is able almost entirely to destroy them. Of this there is a remarkable instance in the universal carelessness and stupidity of men in regard to a future state, where they show as obstinate an incredulity, as they do a blind credulity on other occasions……the vulgar……have nothing like what we can call a belief of the eternal duration of their souls……as belief is an act of the mind arising from custom, 'tis not strange the want of resemblance shou'd overthrow what custom has establish'd, and diminish the force of the idea, as much as that latter principle increases it. A future state is so far remov'd from our comprehension, and we have so obscure an idea of the manner, in which we shall exist after the dissolution of the body, that all the reasons we can invent, however strong in themselves, and however much assisted by education, are never able with slow imaginations to surmount this difficulty, or bestow a sufficient authority and force on the idea. I rather choose to ascribe this incredulity to the faint idea we form of our future condition, deriv'd from its want of resemblance to the present life, than to that deriv'd from its remoteness. For I observe, that men are every where concern'd about what may happen after their death, provided it regard this world; and that there are few to whom their name, their family, their friends, and their country are in any period of time entirely indifferent.

In this passage, Hume explains incredulity in and lack of concern for a distant future state – in this case, the afterlife – in terms of its lack of resemblance to the present life. He explicitly denies that the remoteness of that future state is the reason for the incredulity. Hume argues that, in spite of the obvious remoteness of the next life in comparison to the present life, most people still care deeply about what will happen to their reputation, their friends, their family, and their country after they die. According to Hume, people care about these things because they are all a part of, and therefore, resemble, the present life.

By refusing to attribute incredulity in the afterlife to latter's remoteness from the present life, Hume offers an explanation that conflicts with the one he provides in T 2.3.7.3 and other paragraphs in that section, where he posits remoteness from the present as the reason for our indifference regarding the far future. His claim that people do care about their post-mortem condition to the extent that it resembles the present life is problematic, because Hume's comments in T 2.3.7 all pertain to the present life, yet he still attributes indifference about the future to its remoteness.

Hume unknowingly makes this problem more acute at T 2.3.7.9, where he explores whether two points of time equally distant from the present have the same effect on the imagination, and ultimately concludes that they do not. He argues that different points in time equally distant from the present *would* have the same effect on the imagination *if* PST did not exist:

> When from the present instant we consider two points of time equally distant in the future and in the past, ‘tis evident, that, abstractly consider’d, their relation to the present is almost equal. For as the future will *sometime* be present, so the past was *once* present. If we cou’d, therefore, remove this quality of the imagination [PST], an equal distance in the past and in the future, wou’d have a similar influence.

Without PST, two points of time equally distant in the future and the past would have the same effect upon the imagination. This is because both points would be equally removed from the present; they would both exhibit the same relation to the present. By asserting that the equally distant points in time would have the same effect, Hume clearly assumes that remoteness in relation to the present

determines the strength or weakness of a point in time's influence on the imagination.

A possible way to resolve the difficulty might be to claim that remoteness causes a lack of resemblance; the more remote a point in time is, the less it will resemble the present. Some support for this claim comes from the fact that, as I argued earlier, large distances in time disrupt the mental processes involved with induction, and consequently, make the mind far less likely to assume that the future will resemble the past. Although it is not clear if this completely resolves the problem, it seems to be a good place to start.

Another unresolved problem concerns the relationship between PST and causal inferences. Hume repeatedly claims throughout T 2.3.7 that mental operations which require the imagination to oppose PST and project itself from the present to a short distance in the past are much more difficult for the imagination than mental operations which conform to PST. As discussed in Chapter 3, Hume believes that all causes must precede their effects in time, and causal succession presupposes temporal succession. This means that any mental operation by which the mind begins with a cause and then infers or moves its consideration to

the effect necessarily involves a psychological movement from one moment to the moment immediately following it, which is exactly the order in which the mind experiences time when it functions in accordance with PST.

