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Metaphysicians

David M. Armstrong

DAVID MALET ARMSTRONG'S book *Belief, Truth and Knowledge* contains an important analysis of the infinite regress of inferences - "reasons behind the reasons" - first noticed by Plato in the *Theaetetus*.¹

Knowledge traditionally entails true belief, but true belief does not entail knowledge.

Knowledge is true belief plus some justification in the form of reasons or evidence. But that evidence must itself be knowledge, which in turn must be justified, leading to a regress.

Following some unpublished work of Gregory O'Hair, Armstrong identified and diagrammed several possible ways to escape Plato's regress, including:²

- Skepticism - knowledge is impossible
- The regress is infinite but virtuous
- The regress is finite, but has no end (Coherence view)
- The regress ends in self-evident truths (Foundationalist view)
- Non-inferential credibility, such as direct sense perceptions
- Externalist theories (O'Hair is the source of the term "externalist")
- Causal view (Ramsey)
- Reliability view (Ramsey)

Armstrong is cited by HILARY KORNBLITH and other recent epistemologists as restoring interest in "externalist" justifications of knowledge. Since Descartes, and perhaps Kant, epistemology had been focused on "internalist" justifications. Knowledge in information philosophy is a *correspondence* between information in the mind (the experience recorder and reproducer - ERR) and the external world that provides the experience.

1 Plato, *Theaetetus*, 200D-201C

2 Armstrong (1973) *Belief, Truth, and Knowledge*. p.152



Armstrong does not subscribe to traditional views of justifying true beliefs, but he cited “causal” and “reliabilist” theories as direct non-inferential validation of knowledge. Direct validation or justification avoids the problem of the infinite regress of inferences.

Causality and reliabilism also were not original with Armstrong. He referred to the 1929 work of FRANK RAMSEY. Today these ideas are primarily associated with the name of ALVIN GOLDMAN, who put forward both “causal” (in 1967) and “reliabilist” (in 1969) theories of justification for true beliefs. Goldman was apparently not familiar with the earlier Ramsey work, since it is not mentioned in the early Goldman papers?

Here is how Armstrong described “causal” and “reliabilist” views:

According to “Externalist” accounts of non-inferential knowledge, what makes a true non-inferential belief a case of knowledge is some natural relation which holds between the belief-state, Bap [‘a believes p’], and the situation which makes the belief true. It is a matter of a certain relation holding between the believer and the world. It is important to notice that, unlike “Cartesian” and “Initial Credibility” theories, Externalist theories are regularly developed as theories of the nature of knowledge generally and not simply as theories of non-inferential knowledge. But they still have a peculiar importance in the case of non-inferential knowledge because they serve to solve the problem of the infinite regress.

Externalist theories may be further sub-divided into ‘Causal’ and ‘Reliability’ theories.

The source for both causal and reliabilist theories is Frank Ramsey (1929). Armstrong gets this right.

Ramsey’s brief note on ‘Knowledge’, to be found among his ‘Last Papers’ in *The Foundations of Mathematics*, puts forward a causal view. A sophisticated recent version of a causal theory is to be found in ‘A Causal Theory of Knowing’ by Alvin I. Goldman (Goldman 1967).

Ramsey is the source for reliabilist views as well. Once again, Ramsey is the pioneer. The paper ‘Knowledge’, already mentioned, combines elements of the Causal and the Reliability view. There followed John Watling’s ‘Inference from the



Known to the Unknown' (Watling 1954), which first converted me to a Reliability view. Since then there has been Brian Skyrms' very difficult paper 'The Explication of "X knows that p"' (Skyrms 1967), and Peter Unger's 'An Analysis of Factual Knowledge' (Unger 1968), both of which appear to defend versions of the Reliability view. There is also my own first version in Chapter Nine of *A Materialist Theory of the Mind*. A still more recent paper, which I think can be said to put forward a Reliability view, and which in any case anticipates a number of the results I arrive at in this Part, is Fred Dretske's 'Conclusive Reasons' (Dretske 1971).

Here is Hilary Kornblith on Armstrong

The terms "internalism" and "externalism" are used in philosophy in a variety of different senses, but their use in epistemology for anything like the positions which are the focus of this book dates to 1973. More precisely, the word "externalism" was introduced in print by David Armstrong in his book *Belief; Truth and Knowledge* (sic).

Michael Burke

MICHAEL BURKE is Professor Emeritus of Philosophy at Indiana University. He worked on problems of material constitution and critically examined the idea of coinciding objects (colocation), both Chrysippus's ancient problem of Dion and Theon and its modern version as Tibbles, the Cat. He wrote in 1994:

The Stoic philosopher Chrysippus is said to have posed the following puzzle. Yesterday, there was a whole-bodied man called 'Dion' who had a proper part called 'Theon.' Theon was that part of Dion which consisted of all of Dion except his left foot. Today, Dion's left foot was successfully amputated. The Academic Sceptics said no individual can survive a material loss. Chrysippus argued that Dion could. Theon was just a name for a part of Dion, not a distinct individual, hypothesized for dialectical purposes. So, if Dion and Theon both still exist, they are numerically different objects now occupying just the same place and wholly composed of just the same matter. Presuming this to be impossible, the question is which of the two, Dion or Theon, has ceased to exist.



At first thought, of course, it seems that neither has ceased to exist. It would seem absurd to deny that Dion is still with us. Surely, a man can retain his identity despite the loss of a foot. But it also seems undeniable that Theon still exists. Theon, it seems, has emerged from the surgery intact.

Might it be that Dion and Theon, who initially were two, have both survived, but now are one? Assuming the indiscernibility of identicals, a principle invoked even in Hellenistic philosophy, the answer is “no.” For even now there is something true of Dion which is not true of Theon: that he once had two feet.

As will be obvious to those familiar with contemporary identity theory, the puzzle of Dion and Theon is of more than antiquarian interest. The same type of puzzle commands much attention today. (The example discussed most often is that of Tibbles the cat.) Interestingly, none of today’s theorists would agree with Chrysippus that Theon has perished.”³

Tibbles the Cat

The original suggestion of Tibbles by Peter Geach in the early 1960’s may not have been what is called today a “body-minus” problem. It was a problem of the many. But in 1968, David Wiggins repurposed Geach’s idea, imagined Tibbles as a cat without a tail, renaming of the problem of Dion and Theon that has eclipsed Chrysippus’ account.

About the same time, Peter van Inwagen (1981) imagined a Descartes who had lost a leg.⁴ Van Inwagen denied the legitimacy of a second individual occupying the same space and time as even a part of Dion. This is right, of course, it was just the deliberate setting up of the ancient paradox.

Wiggins described his Tibbles, beginning with an assertion that he calls a *necessary* truth.

“S*: No two things of the same kind (that is, no two things which satisfy the same sortal or substance concept) can occupy exactly the same volume at exactly the same time.

3 Burke (1994b) ‘Dion and Theon: An essentialist solution to an ancient puzzle,’ p.129

4 Van Inwagen (1981) ‘Doctrine of Arbitrary Undetached Parts,’



This, I think, is a sort of necessary truth...

A final test for the soundness of S* or, if you wish, for Leibniz' Law, is provided by a puzzle contrived by Geach out of a discussion in William of Sherwood."⁵

In their great 1987 compilation of Hellenic thought, A. A. Long and D. N. Sedley described Tibbles as an example of "two peculiarly qualified individuals coming to occupy one substance," something the Stoics explicitly denied is possible. Long and Sedley clearly are following Wiggins' 1968 version of Tibbles. They suggest that Chrysippus has given us an example of Dion surviving a diminution in his material without losing his identity, as the Academic Skeptics claimed.

