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The Psychologicistic Foundations of Hume's Critique of Mathematical Philosophy

WAYNE WAXMAN

Nearly every philosopher has encountered positions or arguments that seem fatally flawed yet been at a loss to diagnose the precise causes of the debility. There are cases, too, where a broad consensus exists that something is defective but, even after centuries of trying, no agreement as to why. So, when an author arrives claiming to establish a definitive diagnosis, as James Franklin does in "Achievements and Fallacies in Hume's Account of Infinite Divisibility,"¹ one can only respond with hope and anticipation.

Alas, once Franklin's case is subjected to scrutiny, most readers will, I believe, conclude that their hopes were misplaced. Nevertheless, its examination offers an excellent opportunity to improve our understanding of why Hume's reasons for denying infinite divisibility seem so uncharacteristically weak, while the source of the apparent infirmity remains so frustratingly elusive. In this paper, I shall advance a new diagnosis, locating the trouble not in Hume's argumentation but in the way readers tend to approach it. The error consists in treating the demonstrations of T I ii as self-contained exercises in philosophy of mathematics: so long as we remain wedded to the assumption that items established elsewhere in the *Treatise* may be ignored unless, and only insofar as, Hume expressly invoked them, his critique of mathematical philosophy cannot but seem shoddy and vainglorious. These demonstrations,² together with the analysis of space and time of which they form a part, can be sustained only if buttressed by psychologicistic supports drawn from T I i, most particularly the subjective,

imagination-dependent character of relations and the reduction of universals to habitudes of comparison with an eye to resemblances. Once these and related tenets (“the elements of this philosophy,” T 13)³ are factored in, and stand in readiness to ward off any challenge premised on the usual piecemeal approach, Hume’s critique of mathematical philosophy gains immeasurably in force and coherence. Moreover, as their direct implication and application, an attack upon this critique necessarily strikes to the very heart of Hume’s psychologism. Thus, if my diagnosis is correct, the proponent of mathematical philosophy can triumph over Hume only by redirecting his fire at the foundations of that psychologism.

Unfortunately, it is impossible to undertake a systematic, detailed analysis of T I ii within the confines of a single paper. Instead, I propose to use Franklin’s critique of Hume on indivisibles as a case study of what happens when the theory of space and time propounded in T I ii is detached from its foundations in T I i. What follows, then, is by design something of a hybrid, mixing elements of both critical discussion and philosophical interpretation.

I.

Franklin bases his belief that a final reckoning with the question of indivisibility is possible on advances in mathematics and set theory which establish once and for all the possibility that space and time are infinitely divisible. Since there are also consistent models of space and time as discrete or atomic (in one dimension the integers, and in higher dimensions, the lattice of points with integer coordinates), he concludes that it is now a merely empirical question, not to be settled either way by *a priori* reasoning, which model is correct (Franklin, 87–88). From this, Franklin draws two conclusions. First, Hume was warranted in rejecting the arguments of seventeenth and eighteenth century mathematicians who claimed to demonstrate infinite divisibility *a priori*, employing only the techniques then available (Franklin, 88–89); however, he was himself equally mistaken in believing that he was in possession of *a priori* demonstrative proofs for the indivisibility thesis. Second, and more controversially, Franklin holds that contemporary psychology and cognitive science lend support to Hume’s imagistic approach to philosophical problems, including the philosophy of mathematics:

Although mathematicians can claim that it is theoretically possible to do geometry purely by manipulating symbol strings (“’Tis usual with mathematicians, to pretend, that those ideas, which are their objects, are of so refin’d and spiritual a nature, that they fall not under the conception of the fancy” [T 72]), the modern evidence is that a spatial visualization capacity (read “imagination”) is necessary in practice. So Hume’s strategy of beginning his “impressions and ideas” project

with an extended consideration of our "ideas of space and time" can be awarded some belated praise on this score.⁴

Nevertheless, Hume is to be faulted for grounding his imagism on a dogmatic perceptual atomism: "his *a priori* atomism is wrong, since its consequence, the denial of even the possibility of infinite divisibility, provides a *reductio* of it" (Franklin, 96).

Having purportedly pinpointed Hume's mistakes, Franklin then presents his diagnosis of their causes. Firstly, Hume is guilty of an "attitude of sour grapes, that if something is beyond the reach of the mind, then it isn't there at all." According to Franklin, this attitude, "constitutive of...idealism" (Franklin, 91), began with Berkeley, gradually gained favor until, early in the twentieth century, "it became the first and only philosophy to capture the entire academic world, and then suddenly disappeared" (Franklin, 93). It disappeared because philosophers at last came to recognize the fallacy of the idealist tenet, "It is not conceivable by the human mind, therefore it cannot be." For, however great the contribution of the mind to our *knowledge* of the world, nothing can justify our saying "that the world is restricted by the powers the mind has"—and to insist on saying it anyway is thus only "sour grapes."

To convict thinkers of the caliber of Berkeley and Hume of this "crudest of logical errors" (Franklin, 95), one needs to be able to muster evidence of the most conclusive kind. What case does Franklin have to offer? To begin with, he cites Berkeley's reason for claiming that material objects cannot be conceived to exist outside a mind: "to make out this, it is necessary that you conceive them existing un-conceived or unthought of, which is a manifest repugnancy. When we do our utmost to conceive the existence of external bodies, we are all the while only contemplating our own ideas."⁵ Berkeley's fallacy, according to Franklin, is to infer, from our inability to *conceive* (*perceive, imagine*) stones, trees, etc., separately from the mind's action of conceiving (*perceiving, imagining*) them, that these things cannot *exist* separately from minds. Yet, there are several features of Berkeley's reasoning that belie this conclusion. In the first place, he did not deny that there may be minds possessing sense faculties different from ours, and thus ideas inconceivable by the human mind which nevertheless may be said to exist.⁶ He even conceded the possibility that there might be a third kind of entity, other than matter and spirit.⁷ As such an entity would be, by definition, inconceivable (since, for him, anything conceivable is *ipso facto* an idea and so mental in nature), it follows that Berkeley cannot have subscribed to the thesis Franklin attributes to him: "what cannot be conceived by the human mind therefore cannot exist."

Berkeley's admission that other beings might exist besides spirits and their ideas means that, strictly speaking, it is incorrect to label him an idealist or a spiritualist, rather than simply an anti-materialist. The contrary impression is

Volume XXII, Number 1, April 1996

due to his having, not unreasonably, concerned himself principally with those things a mind *can* conceive—objects like stones, trees, etc.—and asking whether *they* may be supposed to exist “without the mind.” The general principle to which he in fact appealed, *pace* Franklin, is that two things separable in thought only by abstraction (i.e., by a distinction of reason) cannot be supposed capable of *existing* independently of one another.⁸ This is a principle nearly everyone accepts in some form; for example, only a diehard platonist would hold that cubical shape is capable of existing as a sheer form, all by itself, without there being anything—mental, material, or of some other ontological kind—that bears the shape. However, Berkeley, like Hume after him, attached a particularly strong import to this principle, as his critique of the distinction between primary and secondary qualities illustrates. His reasoning was essentially as follows: (i) it is impossible to form an image in imagination of cubical shape without fancying some colored or tangible expanse so shaped; (ii) this impossibility reflects the fact that nothing has ever been presented to our senses possessed of cubical form that was not also either colored or tangible; (iii) since color and tangible quality are as qualitatively incommensurate with one another as either is with respect to odors, pains, and emotions (i.e., a color can only resemble another color, a tangible quality another tangible quality), it follows that (iv) a visible cube and a tangible cube have nothing in common with one another beyond the name, and (v) it is only through their constant conjunction in experience, not any directly discernible quality, that these two entirely disparate sensations come to be identified as instances of the same shape; accordingly, (vi) there is no such thing as the abstract, primary quality *shape* common to the two sensory media, and *a fortiori* (vii) nothing which could be abstracted from *all* sensory content and be supposed to characterize things outside the mind (be it shaped matter or shape as the property of some third kind of entity).⁹ This same reasoning Berkeley extended to ideas in relation to the mind, resulting in the claim that their *esse* is *percipi*: since we cannot *conceive* (*perceive, imagine*) stones, trees, etc., separately from the mind’s action in conceiving (perceiving, imagining) them, it could only be via abstraction that they could be thought to *exist* separately from minds; but since abstractions are a fallacy of philosophers, it follows that such things can never exist separately from minds. Thus, Berkeley’s anti-materialism is simply an application of his anti-abstractionism.

Hume’s position is in most respects the same as Berkeley’s. He too “readily allowed, that other beings may possess many senses of which we can have no conception; because the ideas of them have never been introduced to us in the only manner by which an idea can have access to the mind, to wit, by the actual feeling and sensation” (EHU 20). He was also “ready to allow, that there may be several qualities both in material and immaterial objects, with which we are utterly unacquainted” (T 168). Clearly, one open to such possibilities

cannot be charged with subscribing to the *general* thesis that what cannot be conceived by the human mind cannot exist. More importantly, Hume, like Berkeley before him, seems not to have been in the least concerned with things of which we lack any notion or idea, much less desirous of proscribing their possible existence—which he could not do anyway for want of any idea by which to think, and so negate, it. I can see no reason why either philosopher would even have balked at conceding that there may be things quite beyond our ken which, by sheerest coincidence, in some manner unspecifiable by us, accord with the word-formulæ by which rationalists and platonists struggle to define their abstract ideas, concrete universals, infinitely divisible quanta, etc. Indeed, insofar as they based their conception of the mind and its powers solely on what experience reveals, they could perfectly well allow that at some future time, perhaps only five minutes hence, hitherto unsuspected powers of our minds might suddenly manifest themselves and ideas of such things actually start flooding in. For their prime concern was with those entities of which we *do* have ideas—sensations, reflexions, and images of these in thought. Berkeley and Hume thus directed their refutations of rationalism towards showing that nothing actually present to human consciousness, whether in sensation, inferable through it, or hypothesizable in imagination, conforms to its formulæ. This sufficed for their purposes since mathematical philosophers of the time likewise staked the worth of their philosophizing on being able to find objects for their notions among the contents present to the mind (for only that whereof we may become conscious can ever be of concern to us in thought or action). So, Berkeley and Hume could quite properly consider their task accomplished if they succeeded in showing that the notions of mathematical philosophy all depend on “*Abstraction*, an opinion, which, if we examine it accurately, we shall find to be unintelligible, and even absurd” (EHU 154)—notwithstanding their acknowledged inability to say anything at all about such objects as may fall beyond the purview of human consciousness.

Indeed, contrary to what Franklin supposes, it would be difficult to find a philosopher less sanguine about the powers of the human mind, and more inclined to dwell on its weakness and limitations, than Hume (“No conclusions can be more agreeable to scepticism than such as make discoveries concerning the weakness and narrow limits of human reason and capacity” [EHU 76]). It was the mathematical philosophers who took an optimistic view of these powers and, in consequence, came in for Hume’s censure: “‘Tis usual with mathematicians, to pretend that those ideas, which are their objects, are of so refin’d and spiritual a nature, that they fall not under the conception of the fancy, but must be comprehended by a pure and intellectual view, of which the superior faculties of the soul are alone capable” (T 72). So, far from indulging in “sour grapes,” Hume’s weapon of choice against the dogmatic

pretensions of the rationalists was the anti-abstractism he adapted from Berkeley.

Or so most of us are inclined to think. However, according to Franklin, the following shows conclusively that Hume subscribed to the sour grapes fallacy:

what are we to make of it when Hume, the paragon of rationality in the century of "Reason" does the same [as Berkeley and the German idealists]? We make nothing of it, because we are too flabbergasted.... [I]t is not being asserted that Hume actually agrees with Berkeley's idealism. The assertion is that Hume accepted an argument of the same logical form as Berkeley's argument for idealism, not that he applied the argument to reach Berkeley's conclusion. Again, we are discussing arguments not conclusions.

One is first tempted to defend Hume. Surely he means something more restrained, perhaps along the lines of, "What we cannot conceive *because it contains a contradiction* cannot exist." But, one must ask, what is Hume's account of contradiction? He does not think of contradictions as vacuous, nor as external constraints on thought (that is the view of the scholastic syllogistic that he continually attacks). The question, "Why cannot a contradiction be true?" is not one he poses clearly—though it is a serious problem for his thought—but his answer to it is quite explicit: "The same is the case with contrariety [that is, it is a relation of ideas, discoverable at first sight]...no one can once doubt but existence and non-existence destroy each other, and are perfectly incompatible and contrary" (T 70). So, far from an appeal to contradiction saving Hume, we find that for him contradiction itself is to be explained in terms of the "contrariety" of ideas. And the move in the last sentence quoted from "contrary" (of ideas) to "incompatible" (of things) is itself an instance of the fallacy, "It is inconceivable, so it cannot be."¹⁰

There are several problems with the evidence by which Franklin justifies his attribution of the fallacy to Hume. (i) The word 'contradiction' does not occur anywhere in the passage cited in the quotation above, T 70, nor in any other known to me in which Hume considered the relation of contrariety. Clearly, Franklin has simply assumed, without textual warrant, that T 70 is intended as an analysis of contradiction; yet, as will become apparent directly, there is ample reason to deny this. (ii) Hume, it is true, does not subject the notion of contradiction to sustained scrutiny. However, one can get a good idea how he conceived it from the following:

What can be conceiv'd by a clear and distinct idea necessarily implies the possibility of existence; and he who pretends to prove the

impossibility of its existence by any argument deriv'd from the clear idea, in reality asserts, that we have no clear idea of it, because we have a clear idea. 'Tis in vain to search for a contradiction in anything that is distinctly conceiv'd by the mind. Did it imply any contradiction, 'tis impossible it cou'd ever be conceiv'd. (T 43)

According to Hume, if something is contradictory, or implies a contradiction, then it is inconceivable, something of which it is impossible to form an idea. From this, there follows an answer to Franklin's question, "Why cannot a contradiction be true?" which makes no reference to relations of contrariety: where there is no idea, there can also be no truth; for both of the varieties of truth distinguished by Hume, relations of ideas and the agreement of ideas with existence and matter of fact, presuppose the possession of ideas. In other words, Hume held precisely the view Franklin complained he ought to have but did not: that contradictions are vacuous and constrain thought by preventing it from even taking place (one also wishes that Franklin had not kept his evidence of Hume's having attacked the scholastic view of contradiction to himself).