Since all causes qua causes temporally precede their effects, all effects qua effects temporally succeed their causes. This obviously means that an inference from an effect to a cause must involve a psychological movement from one moment in time (the moment at which the effect exists) to a moment immediately preceding it (the moment at which the cause exists). Such a mental act directly opposes PST, as well as the natural succession of time. As mentioned above, all mental acts done in conformity with PST are much easier to perform than mental acts which do not. Inferences from causes to effects conform to PST. Inferences from effects to causes, however, do not. For Hume’s remarks regarding PST in T 2.3.7 to be consistent with his belief that all causes temporally precede their effects, it must necessarily be the case that inferences from effects to causes are much more difficult for the mind to perform than inferences from causes to effects.

Hume, however, does not recognize this consequence of his own theories. Many of his comments throughout the

Treatise – especially at T 1.3.6.2, T 1.3.6.7, and T 1.3.12.25 – very strongly suggest that inferences from effects to causes are just as easy for the mind to perform as inferences from causes to effects. He seems to assume that the same psychological and phenomenological processes are involved with each type of inference, and that each type of inference exerts the same degree of power over the imagination and passions. Of course, the processes involved are not the same – inferences from causes to effects conform to PST, inferences from effects to causes oppose it – and the imagination and passions are affected differently to different degrees in each kind of inference; moving from cause to effect is easier for the imagination than moving in the opposite direction. Hume not only fails to realize this, but also makes comments which directly contradict this inescapable consequence of his theories. An excellent example of this occurs in Hume's twentieth footnote in the *Treatise*, where he claims, "We infer a cause immediately from its effect; and this inference is not only a true species of reasoning, but the strongest of all others" (T 1.3.7.5). To be consistent, Hume would have to say that the inference from effects to causes is not the strongest kind of inference, but rather one of the weakest, due to the

fact that such an inference opposes PST, which makes all mental operations easier to perform.

It is not clear if Hume could liberate himself from this problem without sacrificing a major component of his philosophy. The problem arises out of an incompatibility between his theory of induction, his belief that all causes temporally precede their effects, and his belief that any mental operations which conform to PST are easier to conduct than mental operations which do not. Of these, the first is by far the best-known, and is one of the major crowning achievements of Hume's philosophical career. His belief that all causes precede their effects, as well as the argument he uses to support this belief, is not nearly as well-known, but – as I argued in Chapter 3 – nonetheless constitutes a very significant component of his philosophy. Hume's beliefs regarding the mind's experience of and attitude toward the past, present, and future is very rarely discussed, even by Hume scholars. This does not mean that Hume could jettison these beliefs about time without sacrificing something he might consider far more important, however. As I tried to show in this chapter, Hume's account of the process by which the mind produces inductive inferences presuppose certain beliefs about the phenomenal

succession of time, and some of these beliefs are the very same ones which give rise to the problem.

Concluding Remarks – How This Chapter Relates to the Previous Chapters

This chapter focused primarily on the experience of time, and how that experience of time influences inductive reasoning. In particular, it discussed how the imagination has a natural tendency to progress from the past to the present and from the present to the past, and how the processes required for inductive reasoning function better when they proceed in harmony with this tendency. In carrying out this task, I made reference to some of the concepts discussed and analyzed in Chapter Three, such as Hume's belief that all causes must precede their effects in time, as well as a concept that was introduced in Chapter One yet continued to play an important role in Chapter Three – the idea that all successions are temporal in Hume's philosophy. The ideas presented in Chapter Two regarding the finite divisibility of time are also pertinent for the topic of this chapter, however.

As I discussed in Chapter Two, the mind cannot experience time successively if time is infinitely

divisible. This is because the infinite divisibility of time entails that between any two moments are an infinite number of other moments. No moment would have an immediate predecessor or an immediate successor, which would obviously preclude the mind from experiencing moments successively, since doing so presupposes that each moment has an immediate predecessor and an immediate successor.