"The key is to recognize this as the ancestor of a puzzle which has featured in recent discussions of place and identity. Take a cat, Tibbies, and assign the name Tib to that portion of her which excludes her tail. Tibbies is a cat with a tail, Tib is a cat without a tail. Then amputate the tail. The result is that Tibbies, now tailless, occupies precisely the same space as Tib. Yet they are two distinct cats, because their histories are different. The conclusion is unacceptable, and the philosophical interest lies in pin-pointing the false step."⁶

In his 1996 article "Tibbles the cat: A Modern 'Sophisma,'" Burke claimed Tibbles was "scholastic in origin," which is puzzling as he knows the story of the Greek Dion and Theon very well (Burke 1994b). He describes Tibbles, clearly following Wiggins or Long and Sedley and not Geach.

"Before us stands a 10-pound cat named 'Tibbles'. Before us also is that 9-pound part of Tibbles which consists of all of Tibbles except his tail. Following philosophical custom, call that bodily part, for which English has no common name, a 'puss'; and give Tibbles' puss the proper name 'Tib'. Further, assume that cats are wholly physical. (Or else let 'Tibbles' name the body of the cat, or even a toy cat.) Suppose now that Tibbles loses his tail. We are left with a tailless cat - and a puzzle. If Tib and Tibbles both still exist, they are numerically different physical objects, one a former 10-pounder, one not, which now consist of just the

5 Wiggins (1969) 'Being in the same place at the same time', p.94

6 Stoic Ontology, *The Hellenistic Philosophers*, A. A. Long and D. N. Sedley, p.175



same matter and occupy just the same place. That, presumably, is impossible. Either Tib or Tibbles, therefore, has ceased to exist. But which one? The identity of a cat surely is not tied to its tail. So Tibbles still exists. But surely Tib has not ceased to exist: Tib lost none of its parts. Something has to give. But what?

Tibbles-type puzzles are a mainstay of revisionist metaphysics.”⁷

Burke proposes a “novel and conservative solution” to the body-minus problem, based on the idea of “essentialism,” the idea that properties of an object are essential to the object. Burke’s argument agrees with Chrysippus’ view that it is Dion who survives. Tib ceases to exist because she was a puss and, if she still existed, would now be a cat. Though Burke doubts this was Chrysippus’ argument.

“Here is what I propose to say about Tib and Tibbies: Initially we had a 10-pound cat, Tibbies, which contained a 9-pound puss, Tib. Before us now, following the loss of the tail, is a single 9-pound object, one which is both a cat and a puss. That object is Tibbies, which earlier had a tail but now is tailless. Tib has ceased to exist.

What is novel in this account, and what will surely seem counterintuitive, is the claim that Tib has ceased to exist. After all, I allow that there was such a thing as the puss Tib. And I allow that there is a puss before us now. The latter is spatiotemporally continuous with Tib. And it is both qualitatively and compositionally identical to Tib. So how could it fail to be Tib? My answer, very simply, is that Tib was merely a puss, whereas the puss now before us is also a cat...”⁸

For more on Burke’s thoughts on mereological essentialism, see his page on metaphysicist.com and chapter 10 on essentialism. Burke thought he could demystify problems of coinciding objects.

An information-based metaphysics shows that two “coinciding objects” are often just the matter and form of a single object, for example the statue and the lump of clay. But the *immaterial* form (abstract information) and the concrete material are not “parts” in the same sense. Does Burke make a “category mistake?”

“We have before us a copper statue. In the same place, presumably, there is a piece of copper. Let’s call the statue ‘Statue’ and

7 Burke (1996) ‘Tibbles the cat: A Modern “Sophisma”’. p. 63

8 *ibid.*, pp.64-65



the piece of copper ‘Piece’. Now what is the relationship between Statue and Piece? Among philosophers who reject the view that objects have temporal parts, by far the most popular account of such cases is one on which Statue and Piece are numerically different objects even though they consist of just the same matter and are wholly present in just the same place. What shows them to be different objects, according to this account, is that they have different persistence conditions: Piece could survive a drastic change in shape; Statue could not. Let’s call this ‘the standard account.’⁹

Information philosophy denies these two are numerically distinct and yet “just the same matter.” The Piece is wholly matter. The Statue is merely form. They have been picked out as “two” and named for their dialectical value as having different persistence conditions

In a 1994 article, Burke begins by arguing that the “standard account” for many metaphysical identity theorists is this:

“It is common for the whole of one object and the whole of another object to occupy just the same place at the same time. So say many identity theorists.”¹⁰

The “identity theorists” he included are David Wiggins (1967), Saul Kripke (1971), Roderick Chisholm (1973), and E. Jonathan Lowe (1983).

Exceptions include Peter van Inwagen (1981), who Burke says calls it a “desperate expedient,” David Lewis (1986), who wrote, “This multiplication of entities is absurd on its face,” and Harold Noonan (1988), who says it “manifests a bad case of double vision.” These are words the Ancient Skeptics used about the Stoic categories of material substrate or body and the ‘peculiarly qualified individual’ or person in their discussions of the Growing Argument).”

In his extensive article, Burke cites several examples of coinciding objects, the statue and clay, a tree and its molecules, cats and pusses, and persons and bodies.

Information philosophy, and an information-based metaphysics, analyzes all these problems as distinctions between the *immaterial*

9 Burke (1992) ‘Copper Statues and Pieces of Copper: A Challenge to the Standard Account.’ *Analysis* 52: 12-17

10 Burke (1994a) ‘Preserving the Principle of One Object to a Place,’ *Philosophy and Phenomenological Research*, 54(3), p.591



form (the information) and the material substance. As such, information philosophy is a *dualist* theory. Burke recognizes the importance of this distinction, potentially solving problems that are intractable for a modern materialist or naturalist philosopher, who denies anything *immaterial*, notably the *mind*.

“Perhaps the most frequently cited example of coincidence is that of persons and their bodies. Let’s briefly consider the example from both dualist and materialist points of view.

On dualist theories of the human person, there is no threat of genuine coincidence. Dualist theories divide into those on which the body is a proper part of the person and those on which the body is something like a possession. On theories of the first type, it is true that a person occupies the place occupied by his body. But it’s not the whole of the person that occupies that place; it’s merely a part of him that does so. This is no more a case of coincidence than is the case of a pipe and its bowl... On theories of the second type, on which a person is a mind or soul that “possesses” a body, it is only in some non-literal sense that a person may be said to “occupy” the place occupied by her body. The sense is similar to that in which a general may be said to occupy the area occupied by his army, even if he commands the army from outside that area.”¹¹

In a 2004 article, “Dion, Theon, and the Many Thinkers Problem,” Burke summarizes of his work, defending it against numerous criticisms. See his page on metaphysicist.com for details.

Rudolf Carnap

Carnap and his colleagues in the Vienna Circle added very little of lasting value to either science or philosophy with their strong ideas in the philosophy of science. They mistakenly believed that both subjects were reducible to language and logic.

Ludwig Wittgenstein had set the project for the Vienna Circle in the *Tractatus Logico-Philosophicus*.

“4.11 The totality of true propositions is the whole of natural science (or the whole corpus of the natural sciences)”¹²

11 Burke (1994a) “Preserving the principle of one object to a place,” in Rea (1997) *Material Constitution*. p.261

12 Wittgenstein (1922) *Tractatus Logico-Philosophicus* 4.11



In his 1928 book *Der Logische Aufbau der Welt*, and especially his 1934 work *Logische Syntax der Sprache* (published in 1937 as *The Logical Syntax of Language*), Carnap thought that he completed the Wittgenstein project, but with significant differences from some of Wittgenstein's views in the *Tractatus*.