(iii) Once it is recognized that, for Hume, contrariety is a relation of *ideas* (T 15), whereas contradiction precludes the possibility of having an idea, Franklin's claim that he explained the latter by means of the former ceases to be creditable. Still, for the sake of argument, let us suppose that Hume did explain contradiction in terms of contrariety, and ask whether doing so would have committed him to the sour grapes fallacy. I think not. Hume held that, from a strictly logical *a priori* perspective,¹¹ only two among all the myriad ideas in our possession can actually be related as contraries: existence and non-existence (T 15; 247). That "no objects are contrary to each other, but existence and non-existence" has, for Hume, the consequence that "Any thing may produce any thing. Creation, annihilation, motion, reason, volition; all these may arise from one another, or from any other object we can imagine" (T 173). Since this must be true whether we are able to conceive the objects or not, contrariety imposes no *a priori* constraints on ontology: anything whatever can coexist with anything else, with the unique exception of existence and non-existence. Surely, such ontological munificence is quite irreconcilable with the attitude of sour grapes Franklin would attribute to Hume.

(iv) Franklin also takes Hume to task for inferring the incompatibility of *things* from the contrariety of *ideas*. Yet, it is difficult to see why he supposes Hume to have shifted reference from ideas to things other than the occurrence of the words 'existence' and 'non-existence' at T 70. Can it be that Franklin simply forgot, or overlooked, T 15, where, in the course of defining the contrariety relation, Hume made clear that the only *a priori* contraries are the *ideas* of existence and non-existence? So too at T 70: it is the *ideas* of existence

and non-existence that "destroy each other, and are perfectly incompatible," not the existence of one particular thing and the non-existence of another (which would be physical, psychological, or some other real incompatibility, and so could only be discovered *a posteriori*). This is not to deny that *a priori* contrariety has an existential implication: neither existent non-existents nor non-existent existents are possible. For contrariety does indeed imply the denial of the conjunction that one and the same thing may both exist at a place and/or a time and fail to exist at all places and times. But who would consider that "sour grapes"?

(v) Because Hume both denied that existence is an idea and affirmed that no other idea has an *a priori* contrary,¹² it may strike one as odd that he classed contrariety as a relation of *ideas* at all. Why did he do so? According to Hume, existence and non-existence concern not the thing itself but the manner of our conceiving it: if consciousness of a perception is qualified by a feeling of vivacity, we believe it really to exist; if not, then it lacks all reality for us.¹³ The contrariety of existence and non-existence is thus most accurately construed as a relation not of two ideas but of two ways in which *one and the same* perception is regarded: it signifies the impossibility of both believing and not believing in the reality of one and the same thing.¹⁴ By contrast, where different things (impressions or ideas) are concerned, contrariety in no way restricts belief: just as we may *conceive*, it is likewise possible for us to *believe* anything to coexist with anything else.

When (i)–(v) are taken together, it becomes clear that T 70 is by no means sufficient to warrant Franklin's attribution to Hume of a sour grapes fallacy. Quite the contrary, consideration of Hume's treatment of both contradiction and contrariety shows him to be, of all philosophers, the one to place the fewest *a priori* limitations on the domain of the possible.

II.

Franklin finds further evidence of sour grapes in Hume's claim that "since the idea of duration cannot be deriv'd from [an unchanging object], it can never in any propriety or exactness be apply'd to it" (T 37). Since Hume's restriction of the application of an idea to those things alone from which it may originally be acquired is by no means confined to duration, but rather a general tendency—one might almost say a principle—of his philosophizing, it indisputably constitutes strong *prima facie* evidence in favor of Franklin's contention. Yet, before this evidence can be accepted as conclusive, we first need to examine a possibility that Franklin neglected: that the demarcation of application by origin may be nothing more than a consequence, and application, of doctrines set forth in T I i. If so, then, to prove that Hume did indeed commit a sour grapes fallacy, it would have to have been in the elaboration of these doctrines; it is therefore to these that we now must turn.

As noted earlier, Franklin is critical of perceptual atomism for the sole reason that, in his view, it entails the denial of infinite divisibility (Franklin, 96, quoted above). But this is untrue. Locke is a good illustration that one can be an atomist—that is, affirm that all ideas are either simple or resolvable into simple ideas—and still affirm the possibility of infinities (including infinitely divisible quanta), vacua, unchanging objects, figured matter, mind-independent space and time, etc.¹⁵ The entailment Franklin supposes arises only through the addition of certain quite specific doctrines that determine what may and may not count as a perceptual atom. Thus, if like Locke one takes, say, extension to count as a simple idea in its own right, distinct from color or texture,¹⁶ then its *origin* in visual and/or tangible experience implies no restriction on its *application*; hence, the possibility remains open that the very idea of extension we acquire through visual or tactile perception may also apply to a mind-independent reality which is, in fact, infinitely divisible. Other philosophers have included among the immediately encounterable atoms from which human understanding is built items of a still more recondite nature, such as natural kinds,¹⁷ platonic forms, numbers, and sets (which, as Franklin correctly points out, can be used to construct “models” of infinitely divisible space and time). Clearly, if an origin in sensory or other consciousness-bound experience¹⁸ is in any way to limit the scope of our ideas, more is required than a mere commitment to atomism. Such a claim can only be sustained by showing that consciousness itself contributes content essential to the idea, since, in that case, the attempt to employ it independently of any relation to consciousness violates the sense-conditions of the idea and can yield nothing but absurdity. The classic illustration is Hume's analysis of the idea of cause and effect: given that the idea of necessary connection is an essential component of this idea and that its source consists in the feelings of facility and vivacity characteristic of customs of thought involving transitions from impressions to ideas (“Nothing farther is in the case,” EHU 75), “we either contradict ourselves, or talk without a meaning” (T 267) if we suppose the idea of cause and effect capable of being applied to objects—be they perceptions or anything else—independently of any reference to consciousness. Thus, the dry wine of psychologism, not the sour grapes of dogmatism, was the true delight of Hume's palate.

Once it is recognized that Hume, far from being a lazy dogmatist given to simple-minded fallacies, was keenly aware of what was requisite to sustain the sort of claim he wished to make, we can begin to appreciate how his anti-abstractionist account of universals functioned as the leading edge of his critique of the atomisms of philosophers like Locke and Leibniz. His focus was not so much on what the simples of perception are, but on what is to count as a perception of any kind at all. Although a perception need not have the reality of a physical object (e.g., determinate identity criteria, whereby it may be recognized as the same at different times and in different circumstances),

it at least must, according to Hume, be capable of presenting itself as a distinct (distinguishable, separable) content before consciousness, whether in sensation, reflexion, or thought (T 18). Failing that, it cannot be a perception but must be either of two things: something genuinely real which, because we are unequipped to sense or think it, can be nothing to us; or something that only seems to be a perception because we mistake the effects of association and habit for objective insight, or because we place false constructions on our discourse (an especially great risk when reflecting on mathematics).

Hume's target was the aspect, the object of a distinction of reason. Anything incapable of presenting itself separately to the senses or in imagination, of standing alone and possibly being the only perceptual content ever present to a consciousness,¹⁹ is, for Hume, a mere aspect, distinguishable only by reason. Figure, for example, is never encountered except in the presence of texture or color. Were we insensible of these, it seems highly unlikely that we could acquire any idea of figure at all, no more than one blind from birth could form ideas of colors or remedy his deficiency by having recourse to imagination. Similar restrictions govern the acquisition of such ideas as extension, size, solidity, mobility, existence, unity, space, and succession: though not conditioned by the same perceptible contents, all seem to require that there be at least some sensation, reflexion, and/or thought (memory, fancy) present before consciousness (T 34–35; 66–67; 200).

The question for Hume was whether abstractions like these deserve to be counted as perceptions in their own right. His answer was negative. To accord them this status requires that we suppose ourselves to be endowed with a special abstractive mental capability, a power of "aspect-seeing" as it were, whereby *intuitively* and *immediately* to apprehend (perceive) abstracta (distinctions of reason). Were that admissible, there would indeed then be nothing to restrict our application of the idea: the figure we perceive would be only contingently conjoined with color or texture, since it would be perfectly well within our power to separate it from them in thought. Nor would anything prevent us from going on to form a genuine conception of the possibility of its characterizing things imperceptible to us, or even imperceptible absolutely (i.e., shape as a quality of consciousness-independent things in themselves). However, as is clear from Hume's consideration of aspects, immediately preceding his analysis of space and time, he denied the existence of any such abstractive capability:

'Tis certain that the mind wou'd never have dream'd of distinguishing a figure from the body figur'd, as being in reality neither distinguishable, nor different, nor separable; did it not observe, that even in this simplicity there might be contain'd many different resemblances and relations. Thus when a globe of white marble is presented, we receive only the impression of a white colour

dispos'd in a certain form, nor are we able to separate and distinguish the colour from the form. But observing afterwards a globe of black marble and a cube of white, and comparing them with our former object, we find two separate resemblances, in what formerly seem'd, and really is, perfectly inseparable. After a little more practice of this kind, we begin to distinguish the figure from the colour by a *distinction of reason*; that is, we consider the figure and colour together, since they are in effect the same and undistinguishable; but still view them in different aspects, according to the resemblances, of which they are susceptible. When we wou'd consider only the figure of the globe of white marble, we form in reality an idea both of the figure and colour, but tacitly carry our eye to its resemblance with the globe of black marble: And in the same manner, when we wou'd consider its colour only, we turn our view to its resemblance with the cube of white marble. By this means we accompany our ideas with a kind of reflexion, of which custom renders us, in a great measure, insensible. A person, who desires us to consider the figure of a globe of white marble without thinking on its colour, desires an impossibility; but his meaning is, that we shou'd consider the colour and figure together, but still keep in our eye the resemblance to the globe of black marble, or that to any other globe of whatever colour or substance. (T 25)

Here Hume brings his associationist psychology to bear on distinctions of reason and does a fair job of demolition. Instead of a special faculty of "aspect-seeing," there is only custom-driven association by resemblance. In the absence of any history of comparison with an eye to resemblances, and the consequent engendering of habits of comparison, it would wholly surpass the powers of our minds to discriminate, by sheer inspection, the color from the figure. The difference is not available to immediate consciousness, and so not a datum of perception; hence, so far as consciousness is concerned, it is non-existent. Only subsequently, when we set about comparing (genuine) perceptions, does our natural sensitivity to resemblance relations lead us to associate perceptions and form the requisite habitudes of comparison; (consciousness of) an aspect is nothing over and above (consciousness of) such a habit. In particular, association gives a certain impetus or direction to our thought, so that if presented with a white globe and white cube in succession, the transition to a white pyramid now feels more natural to the imagination than otherwise, and certainly more so *at that moment* than a transition to a black globe. White globe, white cube, and white pyramid "feel" like they belong together in a special, almost familial way, and virtually repel, by main force, black globes, red globes, or green globes from their midst. Yet, if the same perceptions were considered in a different order, starting, say, with the

white globe and proceeding to the black globe, then something spherical of whatever color would be more likely to strike the imagination as resembling than something white or black, thus giving rise to a different family of resemblances, with a repellent force just as great. Gradually, as ever more comparisons are made and habits of comparison are formed, the white globe becomes enmeshed in a complex nexus of resemblance series, like axes of association ramifying from it in all directions. Each new aspect we “discover” is therefore nothing more than the formation of a new custom of comparing, and the original perception remains as fully concrete and undifferentiated as at the outset; at no point do we “regard” it with some special power of mind-sight. And thus did Hume explain what “having regard to the color of the white globe” (T 25) means entirely in terms of distinct acts of comparison between data any one of which is fully capable of standing alone in consciousness, apart from every other, that is, in terms of the association of perceptions.

None of this is meant to deny that we can separate figure from color in language or to question the convenience, utility, and semantic validity of so doing. But having semantic legitimacy is one thing, and relating to something possessing the reality of an actual content of consciousness, present to us immediately in sensation or thought, is quite another. For Hume, the *philosophical* question about aspects (abstract ideas) does not turn on semantic legitimacy (which, like Berkeley, he never questioned) but on “the mind’s conception of them” (T 17). What is shown by his associationist account is that aspects have no reality at all as perceptions and that the supposition of a special capacity of “aspect-seeing” is entirely otiose. Nevertheless, it does not deprive them of all cash value in the currency of consciousness:

I observe, that when we mention any great number, such as a thousand, the mind has generally no adequate idea of it, but only a power of producing such an idea, by its adequate idea of the decimals, under which the number is comprehended. This imperfection, however, in our ideas, is never felt in our reasonings; which seems to be an instance parallel to the...one of universal ideas. (T 22–23)

[T]he necessity which makes two times two equal to four, or three angles of a triangle equal to two right ones, lies only in the act of the understanding. (T 166)

Abstract talk, including mathematical discourse, connects up with mentation, particularly iterable operations of the imagination like counting.²⁰ Thus, aspects, and abstracta generally, differ from genuine perceptions in that they are inseparably bound up with mental activity and affect (vivacity and facility), and can have no reality²¹ independently thereof.²²

III.

