BACKDOOR ANALYTICITY

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I. Unequal Partners

PHILOSOPHY should have learned a lesson from what happened to its old playing-partner Theology. When you join forces with a superior player, you may soon find yourself on the sidelines with nothing to do beyond carrying water and leading cheers.

Not so very long ago Philosophy and Science formed a team. In the early halcyon days Philosophy, seasoned and sophisticated, contributed importantly to the joint theoretical enterprise with Science, then relatively immature and inexperienced. But as the game of comprehending the world wore on, Science became the star player. More and more, Philosophy found itself on the sidelines or left behind altogether, a pathetic has-been.

If the rise of Modern Science sent Philosophy reeling, the advent of contemporary Science has left it demoralized. In the immediate wake of the Newtonian Revolution, Hume exhorted his fellow inquirers to consign to the flames any book that did not bristle with experimental reasoning about matters of fact or demonstrative reasoning about numbers or quantity.[1] Fortunately no one heeded Hume's inflammatory admonition to spare only works of empirical science and mathematics or we would not today savor the book in which it appears.

A visceral anxiety that their cherished discipline no longer had any theoretically substantive role to play obsessed many 20th century philosophers. The *apriori* had long been the province of Philosophy but it had either fallen on hard times (e.g., as a consequence of the development of the non-Euclidean geometries) or had been taken over by mathematics and the newly mathematized logic which sought the independence natural to maturity. Philosophers faced a stark alternative: either renounce the cognitive pretensions of their undertaking or find some conceptual path to the *apriori* not already expropriated by Science. They soon convinced themselves that in meaning analysis they had discovered a royal route to the *apriori*. Meaning analysis, whether through the dissection of ordinary discourse or through the construction of Carnapian explications, offered

hope and held out to philosophers the promise of the self-respect that attends productive labor of any kind, even intellectual.

Although meaning analysis could be counted on to yield *apriori* truths, it ran one serious risk: triviality. Almost without exception the great philosophers of the past had expressed open contempt for such truisms as "There can be no injustice without property" (Hume) or "Triangles have three angles" (Descartes), truths all too representative of the sort arrived at by meaning analysis. Could meaning analysis deliver something non-truistic? And if so, could it also deliver something of philosophical interest?

Then-recent history, or at least one way of reading what was then-recent history, suggested affirmative answers to both of these questions. Was not Russell's theory of definite descriptions a paradigm of meaning analysis? Surely Russell's theory was not trivial, however simple it might appear in retrospect. Nor was a theory that banished shadowy Meinongian entities from ontology philosophically barren. Here, then, was a semantic achievement that gave philosophers intellectual confidence even in the face of the relentless cognitive imperialism of contemporary Science.

Behind meaning analysis lay analyticity. The end products of meaning analysis had to be analytic truths, propositions true somehow or other by virtue of their meaning, however meaning itself was to be understood or explained. And therein, as we shall see, lay the rub.

II. Two Dogmas of Empiricism

No doubt all of us once groused about the dates our history teachers forced us to memorize: 313 C.E., Constantine's and Licinius's Edict of Milan; 1066, the battle of Hastings; 1492, Columbus' discovery of the New World; and so on. Yet nothing shapes our sense of history more than the few dates we take to be momentous. For example, 1950 is a year fraught with historical significance for most analytical philosophers. Why? Because Carnap rediscovered pragmatics then? No! It is because in that year, as everyone affects to know, Quine *demonstrated* in "Two Dogmas of Empiricism" that analyticity is a sham notion.[2]

I submit that Quine demonstrated the bogus character of analyticity in much the way that Columbus discovered the New World, for the Genoese navigator's actual accomplishments bear only a faint resemblance to the grand achievement with which popular history crowns him. Similarly with Quine. Scarcely anyone among the legions of philosophers eager to credit Quine with having discredited analyticity can tell you even what the theses of "Two Dogmas" were, much less what Quine's arguments for them were (if indeed he offered any) and whether they have any cogency. Nevertheless there is virtual unanimity on this point: in 1950 Quine successfully debunked analyticity.