Since the mind must experience time successively to form inductive inferences, this means induction cannot occur unless time is discrete and discontinuous. To understand why this is the case, consider one of Hume's example of an inductive inference: repeatedly experiencing one billiard ball moving another, being presented with an instance of one ball approaching another, and then concluding without hesitation that the second ball will move. If time is infinitely divisible, then between the moment at which ball A collides with ball B and the moment at which ball B begins to move, there would be an infinite number of moments. When the mind experiences any temporal succession, it must not only trace all of the individual steps of the succession, but also compare them to the present. How could it ever possibly accomplish this task if the succession it is experiencing contains an infinite

number of steps? Furthermore, how would the mind ever join together ball A and ball B, since there would be an infinite number of moments between them? Obviously, it could not ever complete its tracing of the succession, and it would never associate the balls, and every other pair of billiard balls which resemble them, in a way it would need to for induction to be possible.

These reflections provide a reason why Hume could not escape from the second unresolved problem mentioned above by rejecting his beliefs about the mind's experience of time. The idea that time is discrete and discontinuous – and therefore, only finitely divisible – is extremely important to him, and he never abandoned that belief. That specific property of time determines how the mind experiences it, and the manner in which the mind experiences time plays a crucial role in the formation of inductive inferences.[51]

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[51] While the literature on Hume's account of induction is very vast, I have not yet come across any source that seemed to even notice that Hume's theory of induction requires a particular conception of, and a specific mode of experiencing, time. Many commentators, however, have argued that Hume's purposes for discussing inductive reasoning were more psychological than epistemological. These commentators – such as Craig, Livingstone, Strawson, Wright, as well as many others – tend to depict Hume as a naturalist instead of a skeptic. Exploring the arguments they give to support their naturalized vision of Hume is far beyond the scope of my project; a thorough examination of all the interpretative issues involved would require a dissertation in and of itself. Dicker's analysis of induction in *Hume's Epistemology and Metaphysics* acknowledges both the naturalist and the more traditional, skeptical interpretations of

One issue discussed in my first chapter that was conspicuous by its absence in this chapter was the Humean account of memory. Hume never discusses the role memory plays on our attitudes regarding the past in T 2.3.7 and 2.3.8 This is an extremely strange omission on Hume's part, since memory undeniably exerts a tremendous influence over our experience of time, and those sections pertain specifically to our experience of and attitudes toward the past, present, and future. An exciting area of additional research would be to investigate whether Hume's account of memory can help solve some of the unresolved tensions I discussed earlier. Such an investigation would require some degree of speculation about the strength of memory's impact on the imagination and passions in comparison to PST.

The relationship between PST and memory is just one unanswered question left over from my study of Hume's theory of time. I will discuss some other unanswered questions in my concluding chapter.

Hume, refuses to support either one, and then argues for an interpretation which combines aspects of both. Dicker spends a significant amount time exploring the psychological aspects of Hume's account of induction. Inasmuch as my discussion of Hume's theory of induction also focuses on the psychological dimensions of induction, I am still contributing something of value to the endless debates in Hume scholarship over Hume's naturalism and skepticism.

Chapter Six

Conclusion

The Philosophical Motivations behind this Dissertation

Despite Hume's significant contributions to the history of philosophy, many dimensions of his thought have not been sufficiently explored. His theory of time is one such rarely-studied aspect of his philosophy. Even well-known commentators on Hume have not given Hume's theory of time all of the attention and consideration it deserves.

When these commentators do discuss Hume's philosophy of time, they always focus on particular aspects of it and fail to even mention others. For example, Jacquette's *David Hume's Critique of Infinity* provides extremely detailed analyses of the arguments Hume develops to prove that time is finitely divisible, but never discusses how contiguity and distance in time affects the passions and the imagination, or why Hume believes every cause must temporally precede its effect. In contrast, Beauchamp and Rosenberg's *Hume and the Problem of Causation*, which is a very influential book in Hume scholarship, does study Hume's reasons for thinking that all causes must be prior to their effects, but explicitly dismisses Hume's arguments

against the infinite divisibility time as too weak and esoteric to deserve serious consideration from philosophers. After stating their reasons for ignoring Hume's arguments for the discreteness of time – arguments which constitute the subject matter of an entire chapter in Jacquette's book - in a footnote, Beauchamp and Rosenberg never discuss them again.