Resolving abstract ideas into resemblance relations does not yet yield Hume's atoms of perception. For it may well be thought that substituting resemblances for aspects only sets one kind of abstraction (relation) in place of another (quality), and that Hume, in deed if not in word, accorded the status of free-standing perceptions not only to impressions and ideas (sensations, reflexions, and thoughts) but to relations as well (in addition to resemblance one thinks here of contiguity, identity, and constant conjunction).²³ Yet, although he did on occasion characterize certain relations as immediately perceptible (to distinguish them from others knowable only through repeated experience—see T 73 and 168), this was clearly never with the intent of elevating them to the status of perceptions. Relations, for Hume, exist only in the transition of thought from one impression or idea to another in imagination, and this only insofar as it is accompanied by a *feeling* of facility in the transition (“the nature of relation, and that facility of transition, which is essential to it...,” [T 99]; “the very essence of these relations consists in their producing an easy transition of ideas,” [T 260]). In the absence of any feeling of facility in the consciousness contemplating the successive perceptions, the perceptions would have nothing whatever to connect them in imagination, and so would remain wholly alien and isolated from one another. For there are potentially as many species of relation as there are possible *acts* of relating perceptions (“a relation...is not, strictly speaking, a property in the figures themselves, but arises merely from the comparison, which the mind makes betwixt them,” [T 46]); and since there are infinitely many possible ways of arraying perceptions through such acts, this potential is limitless. Nevertheless, the only arrays Hume deemed deserving of the title of ‘relation’, and an identifying name, are those that chime with the native associative propensities of human imagination (so that different such propensities would have led to other perceptual arrays assuming the status of relations). In other words, of all the possible relating activities of mind capable of singling out distinct perceptual arrayings as relations, only those that are the occasion of feelings of facility actually become relations, in the Humean sense of the term.²⁴ Hence, relations for Hume are doubly subjective, bound up by *content* not only with the operations of imagination but also with its affect, and are thus doubly hostage to human nature.²⁵

This subjective character is especially marked in the resemblance relations constitutive of general ideas like space and time. According to Hume, “Resembling ideas are not only related together, but the actions of the mind, which we employ in considering them, are so little different, that we are not able to distinguish them” (T 61); hence, resemblance “not only causes an association of ideas, but also of dispositions, and makes us conceive the one idea by an act or operation of the mind, similar to that by which we conceive the other” (T 203). This implies that it is not enough for the ideas or

impressions themselves to exhibit qualitative indiscernibility or similarity in order to be related as resembling; the dispositions of the mind (imagination) in contemplating them must also *feel* alike. Were such a feeling absent, or its contrary present instead (a difficult, painful transition), then, however qualitatively similar the perceptions may be objectively, in appearance, they would still not be found resembling, and so would not be related by the imagination.²⁶ The idea of space is a case in point. The process of forming this idea (T 33–34) begins with the forming of habits of comparison between distinct visual manifolds and between distinct tangible manifolds, where the resulting “general” ideas are restricted to the manifolds of vision and touch respectively. At this stage, the resemblance is as much between the perceptions (appearance) as the actions of the mind in contemplating them. But then the imagination feels within itself such a great resemblance between its action when operating with visual manifolds and with tangible manifolds (“in the disposition of their parts,” [T 34]) that, notwithstanding the qualitative incommensurateness in their appearance, it forms the fiction/conviction that a resemblance exists (as with so many of the other doctrines of T I ii, Hume postponed detailed consideration of this dimension of resemblance relations until T I iv). When severed from appearance in this way, the “idea” of extension is apt to seem dark and mysterious to reflection, and readily misleads those who rely on it (perfectly legitimately) in mathematical discourse to attach an illusory metaphysical import to it.²⁷ For that it is an illusion cannot be doubted: actions and affects immanent to imagination enter essentially into the very *content* of the idea.²⁸

What is true of resemblance is true likewise of contiguity, identity, cause and effect, and all the other relations Hume distinguished: stripped of the feeling of facility, there would be nothing to relate perceptions in imagination; and since this implies the absence of any awareness of their being related (facility being essential to, or presupposed in, such awareness), it follows that, regardless of what may or may not be true of perceptions “in themselves,” they would be, for all intents and purposes, relationless—their arrayings mere noise in our perceptual input, incapable of having any weight in our thought or actions. Relations, for Hume, are purely subjective. They are complex ideas copied not from some impression-original, but from the action and affect of imagination *vis à vis* perceptions. To suppose these ideas capable of applying in objective, imagination-independent contexts—including to perceptions “in themselves” (independently of their presence to consciousness)—is precluded by their very content; any such supposition is unintelligible, a mere word-formula devoid of sense (“in all these expressions, so apply’d, we have really no distinct meaning, and make use only of common words, without any clear and determinate ideas,” [T 162]). So, if by “perceptual atoms” we understand the raw material (the given) upon which the comparing, associating imagination sets to work, relations cannot be counted among them. Only those contents of experience prior to and independent of

imaginative activity and affection deserve to be deemed atoms in this sense. Franklin is thus not altogether mistaken in supposing that Hume drew metaphysical conclusions on the basis of considerations pertaining to ideas. Yet, it seems quite clear that Hume's reasoning has nothing like the sour grapes form Franklin would attribute to it. For far from drawing inferences from the lack of ideas, or the impossibility of having them, to the non-existence, or impossibility of existence, of things, Hume based his anti-metaphysical skepticism on the discovery that contents essential to our most basic ideas of objective reality—cause and effect (necessary connection), identity, space and time, etc.—arise from, and exist only in and for, consciousness, particularly in its guise as imagination.

The most significant result of Hume's explication of universals and relations in terms solely of association was to cancel the warrant for positing a special faculty of understanding, with its own peculiar brand of representation (the concept), over and above imagination (T 103; 140; 265; 267). 'Conception', 'judgment', and 'reasoning' become different names for ways in which belief (vivacity) may be joined to a perception (T 96n.). Even demonstrative reason can produce conviction and carry inferential force only to the extent that it is accompanied by a *feeling* of vivacity; and, as confined strictly to ideas and their comparison in thought (T 70; EHU 25), its application to existents in the worlds of the senses and judgment (T 108) is dependent on associative causal relations, first, to impressions (as their copies),²⁹ and, second, to ideas of present, unperceived existents associated with those impressions through custom (T 108–110; 413–414). Humean imagination thus usurps all the roles that had traditionally been held to define the intellect, while universality and ratiocination, as logicians and mathematicians understand them, are locked fast within the prison of language, deprived of all but the most attenuated significance *vis à vis* the contents and processes of mind. Accordingly, by the conclusion of T I i, Hume had secured the result necessary to underwrite the thesis at the heart of his entire critique of mathematical philosophy in T I ii:

The first principles [of mathematics] are founded on the imagination and senses: The conclusion, therefore, can never go beyond, much less contradict these faculties. (T 638)³⁰

IV.

Before our grasp of the foundation of Hume's critique of mathematics can be quite secure, a final preliminary task must be performed: clarifying the difference between Hume's empiricism and that of Berkeley, with which it is so often embrangled (Franklin being again a case in point). There are four points of divergence whereof it is especially important to take note:

a) One of Berkeley's principal reasons for denying the existence of aspects lay in the qualitative incommensurateness of different sensory media. He denied that there is anything common to one kind of idea and another, or between ideas generally and thinking (hence his coining the term 'notion' for the latter); and any illusion to the contrary he traced either to language or, in the more important case of ideas of primary and secondary qualities, to the constant conjunction between tangible and visual properties. For example, against the notion that there is such a thing as triangular shape common both to visual and tactile perception, Berkeley argued:

That which I see is only variety of light and colours. That which I feel is hard or soft, hot or cold, rough or smooth. What similarity, what connexion have those ideas with these? Or how is it possible that anyone should see reason to give one and the same name to combinations of ideas so very different before he had experienced their coexistence? We do not find there is any necessary connexion betwixt this or that tangible quality and any colour whatsoever. And we may sometimes perceive colours where there is nothing to be felt. All which doth make it manifest that no man, at first receiving of his sight, would know there was any agreement between this or that particular object of his sight and any object of touch he had been already acquainted with.... [T]here is no discoverable necessary connexion between any given visible magnitude and any particular tangible magnitude; but...it is entirely the result of custom and experience, and depends on foreign and accidental circumstances that we can by the perception of visible extension inform ourselves what may be the extension of any tangible object connected with it.
(*New Theory of Vision*, Sections 103-104)

However, Berkeley's attempt to account for the illusion—if that is what it is—that resemblances exist between the visual and tangible by reference to constant experience is by no means unproblematic. In the first place, there are many non-resembling features found by experience to be constantly conjoined—e.g., the qualities of color, taste, texture, and odor we bundle together under the denomination 'apple'—which never give rise to any illusion of resemblance (e.g., no one supposes that an apple's scent resembles its color or texture); so, Berkeley leaves us in ignorance as to why constantly conjoined tangible and visual qualities should give rise to this illusion whereas other similarly conjoined qualities do not. Secondly, whatever plausibility the Berkeleyan account may have in respect of ideas of spatial primary qualities it loses when applied to temporal ones. It simply does not seem possible to account for the notion that the same temporal features (succession, duration) are common to all ideational media, and to thinking itself, by reference merely

to constant experience, without reliance on immediate perception. In both instances, what seems to be required is an account of the phenomena in terms of immediately perceptible resemblances; but the problem is how to do this without reintroducing abstraction through the back door in the form of immediately perceptible aspects of sensation and thought (ideas of primary qualities). Hume's subjectivist account of resemblance relations, according to which they obtain only in and for associative imagination, offered an answer not available to an objectivist like Berkeley.³¹ For in order to find a tangible and visual triangle resembling, Hume was not obliged to suppose that there is even the remotest qualitative likeness between their appearances; it suffices merely that the action of the imagination in apprehending the one feel sufficiently like that in apprehending the other for it to relate them as resembling and to reason accordingly thereafter.³² So too time: each perceptual medium in which the imagination operates is felt by it to bear a certain resemblance to every other, and this similarity, once it has become an habitual comparison, we term 'succession'.³³

b) Hume does not seem to have deemed *esse is percipi* a legitimate application of the critique of abstraction. For while he would probably have accepted Berkeley's assertion that we cannot conceive of any perception separately from the conception of the mind's action in conceiving (perceiving, imagining) it, I doubt that he would follow Berkeley in holding this to entail that it is only by abstraction that perceptions could be supposed to *exist* separately from the mind: "as every perception is distinguishable from another, and may be consider'd as separately existent; it evidently follows, that there is no absurdity in separating any particular perception from the mind; that is, in breaking off all its relations, with that connected mass of perceptions, which constitute a thinking being" (T 207).³⁴ This is not to deny that Hume adopted Berkeley's standard for distinguishing genuine perceptions from abstracta (aspects) wrongly supposed to be perceptions (viz. the separability criterion of T 10; 18; etc.).³⁵ Nevertheless, Hume recognized that, in philosophical psychology, nearly every standard has a limited applicability and utility.³⁶ The separability criterion is very effective in showing that shape and color or timbre and pitch are merely aspects; but matters become shrouded in obscurity the moment we attempt to apply it to consciousness and its immediate objects (= perceptions). Berkeley himself often insisted that consciousness is so radically incommensurate with any of its objects that it is a misuse of language to talk of having an "idea" of one's thinking, and so coined the term 'notion' to mark this disparity. Yet, what could be easier than to separate an idea from a non-idea, if they have nothing whatever in common? It may be impossible to separate in thought the timbre from the pitch of an auditory sensation, but what could be simpler than to conceive the separation and distinct existence of something having the quality of a sensation, passion, or image, from something else utterly devoid

of such qualities and quite incapable of being brought before the mind in any idea whatsoever? It is true that, as a matter of *fact*, it is impossible for us to conceive such a quality as existing independently of our thought without, in the process, conceiving of it; but this may be seen as a mere coincidence, the contingent result of being ourselves a consciousness, and so unable to step outside it. Whatever one's opinion, this much at least is certain: when we try to apply the separability principle to the case of consciousness and its perception-object we find ourselves confronted with uncertainty and ambiguity, and not only the advantageousness but the very applicability of the principle is brought into question.