The logical syntax of a language is a set of formal rules. They have nothing to do with the “meaning of the symbols (for example, the words) or the sequence of expressions (the sentences), but simply and solely to the kinds and order of the symbols from which the expressions are constructed.”

As logical empiricists or positivists, they were committed to minimal “interpretations” of “reality” itself. Their goal was a “unified science” built up from pointer readings, from physical “observables.” They were inspired by the early work on relativity by Albert Einstein, who had been inspired by Ernst Mach's positivism and opposition to metaphysics.

Limiting physics to observables, instead of a preconception about how reality must be, was behind Werner Heisenberg's uncertainty principle. Thus we can observe the spectral lines emitted by electrons when they jump from one orbit to another, but we cannot observe the orbiting electrons themselves.

For Carnap, a causal law was simply the fact that events are predictable. Quantum uncertainty put limits on that predictability, and some physicists spoke loosely of “the failure of the principle of causality only because it has become impossible to make predictions with any desired degree of accuracy.”

David Chalmers

Chalmers is a philosopher of mind whose characterization of consciousness as “the hard problem” has set a very high bar for understanding the mind. He says that “the problem of quantum mechanics is almost as hard as the problem of consciousness.”

Chalmers describes his position as a naturalistic dualism. He doubts that consciousness can be explained by physical theories, because consciousness is itself not physical. We agree, because all experiences are recorded and reproduced as immaterial information



- in both conscious and unconscious playback. But information, while not material, is embodied in the physical. It is a property of the material world.

Chalmers says that the failure of supervenience implies that materialism - as a monistic theory of the complete contents of the world, that there is “nothing but” matter, and that the world is “causally closed,” for example - is “false.” We agree with this and believe that the reductionist arguments of Jaegwon Kim can be shown wrong.

“In our world, there are conscious experiences.

There is a logically possible world physically identical to ours, in which the positive facts about consciousness in our world do not hold.

Therefore, facts about consciousness are further facts about our world, over and above the physical facts.

So materialism is false.”¹³

Chalmers suggests that the dualistic (non-physical) element might be information. Indeed it might. With this idea too, information philosophy completely agrees. But information is physical. It is just *immaterial*. Mind/body is a property dualism.

Chalmers says that a “fundamental theory of consciousness” might be based on information. He says that “physical realization is the most common way to think about information embedded in the world, but it is not the only way information can be found. We can also find information realized in our phenomenology.” (*ibid*, p.284)

He is quite correct. Information is neither matter nor energy. It needs matter to be embedded temporarily in the brain. And it needs energy to be communicated. Phenomenal experiences transmitted to us as visual perceptions, for example, consist of information that is pure radiant energy. The pure (mental) information content in one brain can be transmitted to other brains, by converting it to energy for communication; other brains can then embody the same information (perhaps with significant differences in the details) for use by other minds (the “multiply realizable” software in different brains’ hardware).

13 Chalmers (1996) *The Conscious Mind*, p.123



Chalmers comes very close to our view of the mind as information. He describes his fundamental theory as a “double-aspect principle.”

“The treatment of information brings out a crucial link between the physical and the phenomenal: whenever we find an information space realized phenomenally, we find the same information space realized physically...It is natural to suppose that this double life of information spaces corresponds to a duality at a deep level. We might even suggest that this double realization is the key to the fundamental connection between physical processes and conscious experience. We need some sort of construct to make the link, and information seems as good a construct as any. It may be that principles concerning the double realization of information could be fleshed out into a system of basic laws connecting the physical and phenomenal domains.

We might put this by suggesting as a basic principle that information (in the actual world) has two aspects, a physical and a phenomenal aspect. Wherever there is a phenomenal state, it realizes an information state, an information state that is also realized in the cognitive system of the brain. Conversely, for at least some physically realized information spaces, whenever an information state in that space is realized physically, it is also realized phenomenally...

Information seems to be a simple and straightforward construct that is well suited for this sort of connection, and which may hold the promise of yielding a set of laws that are simple and comprehensive. If such a set of laws could be achieved, then we might truly have a fundamental theory of consciousness.

It may just be...that there is a way of seeing information itself as fundamental.”¹⁴

In his conclusions, Chalmers declares himself to be a mind-body dualist, even a *panpsychist*.

“I resisted mind-body dualism for a long time, but I have now come to the point where I accept it, not just as the only tenable view but as a satisfying view in its own right. It is always possible that I am confused, or that there is a new and radical possibility that I have overlooked; but I can comfortably say that I think dualism is very likely true. I have also raised the possibility of a

14 *Ibid.*, pp.284-7



kind of panpsychism. Like mind-body dualism, this is initially counterintuitive, but the counterintuitiveness disappears with time. I am unsure whether the view is true or false, but it is at least intellectually appealing, and on reflection it is not too crazy to be acceptable.”¹⁵

In recent years, Chalmers has explored panpsychism, the thesis that some fundamental entities have mental states. THOMAS NAGEL and GALEN STRAWSON have also examined panpsychism. Since information is a universal property of matter, it “goes all the way down,” so the basis of mentality - information - is present in the simplest physical structures, but there is no mind in the worlds of physics and chemistry, which have minimal histories and no use of information to manage the *arrangement* of matter.

Roderick Chisholm

Chisholm studied at Harvard but was strongly opposed to behaviorist analytic philosophers like Quine. His major work was titled *Person and Object* to draw the contrast with analytic language philosophy implicit in Quine’s famous *Word and Object*.

Chisholm was a libertarian who distinguished “agent causation” from “event-causation” (see his book *Freedom and Action*), which is a major distinction made by current incompatibilist philosophers, though later in life he recanted this distinction.

“In earlier writings on this topic, I had contrasted agent causation with event causation and had suggested that “causation by agents” could not be reduced to “causation by events.” I now believe that that suggestion was a mistake. What I had called agent causation is a subspecies of event causation. My concern in the present study is to note the specific differences by reference to which agent causation can be distinguished from other types of event causation.”¹⁶

In his 1964 Lindley Lecture, Chisholm saw free will as a metaphysical problem. He asserts that a man who performs an act is completely free and uncaused, a *causa sui*.

15 *Ibid.*, p.357

16 Chisholm (1995) Agents, Causes, and Events: The Problem of Free Will, in *Agents, Causes, and Events*, ed. T. O’Connor,



“The metaphysical problem of human freedom might be summarized in the following way: “Human beings are responsible agents; but this fact appears to conflict with a deterministic view of human action (the view that every event that is involved in an act is caused by some other event); and it also appears to conflict with an indeterministic view of human action (the view that the act, or some event that is essential to the act, is not caused at all).” To solve the problem, I believe, we must make somewhat far-reaching assumptions about the self of the agent — about the man who performs the act.

Perhaps it is needless to remark that, in all likelihood, it is impossible to say anything significant about this ancient problem that has not been said before.

Let us consider some deed, or misdeed, that may be attributed to a responsible agent: one man, say, shot another. If the man was responsible for what he did, then, I would urge, what was to happen at the time of the shooting was something that was entirely up to the man himself. There was a moment at which it was true, both that he could have fired the shot and also that he could have refrained from firing it. And if this is so, then, even though he did fire it, he could have done something else instead. (He didn’t find himself firing the shot “against his will,” as we say.) I think we can say, more generally, then, that if a man is responsible for a certain event or a certain state of affairs (in our example, the shooting of another man), then that event or state of affairs was brought about by some act of his, and the act was something that was in his power either to perform or not to perform.