What in fact did Quine do? Well, he advanced some reasons for believing

that analyticity in the broad sense (the property possessed by sentences that become logical truths or logical falsehoods upon substitution of synonyms for constituent expressions) belongs to a family of concepts each member of which tends to impress people like himself as unclear or unintelligible. Quine also advanced reasons that suggest that the analytic-synthetic distinction would not be sharp but fuzzy, even if one were to succeed in making good sense of the notion of analyticity. And, most influentially of all, he painted a pragmatic picture of meaning (the fabric-of-sentences and field-of-force metaphors) that spoke to some deep longing in the English-using philosophical psyche. Quine also had something to say in "Two Dogmas" about reduction but we skip over it here.

Get enough people to believe that something is so and you almost make it so. Suppose that Quine had in fact demonstrated the incoherence or bogus nature of analyticity. How would responsible philosophers have reacted to the demonstration? First, they would have carefully eschewed the concept and the attendant distinction in their professional presentations and publications, solemnly citing Quine's proof of unintelligibility and untenability. Second, they would have adopted if available, or tried to develop if unavailable, a conception or theory of meaning that did not presuppose the tainted notion or incorporate the discredited distinction. And, most religiously of all, they would have renounced all philosophical methods that presuppose the concept of analyticity. In those instances where the discarded methods seemed indispensable to Philosophy, they would have set about to find substitutes, surrogate methods that do not depend on the notion of analyticity but that nevertheless do much the same work as the old methods that turn on it.

It is a matter of historical record that philosophers responded to "Two Dogmas" in all these ways. (More accurately, they responded to a "Two Dogmas" reinforced by the doctrines of *Word and Object*, most notably by the thesis of the indeterminacy of translation.[3]) Professional philosophers who value their reputations seldom pass up an opportunity to disparage the notion of analyticity or a sharp analytic-synthetic distinction by means of a ritual genuflection towards Quine. Nor do they hesitate to proclaim their allegiance to a doctrine of meaning that sweeps analyticity and the analytic-synthetic distinction aside, often one akin to the seductive fabric-of-sentences model sketched in "Two Dogmas" and one no less impressionistic.

Because meaning analysis in its various guises presupposes analyticity, philosophers abandoned meaning analysis as a legitimate philosophical method and sought surrogates. But philosophical methods do not come a dime a dozen; to devise even one such method secures a thinker a place in the pantheon of Philosophy. What method or methods, then, have supplanted meaning analysis? My not too controversial answer: the method of *thought experiments* or, as it might also be called, the appeal to

conceivability arguments. Does the method of thought experiments pre-suppose analyticity? My highly controversial answer: It presupposes a notion of conceivability indiscernible at bottom from analyticity.

III. CONCEIVABILITY

I will argue, then, that while analyticity was expelled out the front door of Philosophy with great pomp and ceremony, it was quietly and unceremoniously readmitted through the rear. It went out the front door as analyticity; it re-entered through the back door as conceivability.

Conceivability is no stranger to Philosophy, no newfangled post-empiricist notion. The concept of conceivability, and the genus of arguments and methods to which it gives rise, go back to the dawn of Philosophy. But it was Descartes who brought conceivability to centerstage in a remarkably uncritical, and largely uncriticized, way. Doubtless each philosophical epoch has its own uncritical and unchallenged concepts and methods that give the era its distinctive cast. So long as there is philosophical "progress," i.e., so long as there is a collective sense of forward motion or cognitive momentum, the concepts and methods go unchallenged, for what philosopher would be so churlish as to question a generous and steadfast benefactor? The uncritical method of that period we call *modern philosophy* is the method of thought experiments. Its uncritical concept, conceivability.