This disdain for Hume's arguments against the infinite divisibility of time also occurs in Flew's "Infinite Divisibility in Hume's Treatise," which, like *Hume and the Problem of Causation*, has also exerted a strong influence over Hume scholarship, as evidenced by the sheer number of responses it has received. Although Flew fiercely opposes Hume's positions regarding the infinite divisibility of time, he does consider them important enough to examine in detail. By focusing primarily on Hume's arguments against the continuity of time, he never even considers how Hume's belief in temporal discontinuity affects other aspects of Hume's philosophy, such as Hume's theory of causation and induction.

Even Hume scholars who mostly agree with or are sympathetic to Hume's stance on temporal discreteness completely neglect equally important components of Hume's

theory of time. Baxter exemplifies this phenomenon in his *Hume's Difficulty: Time and Identity in the Treatise*. Because of the sheer number of pages *Hume's Difficulty* devotes to the idea of time, how Hume thinks we acquire it, the arguments against infinite divisibility, and the relationship between time and identity in Hume's thought, one can argue that *Hume's Difficulty* is the most in-depth and detailed study of Hume's conception of time currently in publication. Baxter is aware of this himself, as he remarks that since "there has been no in-depth study of Hume's view of identity," and "there has been no in-depth study of Hume's account of time," he intends *Hume's Difficulty* "to supply these deficiencies by being the first focused study of Hume on time and identity" (Baxter 1). Despite his intense and protracted focus on time, however, Baxter's primary concern in *Hume's Difficulty* is Hume's account of identity, not Hume's account of time. Baxter's main argument is that Hume discovered a serious, unresolved problem with the very concept of numerical identity, and that understanding this problem necessitates an understanding of Hume's theory of time. Thus Baxter subordinates his discussion of Hume's theory of time to his analysis of Hume's conception of identity and the problem

with that conception. Baxter only discusses the components of Hume's philosophy of time that are directly relevant to numerical identity. Consequently, he leaves several important issues in Hume's temporal theory completely unexplored, such as the link between time and causation, and the effects of temporal contiguity and remoteness on the imagination.[52]

This brief excursion into the secondary literature regarding Hume's conception of time should have made clear to the reader that no text currently in publication features a detailed analysis of both the fundamental aspects of Hume's theory of time and the influence that said theory exerts on other, far better-known components of Hume's overall philosophy, especially his descriptions of causation and induction. The literature which even bothers to mention that Hume has a theory of time tends to either dismiss it as unimportant, or focus extensively on one aspect of it and neglect the others. One of my intentions in writing this dissertation was to rectify this problem by providing a detailed, in-depth study of *all* of the major components of Hume's theory of time, so that anyone

[52] Baxter does quote a sentence from T 2.3.7.5 on page 29, but he does so only to support an implicit premise in Hume's third reductio argument against infinite divisibility. He never discusses or even mentions what the topic of that section of the *Treatise* is.

conducting research on this underappreciated aspect of Hume's thought would be able to have access to a much fuller, more complete picture of Hume's temporal theory than is currently available in other texts.

Synopsis of Dissertation

I carried out my goal of establishing this more thorough study of Hume's philosophy of time over the course of five chapters. My first chapter begins with a brief discussion of crucial principles of Hume's epistemology. Doing so is necessary because the arguments presented in the later chapters presuppose knowledge of those principles. My next task in Chapter One involves clarifying precisely what time is for Hume. I argue that time for Hume is a compound abstract idea of succession qua succession. An important consequence of this view, which is a recurring theme in subsequent chapters, is that all successions are temporal for Hume. Another consequence of this conception of time is that a persistent worry raised by many commentators on Hume – that Hume's conception of time violates his Copy Principle, one of Hume's most important epistemic principles – is unnecessary. Hume explicitly claims that the Copy Principle does not apply to compound ideas, only simple ones. Hence the common concern that

Hume’s notion of time contradicts his own Copy Principle is ill-founded.