Chisholm reprises the standard argument against free will. The ascription of responsibility conflicts with a deterministic view of action. Perhaps there is less need to argue that the ascription of responsibility also conflicts with an indeterministic view of action — with the view that the act, or some event that is essential to the act, is not caused at a

If the act — the firing of the shot — was not caused at all, if it was fortuitous or capricious, happening so to speak “out of the blue,” then, presumably, no one — and nothing — was respon-



sible for the act. Our conception of action, therefore, should be neither deterministic nor indeterministic. Is there any other possibility?

We must not say that every event involved in the act is caused by some other event, and we must not say that the act is something that is not caused at all. The possibility that remains, therefore, is this: We should say that at least one of the events that are involved in the act is caused, not by any other events, but by something else instead. And this something else can only be the agent — the man.

If there is an event that is caused, not by other events, but by the man, then there are some events involved in the act that are not caused by other events. But if the event in question is caused by the man, then it is caused and we are not committed to saying that there is something involved in the act that is not caused at all.”¹⁷

René Descartes

In his 1644 *Principles of Philosophy*, Descartes identified freedom with actions that are not pre-determined, even by the existence of divine foreknowledge.

Descartes was of course the origin of the central problem in metaphysics that divided the world into *mind* (the ideal realm of thoughts) and *body* (the material world). For him, the physical world was a *deterministic* machine, but our ideas and thoughts can be free (*indeterminate*) and could change things in the material world (through the pineal gland in the brain, he thought). Here are the relevant sections in Descartes' *Principles*.

39. *The freedom of the will is self-evident.*

There is freedom in our will, and that we have power in many cases or withhold our assent at will, is so evident that it must be counted among the first and most common notions that are innate in us. This was obvious earlier on when, in our attempt to doubt everything, we went so far as to make the supposition of some supremely powerful author of our being who was attempting to deceive us in every possible way. For in spite of that supposition, the freedom which we experienced within us was nonetheless so great as to enable us to abstain from believing

17 Chisholm (1964) '*Human Freedom and the Self*', The Lindley Lecture



whatever was not quite certain or fully examined. And what we saw to be beyond doubt even during the period of that supposition is as self-evident and as transparently clear as anything can be.

40. *It is also certain that everything was preordained by God.*

But now that we have come to know God, we perceive in him a power so immeasurable that we regard it as impious to suppose that we could ever do anything which was not already preordained by him. And we can easily get ourselves into great difficulties if we attempt to reconcile this divine preordination with the freedom of our will, or attempt to grasp both these things at once.

41. *How to reconcile the freedom of our will with divine preordination.*

But we shall get out of these difficulties if we remember that our mind is finite, while the power of God is infinite — the power by which he not only knew from eternity whatever is or can be, but also willed it

XLI. Quomodo arbitrio liberi libere & Dei præordinationi concilietur.

Illis verò nos expediemus, si recordemur, mentem nostram esse finitam; Dei autem potentiam, per quam non tantum omnia, quæ sunt aut esse possunt, ab æterno præcivit, sed etiam voluit ac præordinavit, esse infinitam; ideoque hanc quidem à nobis fati attingi, ut clarè & distinctè percipiamus, ipsam in Deo esse; non autem fati comprehendi ut videamus quo pacto libertas hominum actiones **indeterminatas** relinquat; libertatis autem & **indifferentiæ** quæ in nobis est, nos ita conficios esse, ut nihil sit quod evidentius & perfectius comprehendamus. Absurdum enim esset, propterea quod non comprehendimus unam rem, quem scimus ex natura sua nobis esse debere incomprehensibilem, de alia dubitare, quam intimè comprehendimus, atque apud nosmet ipsos experimur.

and preordained it. We may attain sufficient knowledge of this power to perceive clearly and distinctly that God possesses it; but we cannot get sufficient grasp of it to see how it leaves the free actions of men undetermined. Nonetheless, we have such close awareness of the freedom and indifference which is in us, that there is nothing we can grasp evidently or more perfectly. And it would be absurd, simply because we do not grasp one thing, which we know must by its very nature be beyond our comprehension, to doubt something else of which we have intimate grasp and which we experience within ourselves.¹⁸

1. Haldane and Ross translate *indifferentiæ*, perhaps influenced by the liberty of indifference, and by *indeterminata* in the prior line, as indeterminacy.

“We are so conscious of the freedom and indeterminacy which exist in us, that there is nothing we comprehend more clearly and perfectly”

18 Descartes. *Principles of Philosophy*, Part One, Section 41, trans. Haldane and Ross, 1911, p.235



Peter Geach

Peter Geach was a young colleague of Ludwig Wittgenstein. Geach tried to synthesize analytic philosophy and Thomism.

He worked on problems of identity, and some time in the early 1960's created "Tibbles, the Cat," as a character in two important problems in metaphysics, Chrysippus's ancient problem of Dion and Theon and the problem of the many.

In 1968, David Wiggins wrote an article, "On Being in the Same Place at the Same Time," in which he described Geach's Tibbles. Where Theon is identical to Dion except he is missing a foot, we now have a cat named Tibbles and a second cat named Tib who lacks a tail.

In Geach's second account of Tibbles as an exemplar of a metaphysical problem, published some years later (1980), Tibbles is a cat with 1,000 hairs that can be interpreted as 1,001 cats, by "picking out" and then pulling out one of those cat hairs at a time and each time identifying a new cat..

Geach's second version of Tibbles is widely cited as a discussion of the problem of vagueness or what Peter Unger called the Problem of the Many, also published in 1980. It is not the "body-minus" problem of Geach's original Tibbles.

If a few of Tibbles' hairs are pulled out, do we still have Tibbles, the Cat? Obviously we do. Have we created other cats, now multiple things in the same place at the same time? Obviously not.

Geach argues that removing one of a thousand hairs from Tibbles shows that there are actually 1,001 cats on the mat.

"The fat cat sat on the mat. There was just one cat on the mat. The cat's name was "Tibbles": "Tibbles" is moreover a name for a cat.—This simple story leads us into difficulties if we assume that Tibbles is a normal cat. For a normal cat has at least 1,000 hairs. Like many empirical concepts, the concept (single) hair is fuzzy at the edges; but it is reasonable to assume that we can identify in Tibbles at least 1,000 of his parts each of which definitely is a single hair. I shall refer to these hairs as h_1, h_2, h_3, \dots up to $h_{1,000}$. Now let c be the largest continuous mass of feline tissue on the mat. Then for any of our 1,000 cat-hairs, say h_n , there is a proper



part c_n of c which contains precisely all of c except the hair h_n ; and every such part c_n differs in a describable way both from any other such part, say c_m , and from c as a whole. Moreover, fuzzy as the concept cat may be, it is clear that not only is c a cat, but also any part c_n is a cat: c_n would clearly be a cat were the hair h_n plucked out, and we cannot reasonably suppose that plucking out a hair generates a cat, so c_n must already have been a cat. So, contrary to our story, there was not just one cat called ‘Tibbles’ sitting on the mat; there were at least 1,001 sitting there!

All the same, this result is absurd...

Everything falls into place if we realize that the number of cats on the mat is the number of different cats on the mat; and c_{13} , c_{279} , and c are not three different cats, they are one and the same cat. Though none of these 1,001 lumps of feline tissue is the same lump of feline tissue as another, each is the same cat as any other: each of them, then, is a cat, but there is only one cat on the mat, and our original story stands.

So we recover the truth of the simple story we began with.