In Berkeley's espousal of *esse is percipi*, one cannot help suspecting that he left anti-abstractionism behind and surreptitiously set in its place a dogmatic rationalism, so that the real reason he will not allow that a perception can continue in existence unperceived is his *a priori* certainty that perceptions are dependent existents—an assumption which, so far as Hume was concerned, is quite baseless (T 233–234; 244; 252). Moreover, there is reason to think that Hume's views, especially on belief, committed him to a denial of *esse is percipi*. Belief, for him, is a feeling of vivacity in our consciousness of perceptions, which can vary independently of the idea believed (i.e., we can fail to believe an idea at one time and believe it another without having to suppose the idea itself is changed thereby, i.e., a different content). Yet, if consciousness were only abstractly distinct from the perception, then any change in vivacity would imply a change in the perception itself, with the consequence that it would be impossible to believe and not believe one and the same thing (i.e., the addition of vivacity requisite for belief would *ipso facto* alter the content of the idea and so change it into something else).

c) But the most significant difference between Hume's anti-abstractionism and that of Berkeley is that only the former's is able to eliminate all warrant for positing a special faculty of intellect (or reason) over and above idea-relating and -enlivening imagination. (i) In the case of general representation, it is not so much that Berkeley and Hume differ as that there is a gap in the former's explanation which is filled by the latter's associationism: Hume could explain the open-ended scope of universals by referring them to (similarly open-ended) *habitudes* of comparison with an eye to resemblances, whereas Berkeley had nothing to set in place of an abstractive mental gaze (aspect-seeing), and in the end seems reluctantly, and inconsequentially, to have embraced it (*Principles*, "Introduction," Section 16, esp. the 2nd edition addition). (ii) In the case of inferential reasoning, Berkeley never once questioned that such traditional metaphysical principles as "every beginning of existence must have a cause," and "everything is either a substance or an accident," are intuitively certain (i.e., valid *a priori*, necessarily and universally). Hume, by contrast, denied the self-evident character of the first (T 78–82; 172), and rejected the second as unintelligible (T 233; 244). He thereupon reduced causal

necessity to the blind operation of custom in associative imagination, and identity (of mind, body, and substance) to still more primal imaginative contrivances and feelings.³⁷ Nothing could be less Berkeleyan than Hume's contention that "all probable reasoning is nothing but a species of sensation" so that "'Tis not solely in poetry and music, we must follow our taste and sentiment, but likewise in philosophy" (T 103). Intellect, for Hume, comes to nothing more than "the general and more establish'd properties of the imagination" (T 267), and this is as true in mathematical reasoning as any other kind:

'Tis usual with mathematicians, to pretend, that those ideas, which are their objects, are of so refin'd and spiritual a nature, that they fall not under the conception of the fancy, but must be comprehended by a pure and intellectual view, of which the superior faculties of the soul are alone capable. The same notion runs thro' most parts of philosophy, and is principally made use of to explain our abstract ideas.... But to destroy this artifice, we need but reflect on that principle so oft insisted on, *that all our ideas are copy'd from our impressions*. For from thence we may immediately conclude, that since all impressions are clear and precise, the ideas, which are copy'd from them, must be of the same nature, and can never, but from our fault, contain any thing so dark and intricate. (T 72–73)

d) Hume's empiricism finds its most succinct and parturient expression in his separability principle:

[W]hatever objects are different are distinguishable, and...whatever objects are distinguishable are separable by the 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. For how is it possible we can separate what is not distinguishable, or distinguish what is not different? (T 18)

The separability principle is utilized in the distinction between complex and simple ideas ("Simple perceptions or impressions and ideas are such as admit of no distinction nor separation," [T 2]), in defining and delimiting the powers of imagination ("all our ideas are copy'd from our impressions, and...there are not any two impressions which are perfectly inseparable" [T 10]), in the critique of abstraction (T 18), and in virtually every other topic treated in the first book of the *Treatise* (T 54; 66; 79; 207; 221; 225; 233; 234; and 636). To say it represents a radical break with philosophical tradition is to be guilty of understatement. Every philosopher before Hume, and nearly everyone since, treated perceptions as effects and/or modifications of some

object, material or immaterial. Even for Berkeley it was a self-evident metaphysical truth that perceptions have to have some cause, whether within or without the mind, and that they must exist in some substance.³⁸ He was even willing to stick his neck out to declare that “nobody will say, that what he means by the terms *soul* and *substance*, is only some particular sort of idea or sensation” (*Principles*, Section 136). Yet, Hume seems to have been born to confound one’s faith in the good sense of philosophers:

all our particular perceptions...are different, and distinguishable, and separable from each other, and may be separately consider’d, and may exist separately, and have no need of any thing to support their existence. After what manner, therefore, do they belong to self; and how are they connected with it?...They are the successive perceptions only, that constitute the mind; nor have we the most distant notion of the place, where these scenes are represented, or of the materials, of which it is compos’d. (T 252–253; see also T 207; 222; 233–234; 244; 253–255)

The separability principle is Hume’s touchstone. It is also the fount from which all his skepticism with regard to metaphysics flowed: the assertion that talk of necessary connections independently of custom is unintelligible, the vacuity of all notions of substance, and the rejection of mathematical philosophy (infinite divisibility, vacua, etc.). Moreover, by enabling him to clear the ground of such metaphysical eyesores, separability also disclosed to Hume possibilities for a constructive psychologistic theory in which, by strictly empirical means, he could show how, from a minimal input, associative imagination is able to generate the objective world of ordinary consciousness, consisting of dynamically interconnected existents, including other selves, situated within the boundless reaches of space and time.³⁹ And the separability principle is, arguably, what led to the final unravelling of Hume’s system (T 633–36), and opened the way for Kant’s transcendental psychologism to supersede the empirical variety.⁴⁰

V.

Hume’s case against infinite divisibility in the first sections of T I ii has the following general form:

- (i) The imagination cannot infinitely divide its perceptions; it always reaches an indivisible minimum.
- (ii) The senses cannot perceive an infinite division; they always reach an indivisible minimum.
- (iii) We have no other faculties than imagination and sense.
- (iv) [Conclusion:] It is beyond our power to perceive or to think an

infinitely divisible magnitude.

- (v) [Corollary:] Discourse regarding infinities and other arcana of mathematical philosophy has significance only in respect to the operations and affects of imagination.

Hume based the first two premises, with certain qualifications, on introspection and observation, e.g., the spot of ink that appears indivisible at a certain distance (T 27–28; 41–42; EHU 156n.).⁴¹ It is the third that derives from the doctrines of relation and abstraction laid down in T I i.⁴² Given this premise, Hume's conclusion that we have no acquaintance with, nor can we think, any infinitely divisible magnitude follows, as does the corollary that all but the simplest mathematical discourse can represent nothing beyond iterable acts of arraying perceptions in imagination and is wholly dependent on custom and association for its inferential force (T 22–23; 72; 413–414; 638). My thesis is therefore this: The strength and structural coherence of Hume's reasoning is apparent only to the extent one grasps, and takes seriously, the doctrines undergirding the third premise.

If Hume's reasoning in T I ii so often seems to contradict itself or leave gaping holes, it is in part because Hume handicapped himself, at least in the eyes of meticulous analysts, by a desire not to throw too much at his reader at once. For example, his appeal to a "reason [that finds] that there are other objects vastly more minute...than those minute objects, which appear to the senses" seems to work against the very claim he uses it to set up, namely, that "we too hastily conclude that these are inferior to any idea of our imagination or impression of the senses" (T 28). For what is to stop this same "sound reason" (T 48) from postulating an unending division to infinity, and thereby conceiving the very possibility Hume is arguing lies beyond our power? Yet, the reader cognizant of the doctrines of T I i immediately recognizes that, far from freeing us from the limits of an imagination which derives all its materials by copying from the senses and reflexion, the "reason" here invoked is merely imagination in another guise. Or rather, the re-reader: since, in T I ii, Hume tended to withhold those implications of the T I i doctrines he was not prepared to develop and explore until T I iii (custom as the basis of the world of fixed realities in space and time) and T I iv (the fiction of distinct, continued existents).⁴³ For, by the end of the first book of the *Treatise*, he expected us to have grasped that the ultimate implication of the seeds sown in T I i is that "The memory, senses, and understanding are, therefore, all of them founded on the imagination, or the vivacity of our ideas" (T 265).

Another example of how neglect of the tacit underpinning of Hume's premises in T I ii can give a Swiss-cheesey appearance to his reasoning is the assertion "that whatever is capable of being divided *in infinitum*, must consist of an infinite number of parts, and that 'tis impossible to set any bounds to the number of parts, without setting bounds at the same time to the division"

(T 26–27). Is he not overlooking the possibility of a continuum? Actually, not. This possibility had already been precluded by Hume's doctrines of relations and universals, together with the copy-thesis that all the data available to the imagination derives originally from the senses; for from these it follows that the only objects left to debate about in T I ii are perceptual spaces composed of manifolds of visible, tangible, and temporal minima.⁴⁴ All talk of continua must, accordingly, either be cashed out in the currency of iterable operations of imagination performed upon these manifolds or not at all.

As stated at the outset, it is not possible within the confines of a single paper to give all of Hume's arguments in T I ii the detailed examination they deserve. Instead, we shall confine ourselves to just one, that borrowed by Hume from the mathematician Malezieu:

'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, &c. 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 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. 'Tis in vain to reply, that any determinate quantity of extension is an unite; but such-a-one as admits of an infinite number of fractions, and is inexhaustible in its sub-divisions. For by the same rule these twenty men *may be consider'd as an unite*. The whole globe of the earth, nay the whole universe *may be consider'd as an unite*. That term of unity is merely a fictitious denomination, which the mind may apply to any quantity of objects it collects together; nor can such an unity any more exist alone than number can, as being in reality a true number. But the unity, which can exist alone, and whose existence is necessary to that of all number, is of another kind, and must be perfectly indivisible, and incapable of being resolved into any lesser unity. (T 30–31)

This argument, which Hume commended as "very strong and beautiful," is the butt of Franklin's severest criticism: "Hume simply cannot understand how a complex thing can exist without its being made up of units. That is, he rules out *a priori* what seems to almost everybody a contingent matter of fact and existence; whether there are things that are infinitely complex" (Franklin, 95). Hume's mistake, in Franklin's eyes, was to think he could go so far as to preclude even the possibility that something present to us in or through sense perception is infinitely complex. Is this criticism warranted?

In his analysis of the argument, Franklin completely ignores the

distinction between a real and a merely fictitious unit that clearly, in Hume's eyes, goes to its heart.⁴⁵ The distinction is, so far as I am aware, entirely Hume's own. It gives the argument a distinctly Humean setting which, like the work of an expert jeweller, shows Malezieu's little gem to best advantage; and it holds the key to interpreting the significance Hume attached to it. The distinction turns on what is and is not dependent on the workings and affects of imagination. The point of terming a unit fictitious is to indicate that it is inseparably bound up with relation and general representation, which, according to T I i, exist only in and for idea-associating and -enlivening imagination. A unit can be deemed real only if it "can exist alone," independently of any "denomination, which the mind may apply to any quantity of objects it collects together."⁴⁶ The difference may be illustrated by an example of Hume's own, borrowed from a different, though related context: a dye four sides of which are marked with one figure, the other two with another figure (T 127–130). There are many ways of considering the dye numerically: one (dye), six (sides), two (figures), eight (corners), twelve (edges), three (visible surfaces), four (edges in contact with the supporting surface), etc. But, from Hume's perspective, all such numbers (including any non-denumerable infinites) are quantities of fictitious units, with no reality of any kind outside associative imagination or linguistic convention. Real units, by contrast, are pre-conceptual, pre-reflective, pre-relational (i.e., objective).⁴⁷ Numbers of *these* are not sums of some *what*—sides, figures, physical objects, objects in general, etc. (i.e., quantities indexed to some general term or habitual resemblance relation); their multiplicity consists in their self-subsistent presence and distinctness before consciousness. Hence, as glossed by Hume, the Malezieu argument really holds only for that which can be accorded imagination-independent validity, namely, perceptions, (sensations, reflexions, and thoughts). Of course, if taken literally, this would prevent it from working even in Hume's own example, since the unit 'man' is a general idea (i.e., a habitude of comparison), and individual men, like physical objects and minds generally, are conceivable only by means of various fictions and contrivances of associative imagination.⁴⁸ Still, there can be no doubt that, in the context of T I ii, the argument has to be given the strictest possible construction, so that only something completely independent of the operations and affects of imagination can count as a real unit or real number. Accordingly, Hume's endorsement of Malezieu's argument, far from being unqualified, is conditional upon the doctrines of T I i, and, in particular, is restricted to the single case of minima (units) and pre-imaginative aggregates thereof (number). But clearly, *if* Hume's condition is granted, then, contrary to Franklin, the Malezieu argument does indeed constitute a "very strong and beautiful" demonstration against infinite divisibility, in the strict sense of the term (T 31–32)—and so too, I believe, do the other arguments in T I ii.

Once we consent to view it through the prism of T I i 3–7, it even becomes possible to extrapolate from Malezieu's argument a Humean response to Franklin's contention that, with the advent of set theory and a mathematical model of infinite divisibility, the question as to the conceivability of infinite divisibility must be considered closed, once and for all. For the sense of 'unit' ("such-a-one as admits of an infinite number of fractions...inexhaustible in...subdivisions") Hume imagines being used to formulate an objection to Malezieu can, without undue anachronism, be extended to sets. Sets, not being collections, are not real in the sense Hume supposes minima to be. If one were to eliminate all *sets* of minima, nothing at all would change in the appearance present before consciousness, whereas the elimination of the *minima themselves* would result in the literal elimination of the perceptions which appear; and while the existence of a single minimum would yield at least a pinpoint of appearance, the existence of all sets of minima would not suffice for even that did not the minima exist in them as well. Sets are mere abstractions, universal denominations, which, according to Hume's psychologicistic analysis, are essentially bound up with the actions and affect of imagination. Independently of the latter, they are devoid of any sense or signification in respect of the only reality ever capable of entering into and influencing our thought and action: that present to or immanent in consciousness.