Let me explain how I propose to argue for the thesis that at bottom analyticity and conceivability are the same notion, and for the methodological corollary that meaning analysis and thought experimentation boil down to the same thing. My strategy will be similar to the one David Hume employed to prove that the sentiment of humanity or fellow feeling is one and the same with the moral sentiment, to wit:

> The same endowments of the mind, in every circumstance, are agreeable to the sentiment of morals and to that of humanity; the same temper is susceptible of high degrees of the one sentiment and of the other; and the same alteration in the objects, by their nearer approach or by connexions, enlivens the one and the other. By all the rules of philosophy, therefore, we must conclude, that these sentiments are originally the same; since, in each particular, even the most minute, they are governed by the same laws, and are moved by the same objects.[4]

Mimicking Hume, then, I will try to show that analyticity and conceivability are governed by the same laws and moved by the same objects, and so are at bottom one notion.

The connexions of analyticity with apriority and necessity are well enough known for me to pass over them with very little comment. The enigma of the necessity of the evidently synthetic theses of Euclidean geometry turned out happily enough to be a pseudo-problem: the discovery of the non-Euclidean geometries showed the necessity to be only apparent, not real. But those post-Kantian philosophers who identified the *apriori* with the analytic had to wrestle with the status of arithmetic. It was

incumbent on them to show either that arithmetic was analytic because *apriori*, or *aposteriori* because synthetic. Most of them opted for the first disjunct, claiming eventually to reduce arithmetic to pure logic whose laws were deemed analytic by courtesy or, perhaps better, by what Descartes would have called "eminence." Even in "Two Dogmas," you will recall, Quine did not challenge analyticity in the narrow sense, i.e., logical truth, when he railed against the unintelligibility of the broad notion of analyticity which itself presupposes logical truth.

Two points here concern me. The first is the relationship of analyticity to logical truth (and logical falsehood). The same relationship, I contend, holds between conceivability and logical possibility. Resounding through modern philosophy like the steady beat of a drum is the theme that whatever is logically impossible is inconceivable, or contrapositively that whatever is conceivable is logically possible. Hume, the thinker whose theory of conceivability I view as representative of the doctrines of many modern and contemporary philosophers, put the matter this way:

> 'Tis an established maxim in metaphysics, *That whatever the mind clearly conceives includes the idea of possible existence*, or in other words, *that nothing we imagine is absolutely impossible*. We can form the idea of a golden mountain, and from thence conclude that such a mountain may actually exist. We can form no idea of a mountain without a valley, and therefore regard it as impossible.[5]

A few pages later, Hume continues this line of thought in a clear and unequivocal passage:

> 'Tis in vain to search for a contradiction in any thing that is distinctly conceiv'd by the mind. Did it imply an contradiction, 'tis impossible it cou'd ever be conceiv'd.[6]

Just as the logically true or false is analytic and the analytic is logically true or false, so too is the conceivable logically possible and the inconceivable logically impossible.

There were, of course, dissenters. Notable among them is Descartes whose multifaceted theory of conceivability eludes easy classification. For Descartes, conceivability, i.e., clear and distinct conception, entails possibility, for God can bring about whatever we so conceive exactly in the manner we conceive it, a principle he needs in order to establish the real distinction of mind and body in the Sixth Meditation. But inconceivability does not entail impossibility, for the boundaries of our minds must not be mistaken for limits on the unlimited or infinite power of God. He writes to Mersenne that "In general we can assert that God can do everything that we can comprehend [conceive] but not that he cannot do what we cannot comprehend [conceive]."[7] Descartes is quite prepared to contemplate God's making the sum of 1 and 2 something other than 3, or God's creating a mountain without a valley or even God's producing a vacuum, all of which he deems inconceivable. Of the inconceivable, of what *our* minds cannot

conceive, Descartes cautions us to say piously only that an angel cannot bring it about, not that God cannot.[8]

Descartes's curious views aside, whatever the laws of logic might be, the regulative role they play toward conceivability (one's conceptions may not violate the laws of logic) is the same as the constitutive role that these laws play toward analyticity (whatever is logically true or false is analytic). Or put the other way around, the regulative role of analyticity in logic (logical laws must remain within the bounds of semantic sense) is the same as the constitutive role of logic toward conceivability (the logically inconsistent is inconceivable). This, then, is the first step in my quasi-Humean demonstration of the root identity of the two seemingly diverse notions.