A significant portion of Chapter One features my response to Baxter, who interprets Hume as arguing that distinct moments of differing temporal lengths can coexist. Baxter, well aware of Hume’s repeated insistence that the parts of time do not and cannot coexist, defends his interpretation of Hume by claiming that the members of a succession (the moments constituting the succession) cannot coexist with other members of the same succession, but they can coexist with the members of another succession. Baxter thinks this qualification is consistent with Hume’s numerous denials that moments can coexist.

I strongly disagree with Baxter’s interpretation, and raise a series of arguments against it. The most important one concerns the fact that any two successions can easily be reinterpreted as being members of a larger succession which contains them both. Since the members of both sub-successions would be members of the same, larger succession, and both Hume and Baxter explicitly state that moments in the same succession can never coexist, Baxter must deny the possibility that distinct moments of differing temporal lengths could coexist.

In the second chapter, I analyze Hume's arguments for temporal minima, which are discrete, indivisible "parts" of time. Hume calls these temporal minima "moments," and he employs two different strategies to argue for their existence. The first is a phenomenological approach, in which he uses thought experiments to present reasons for thinking that our experience of time requires temporal minima. The second strategy is primarily logical, and consists of three arguments by which Hume attempts to prove that the very concept of the infinite divisibility of any finite thing – either spatial or temporal – is contradictory. These arguments take the form of *reductio ad absurdums*. I defend the first and third of these arguments from objections which have commonly be raised against them in the secondary literature. By far the most important objection, made famous by Flew, accuses Hume of misunderstanding what infinite divisibility entails. I discuss arguments developed by authors who disagree with Flew, and then raise my own objections to his position. Throughout the chapter, I explain how infinite divisibility is incompatible with succession, and consequently how time cannot be successive if it is infinitely divisible.

Hume’s belief that time is not and cannot be infinitely divisible plays a pivotal role in his theory of causality. In Chapter Three, I elucidate the link between temporal discreteness and causation. I do this by analyzing the Temporal Priority Argument, an argument Hume gives to prove that all causes, qua causes, must precede their effects in time. Hume believes causation is successive, and because all successions are temporal, causal successions and temporal successions are very closely connected for Hume – so much so that one could not exist without the other. Since causal succession implies temporal succession, and temporal succession requires an atomistic conception of time, causal succession requires discrete, atomistic time.

After discussing Hume’s Temporal Priority Argument, I explain why the temporal priority of causes to their effects is much more important for Hume’s project than Hume realizes. Hume thinks that temporal priority, contiguity, and necessary connection are the three essential components of the concept of a cause, but repeatedly emphasizes that necessary connection is the most important of the three. I argue that the temporal priority of causes to their effects is at least as important as necessary connection, if not more so, for the following reasons. A crucial part of

Hume’s theory of causation is that causes and effects must be conceptually distinct. If there is no way to distinguish between causes and effects, his theory of causation does not work. Both contiguity and necessary connection are symmetrical relationships; both causes and effects exhibit both relationships the same way to the same degree. If all of the relationships between causes and effects are symmetrical, it is extremely difficult, if not impossible, to distinguish between them. Temporal priority of causes to their effects, however, is an asymmetrical relationship. The asymmetrical nature of the relationship makes a distinction between causes and effects possible. Hume does not have other means of distinguishing causes from effects at his disposal, so he must rely on temporal priority.

Hume’s belief that causes and effects are conceptually distinguishable also features prominently in his critique of the causal maxim. The causal maxim states that whatever begins to exist must have a cause. In Chapter Four, I discuss Hume’s critique of this maxim, and reveal a problem with it. Although Hume agrees with the maxim, he thinks it can be denied without contradiction. He claims that the concept of a cause of existence is distinct from the concept of a beginning of existence, and so the two

concepts can be separated from each other. This means that asserting that something began existing without a cause is not self-contradictory.