To characterize sets as "fictitious" is not, of course, to call into question their semantic legitimacy (which here simply means: satisfaction of the constraints for employment of a concept in mathematical discourse). Nor is there even so much as a suggestion, here or elsewhere in Hume's discussion, that mathematicians might benefit by abandoning their fictitious denominations, hitherto so successful in the pursuit of their science, in favor of phenomenally accurate talk (indeed, if his distinction between true-but-useless and false-but-useful standards is any indication—see T 45–53—he would almost certainly have regarded proposals for linguistic reform as completely misguided). Yet, meaningful discourse is one thing, validity in respect of perceptions and consciousness quite another. To *understand* a set, it is necessary that one be given a rule of some kind which determines set-membership. Such rules always employ quantifiers and are framed in general terms ("all real numbers between one and two," "all objects not identical with themselves," "every third sign churned out by my printer between 3 p.m. and 4 p.m. yesterday," etc.). For any rule of set-membership to be credited with true imagination-independent validity, we would have to suppose that abstractions really exist, or, minimally, that there are relations present to consciousness, independently of imagination. However, if, as Hume maintained, there is no faculty of aspect-seeing, and all reasoning (inference) about existence depends on custom (cause and effect) and conflated resemblances (imperfect identities), then there can be nothing present to us

but the given appropriate to a sheerly imaginative, animalian consciousness, namely, manifolds of minima which the imagination is free to divide and recombine to the full extent of its (infirm and highly circumscribed) powers (T 42). In that case, the only question left is: how far can the imagination take such division? And Hume's answer is: not farther than we find by *experience* that it can, namely, to the minimum of perception—the *real* and *indivisible* unit of perception. We have only to remove the blinkers of relational imagination and language to recognize that we never find anything else before us. For when the processes whereby these blinkers are constructed are understood—feelings of facility and vivacity in imagination in the case of abstraction and inference, and the artifice of conventions in the case of language—Hume could claim that we are left no option but to conclude that abstractions like infinitely divisible space and time can refer to nothing present to consciousness, whether in sensation, reflexion, or thought. Thus, if sets have any cash value at all in respect of the real, it can only be in the currency of iterable operations performed on perceptions in imagination and the accompanying affect—never in that of perceptions themselves.⁴⁹

But is this not precisely the fallacy Franklin charges Hume with committing—inferring from *our inability to conceive* any division of the minimum of perception that the *minimum itself* is indivisible? To understand how Hume would respond we must be careful to keep in mind that, for him, with the single exception of a *a priori* contrariety, our inability to conceive this or that in no way constrains reality; indeed, I know of no thinker prior to Hume so keenly cognizant as he of the dangers of inferring from how our natures oblige or prevent us from thinking about reality, how reality “in itself” is or must be. It was not reality he was concerned to demarcate, but our ability to conceive it. He operated not as a metaphysician but as a philosophical psychologist; his interest lay not in the ideas we lack, but in those we have, or pretend to have, and what human nature determines us to believe or disbelieve. To the objection, is it not at least *possible* that, by sheer serendipity, things unknown and unconceived by us answer perfectly to our notions of infinite divisibility, his answer would therefore be an unflinching no. For the ability even to pose the question presumes that we have in our possession an idea of space and time that leaves open the possibility of their infinite divisibility; and this, for him, is precisely the point at issue. What Hume's examination of the origin of the ideas of space and time reveals is that they are bound up by *content* with the activity and affects of imagination; and since this implies that these ideas cannot possibly hold of anything (perceptions included) prior to and independently of imagination, it follows that any attempt so to apply them—the only ideas of space and time we have—would violate their sense-conditions and so yield only nonsense. Here, it seems to me that we can legitimately extend what Hume says of cause and effect to relations generally, including the customary resemblances underlying our

abstract ideas of space and time:

I am ready to allow, that there may be several qualities both in material and immaterial objects, with which we are utterly unacquainted; and if we please to call these *power* or *efficacy* [read: *infinitely divisible extension or duration*], 'twill be of little consequence to the world. But when, instead of meaning these unknown qualities, we make the terms...signify something, of which we have a clear idea [e.g., *space or time*], and which is incompatible with those objects, to which we apply it [because it presumes space and time to be independent of imagination], obscurity and error begin then to take place, and we are led astray by a false philosophy. (T 168)⁵⁰

To any protest that one should not infer that something we cannot conceive therefore cannot be, Hume might reply: "we have no idea of this connexion [read: *no idea of infinite divisibility*], nor even any distinct notion what it is we desire to know, when we endeavour at a conception of it" (EHU 77), and thus "either contradict ourselves, or talk without a meaning" (T 267). And to the complaint that we can never legitimately preclude the possibility that such an idea might one day be discovered or produced, Hume would surely have hastened to agree, but then added:

If any one...thinks he has attain'd a notion of power [read: *infinite divisibility*] in any particular object, I desire he may point out to me that object. But till I meet with such-a-one, which I despair of, I cannot forbear concluding, that...we deceive ourselves in imagining we can form any such general idea. (T 162)

I may be mistaken, but I doubt very much that set theoreticians, with their cargo of abstractions, are in any position to assuage Hume's despair.⁵¹

Hume, like Berkeley before him, discerned a ready tendency, even on the part of minds of the caliber of Newton or Leibniz, to suppose that every word, if it has significance, must correlate to an idea in the mind, especially if it has satisfied the rigorous standards imposed in mathematics or physics and, moreover, is indispensable to the pursuit and growth of these sciences.⁵² In Hume's eyes, the fallacy that characterizes disputes concerning infinite divisibility (or the vacuum, or unchanging objects) is not any of the ones identified by Franklin, but the assumption that linguistic legitimacy and indispensability necessarily cash out as ideational content—that is, any inference to the effect that what is essential to syntax, semantics, and/or communication must, or even *may*, hold of thought as well.⁵³ This is not to say the assumption is indefensible. But Hume would likely have rejoined that those who make it rarely think to defend it, or, if they do, fail to appreciate the true nature and gravity of such challenges to it as his (Franklin among them).

For him, language and thought belong essentially to different spheres—public/artificial and private/natural—and require entirely different modes of investigation. Thus, if Hume's analyses of generality and relation suffice to demonstrate anything at all, it is the formidable character of the obstacles one needs to surmount in order to weave together two such disparate strands of our humanity into a single fabric.

VI.

Hume's analysis of general representation results in the reduction of abstract ideas (aspects, distinctions of reason) to habitudes of comparison in associative imagination, thereby cancelling the warrant for positing a distinct faculty of conceptual representation (intellect) and confining generality and abstraction within the prison of language. His analysis of relations reveals that essential elements of their ideational content derive from feelings (facility and vivacity) immanent to the consciousness contemplating perceptions, thus precluding their imagination-independent applicability. What is it then that remains in perception, prior to and independent of consciousness and imagination—the real unit “which can exist alone, and whose existence is necessary to that of all number...and is perfectly indivisible, and incapable of being resolved into any lesser unity”? What most needs to be stressed is what real units are *not*: they are not bearers of properties, do not stand in relations to one another or to anything else (relations without a relative), and, in general, should not be confounded with anything whatever having to do with the fictitious units of abstraction. Real number is independent of and indifferent to how we enumerate the distinct elements, or even whether we are able to do so (Hume recognized the impossibility of a “true” count of minima; see T 42 and 45). Instead of chasing the false ideal of rigorous enumeration (the naming of perceptual atoms, à la Russell), Hume deemed a rough criterion quite sufficient for his purposes: what is really distinct is distinguishable and separable in imagination, and vice versa (T 10; 18); hence, the real unit of distinctness is that which is inseparable in imagination *yet still immediately perceptible*.⁵⁴ It is true that he referred to real units as colored, textured, etc., *points* or *moments* of perception; but this was not in order to *classify* them as some kind of thing (point or instant), or to determine them ontologically as property-bearers, but simply as the best way to indicate, by such words as would both be effective and yet draw as little attention to themselves as possible, whither they may be found: *in the immediate presence of consciousness*.⁵⁵ To understand what this means, it is helpful to recall Locke's metaphor of reading sensations as we do characters on a page, which he employed in order to illustrate the extent to which past experience and habit (familiarity) blind us to what really happens in perception and other modes of reflection.⁵⁶ Real units function like characters in that the imagination

directs its attention not to them but to the causally interrelated, distinct and continued existents it is accustomed to “reading” through them. Yet, whereas characters can themselves become objects of our imagination (i.e., be “read” through perceptions), our perceptions never can, and, as such, may deservedly be accounted the *real* units of conscious representation. In other words, real units are not so much *before* our eyes as they are *our very eyes themselves*, the pre-imaginative *medium* in and through which the imagination-fabricated objects of our attentive, directed gaze present themselves (and it is as imaginations that we experience the world and reflect upon it: “the present situation of the person is always that of the imagination,” [T 430]). They are *perceived* only in the sense that it is necessary that they be present before consciousness (Locke, to whom Hume is indebted in this matter, deemed perception of this kind—i.e., that unalloyed by judgment (= habit and experience)—to lie within the capacity of even so primitive an animal as an oyster, thus marking the difference between animals and plants).⁵⁷

According to Hume, the true source of our ideas of space and time are manifolds of real units: in the case of the former, the origin lies in the perception of “impressions of colour’d points, dispos’d in a certain manner” (T 34), and, in the latter, in a perception of “different ideas, or impressions, or objects dispos’d in a certain manner, that is, succeeding each other” (T 37).⁵⁸ This formulation is not altogether happy since it has led many to suppose that the distinction between perceptions and the *manner* of their appearance reintroduces abstraction through the backdoor. In my view, the problem is merely verbal. Hume’s intention seems to have been to draw attention to the evident fact that perceptions, instead of appearing individually and in isolation (i.e., utterly alien from one another, incomposite), present themselves to consciousness in *manifolds* (complexes). Since there can be no temptation to suppose a real, abstract distinction between the *manifoldness* of their appearance and the *perceptions themselves* that appear (as if the former were something over and above the latter), Hume might have avoided misconstruals of his doctrine simply by substituting ‘appearance’ *tout court* for ‘manner of appearance’. For that it is a misconstrual seems clear, since one can be quite sure that Hume would not have conceded that there is any *immediately* discernible feature of appearance, prior to all comparison and relation in imagination, whereby one might distinguish the manner in which perceptions appear from the appearance of the perceptions themselves. It is a mere distinction of reason, and should therefore be understood according to the pattern established in the analysis of the white globe in T I i 7: nothing really present in perception, but merely the artifact of our ingrained habits of comparison (see section II). The “manner” of appearance enshrined in our ideas of space and time exists in distinction from the perceptions themselves only in and through the feeling, relating, custom-driven imagination; their generality signifies nothing more than that the relevant comparisons have

been performed so frequently as to inculcate habits of mind. Space and time—like all abstract ideas—are inextricably bound up with the actions of a consciousness which contemplates perceptions and, in this contemplation, has certain feelings which are constitutive of their resemblance relations. Since such ideas are incapable of holding independently of imagination (whether of perceptions themselves or of unperceived “things in themselves”), Hume’s conclusion therefore follows: there is no idea corresponding to such fictitious denominations as “infinitely divisible space or time” or “unchanging object.”

Conclusion

Franklin, like many others, finds in Hume’s philosophy nothing so numbing in its grossness as the principle that application is restricted by origin (“Ideas always represent the objects or impressions, from which they are deriv’d, and can never without a fiction represent or be apply’d to any other” [T 37]). But it should now be clear that Hume’s principle is a direct consequence of the T I i associationist account of abstraction and, still more, the subjectivist conception of relations that underwrites it. For if an idea is inextricably bound up by *content* with the action of a contemplating, feeling consciousness, then its application is indeed restricted by its origin; and it is precisely this implication of the doctrines of T I i that is worked out in T I ii (space and time, existence), T I iii (cause and effect), and T I iv (identity). Indeed, Hume owes his position in the Pantheon of great philosophers principally to this insight, since it prompted Kant to credit him with inaugurating a new epoch in philosophy by showing how an investigation of the origin of ideas is capable of settling major questions in philosophy arising from their application.⁵⁹ My interpretation of Humean relations, philosophical no less than natural, as confined to idea-relating and -enlivening imagination, is admittedly controversial. But this at least may be said for it: it alone seems capable of yielding the desired Humean conclusion that our ideas of space and time can have application to nothing other than the perceptible manifolds, comprised of real indivisible units, from which associative imagination originally fabricates them.⁶⁰

If the thesis of this paper is correct, then Hume’s reasoning regarding space and time in T I ii is largely exemplary: his conclusions do indeed follow from their premises. Any fault in the arguments must instead be traced to the soundness of the premises and the supports on which they in turn rest: the doctrines and arguments of T I i, particularly the imagination-dependence of all relations and the reduction of generality to customary relations of resemblance. A challenge to Hume’s views regarding space and time must therefore rely less on contemporary advances in mathematical logic (or non-philosophical psychology) than on well-informed, effective arguments

against the psychologistic doctrines of T I i. Otherwise, Hume's conclusion must be allowed to stand:

The first principles [of mathematics] are founded on the imagination and senses: The conclusion, therefore, can never go beyond, much less contradict these faculties. (T 638)

NOTES

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1 James Franklin, "Achievements and Fallacies in Hume's Account of Infinite Divisibility," *Hume Studies* 20.1 (1994): 85–101; cited in text as Franklin.

2 The term is used advisedly. See David Hume, *A Treatise of Human Nature*, edited by L. A. Selby-Bigge, 2nd ed. revised by P. H. Nidditch (Oxford: Clarendon, 1978), 31–32; cited hereafter as T; David Hume, *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*, edited by L. A. Selby-Bigge, 3rd ed. revised by P. H. Nidditch (Oxford: Clarendon, 1975); cited hereafter as EHU and EPM. Though separated by nearly 10 years, both works seem to me to agree on all substantive points, differing only in manner of exposition. For discussion, see my *Hume's Theory of Consciousness* (Cambridge: Cambridge University Press, 1994); cited hereafter as Waxman, *Hume*.

3 These elements include: the differentiation of perceptions into impressions and ideas by their vivacity; the distinction between simple and complex perceptions based on separability; the thesis that ideas are copied from impressions; the difference between imagination and memory; association; the distinction between natural and philosophical relations; substance and mode; and abstract ideas. Several of these will be given detailed consideration below.