I come now to the second and related point hinted at above, namely, the *apriori* access to necessity and possibility provided by both analyticity and conceivability. If again we take Hume's theory as representative, we see that conceivability entails possibility and that inconceivability entails impossibility. Now if anything qualifies as an *apriori* matter, conceivability surely does; this is a point on which even the so-called modern philosophers reached consensus. So, like analyticity, conceivability affords direct *apriori* access to modality, but to the possible and the impossible rather than to the necessary and the contingent.

Conceivability appears to furnish then, if not the philosopher's stone, at least a powerful philosophical tool. Merely by conceiving something the philosopher can establish its possibility, or by attending to something's inconceivability the philosopher can demonstrate its impossibility. Here, then, is an armchair method that goes right to the metaphysical heart of things, a veritable royal road to wisdom.

But is the road really so royal? Is it really child's play to conceive states of affairs, or to detect their inconceivability? It would appear to be so, says Hume:

> Nothing, at first view, may seem more unbounded than the thought of man, which not only escapes all human power and authority, but is not even restrained within the limits of nature and reality. To form monsters, and join incongruous shapes and appearances, costs the imagination no more trouble than to conceive the most natural and familiar objects. And while the body is confined to one planet, along which it creeps with pain and difficulty; the thought can in an instant transport us into the most distant regions of the universe; or even beyond the universe, into the unbounded chaos, where nature is supposed to lie in total confusion. What never was seen, or heard of, may yet be conceived; nor is any thing beyond the power of thought, except what implies an absolute contradiction.[9]

Notice, by the way, that we can turn this passage of Hume's into an observation about language and meaning without loss of literary eloquence or philosophical pertinency, thus:

> Nothing, at first view, may seem more unbounded than language, which not only escapes all human power and authority, but is not even restrained within the limits of nature and reality. To speak of monsters, and join incongruous

shapes and appearances, costs the speaker no more trouble than to talk of the most natural and familiar objects. And while the body is confined to one planet, along which it creeps with pain and difficulty; language can in an instant transport us into the most distant regions of the universe; or even beyond the universe, into the unbounded chaos, where nature is supposed to lie in total confusion. What never was seen, or heard of, may yet be spoken of; nor is any thing beyond the power of language, except what implies an absolute contradiction.

But, as Hume himself goes on to say in the very next paragraph, these appearances are misleading. Far from being free and unbounded, our power of conception is tightly constrained:

> But though our thought seems to possess this unbounded liberty, we shall find, upon a nearer examination, that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience. When we think of a golden mountain, we only join two consistent ideas, *gold* and *mountain*, with which we were formerly acquainted. A virtuous horse we can conceive; because, from our own feeling, we can conceive virtue; and this we may unite to the figure and shape of a horse, which is an animal familiar to us. In short, all the materials of thinking are derived either from our outward or inward sentiment: the mixture and composition of these belongs alone to the mind and will. Or, to express myself in philosophical language, all our ideas or more feeble perceptions are copies of our impressions or more lively ones.[10]

It would be profitable, had we now the space, to focus on Hume's observation, casually expressed in the foregoing passage, that complex ideas are formed by joining together "consistent" ideas like *gold* and *mountain*. This remark amounts to implicit recognition by Hume of the regulative role in conception played by logical laws. It would be equally profitable but similarly out of place here to show that Descartes's view of conception is pretty much like Hume's. Descartes leaves to mind and will only the mixture and composition of the primary materials of thought, namely, the ideas present innately to the mind or produced in it on the occasion of certain bodily experiences.