To support this position, Hume uses his Separability Principle and his Conceivability Principle, which are two important principles in his epistemology and ontology. By examining Hume's descriptions and uses of these principles, I show how they entail that if X is separable from Y, then Y must be equally separable from X. When applied to the critique of the causal maxim, this means that if the concept of a beginning of existence is separable from the concept of a cause of existence, then the concept of a cause of existence must be equally separable from the concept of a beginning of existence. The Separability and Conceivability principles imply that something can be caused to exist without beginning to exist. Based upon Hume's descriptions of a cause of existence, however, it is self-contradictory to claim that something can be caused to exist without beginning to exist. The concept of a cause of existence as Hume articulates it contains the concept of a beginning of existence. Hume does not use the word "cause" in a way that would enable something to be caused to exist without beginning to exist. Consequently, a beginning of

existence and a cause of existence are not nearly as separable from each other as they need to be for the critique of the causal maxim to work. Neither Hume nor his commentators in the secondary literature seem to have realized this.

In Chapter Five, I explore the link the between Hume's theory of time and his account of induction. I begin the chapter by examining T 2.3.7 and T 2.3.8, sections of the *Treatise* in which Hume describes what I call the Phenomenal Succession of Time (PST), which is the imagination's natural tendency to progress from the past to the present and from the present to the future. I explain how PST influences the imagination and the passions. I then argue that the mental processes required for the production of inductive inferences need PST in order to function properly. PST is a necessary condition for the possibility of induction. One unexpected consequence of induction's reliance upon PST is that inferences from effects to causes must be much more difficult for the mind to perform than inferences from causes to effects. This is due to the fact that all causes temporally precede their effects, so when the mind begins with an effect and then shifts its attention to the cause of that effect, the mind opposes

PST. Hume claims that any mental operation which opposes PST is much more difficult to perform than mental operations which conform to it.

Hume is not aware of this consequence of his own theory, as evidenced by numerous passages in which he very strongly suggests that both types of inferences are equally easy. The secondary literature is not aware of this problem either. Virtually everything written about Hume and induction tends to focus on the famous problem of induction which Hume discovered. Very few sources mention anything even remotely relevant to the influence Hume's theory of time has on his account of induction. This is unfortunate, because the relationship between time and induction in Hume's thought raises several questions which deserve careful consideration and exploration.

Possibilities for Further Research

One aspect of this relationship between time and induction in Hume's thought which warrants further research is what effect, if any, reversing the direction of PST would have on the formation of inductive inferences. If we experienced time moving into the past instead of the future, would this reversed experience of time affect our

ability to generate inductive inferences, and if so, how? A related issue concerns whether or not it is possible for the phenomenal succession of time that we experience to be in opposition to the natural succession of time. Hume distinguishes between the natural succession of time and PST, remarks that the latter conforms to the former, yet never contemplates the possibility that the two successions of time could be opposed. Since Hume himself remained silent on these issues, any investigation into what his philosophy has to say about them will obviously be purely speculative. From a metaphysical standpoint, however, these sorts of issues are too important to ignore.

It is not completely surprising that Hume said nothing about the possibility of a reversed PST, since the naturalistic and empiricist tendencies in his philosophy would not give him a reason to inquire into that topic. What is truly surprising, however, is that Hume never discusses the role memory plays in PST. Memory obviously exerts a tremendous influence over our beliefs in and attitude toward the past. For this reason, Hume should have discussed memory vis-à-vis PST.[53] The very same naturalistic

[53] Hume does mention the relationship between memory and time very briefly in T 1.1.3 and 1.3.5, but his main goal in these sections is to explore the differences between memory and the imagination. For

and empirical tendencies which precluded him from contemplating possible worlds in which the direction of PST is reversed should have compelled him to explore the link between memory and PST. Attempting to determine what that link may possibly be would be difficult, but it would also be important, because it would help to illuminate some poorly-understood and under-studied aspects of Hume's thought.