4 Franklin, 90. One might however remark that there is nothing very "refin'd and spiritual" about manipulating strings of symbols. Hume, in my view, would balk only at those who would suppose those symbols to stand for something real yet insensible.

5 George Berkeley, *Principles of Human Knowledge*, in *Berkeley: Philosophical Works*, edited by Michael Ayers (London: Dent, 1975). All Berkeley references are to this edition. *Principles*, Section 23, cited by Franklin, 93.

6 *Principles*, Section 78. Since Franklin includes as instances of the fallacy "Arguments that there can be no more than the five senses" (Franklin, 94), Berkeley's admission of this possibility would seem to exonerate him.

7 See the Third of the *Three Dialogues between Hylas and Philonous*, 184 and 189–90.

8 See *Principles*, "Introduction," Section 10.

9 See especially *An Essay towards a New Theory of Vision*.

10 Franklin, 93–94. I do not understand why Franklin should wish to take Hume to task for failing clearly to pose a question when in the same breath he tells us that Hume furnished an explicit answer to it.

11 Which is the perspective of the sour grapes fallacy: "[A tendency to phenomenalism] is a problem in Hume's philosophy, but it is a different one from the strictly logical problem being complained of here," Franklin, 93.

12 "[N]o real objects are contrary" (T 247)—where "real" may be construed as anything satisfying the T 18 criterion for being a perception (distinct/distinguishable/separable), and so includes unvividified ideas.

13 Belief, as vivacity, concerns reality, not truth. It belongs to psychology, not the analysis of language (i.e., it is not a propositional attitude). To "feel" the vivacity of a perception, one need not even be capable of using language (e.g., animals and infants can "believe" in this sense). Nor should vivacity be supposed (or faulted for failing) to be present on all and only cases where it would be appropriate to employ the word 'belief' (with its baggage of first-, second-, and third-person uses, its connection with values like sincerity, the expectations that arise from its most familiar roles, e.g., contexts of evidence presenting and -evaluating, and the nonsense of statements like "I believe it appears red to me"). Hume's characterization of belief as a feeling of vivacity does not belong to theory of meaning, psychologistic or any other kind. My analysis of Hume's views on existence, belief, and vivacity is in Waxman, *Hume*, Chapters 1, 2, and 4–A, plus pp. 10 and 151–52.

14 Of course, since Hume held that we possess ideas of these divergent ways of conceiving (presumably, copies retained from past consciousness), *a priori* contrariety does after all conform to the model of a relation of ideas. Given that contrariety concerns existence or non-existence in space and time, undoubtedly the most important ground of contrariety is the relation of cause and effect, which underlies all fixity in space and time (T 73–74; 108–110). See also Waxman, *Hume*, Chapter 4.

15 John Locke, *An Essay concerning Human Understanding*, edited by P. H. Nidditch (Oxford: Clarendon, 1975), II xvii; cited hereafter as ECHU.

16 I am here departing from earlier usage and employing 'texture' to designate not surface contour, but the non-geometrical, purely qualitative aspects of tangible sensation, e.g., feel (satiny, abrasive, etc.), hard/soft, hot/cold, kinesthetic sensation of bodily movement, muscle tension, and pressure.

17 In "Induction: A Non-Sceptical Humean Solution," *Philosophy* 67(1992): 307–327, John O. Nelson takes Hume to task for failing to recognize what Nelson, inspired by Aristotle, believes to be manifestly a primary, ineliminable component of experience: natural kinds. See discussion in Waxman, *Hume*, 311 n31.

18 For example, Cartesian intellectual intuition, Husserlean *Wesenschau*,

Fregean senses, etc.

19 Hume allows that “We can conceive a thinking being to have either many or few perceptions” and so suppose it “to be reduc’d even below the life of an oyster” (T 634).

20 Although Hume continued on occasion to employ the term ‘abstract idea’ after having resolved aspects into relations of resemblance and habit, it would, in my view, be mistaken to suppose that his account does not eliminate abstraction, be it in the form of the abstract, general images criticized by Berkeley or of “aspect-seeing” (i.e., a special mental capacity directly to perceive distinctions of reason present in particular, concrete images). On this score, Hume is a reductivist: only the word ‘abstraction’ remains, but nothing in the mind distinct from association in relations of resemblance and habit corresponds to it (for discussion, see Waxman, *Hume*, Chapter 3-A and -B). It is also worth noting that Hume’s reliance on iterable acts of mind has important affinities with Kant’s doctrine of schematism and his account of algebra; Immanuel Kant, *Critique of Pure Reason*, translated by Norman Kemp Smith (London: Macmillan, 1961), A140–2, B179–81; A713–14, B741–2; and A717, B745. Hereafter, *Critique*.

21 According to Hume’s fully developed conception of reality, a perception must be enlivened in order for it to qualify as real. Since aspects are not perceptions in their own right, it is impossible *a fortiori* that they acquire vivacity; nevertheless, insofar as Hume resolved aspects into customary relations of resemblance, and he classified relations as complex ideas (albeit involving components immanent to consciousness), vivacity is possible even here.

22 It is sometimes suggested that Hume expounded a crude psychologicistic semantics, in which ideas are identified with the meaning and/or referents of our words (e.g., by Quine). This is false. On the contrary, there are few thinkers, even in our own times, with so keen an awareness of the difference between semantic and objective relations as Hume had. In particular, he seems to have appreciated that the fact a word has a sense and succeeds in referring implies nothing at all as to the reality of the referent. For example, that ‘carbon’, ‘lust’, and ‘tantrum’ all have reference tells us nothing at all whether such things exist, or whether, if they do, what the nature of their existence is (e.g., physical object, thing in itself, sensation had by a brain, Humean perception, etc.). What Hume did affirm is that the meaning and reference of terms is dependent on having a foundation in ideas; yet, this is a far less rigid or exacting criterion than is usually supposed. Many terms, probably including ‘lust’ and ‘tantrum’ as well as ‘carbon’, can, in principle, be correlated to various aspects and relations present in consciousness, which in turn resolve into complexes of perceptions, mental operations performed on perceptions, and/or affects resulting therefrom (a true but useless criterion in the T 45–53 sense—see notes 36 and 52 below—since it would, in practice, be quite impossible to offer rigorous analyses of the great majority, if not all, of our expressions in this way; see Waxman, *Hume*, Chapter 3–D). Hence, by the criterion of idea-dependence, nearly all of language—almost certainly including most theological and mathematical discourse (set theory)—counts as meaningful, albeit subjectified in a way, and to an extent, anyone other than a Humean skeptic would be

loath to countenance. For, in order not to satisfy this criterion, a term would have to violate the conditions for forming an idea of any kind at all. For example, an expression can be deemed meaningless if, in order to be converted into the currency of ideas, we would have to have the power to think a contradiction. Another sort of case, resulting from the specifically Humean psychologistic concern with the origin of ideas, involves expressions that invoke (depend on) a certain idea yet, at the same time, effectively deprive that idea of an essential element of its content. We thus "contradict ourselves or talk without a meaning" (T 267) when our discourse implies the applicability of the idea of cause and effect in abstraction from or in violation of the conditions essential to the formation of customs of thought (thereby detaching it from the idea of a necessary connection, integral to it). Or, again: expressions are meaningless which require us to treat aspects as if they were full-fledged perceptions, capable of existing prior to and independently of all mental activity and affect (Hume believed such terms abound in Locke and other abstractionist philosophers). But this is critique of metaphysics, not theory of meaning. To infer from the dependence of language on ideas, et al. that Hume's psychologism is principally (or *de facto*) concerned with semantics as presently understood, or that he held thought to be isomorphic with language (and so itself, in effect, a kind of language), is, in my view, a serious error, almost certain to mislead one as to the true tenor and import of his philosophy. Meanings, for Hume, are in the world, not in the mind. They belong as much to the physical realm as does the human body, are inextricably embedded in the conventions of human social interaction, and are historical phenomena, to be understood and explained accordingly.

23 One finds this criticism in Russell and in Kemp Smith: see Waxman, *Hume*, Chapter 3-A for discussion.

24 Resemblances, along with the other associative relations (causation and contiguity) plus identity, also create a feeling of vivacity in imagination, so that there is not only a felt ease of transition but, in cases of transitions from an impression to an associated idea, the content present in the idea is believed to be real (vivacity = belief). This seems to me crucial to comprehending the difference between philosophical relations and natural. For since the former are incapable of generating feelings of either facility or vivacity, the only way they may be supposed to exert an influence on understanding—i.e., engender beliefs and so play a role in thought and action—is as extensions of the latter. In other words, philosophical relations are parasitic on natural. For a sustained examination of Hume's views on relations; see Waxman, *Hume*, Chapters 1-D, 2-D, 5-E, 6-A and -C, and 7-B.

25 Since perceptions (sensations, reflexions, and thoughts) are, in Hume's lexicon, objects, it makes sense to designate anything inextricably bound up with consciousness, particularly with imaginative action and/or affection, subjective. That something is subjective implies that it exists only in and for consciousness (especially associative imagination), by contrast with perceptions (as well as all things unperceived), which are prior to and independent of consciousness, and, in that sense, objective (see also discussion of *esse* is *percipi* in section IV). Confusingly, what normally is denominated "objective"—necessary connections, bodies, the world of fixed existents in

space and time—must be classified as subjective, insofar as they are bound up with relations and relations always entail imaginative action and affect (see previous note). Interestingly, one finds a parallel situation in Kant (as so often is the case): objects, and nature as a whole, are inextricably bound up with the subjective sources of cognition, especially, imaginative synthesis and pure concepts of its unity; thus, for Kant too, objectivity exists only in and through consciousness and the forms immanent to it (space and time and the logical functions of judgment).

26 A relation, for Hume, always involves a transition in thought from one perception to another. In addition to the disposition of imagination itself, Hume also on occasion drew attention to the effects of emotion on its operations: “no object is presented to the senses, nor image form’d in the fancy, but what is accompany’d with some emotion or movement of spirits proportion’d to it; and however custom may make us insensible of this sensation, and cause us to confound it with the object or idea, ‘twill be easy, by careful and exact experiments, to separate and distinguish them” (T 373); “almost every kind of idea is attended with some emotion, even the ideas of number and extension” (T 393; see also T 120; 590). Thus, one may speculate that if the emotions excited by two perceptions differed sufficiently, then, despite their qualitative indiscernibility and the similarity of the dispositions of the mind in contemplating them, they still might not be found resembling.

27 Robert Fogelin derided Hume’s assertion that what is true of ideas must also be true of their objects if those ideas are adequate representations of their object (T 29) as “a match for anything to be found in the rationalists” (Fogelin, “Hume and Berkeley on the Proofs of Indivisibility,” *Philosophical Review* 97 (1988), 53. The objects in question, however, are presumably the perceptions (impressions and ideas) from which our ideas are copied, and it is as copies that their adequacy should be understood (see T 64–65 and Waxman, *Hume*, 293 n47). T 29, and T I ii generally, tend to be read in isolation from T I i, as if the terminology there were Locke’s or Berkeley’s, so that ‘ideas’ includes sensations (e.g., Fogelin, 60–61). One should keep in mind the first occasion Hume used the expression ‘adequate idea’: “I observe, that when we mention any great number, such as a thousand, the mind has generally no adequate idea of it, but only a power of producing such an idea, by its adequate idea of the decimals, under which the number is comprehended. This imperfection, however, in our ideas, is never felt in our reasonings; which seems to be an instance parallel to the present one of universal ideas” (T 23). The power in question is an operation of the mind, and it is (the iteration of) this, not any image, we represent to ourselves when we form the idea of any large magnitude. This seems to be behind Hume’s otherwise confusing insistence in the first sections of T I ii that we have the power to represent the smallest possible parts of any magnitude by supposing that any indivisible minimum would, if magnified, reveal parts, and so on, in Babushka-doll fashion, to any arbitrary point in the division: this process has as its true object not the perception upon which the imagination operates but its own action in splitting up perceptual manifolds into simpler parts, all the way down until it reaches the unsplittable minima. This way of interpreting Hume is neglected by Fogelin, but it allows one to

understand why he insisted that mathematicians have no adequate idea (= copy) of an infinitely divisible extension: they mistake the representation of iterable processes of their imagination for the possibility of an infinitely divisible quantum outside imagination—yet another case of what is true only of the action of the mind being illicitly transferred to the images it contemplates. The foundation of our ideas of division in actions of imagination seems also to be a factor in Hume's refusal to countenance the distinction between proportional and aliquot parts as well as his critique of standards (see note 53).

28 The same sort of account applies, *mutatis mutandis*, to time (T 34–37). But it is only when Hume turns to identity that the contradiction between feeling and appearance becomes decisive: see the discussion of the third part of Hume's system of identity at T 205–208 in Waxman, *Hume*, Chapter 7-B). Kant's account bears striking similarities to Hume's. For Kant, space and time are forms of intuition, which, properly understood, means: forms of the synthesizing action of imagination, forms which thus exist only in and for imagination (see my *Kant's Model of the Mind*, Oxford: Oxford University Press, 1991). Hence, although there is nothing common to tangible and visual sensations themselves, there are still common forms governing their synthesis in imagination, and these (together with a concept that supplies the rule for the synthesis) explain how the same shape can be perceived by touch and by sight. Hume's account of mathematics, stressing as it does actions of the mind, is an especially close anticipation of Kant; cf.: "the necessity which makes two times two equal to four, or three angles of a triangle equal to two right ones, lies only in the act of the understanding" (T 166) and "I construct a triangle by representing the object which corresponds to this concept either by imagination alone, in pure intuition, or in accordance therewith also on paper, in empirical intuition—in both case completely *a priori*.... The single figure which we draw is empirical, and yet serves to express the concept, without impairing its universality. For in this empirical intuition we consider only the act whereby we construct the concept" (*Critique*, A713–14, B741–2, my emphasis).