The price to pay is that we must regard “is the same cat as” as expressing only a certain equivalence relation, not an absolute identity restricted to cats; but this price, I have elsewhere argued, must be paid anyhow, for there is no such absolute identity as logicians have assumed.”¹⁹

Geach worked on problems of identity and debated for years with DAVID WIGGINS about relative identity.

For Geach and Wiggins, relative identity means “ x is the same F as y ,” but “ x may not be the same G as y .” Wiggins argued against this idea of relative identity, but accepted what he called a sortal-dependent identity, “ x is the *same what* as y .” Geach called this a “criterion of identity.”

“I had here best interject a note on how I mean this term “criterion of identity”. I maintain that it makes no sense to judge whether x and y are ‘the same’, or whether x remains ‘the same’, unless we add or understand some general term—”the same F ”. That in accordance with which we thus judge as to the identity, I call a criterion of identity.”²⁰

19 Geach (1980) *Reference and Generality*, 3rd edition, p.215

20 Geach (1980) *Reference and Generality*, p.63 (1962, p.39;)



In his 1967 article “Identity,” in the *Review of Metaphysics*, Geach had written

“I am arguing for the thesis that identity is relative. When one says “x is identical with y”, this, I hold, is an incomplete expression; it is short for “x is the same A as y”, where “A” represents some count noun understood from the context of utterance.”²¹

David Hume

Hume thought and wrote a great deal about necessity and liberty. Has the necessitism of modal logic as metaphysics settled any of the problems raised by Hume?

Hume redefined the term “necessity” to describe the inference of the human mind that discovers *causality* in the regular succession of events, that postulates “uniformity of nature” to assume that the laws of nature will continue tomorrow to be the same as today, and even to describe the assumption that we can predict future behaviors of an agent based on our observations of the agent’s habitual behaviors.

Modern uses of Hume’s word “necessity” lead many philosophers to misunderstand Hume. Today we should say that the empirical observations of all these regularities only justify our assigning high probabilities to such predictions, and never the “certainty” that is associated with a physical causal determinism or a logical necessity. Hume’s usage may be closer to the eighteenth-century use of the terms “moral necessity” or “moral certainty.”

Indeed, now that quantum mechanics has shown that the laws of nature are fundamentally probabilistic, there is evidence that Hume’s “necessity” was in fact only such a high probability.

“It seems evident that, if all the scenes of nature were continually shifted in such a manner that no two events bore any resemblance to each other, but every object was entirely new, without any similitude to whatever had been seen before, we should never, in that case, have attained the least idea of necessity, or

21 See chapter 13 on identity for more details.



of a connexion among these objects...Inference and reasoning concerning the operations of nature would, from that moment, be at an end; and the memory and senses remain the only canals, by which the knowledge of any real existence could possibly have access to the mind. Our idea, therefore, of necessity and causation arises entirely from the uniformity observable in the operations of nature, where similar objects are constantly conjoined together, and the mind is determined by custom to infer the one from the appearance of the other...it must follow, that all mankind have ever agreed in the doctrine of necessity, and that they have hitherto disputed, merely for not understanding each other.”²²

“We must not, however, expect that this uniformity of human actions should be carried to such a length as that all men, in the same circumstances, will always act precisely in the same manner, without making any allowance for the diversity of characters, prejudices, and opinions. Such a uniformity in every particular, is found in no part of nature. On the contrary, from observing the variety of conduct in different men, we are enabled to form a greater variety of maxims, which still suppose a degree of uniformity and regularity.”²³

Hume here is cautious and circumspect. He knows that perfect uniformity has never been seen. Agents may act differently even in the same circumstances.

Our careful reading shows that Hume backs away from strict necessity and says the inferences are only probabilistic, with certainty only “more or less.”

“Above one half of human reasonings contain inferences of a similar nature, attended with more or less degrees of certainty proportioned to our experience of the usual conduct of mankind in such particular situations.”²⁴

22 Hume (1748) *Enquiry Concerning Human Understanding*, Section VIII, “Of Liberty and Necessity,” pp.81-82

23 *ibid.*, p.85

24 *ibid.*, p.91



Whatever Hume thought about reduced certainty, for him there was no such thing as chance. It is human ignorance that leads to all our ideas of probability. This was the view of all the great mathematicians who developed the calculus of probabilities - ABRAHAM DE MOIVRE before Hume and PIERRE-SIMON LAPLACE after him. And, following de Moivre, Hume called chance a mere word.

“Though there be no such thing as Chance in the world; our ignorance of the real cause of any event has the same influence on the understanding, and begets a like species of belief or opinion.”²⁵

Most compatibilists and determinists since Hobbes and Hume never mention the fact that a causal chain of events going back before our birth would not provide the kind of liberty they are looking for. But Hume frankly admits that such a causal chain would be a serious objection to his theory.

“I pretend not to have obviated or removed all objections to this theory, with regard to necessity and liberty. I can foresee other objections, derived from topics which have not here been treated of. It may be said, for instance, that, if voluntary actions be subjected to the same laws of necessity with the operations of matter, there is a continued chain of necessary causes, pre-ordained and pre-determined, reaching from the original cause of all to every single volition, of every human creature. No contingency anywhere in the universe; no indifference; no liberty. While we act, we are, at the same time, acted upon.”²⁶

Is it the case that modern metaphysicians, with their tendencies to eliminative materialism, tacitly accept this lack of contingency?

Immanuel Kant

Kant reacted to the Enlightenment, to the Age of Reason, and to Newtonian mechanics (which he probably understood better than any other philosopher), by accepting determinism as a fact in the physical world, which he calls the *phenomenal* world. Kant's goal was to rescue the physical sciences from the devastating and unanswerable skepticism of David Hume, especially Hume's assertion

25 *Enquiry*, Book VI, Of Probability, p. 56

26 *Enquiry*, Book VIII, Of Liberty and Necessity, p. 99



that no number of “constant conjunctions” of cause and effect could logically prove causality. Today we know that nothing is logically true of the world, but Kant called Hume’s assertion the “*crux metaphysicorum*.” If Hume is right, he said, metaphysics is impossible. Kant’s goal for his *Critique of Pure Reason* was to prove that Hume was wrong.

Neither Hume’s Idea of “natural belief” nor Kant’s “concepts of the understanding” are the apodeictic and necessary truths sought by metaphysicians. They are *abstract theories* about the world, whose information content is validated by experiments. Hume criticized the Theory of Ideas of his fellow British empiricists JOHN LOCKE and GEORGE BERKELEY. If, as they claim, knowledge is limited to perceptions of sense data, we cannot “know” anything about external objects, even our own bodies. But Hume said that we do have a *natural belief* in the external world and in causal laws.

Hume’s idea of the mind having a “feeling” (not a reason) that leads to natural beliefs became Kant’s “second Copernican revolution” that the mind projects “concepts of the understanding” and “forms of perception” on the external world.

Kant’s main change in the second edition of the *Critique of Pure Reason* was an attempted refutation of this British idealism (B 274). He thought he had a proof of the existence of the external world. Kant thought it a scandal in philosophy that we must accept the existence of material things outside ourselves merely as a belief, with no proof.

“The only thing which might be called an addition, though in the method of proof only, is the new refutation of psychological idealism, and the strict (and as I believe the only possible) proof of the objective reality of outer intuition. However innocent idealism may be considered with respect to the essential purposes of metaphysics (without being so in reality), it remains a scandal to philosophy, and to human reason in general, that we should have to accept the existence of things outside us (from which after all we derive the whole material for our knowledge, even for that of our inner sense) merely on trust, and have no satisfactory proof with which to counter any opponent who chooses to doubt it.”²⁷



Saul Kripke

Saul Kripke is a philosopher and logician and emeritus professor at Princeton. He attacked the theory that proper names are descriptions, for examples bundles of properties, as espoused by GOTTLOB FREGE and especially BERTRAND RUSSELL.