But we have strayed from our point. The cited passages do not bear on the ease of conception so much as on the narrow limits to which it is confined. Perhaps within these narrow confines nothing is easier than conception. Perhaps the conceptual agility of our minds would have impressed even the poet who penned this memorable couplet:

> I think it clever of the turtle
> In such a fix to be so fertile.[11]

One of the earliest and most famous thought experiments of Hume's first *Enquiry* appears to confirm this *thesis of facile conception*, namely, the celebrated case of the missing shade of blue. Can we conceive of someone's raising up to himself or herself the idea of this shade, someone who has enjoyed long and direct acquaintance with all the shades of all the colors save this one? It is scarcely an idle question. An affirmative answer to it appears to subvert the universal claim made a page earlier that "every

idea...is copied from a similar impression," a claim reinforced by the contemptuous challenge that "Those who would assert, that this position is not universally true nor without exception, have only one, and that an easy method of refuting it; by producing that idea, which, in their opinion, is not derived from this source."[12]

Perhaps Hume's ultimate answer to the question can be explained only by abject acquiescence on his part in the thesis of facile conception.[13] Hume accepts at face value what he expects the response of others to be and what doubtless was his own response to the thought experiment, namely, that one can indeed conceive of such a person conjuring up the idea of the missing shade of blue. He even takes these anticipated responses "as a proof, that the simple ideas are not always, in every instance, derived from the correspondent impressions; though this instance is so singular, that it is scarcely worth our observing, and does not merit, that for it alone we should alter our general maxim."[14] What an anemic retort after so fiery a challenge!

To take the case of the missing shade of blue as your paradigm of thought experimentation is to espouse the thesis of facile conception. Perhaps no other thesis is more widely accepted in contemporary Philosophy. Its acceptance is ordinarily implicit but readily detected nevertheless. To descry it one need only recollect how philosophers poke holes in one another's theories.

The philosophical art is the art of counterexampling. Philosophical truths, if there be any, are claims that withstand every purported counterexample. If I advance some general thesis, e.g., that intension determines extension, you immediately start to think about falsifying it. How? By conceiving a state of affairs in which my thesis fails, a state of affairs like Putnam's twin-earth scenario in which the sense of "water" allegedly fails to determine its reference.[15] How do *I* know whether you have been successful? How for that matter do *you* know whether you have been successful? Well, if you feel satisfied with your conception, if it seems to you that you have managed to conceive such a state of affairs, you simply rest your case. And if it seems to me that you have succeeded, perhaps because profiting from your tutelage I seem now able to conceive it myself, I capitulate. Either I abandon my thesis or, like Hume, I dismiss your counterexample as too esoteric to do serious damage. There is, of course, a third alternative, one surprisingly rarely taken, namely, to dismiss your conception as somehow bogus or counterfeit. I shall return to this alternative later.

Sound familiar? If not, I beg you to recall the dialectic of Philosophy as it was practiced during the heyday of meaning analysis when analyticity was still a respectable concept. (In advancing this analogy I expect you to perform the relevant *mutatis mutandis* maneuvers, something I should perhaps be able to take for granted.)

Reflection on the way they conduct their thought experiments leads me to

think that contemporary philosophers have decided to follow the example Hume set in the case of the missing shade of blue. If so, they have chosen to imitate Hume at his worst. Perhaps no other philosopher has conducted his thought experiments with the degree of care and sophistication that Hume bestowed on his, or at least on some of his. But if we want to see what it is like for a philosopher to perform a thought experiment responsibly, we must turn to the *Treatise*, in particular to Part II (Of the Ideas of Space and Time) of Book I (Of the Understanding) where Hume deals with the problem of the infinite divisibility of space and the question whether there can be a vacuum.

On these issues Hume reaches answers opposite to those proffered by Descartes. Having identified body with extension and extension with 3-dimensional space, Descartes predictably concludes that a vacuum is inconceivable. If you manage to conceive all matter removed from a chamber, you will find that its walls touch, for there is then nothing to separate them. But if you find that the walls do not touch, you have failed to conceive the removal of all the matter (body) inside them. Not even Lucifer before his fall could produce a vacuum. Nevertheless, insists Descartes, it would be impious to claim that God Almighty could not create one simply because the idea of a vacuum strikes *our* minds as contradictory.[16]

Hume notes that it follows from his theory of space or extension as the manner or order in which visible or tangible points are distributed that "we can form no idea of a vacuum, or space, where there is nothing visible or tangible," but he acknowledges three weighty objections to this conclusion.[17] The first objection, and the one I wish to discuss now, holds that "the very dispute is decisive concerning the idea, and that 'tis impossible men cou'd so long reason about a vacuum, and either refute or defend it, without having a notion of what they refuted or defended."[18] What makes this objection so compelling is Hume's principle that conception entails possibility. If we have the idea or conception of a vacuum, therefore, the dispute must be resolved decisively in favor of its existence or at least its possibility.