29 The recognition that Hume intended the copy-thesis of T 4–5 to be construed as an ordinary causal association founded on constant conjunction, rather than an aprioristic, quasi-metaphysical thesis about the essence of our ideas, seems slowly to be taking root among Hume interpreters. For discussion and examples, see Waxman, *Hume*, Chapter 1-E.

30 If it is objected that this claim is a consequence, not a presupposition, of the critique of mathematical philosophy in the first sections of T I ii, then attention should be directed to T 72–73, where Hume employs the copy-thesis of T I i 1 to discredit the pretension of mathematicians and other peddlers of abstractions "that those ideas, which are their objects, are of so refin'd and spiritual a nature, that they fall not under the conception of the fancy." Since the copy relation (singular representation), like customary resemblance relations (universals), is itself to be understood in terms of associative relations (see note 29), there need be no concern that I am putting the cart before the horse.

31 Berkeley expressly included relations in his ontology: see *Principles*, Sections 89 and 142.

32 Hume did, however, resort to constant conjunction to explain why impressions that literally exist nowhere are nevertheless located by perceivers in the objects of sight and touch (see T 235); here resemblance plays no role (except in recognizing the constancy of the conjunctions).

33 Actually, the case of succession is more complex: Hume, following Locke, traced its origin to the succession of thoughts (i.e., the perception of the act of thinking itself), not of appearances (“motion”); thus, succession is in fact an idea of a single sense (viz. internal sense). Nevertheless, Hume never doubted that sensations arrive in a real succession—see note 40.

34 It might be supposed that Hume’s admission of the possibility of separating any perception from the mind-bundle (idea of self, person) is sufficient for us to infer that he denied *esse is percipi*. But this is mistaken: the separability of a perception from other perceptions, including the mind-bundle (itself an idea, i.e., a perception), proves nothing either way as to whether it can exist in the absence of any consciousness of it (i.e., exist unperceived). For consciousness, contrary to the mind-bundle, may be quite simple and instantaneous, and, moreover, is not, like it, properly classed as a perception at all (a term Hume reserved for objects of consciousness: that “present to the mind” [T 212], “our only objects” [T 213]); that is, we have no idea of present consciousness at all, whereas we do possess a “true idea of the human mind” (T 261). Thus, other reasons must be adduced before one can safely conclude that Hume would have refrained from espousing *esse is percipi* (see Waxman, *Hume*, Part III, esp. Chapter 6-B).

35 Berkeley’s standard is stated in *Principles*, “Introduction,” Section 10 (on Berkeley’s inconsistency in applying it, see Waxman, *Hume*, Chapter 3-A). It has been objected that my construal of this text is faulty because it makes no reference to the various modes of sensation. But there Berkeley writes: “To be plain, I own myself able to abstract in one sense, as when I consider some particular parts or qualities separated from others, with which, though they are united in some object, yet it is possible they may really exist without them.” Now, surely, it would not be indulging in wild speculation to aver that this warrants the conclusion that, say, the flavor, color, odor, texture, etc., of an apple are qualities that can be conceived, and exist, separately from one another (from one another—not, of course, “separately” in the sense of being self subsistent entities: Hume was the first to reject the claim that perceptions are dependent existents in some metaphysical sense, e.g., at T 244). For the only thing that unites these qualities is their constant conjunction (see also *Principles*, Section 44).

36 For example, the notion that a simple perception is one that is not divisible into parts breaks down when one considers qualities that could not be known from a single isolated perception, e.g., qualities of extended manifolds like gloss and matte; similarly for many tactile qualities (“the impressions of touch are simple impressions, except when consider’d with regard to their extension,” T 230–231). The missing shade of blue is another instance, as are the criteria by which memory and imagination are originally distinguished and the true-but-useless standards of geometry (see notes 22 and 52). For further discussion, see Waxman, *Hume*, Chapters 1-C, 1-D, 2-B, and 3-D.

37 For detailed analysis of these reductions, see Waxman, *Hume*, Parts II (cause and effect) and III (identity). In view of Hume's discussion of epistemic norms in T I iii 15, it may be thought too strong by some to characterize reasoning as a blind process. Yet, in my view, it is even more culpable to assign undue weight to what is, after all, a mere digression, tangential to his main thrust in T I iii: the nonrational, merely naturalistic foundation of reasoning in habit and association, common to brutes and humans alike. Moreover, one should not overlook or discount Hume's assertion that his list of epistemic norms "might have been supply'd by the natural principles of our understanding" (T 175). Since this suggests that, at bottom, our very standards of rationality are a consequence of the blind, irrational dictates of our peculiar animalian natures, we should guard against letting the artificial institutions and practices characteristic of society and culture (including science) obscure Hume's point. Our norms and practices of reasoning are essentially human norms, tailor-made to the purposes and forms of life peculiar to our species, and might prove disastrous for a lion or a hyena. We should consider how strange it might seem to Martian anthropologists that our species manages to thrive despite its curious practice of relying on past experience in present judgments! Or our equally peculiar characteristic of never being satisfied that something has been explained until it has been accounted for in terms of material efficacies! Certainly, the possibility must be conceded that our species' instinctual fondness for the past and for explanation in terms of material causes might not have entered into its evolution, and something else taken their place, perhaps equally, or even better, suited to its survival. In any event, in view of the meticulous care and (well-deserved) prominence given by Hume to the task of exhibiting the extent to which our conceptualizing and reasoning are dependent on our subjective constitution, his cursory treatment of epistemic normativity ought to be regarded as being of only minor interest, and it seems rather perverse for interpreters to make so much more of it than he did (see Waxman, *Hume*, 308 n23).

38 Although Berkeley anticipated many of the elements of the critique of necessary connections commonly associated with Hume (see *Principles*, Sections 25; 31; 32), his commitment to the general causal maxim (every existence must have some cause) is clear: "I know that effects must have a cause: but I neither see nor know that their connexion with that cause is necessary" (*The Theory of Vision Vindicated and Explained*, Section 30; see also *Principles*, Sections 26; 28; 29). The true basis of Hume's originality with regard to necessary connection is his skepticism concerning the nature of the certainty of the general causal maxim: see Waxman, *Hume*, 142–144. That Berkeley treated the mind as the presupposed substratum of all ideas is clear at *Principles*, Sections 7 and 135.

39 This is the world founded on custom described by Hume on T 108–10. As based on relation and habit, it is inseparably bound up with imagination, and so is, in truth, a merely subjective "objectivity" (see note 25). For a detailed analysis of Hume's constructive psychologism, both as concerns causality (custom) and identity, see Waxman, *Hume*, Parts II and III.

40 The consequence of separability was to have "loosen'd all our particular perceptions," whereupon "all my hopes vanish, when I come to explain the

principles, that unite our successive perceptions in our thought or consciousness.... In short there are two principles, which I cannot render consistent; nor is it in my power to renounce either of them, viz. *that all our distinct perceptions are distinct existences, and that the mind never perceives any real connexion among distinct existences.* Did our perceptions either inhere in something simple and individual, or did the mind perceive some real connexion among them, there would be no difficulty in the case. For my part, I must plead the privilege of a sceptic, and confess, that this difficulty is too hard for my understanding" (T 635–636). Nearly all commentators agree that Hume was not claiming that the two principles are inconsistent with one another, and suppose that there was some third, equally unrenounceable principle that, together with the others, creates a dilemma. Many proposals have been advanced as to what that principle might be. In my own view, it is the affirmation of the metaphysical reality (i.e., imagination-independence) of perceptual succession; for so long as one supposes this succession to be real, yet refrains from positing either an enduring substrate or immediately perceptible real connections (whereby predecessors and successors might be directly perceived, at any given instant, by simply reading off the causes and effects of the present contents of perception), there seems to be no way to explain how past and future perceptions (i.e., copies thereof) can be compresent (united) in a single consciousness. If this hypothesis is correct, then the problem is more basic than personal identity *per se*. For the difficulty concerns the unity of successive perceptions in one consciousness, not the question how, subsequently, we can become aware of the identity of consciousness in these perceptions. (These two questions are not the same; unity of perceptions in consciousness does not consciousness of an identical person make. This is why, even if Hume's metaphysical worry in the appendix were set aside and unity of consciousness assumed, there still remain several further steps to be taken (detailed in T I iv 6) before the idea of an identical self can be acquired: (i) consciousness must associate the successive perceptions united in it and form customs until eventually there emerges (ii) a system of perceptions associatively connected by cause and effect, whereupon (iii) there is created in imagination a disposition sufficiently resembling its feeling when contemplating a perfect identity (T 202–204) for the two to be confounded (viz. confounding the feeling of smooth transition when successively contemplating the same relation of ideas with that when successively contemplating the same idea [a successively repeated relation of ideas with a successively repeated idea]—see T 254.) It seems to me that nothing short of a radical reappraisal of temporal succession is capable of salvaging Hume's two unrenounceable principles, and, as I have argued elsewhere, this is precisely what Kant effected with his transcendental idealism: time as form of imaginative consciousness. For a brief discussion, see the conclusion of my "Hume's Quandary Concerning Personal Identity," *Hume Studies* 18.2 (1992): 233–253.

41 Hume considered perceptual media only with respect to magnitude, inclusive of time. Thus, he never claims that, e.g., "olfactory space" is composed of indivisible points. This is presumably because, in humans, olfaction yields no perception of magnitude (save with respect to succession

and duration). See Waxman, *Hume*, 43–46 and Chapter 3-D. Regarding Hume's use of the expression 'physical points' at EHU 156n1, see Waxman, *Hume*, 304n30.

42 The reduction of understanding (reason, judgment, conception) to imagination results when abstraction is reduced to relation and habit, and these in turn to subjective action and affect internal to imagination (see sections III and IV; it is also evident from texts such as T 96n.) Imagination and sense also happen to be the faculties on which Hume focused in his discussion of space and time in T I ii. He did, of course, distinguish other faculties, but, interestingly, by the end of T I, seems to have concluded that all—understanding, memory, even the senses (not as suppliers of sensations but as witness to temporal succession)—have their foundation in "imagination, or the vivacity of our ideas" (T 265). For a defense of a reductionist reading of Hume's conclusion, see Waxman, *Hume*, Chapter 2.

43 To be precise, the reason that supposes bodies to be divisible beyond what the senses can detect (even if aided by microscopes) is a "philosophical" extension parasitic on the identity-fictions of associative imagination (on this use of 'parasitic' see note 24).

44 Whether there are aural and other sensible minima is an issue Hume does not address. The temporal minimum would, presumably, be a duration indivisible by imagination, and thus, so far as consciousness is concerned, a moment (by reasoning "philosophically," on the foundation of identity and other fictions of imagination, one might postulate the insensible temporal division of such a moment, down to nanoseconds and beyond, just as one may similarly postulate the spatial division of a *minimum visibile*, down to nanometers and beyond). Whether or not Hume would have accepted the notion of a specious present is unknown. For further discussion, see Waxman, *Hume*, Chapters 2-D and 3-D.

45 Indeed, Franklin ends his citation at "...fictitious denomination...," thereby omitting the crucial contrast.

46 Only on T 200 did Hume actually explain (real) unit and number. In doing so, he relied on the notion of a view: "the view of any one object is not sufficient to convey the idea of identity...[it] conveys the idea of unity." There is no need to suppose that the object (perception) has to be simple in order to convey an idea of unity; it is not until the imagination sets to work on the object with an eye to splitting it up that the simplicity or complexity of the perception comes into play and we can determine what are the "atoms" of perception (i.e., the notion of a view cuts across the distinction between simple and complex). Admittedly, a failure to distinguish 'atom' from 'unit' in analyzing the Malezieu argument has no untoward consequences, and, for simplicity's sake, I will use them interchangeably. Yet, it is still worth noting that, from the point of view of the psychology of perception, Hume's claim that the imagination can divide perceptions into indivisible minima does not imply that these are what is actually perceived when we have a "view" of any object (perception). There is plenty of room in Hume's theory to accommodate Gestalt psychology and such like. All that is necessary for his purposes in T I ii is that we concede the existence of operations of imagination like separation

and division, which he can then call on us to employ in the task of disproving the claims of mathematical philosophy, with no risk of falling foul of the truths (manifest or otherwise) of the psychology of perception.

47 It is the distinction between something which is objective (as prior to and independent of consciousness) and something subjective (a mere creature of our consciousness, incapable of existing independently, whether as a perception or anything else); see note 25.

48 One might nevertheless extrapolate a limited, conditional application of the Malezieu demonstration to fictitious units, since, in general, the more concrete and natural the unit, the better its fit with perception, whereas the more abstract and artificial the unit, the worse.