The Frege-Russell *theory of descriptions* was also a theory of meaning. The meaning of a proper name was said to consist in all the properties attached to the named person. The Frege-Russell theory was also a theory of reference, of denotation, of terms that “pick out” or identify an individual, whether a human being, an inanimate object, or a natural kind.

Frege and Russell said that some of these properties can be substituted in statements for the name and preserve the truth value of the statement. For example, George Washington can be replaced by “the first president of the United States.” But descriptive properties can be problematic.

Kripke’s modal analysis of alternative possibilities shows that the first president of the United States might not have been Washington. Things might have been otherwise. Washington might have died in the Revolutionary War.

But his proper name, given as a child by his parents, told to family and friends and then to people widely through a chain of communications that grew worldwide, could only be a reference to this unique individual, a reference that identifies him more strongly than any accidental property.

Kripke says that proper names are “rigid designators” that only refer to the objects they designate. They contain none of the likely accidental properties that accrue to persons during their lifetimes, such as “first president.” Rigidity of proper names refers to their unchanging, even *necessary* character, says Kripke, colorfully described as “true in all possible worlds,” as today’s modal philosophers like to say, even “*necessary a posteriori*,” which is only “true” within a logical system, not a fact in the irreducibly *contingent* material world.



Kripke says that once an object is “baptized” with the first use (the origin) of its name, it more reliably denotes that individual than any of the properties the individual might acquire during a lifetime that might evolve in multiple possible ways.

But note that the rigidity of a proper name is only relative to its early date. Any property that was established in the past is now unchangeable – “necessary ex post facto?” – even if it could have been otherwise, so it too might serve as a rigid designator.

Reference and Identity

Using the ancient example of “Hesperus is Phosphorus,” the two ancient names for the planet Venus that appears as both the Evening star and the Morning star, Kripke claims that since the two names refer to the same thing, they are identical. But this seems extreme.

Granted that someone who knows that Venus can appear on either side of the sun, Hesperus and Phosphorus refer to the same thing. But there is no way the names themselves (as words) are identical to one another. We must select a subset of the information contained in the two words and in factual, even scientific and empirical knowledge available, to pick out the fact that these words refer to the same object.

There are not two things (names) here that are identical to one another. Identical terms should be substitutable for one another in propositions and preserve the truth value. Hesperus and Phosphorus are two different words. They contain significantly different information. They are examples of Quine’s failure of substitutivity.

One name describes a morning phenomenon. So, there is no truth to the statement “Phosphorus is the Evening Star.” Phosphorus never appears in the evening. Circumlocutions are needed like “What we call Phosphorus is a planet that sometimes appears as Hesperus.”

Part of the information content here is that we have two words referring to one thing. But each word provides different knowledge about the planet Venus, one telling that Venus sometimes appears to the East of the Sun, the other that it sometimes appears to the West. It is false that “The Morning Star *Is* The Evening Star,” except in a limited sense.



Most all statements of identity between two things should be paraphrased as “these two things are identical in some respect.” They are only the same if we ignore their differences. For example, Hesperus and Phosphorus are identical *qua* referents to the planet Venus

GOTTFRIED LEIBNIZ’s famous law about the “identity of indiscernibles” can not be an absolute statement. The only absolute identity is self-identity. All things are identical only to themselves. Two indiscernibles are only indiscernible *qua* – in some respects. They are easily discerned to be two objects, in different places for example.

But any two things are similar if we ignore all their differences, just as they are different if we ignore their similarities. Exceptions are the identical and “indistinguishable” elementary particles of quantum physics, a deep problem for quantum mechanics and for metaphysics.

Hesperus and Phosphorus are identical only *qua* referents to a planet, and there is nothing necessary about this fact except that it began in the past and is now a convention and tradition, and as such Hesperus and Phosphorus are Kripke rigid designators.

But we cannot forget the obvious fact from linguistic theory, whether Peirce semiotics or Saussure semiology, that the names Hesperus and Phosphorus are *arbitrary* symbols, with no information in common with the planet Venus. In ancient languages, the planet was *Ishtar*, *Ashtoreth* in the Bible, in Greek *Astarte*, for centuries before the Latin name for the love goddess.

Given the fact that all human language terms are *contingent* and historically accidental, we must struggle to understand Kripke’s claim for the names’ necessity.

Necessary A Posteriori?

Kripke has defined a different kind of necessity from that usually identified with the *analytic* and the *a priori*. He thus alters the traditional distinction between the necessary and the contingent.

Kripke calls his idea *metaphysical necessity* to distinguish it from epistemic necessity. Kripke further distinguishes analyticity and a prioricity from necessity. For him, *analyticity* is a *semantic* notion, *a priori* is *epistemic*, and his *necessity* is a *metaphysical* notion.



Analyticity covers everything known to be true or false by definition of the terms involved. This includes logical and mathematical truths, such as “A is A,” and “ $7 + 5 = 12$.” He says, “an analytic statement is, in some sense, true by virtue of its meaning and true in all possible worlds by virtue of its meaning. Then something which is analytically true will be both necessary and a priori. (That’s sort of stipulative.)”²⁸

Metaphysical necessity concerns facts that are known to be the case by the nature of a physical object. This is based on the physical presumption that the way the world is, for example the laws of nature, could not have been otherwise. It may also be based on the fact that any event in the past is now fixed and so can be called metaphysically necessary? In any case, Kripke believes that we discover the essential properties, the essence of physical objects empirically.²⁹

Anything that has been empirically determined to be the case thus can be called metaphysically necessary or “necessary a posteriori,” says Kripke.

Consider the modal claim ‘Necessarily, water is H_2O .’ It is said to follow from the empirical and a posteriori claim ‘Water is H_2O ’ together with an *a priori* claim, such as ‘If water is H_2O , then necessarily, water is H_2O .’³⁰ But this seems dangerously like the redundancy in ‘If water is H_2O , then it is true that water is H_2O ’?

Kripke’s other examples include: it is necessary that gold is necessarily a metal, that it is yellow, and has atomic number 79; lightning is necessarily an electrical discharge; “This table (pointing at a table in the room) is necessarily made of wood,” if it was made of wood. Indeed, he says that the table was by metaphysical necessity made of the exact wood that it was made of.

We can take Kripke’s “metaphysical necessity” with a metaphorical grain of salt (necessarily NaCl). This is because the physical world contains the possibility that the carpenter could have chosen a different piece of wood, or the table could have been made of ice.³¹

28 Kripke (1981) *Naming and Necessity*, p.39

29 *Ibid.*, p.110

30 *Ibid.*, p.128

31 Kripke’s cryptic alternative, *ibid.*, p.114



Possible Worlds

Kripke and DAVID LEWIS are both famous for using the concept of possible worlds, but there are some extreme and very important differences between them. Kripke thinks that Lewis's idea has "encouraged philosophical pseudo-problems and misleading pictures." One major difference is that Lewis thinks of his super-infinity of possible worlds as actually existing in an infinite space-time continuum, where Kripke thinks his possible worlds are merely ways of talking about the alternative possibilities in our actual world. He says that "possible worlds" are total 'ways the world might have been,' or states or histories of the entire world, or 'counterfactual situations' might even be better.