Thereupon Hume begins an intricate chain of reasoning, one mediated at each step by one or another explicitly stated principle of conceivability. Moreover, he does not hesitate to conduct nested thought experiments, i.e., thought experiments within thought experiments, e.g., one in which the reader is asked to conceive of points of light separated by complete darkness as if simultaneously viewing several stars on an inky black night. This thought experiment leads Hume to posit a second type of distance, an invisible and intangible distance, that is linked to visible and tangible distance in counterfactually specified ways. Ultimately, the chain of reasoning and embedded thought experiments lead to the "paradox...that if you are pleas'd to give to the invisible and intangible distance [separating the stars on the inky night], or in other words, to the capacity of becoming a visible and tangible distance, the name of a vacuum, extension and matter are the same, and yet there is a vacuum. If you will not give it that name,

motion is possible in a plenum, without any impulse *in infinitum*, without returning in a circle, and without penetration."[19]

Unlike this handling of the case of the missing shade of blue, Hume's detailed demonstration of the doctrine advanced in "Of the Ideas of Space and Time" makes no appeal to off-the-cuff judgments about conceivability, much less does it acquiesce abjectly in them. Hume has a well-articulated theory of conceivability, and from beginning to end he brings it to bear on the several topics he broaches. No conceivability claim is appealed to, no thought experiment relied upon, unless it has passed through the sieve of this theory. Would that contemporary philosophers followed suit!

Of course Hume is not the only philosopher to have brought principles to bear on the philosophical practice of conception. Another example, one that deserves to be better known, is Helmholtz. Helmholtz took seriously neo-Kantian claims that, albeit as consistent as Euclidean geometry, the non-Euclidean geometries are strictly inconceivable, i.e., that human beings cannot conceive spaces that exhibit non-Euclidean features. Recognizing that one could not tackle this question without an articulated theory of spatial conception, Helmholtz set out to develop one. His investigations led him to formulate the following criterion of spatial conception: to conceive the space corresponding to a geometry G is to describe the series of sensations that would be experienced by creatures inhabiting a space whose geometry is described by G, creatures whose physiology resembles our own and is governed by the same laws. Equipped with this criterion of conceivability, Helmholtz was able to prove that non-Euclidean spaces were no less conceivable than familiar Euclidean space, *pace* the neo-Kantians.[20]

The existence of a vacuum and the conceivability of non-Euclidean spaces were serious scientific issues, so it is perhaps no surprise that responsible solutions to them incorporated explicit principles and carefully ramified doctrines of conceivability. It seems that one's readiness to accept off-the-cuff conceivability claims is inversely proportional to the importance of the matters at issue. If so, we may conclude from the casual acceptance of unprincipled thought experiments that the stock-in-trade of much contemporary Philosophy consists of trivia.

On the brighter side, we can expect the development of a general theory of conceivability to keep pace with efforts to deal with the serious conceptual problems faced or occasioned by science in its various branches. Set theory is a case in point. Early on, mathematicians thought they could base set theory on intuitive or off-the-cuff conceptions of the properties or conditions that determine sets. *Inter alia*, Russell's antinomy showed how wrong they were. In response to it and to other antinomies, mathematicians and logicians gradually articulated various theories of conceivability tailored to sets, a process of theory formation that is still unfinished.