49 In any discussion to which Hume's views on language are pertinent, two points should never be forgotten. (i) *Language is situated in the physical, intersubjective world.* Language, for Hume, is no less bound up with physical reality than human bodies are, and just as inseparable from human social interaction as conventions generally. It is true that physical reality and persons resolve into various fictions of imagination, and so cash out in the currency of consciousness as complexes of perceptions, mental actions performed on perceptions, and affects resulting therefrom. But their fictitious nature does not make them any less essential to comprehending our world, language included: since "General language...being formed for general use, must be moulded on some more general views...which arise from the general interests of the community" (EPM 228), an account of language in purely psychological terms would be as worthless, and beyond our cognitive capability (i.e., our inescapable dependence on general views), as would a similar such account of Bismarck's policy towards France in the 1860s or of divorce law in contemporary Denmark. Thus, as so often was the case for Hume, the true standard (here, of meaning, viz. ideas) is here useless, and our understanding is obliged to depend on false, but useful, standards founded on general appearances, human purposes, and established conventions (see note 22 and Waxman, *Hume*, Chapter 3-C and -D for further discussion). (ii) *Perceptions and their relations in no sense constitute a language.* By contrast with Berkeley and others, Hume would have us understand these as natural phenomena, akin to the movements of celestial bodies and falling stones (though, in the final analysis, it is nature that must be construed on the model of blind association and brute custom, i.e., natural science modeled after the science of human nature—see T xv and T 409–10). So, when considering what "corresponds" to our words in consciousness, our task is not even remotely like that of translating one language into another (when Hume applies terms like 'represent', 'believe', 'true', etc., to perceptions, it should be understood in terms of association, i.e., as naturalistic ancestors to, not equivalents of, our semantic notions—see notes 13 and 29). Indeed, the principal utility of the enterprise consists in preventing us from mistaking thought for language (with the implication that its workings and limits mirror those of language), or being otherwise deceived by language into a false estimation of the nature and powers of human understanding. From a Humean point of view, thought is a purely natural process of customary association, no more mysterious or exalted than other animalian processes like sex or digestion. See also note 52.

50 In referring to the material and immaterial objects in which these unknown qualities reside, he may be talking of the perceptions the vulgar mistake for enduring objects or of the unperceived objects of philosophers. Since both sorts are in any case to be exposed as fictions in T I iv, too much should not be made of Hume's talk of "unknown qualities": either way, the reference is to perceptions present in sensation (impressions) or thought (ideas); and since Hume's notion of a "perception," as I understand it, is purely epistemic (a datum of awareness, with no ontological import whatever—see Waxman, *Hume*, Chapter 6-B), the reference to "unknown qualities" is simply Hume's way of cueing his reader that he is not committing a sour grapes fallacy (see Waxman, *Hume*, Chapter 5-F).

51 Franklin also cites Part IX of Hume's *Dialogues Concerning Natural Religion* as evidence that Hume denied "even the possibility of infinite divisibility" (Franklin, 96). Yet, in the passage in question, Cleanthes (presumably speaking for Hume) does not deny the possibility that the world is a real whole, capriciously divided by the mind into fictitious parts; he merely asserts that the assumption is "arbitrary" and "very unreasonable." This is not yet to affirm or deny anything at all about what the world "really" is. Hume's contention is simply that it is arbitrary and unreasonable for us to posit a real world-whole, and any semblance to the contrary he would probably have attributed to our tendency, when engaged in metaphysical speculation, of applying our fictitious denominations beyond the scope of their validity (as demarcated by imagination-based experience). For surely Hume is correct to cite the maxim that if the existence of every part of a thing, and of every quality and every relation of every part, have been causally explained, then the thing itself has been causally explained. If ever there were a case where it is unclear what it would mean to say we still have the "thing itself" to explain, it is when one is dealing with the universe taken as a whole, outside of which there is nothing: here the analogy with any and all reasoning warranted by custom and other modes of experience is far too weak to sustain a conclusion.

52 One finds examples throughout Berkeley's writings, esp. in *De Motu*: "to be of service to reckoning and mathematical demonstrations is one thing, to set forth the nature of things is another" (Section 18); and "just as geometers for the sake of their art make use of many devices which they themselves cannot describe nor find in the nature of things, even so the mechanician makes use of certain abstract and general terms, imagining in bodies force, action, attraction, solicitation, etc. which are of first utility for theories and formulations, as also for computations about motion, even if in the truth of things, and in bodies actually existing, they would be looked for in vain, just like the geometers' fictions made by mathematical abstraction" (Section 39). There is no reason to believe Hume would have challenged any of this, or dissented from Berkeley's summing up: "the following rules will be of great service in determining the true nature of motion: (1) to distinguish mathematical hypotheses from the natures of things; (2) to beware of abstractions; (3) to consider motion as something sensible, or at least imaginable; and to be content with relative measures" (Section 66). Yet, whereas Berkeley, with a view to the "nature of things" rather than to utility, would have 'idea' be substituted for 'body' at every occurrence in the "book"

of nature, Hume seems to have dispensed with the analogy between nature and language altogether, irrespective of terminology ('bodies' or 'ideas'). This should, in my view, be seen as the inevitable consequence of the displacement of objective relations, inscribed by God or substances, with subjective, associative relations, constituted by feelings of vivacity and facility: the "objective" world, for Hume, is not a given, reflecting external causes, but our own creation, resulting from brute habit and blind conformity to our native associative propensities (any of which might have been different, given the vagaries of evolution). See also note 37.

53 Insofar as any of these do cash out in the currency of consciousness, it is not directly as ideas or impressions, but as actions and affections immanent to imaginative consciousness (of which we are able, then, to retain ideas): see section II and note 22 (also the discussion in memory in Waxman, *Hume*, Chapter 2-C). According to Fogelin, Hume interpreted geometry as empirical and observational, and so failed to recognize that "in geometrical proofs, equalities are stipulated rather than discovered by observation. In geometry, lines are set equal to each other" ("Hume and Berkeley," 57). But what Fogelin seems to overlook in Hume's discussion of equality is that it depends not only on general appearances but also on stipulated false-but-useful standards of equality (as opposed to the true-but-useless standards based on the minimum of perception; see T 45–53). These stipulated standards involve "the use of some common and invariable measure" (T 47), i.e., they rest on convention; and it is but a short, easy step from conventional measures of equality to the sort of arbitrary stipulation featured in geometry (e.g., stating lengths in unspecified units, as in: the sides of rectangle stand in the relation 2:1). More importantly, Fogelin overlooks the possibility that, for Hume, the real observational component in geometry relates not to the data before the mind but to the various operations it performs upon them (see especially the triangle example at T 166; also note 27). I can thus see no reason to accept Fogelin's assertion that Hume underwent any change of mind when, in the *Enquiry*, he classified geometry as a science derived wholly from relations of ideas. Indeed, in the first editions of the *Enquiry*, in a note to XII ii, Hume reaffirmed the dependence of geometry on imprecise standards, deeming it a source of skepticism (just as in the *Treatise*, where it is cited as a reason for treating the certainty of geometry as somewhat less than that achievable in arithmetic or algebra—see T 71). It is impossible to know why Hume deleted the note in later editions, but it was certainly not because he abandoned his misgivings about the standards on which geometers rely.

54 Regarding Hume's rejection of the false ideal of scientific rigor in philosophical psychology, see Waxman, *Hume*, Chapter 3-D.

55 We would, I believe, be seriously misinterpreting Hume were we to construe his assertion that there is "in reality an idea both of the figure and colour" as signifying that the idea is some kind of fusion of the two separate ideas or aspects, color and figure. The idea itself is concrete and pre-reflective; as such, it is prior to and indifferent to such distinctions as indicated by the words 'color' and 'figure', both of which are predicated on habitudes of comparison with an eye to certain resemblances. Hume has in mind the raw datum itself, before we think about it, before we invest it with meaning by

means of association, experience, and/or education.

56 See ECHU II ix 9, and my analysis in Waxman, *Hume*, Chapter 2-A.

57 See ECHU II ix 13–14. According to Fogelin, “for both Berkeley and Hume, it is a phenomenological fact that apprehended extensions are not infinitely divisible, but, instead, are composed of finitely many *minimal parts*” (“Hume and Berkeley,” 60). This makes it look as if Berkeley and Hume were merely claiming that their opponents in the controversy were poor observers of their own perceptions, and only needed to scrutinize them more carefully in order to discern that their own position was the right one—a stance Fogelin, and Franklin after him, not surprisingly, are able to comprehend only as a consequence of dogmatic idealism (“Hume was uncritically wedded to the way of ideas,” Fogelin, *Hume's Skepticism in the Treatise of Human Nature* (London: Routledge and Kegan Paul, 1985). In fact, if one is to characterize Hume's doctrine of minima (and, to a lesser extent, Berkeley's as well) as “phenomenological” it would have to be in a far more sophisticated, even proto-Husserlian sense, in which experiment and analysis play at least as great a role as introspection. It is a widespread myth among philosophers, including even some specialists, that the British empiricists identified consciousness with the attentive gaze. This is definitely not the case. Locke, for example, not only stressed how habit can obscure from us the doings of our own understandings, but even averred that “the *actions of the Mind* are performed” so “very quick” as “to require no time, but many of them seem to be crowded into an Instant” (ECHU II ix 10). To have held such a view, he must have recognized that there may be a great deal within the precincts of consciousness that is inaccessible to direct observation and can be discovered only by scrupulous analytical sifting of and/or extrapolation from observations of behavior and psychological experimentation (the Molyneux case being a prime example of the last: see ECHU II ix 8). Similarly, Humean minima of perception are arrived at not by simple, straightforward observation, but only through a pain-staking, complex, yet still empirical analysis/reduction consisting of three steps: first, the recognition that perception, as ordinarily understood, is actually judgment disguised by custom and past experience, whereas perception, properly so-called, lies within the mental capacity even of such animals as an oyster; second, one's psychology must be brought to the point of sophistication where it becomes possible to determine that relations are subjective, i.e., inextricably bound up with the operations and affect of imagination; and third, one needs to be able to resolve abstraction (whether in the guise of ideas or a mental capacity of aspect-seeing) into resemblance relations (Berkeley fell short on the latter two counts). It is thus no accident that Hume does not mention minima in T I i, much less identify simple perceptions with them: the atomism of T I ii, like the critique of mathematical philosophy as a whole, is the consequence, not the presupposition, of the theory of ideas set forth in T I i and elaborated elsewhere.

58 Franklin commends Hume for distinguishing images into parts since he sees in this procedure an anticipation of a well-established practice in modern psychology, wherein practitioners divide an image, for example, of a ball on a box, into parts corresponding to a ball-image and a box-image (see Franklin, 89–90). Alas, this praise seems misplaced since Hume would surely have

deemed the divisions of psychologists to be premised on fictitious denominations, having nothing whatever to do with the real units of which he deemed the images to be composed. Franklin's neglect of the distinction between fictitious and real units, together with the doctrines that underwrite it, also renders his (tongue-in-cheek?) speculations about the number of minima to an inch otiose (see Franklin, 96–97). One should be extremely careful not to underestimate the extent of the difference between a philosophical psychologist like Hume, for whom ideas of the material world, self, etc., are the *explanandum*, and the non-philosophical psychologist, who helps himself to these ideas, without apologies, as part of his *explanans*.

59 "[Hume's] was not the question, is the concept of cause correct, serviceable, and in respect of the whole of our knowledge of nature indispensable? About this Hume was never in doubt. His question was rather whether the concept can be thought through reason *a priori*, and in such a way as to have an inner truth independent of all experience, and thence a much extended usefulness, not confined to the objects of experience. Here was where Hume expected to make a new beginning. His concern was directed to the origin of this concept, not the indispensability of its use: if only that could be ascertained, the conditions of its use and the scope of its validity would already have been given" (Immanuel Kant, *Prolegomena to Any Future Metaphysics*, translated by P. G. Lucas [Manchester: University of Manchester Press, 1961], AA 4, 258–9). Since Kant generalized the Humean insight from the concept of cause to all metaphysical concepts, the theme of origins looms large in his writings: see *Critique Bxxxv*, A3–4, B7 8; A44–5, B61–2; A56–7, B80–1; and B166–8 (Locke is credited with having paved the way with empirical concepts at A86–7, B118–19). Kant traced the categories to logical forms, and space and time to forms of sensibility, and thereby restricted their application to appearances and their synthesis through imagination and judgment. Even his notion of the *a priori*, unlike later versions (C. I. Lewis, Quine, Kripke, et al.), must be understood as pertaining to origin, i.e., its primary meaning is not epistemic (grounds, warrants), but causal: not what makes a representation true or legitimate, but the source from whence it is acquired.

60 Fogelin believes that "most of their [i.e., Berkeley's and Hume's] arguments are ineffective in refuting the mathematical proofs of infinite divisibility, sometimes because they contain errors of reasoning and sometimes because they rely on philosophical commitments that are themselves dubious" ("Hume and Berkeley," 47–48). It is true that Berkeley and Hume were dealing with a question they took to be metaphysical, not mathematical, and so saw every reason to bring their philosophical commitments to bear. (Why else address it in their philosophical works?). How dubious these commitments are, especially in the case of Hume, can only be judged to the extent that they have been correctly understood. Were Fogelin's opinion buttressed by what I could regard as an accurate and thorough understanding of Hume's associationalist accounts of abstract ideas and relations, I might be more inclined to defer to his judgment. But although generally an outstanding interpreter of Hume, he seems to me seriously mistaken in his belief that there is nothing interesting or original in Hume's psychology (see citation from Fogelin (1985) in note 57); and, as a result, he

does not see just how far Hume went beyond Berkeley in accounting for relations and abstractions ("Hume simply takes over Berkeley's extraordinarily sophisticated attack upon the standard proofs of infinite divisibility," "Hume and Berkeley," 59). Berkeley included relations in his ontology (see *Principles* Section 89) and espoused a thoroughly ontological notion of ideas; in Hume, by contrast, everything is confined to the more modest level of psychology and epistemology (Hume having, in my view, taken an agnostic position *vis à vis* the ontology of perceptions and relations—see Waxman, *Hume*, Introduction and Chapter 6-B).

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