"I will say something briefly about 'possible worlds.' (I hope to elaborate elsewhere.) In the present monograph I argued against those misuses of the concept that regard possible worlds as something like distant planets, like our own surroundings but somehow existing in a different dimension, or that lead to spurious problems of 'transworld identification.' Further, if one wishes to avoid the Weltangst and philosophical confusions that many philosophers have associated with the 'worlds' terminology, I recommended that 'possible state (or history) of the world,' or 'counterfactual situation' might be better. One should even remind oneself that the 'worlds' terminology can often be replaced by modal talk—"It is possible that . . ."

'Possible worlds' are little more than the miniworlds of school probability blown large. It is true that there are problems in the general notion not involved in the miniature version. The miniature worlds are tightly controlled, both as to the objects involved (two dice), the relevant properties (number on face shown), and (thus) the relevant idea of possibility. 'Possible worlds' are total 'ways the world might have been,' or states or histories of the entire world. To think of the totality of all of them involves much more idealization, and more mind-boggling questions, than the less ambitious elementary school analogue. Certainly the philosopher of 'possible worlds' must take care that his technical apparatus not push him to ask questions whose meaningfulness is not supported by our original intuitions of possibility that gave



the apparatus its point. Further, in practice we cannot describe a complete counterfactual course of events and have no need to do so.”³²

When thinking about different possibilities in the actual world, e.g., what if Nixon had lost the 1968 presidential election and Humphrey won it, Nixon in Kripke’s alternative possible world is the same individual, differing only in the property of losing the election. All of Kripke’s possible worlds are different ways our actual world might have been.

By contrast, David Lewis describes a Nixon in an alternate world as not the same individual, but a “counterpart” of Nixon who has the same bundle of properties as the actual Nixon, with the exception of the election loss. This raises the troubling problem of a “trans-world individual.” Clearly no matter how similar, individuals in two different worlds are not identical.

“I wish at this point to introduce something which I need in the methodology of discussing the theory of names that I’m talking about. We need the notion of ‘identity across possible worlds’ as it’s usually and, as I think, somewhat misleadingly called.

(Misleadingly, because the phrase suggests that there is a special problem of ‘transworld identification’, that we cannot trivially stipulate whom or what we are talking about when we imagine another possible world. The term ‘possible world’ may also mislead; perhaps it suggests the ‘foreign country’ picture. I have sometimes used ‘counterfactual situation’ in the text; Michael Slote has suggested that ‘possible state (or history) of the world’ might be less misleading than ‘possible world’. It is better still, to avoid confusion, not to say, ‘In some possible world, Humphrey would have won’ but rather, simply, ‘Humphrey might have won’. The apparatus of possible worlds has (I hope) been very useful as far as the set-theoretic model-theory of quantified modal logic is concerned, but has encouraged philosophical pseudo-problems and misleading pictures.)

One of the intuitive theses I will maintain in these talks is that names are rigid designators. Certainly they seem to satisfy the intuitive test mentioned above: although someone other than the U.S. President in 1970 might have been the U.S. President

32 Kripke (1981) *Naming and Necessity*, pp.15-20



in 1970 (e.g., Humphrey might have), no one other than Nixon might have been Nixon. In the same way, a designator rigidly designates a certain object if it designates that object wherever the object exists; if, in addition, the object is a necessary existent, the designator can be called strongly rigid. For example, ‘the President of the U.S. in 1970’ designates a certain man, Nixon; but someone else (e.g., Humphrey) might have been the President in 1970, and Nixon might not have; so this designator is not rigid.

In these lectures, I will argue, intuitively, that proper names are rigid designators, for although the man (Nixon) might not have been the President, it is not the case that he might not have been Nixon (though he might not have been called ‘Nixon’). Those who have argued that to make sense of the notion of rigid designator, we must antecedently make sense of ‘criteria of transworld identity’ have precisely reversed the cart and the horse; it is because we can refer (rigidly) to Nixon, and stipulate that we are speaking of what might have happened to him (under certain circumstances), that ‘transworld identifications’ are unproblematic in such cases.

(Of course I don’t imply that language contains a name for every object Demonstratives can be used as rigid designators, and free variables can be used as rigid designators of unspecified objects. Of course when we specify a counterfactual situation, we do not describe the whole possible world, but only the portion which interests us.)”³³

It is critical to note that metaphysicians proposing possible worlds are for the most part materialists and determinists who do not believe in the existence of ontological possibilities in our world.

First, they “index” our world as the “actual world.” They are actualists who say that the only possibilities have always been whatever actually happened. This is DANIEL DENNETT’s position, for example, not that far from the original actualist, DIODORUS CRONUS.

Moreover, all of their infinite number of possible worlds are governed by deterministic laws of nature. This means that there are no actual possibilities in any of their possible worlds, only actualities there as well. Every possible world is deterministic!

33 Kripke (1981) *Naming and Necessity*, pp.47-49



Now this is quite ironic, since the invention of possible worlds was initially proposed as a superior way of talking about counterfactual possibilities in our world.

Since information philosophy defends the existence of alternative possibilities leading to different futures, we can adopt a form of modal discourse to describe these possibilities as possible future worlds for our to-be-actualized world.

It turns out there is an infinity of such possible future worlds. The infinity is not as large as the absurdly extravagant number in David Lewis's possible worlds, which have counterparts for each and every living person with every imaginable difference in each of our counterparts, each counterpart in its own unique world.

Thus there are Lewisian worlds in which your counterpart is a butcher, baker, candlestick maker, and every other known occupation. There are possible worlds in which your counterpart eats every possible breakfast food, drives every possible car, and lives in every block on every street in every city or town in the entire world.

This extravagance is of course part of Lewis's appeal. It makes HUGH EVERETT III's "many worlds" of quantum mechanics (which split the universe in two when a physicist makes a quantum measurement) minuscule, indeed quite parsimonious, by comparison.

Specifically, when an Everett universe splits into two, it doubles the matter and energy in the new universe(s) – an extreme violation of the principle of the conservation of matter/energy – and it also doubles the information. Apart from that absurdity, the two universes differ by only one bit of information, for example, whether the electron spin measured up or down in the quantum measurement.

Similarly, for every Lewisian universe, the change of one bit of information implies one other possible universe in which all the infinite number of other bits stay exactly the same. But Lewis imagines that every single bit in the universe may be changed at any time, an order of physical infinities that rivals the greatest number that Georg Cantor ever imagined. Is David Lewis ontologically committed to such a number?



Although Kripke does not seem to have said anything about the problem of free will, his view of “possible worlds” may be sympathetic to human freedom, since he describes the worlds as “ways the world might have been.”

In our two-stage model of free will, we can describe the alternative possibilities for action generated by an agent in the first stage as “possible worlds.” They are “counterfactual situations” in Kripke’s sense, involving a single individual. Suppose the agent is considering five different courses of action. During the second stage of evaluation and deliberation only one of the five options (each a “possible world”) will become actualized.

The agent is the same individual of interest in these five possible worlds. There are no Lewisian “counterparts.” There is no problem of “transworld identification.”

Note that these five possible worlds are extremely close to one another, “nearby” in the sense of their total information content. We can focus on the “miniworld” of the five options and hold the rest of the universe constant. As Kripke described it, “the ‘counterfactual situation’ could be thought of as a miniworld or a ministate, restricted to features of the world relevant to the problem at hand.”

Quantification over the information in each world shows that the difference between them is very small number of bits, especially when compared to the typical examples given in possible worlds cases. In the case of Humphrey winning the election, millions of persons would have to have done something different. Such worlds are hardly “nearby” one another.

For typical cases of a free decision, the possible worlds require only small differences in the mind of a single person. Kripke argued against the identity of mind and body (or brain), and in this example it would only be the thoughts of the agent that pick out the possible world that will be actualized.