The theory of computability furnishes another example. Suppose some-

one to advance an off-the-cuff claim that he or she can conceive an algorithmic device that segregates universally valid first-order wffs from the rest. Would mathematicians and logicians capitulate by giving up Church's Thesis or even Church's Theorem? The very suggestion is ludicrous. First, Church's Theorem has been proved, so there is no gainsaying it. Second, there are well-known standards of conceivability that must be met by any claim that will be taken to bear on Church's Thesis. No off-the-cuff conceivability claims are tolerated here.[21]

Let me return to my original claim that at bottom analyticity and conceivability are the same notion. If my claim is right or at least not too far wrong, we should expect to find that, in the heyday of meaning analysis, articulated theories of meaning—partial theories no doubt—were brought to bear on philosophical problems precisely to the degree that they concerned important issues in science. Here is a claim that the historical record can settle. I invite you to take a look.[22]

NOTES

1. David Hume, *An Enquiry concerning Human Understanding* (Indianapolis: Hackett Publishing Co., 1981), sec. 12, p. 114.

2. W. V. O. Quine, "Two Dogmas of Empiricism," reprinted in his *From a Logical Point of View* (Cambridge: Harvard University Press, 1964), pp. 20-46.

3. W. V. O. Quine, *Word and Object* (New York: John Wiley & Sons, 1960). *See* especially Chapter Two, "Translation and Meaning," pp. 26-79.

4. David Hume, *Enquiry concerning the Principles of Morals* (Indianapolis: Hackett Publishing Co., 1983), sec. 6, part 1, p. 52.

5. David Hume, *Treatise*, I, ii, 2, p. 32.

6. David Hume, *Treatise*, I, ii, 4, p. 43.

7. Descartes, Letter to Mersenne of 15 April 1630, in *Descartes: Philosophical Letters*, ed. & trans. by Anthony Kenny (Minneapolis: University of Minnesota Press, 1981), p. 12.

8. Descartes, Letter to Beckman of 17 October 1630. *See also* his Letter to Arnauld of 29 July 1648, pp. 236-37.

9. David Hume, *Enquiry concerning Human Understanding, op. cit.*, sec. 2, p. 11.

10. *Ibid.*, sec. 2, p. 11.

11. Ogden Nash, *Hard Lines* (1931).

12. David Hume, *ibid.*, sec. 2, pp. 11-12.

13. A better explanation of Hume's puzzling example can be given by invoking his fascinating theory of general rules. I put forward just such an account in my "Hume's Theory of General Rules," an invited address to the International Hume Society delivered in Marburg, Federal Republic of Germany, in August 1988.

14. Hume, *ibid.*, sec. 2, p. 13.

15. Hilary Putnam, "A Problem about Reference," in *Reason, Truth and History* (Cambridge: Cambridge University Press, 1982), pp. 22-48.

16. Descartes, Letter to Mersenne of 9 January 1639, p. 62. *See also* his Letter for Arnauld of 29 July 1648, pp. 236-37.

17. David Hume, *Treatise*, I, ii, 5, p. 53.

18. *Ibid.*, I, ii, 5, p. 54.

19. *Ibid.*, I, ii, 5, p. 64.

20. Hermann von Helmholtz, "On the Origin and Significance of Geometrical Axioms," in his *Popular Scientific Essays* (New York: Dover Publications, 1962), pp. 223-49.

21. Church's Thesis and Church's Theorem are often confused with one another, or run together. Church's theorem asserts that, given a Godel-numbering of the formulas of first-order logic, the theorem function (the function that yields 1 when applied to the Godel-number of a theorem of first-order logic, and that yields two when applied to the Godel-number of a non-theorem) is not Turing computable. Church's Thesis states that every intuitively algorithmic function is Turing computable. (For Turing computability, of course, one may substitute any of the several notions known to be equivalent to it.)

22. This paper was first delivered at the Workshop on the Place of Thought Experiments in Science and Philosophy, which was held on April 18-20, 1986, at the U. of Pittsburgh. I am indebted to Dr. Barbara D. Massey, and to the members of my U. of Pittsburgh graduate seminar on conceivability, for helpful discussions.