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reasons I tried to make clear in both the present chapter and the previous chapter, the relationship between memory and the order of time deserves a more thorough analysis than the extremely brief treatment he gives this topic in these sections.

BIBLIOGRAPHY

Baxter, Donald. “Hume on Infinite Divisibility” *History of Philosophy Quarterly* 5 (1988): 133-140.

-----. *Hume’s Difficulty: Time and Identity in the Treatise*. New York: Routledge, 2008.

Beauchamp, Tom and Alexander Rosenberg. *Hume and the Problem of Causation*. New York: Oxford University Press, 1981.

Dainton, Barry. *Time and Space*. Montreal: McGill Queen’s University Press, 2001.

Davies, Paul. *About Time: Einstein’s Unfinished Revolution*. New York: Simon and Schuster, 1995.

Dicker, Georges. *Hume’s Epistemology and Metaphysics: An Introduction*. New York: Routledge, 1998.

Flew, Anthony. “Infinite Divisibility in Hume’s Treatise” (1976) in Donald Livingston and James King (eds) *Hume: A Re-Evaluation.* New York: Fordham University Press, pp. 257-269.

Fogelin, R.J. “Kant and Hume on the Simultaneity of Causes and Effects” *Kantstudien* 67, 1 (1976): 51-59 in Tweyman, Stanley (ed). *David Hume: Critical Assessments* vol. III. New York: Routledge, 1995, pp. 331-343.

Franklin, James. “Achievements and Fallacies in Hume’s Account of Infinite Divisibility” *Hume Studies* 20 (April 1994): 85-101.

Hume, David. David and Mary Norton, ed. *A Treatise of Human Nature*. New York: Oxford University Press, 2000.

Jacquette, Dale. *David Hume’s Critique of Infinity*. Boston: Brill, 2001.

Kemp Smith, Norman. *The Philosophy of David Hume*. New York: Palgrave Macmillan, 1941.

Kline, David. “Humean Causation and the Necessity of Temporal Discontinuity” *Mind* 94 (1985): 550-556.

Laird, John. *Hume’s Philosophy of Human Nature*. Archon Books: 1967.

Lennon, T.M. “*Veritas Filia Temporis*: Hume on Time and Causation” *History of Philosophy Quarterly* 2, 3 (1985) in Tweyman, Stanley (ed.) *David Hume: Critical Assessments* vol. III. New York: Routledge, 1995, pp. 344-360.

McRae, R. “The Import of Hume’s Theory of Time” *Hume Studies* 6, 2 (1980) in Tweyman, Stanley (ed). *David Hume: Critical Assessments* vol. III. New York: Routledge, 1995, pp. 25-34.

Miller, Jon. “Hume’s Impression of Succession (Time)” *Dialogue* XLVII (2008), 603-617.

Munsat, S. “Hume’s Argument that Causes Must Precede Their Effects” *Philosophical Studies* 22 (1971): 24-26 in Tweyman, Stanley (ed). *David Hume: Critical Assessments* vol. III. New York: Routledge, 1995, pp. 341-343.

Noonan, Harold. *Hume.* Oxford: Oneworld Publications, 2007.

Pappas, G.S. “On McRae’s Hume” *Hume Studies* 7, 2 (1981) in Tweyman, Stanley (ed). *David Hume: Critical Assessments* vol.III. New York: Routledge, 1995, pp. 35-38.

Russell, Bertrand. “On the Notion of Cause” in *Mysticism and Logic*. New York: Anchor Books, 1957, pp. 174-201.

Schwartz, Jeffrey. *The Mind and the Brain: Neuroplasticity and the Power of Mental Force*. New York: Harper Collins, 2002.

Stroud, Barry. *Hume*. London: Routledge, 1977.