Our thoughts are free. Our actions are willed by an adequately determined evaluation and decision process, not one that was pre-determined by the mechanical laws of nature acting on our material bodies.



David Lewis

The analytic language philosopher David Lewis was a possibilist. He developed the philosophical methodology known as modal realism based on the idea of possible worlds. He claims that

- Possible worlds exist and are just as real as our world.
- Possible worlds are the same sort of things as our world – they differ in content, not in kind.
- Possible worlds cannot be reduced to something more basic – they are irreducible entities in their own right.
- Actuality is indexical. When we distinguish our world from other possible worlds by claiming that it alone is actual, we mean only that it is our world.
- Possible worlds are unified by the spatiotemporal interrelations of their parts; every world is spatiotemporally isolated from every other world.
- Possible worlds are causally isolated from each other.

Modal realism implies the existence of infinitely many parallel universes, an idea similar to the many-worlds interpretation of quantum mechanics. In the information interpretation of quantum mechanics, quantum systems evolve in two ways: the first is the wave function deterministically exploring all the possibilities for interaction; the second is the particle randomly choosing one of those possibilities to become actual.

Possible worlds and modal reasoning made “counterfactual” arguments extremely popular in current philosophy. Possible worlds, especially the idea of “nearby worlds” that differ only slightly from the actual world, are used to examine the validity of modal notions such as necessity and contingency, possibility and impossibility, truth and falsity.

Lewis appears to have believed that the truth of his counterfactuals was a result of believing that for every non-contradictory statement there is a possible world in which that statement is true.



True propositions are those that are true in the actual world.

False propositions are those that are false in the actual world.

Necessarily true propositions are those that are true in all possible worlds.

Contingent propositions are those that are true in some possible worlds and false in others.

Possible propositions are those that are true in at least one possible world.

Impossible propositions are those that are true in no possible world.

E. Jonathan Lowe

E. J. Lowe was an Oxford-trained philosopher who worked on the philosophy of action and philosophy of mind since the late 1970's. He developed a version of psychophysical dualism that he called non-Cartesian substance dualism. It is an interactionist substance dualism. (Cf. JOHN ECCLES and early KARL POPPER.) The non-Cartesian "substance" proposed by Lowe is the acting Self, whose (free) will has an irreducible causal power.

Lowe argued, however, that events (both mental and physical) should properly not be thought of as causes, because only actors (human or animal agents - or inanimate physical agents) can cause things. Events are more properly simply happenings, some caused, some uncaused. (If quantum indeterminism is correct, some are only statistically caused - perhaps then uncaused and neither determined nor pre-determined).

For Lowe, reasons, motives, beliefs, desires, etc., should also not be described as causes of human actions. To do so neglects the will of the agent. He says, "Behavior that is caused by an agent's beliefs and desires is, on that very account, not rational, free action." Describing behavior as caused by reasons, etc. is just a *façon de parler*. Events are causally impotent

In my view, only entities in the category of substance — that is, persisting, concrete objects — possess causal powers. Strictly



speaking, an event cannot do anything and so cannot cause anything. For causings are a species of doings — that is, in a very broad sense, actions — and doings are themselves happenings. Thus, talk of an event doing something either involves a gross category mistake — because, understood literally, it implies that one happening is done by another — or else, taken less seriously, it may be dismissed as being no more than a misleading manner of speaking.³⁴

Lowe defends mental events (and mental causation) as distinct from physical events (and physical causes) but equally real. Information philosophy sees them as physical, but *immaterial*.

Lowe is opposed to the notion of *causal closure*, the idea that everything that happens in the world is caused by physical objects in the world. Causal closure is a requirement for current “materialist/physicalist” views in the philosophy of mind, which regard mental events as identical to physical (brain) events, or perhaps merely epiphenomena. That mental states (or processes) are unable to cause anything to happen in the world is the modern version of the Cartesian mind-body problem. Lowe opposes this view with his idea of a non-Cartesian “self” (or mind) which has causal power.

Philosophers DONALD DAVIDSON and Jaegwon Kim have discussed the possibility of a non-reductive physicalism, in which mental events might not be reducible to physical events.

Davidson hoped to describe mental events as emergent from lower physical levels in the hierarchy. Kim denies the possibility of emergence or of a “non-reductive physicalism.” Both describe mental events as supervenient on events in lower hierarchical levels.

Lowe asks three questions important for his interactionist non-Cartesian substance dualism:

“(1) Are all causes events, or are at least some causes agents?

(2) Are free actions uncaused, at least by antecedent events?

and

(3) Are an agent’s reasons for action causes of that agent’s actions?”³⁵

34 Lowe (2010) *Personal Agency*, p.4

35 *Ibid.* p.2



And Lowe proposes three answers, plus a new claim:

- “(1) In the most fundamental sense of ‘cause,’ only agents are causes — although ‘agents’ understood in a very broad sense, to include inanimate objects as well as human beings.
- (2) Free actions are completely uncaused — but they need not on that account be deemed to be merely random or chance occurrences. [Chance is not the direct cause of actions.]
- (3) A rational agent’s reasons for action are never causes of his or her actions.

In addition, I shall make the following claim:

- (4) All free actions either consist in, or are initiated by, an act of will — in other words, a volition — on the part of the agent.”³⁶

Ruth Barcan Marcus

In 1947, Ruth C. Barcan (later Marcus) wrote an article on “The Identity of Individuals, “ the first assertion of the “necessity of identity.” Her work was written in the dense expressions of symbolic logic, with little verbal explanation or commentary.

$$\begin{aligned}
 &2.33^*. \vdash (\beta_1 I(\beta_2) \equiv (\beta_1 I_m(\beta_2)). \\
 &((\beta_1 I_m(\beta_2) (\beta_1 I(\beta_1)) \text{ hook } (\beta_1 I(\beta_2)) \quad 2.21, 2.3, \text{ subst, } 14.26 \\
 &(\beta_1 I_m(\beta_2) \text{ hook } (\beta_1 I(\beta_2)) \quad 2.6, 2.32^*, \text{ subst, adj, } 18.61, \text{ mod pon} \\
 &(\beta_1 I(\beta_2) \equiv (\beta_1 I_m(\beta_2)) \quad 18.42, 2.23, \text{ subst, adj, def}
 \end{aligned}$$

Five years later, Marcus’s thesis adviser, Frederick B. Fitch, published his book, *Symbolic Logic*, which contained the simplest proof ever of the necessity of identity, by the simple mathematical substitution of b for a in the necessity of self-identity statement.

23.4

- (1) $a = b$,
- (2) $\Box [a = a]$,
- then (3) $\Box [a = b]$, by identity elimination.³⁷

Clearly this is mathematically and logically sound. Fitch substitutes b from (1), for a in the modal context of (2). This would be fine if these are just mathematical equations. But as Barcan Marcus knew very well from Lewis’s work on strict implication, substitutivity in statements also requires that the substitution is intensionally mean-

36 Lowe (2010) *Personal Agency*, p.2-3
 37 Fitch (1952) *Symbolic Logic*, p.164



ingful. In the sense that b is actually just a, substituting b is equivalent to keeping a there, as a tautology, something with no new information. To be informative and prove the necessary truth of the new statement, we must know more about b, for example, that its *intrinsic* information in b is identical to that of a.

Marcus reprised the proof of her claim about the necessity of identity. She explicitly added Leibniz's Law relating identicals to indiscernibles to her argument.³⁸

$$(x)(y) (x = y) \subset \Box (x = y),$$

which reads "for all x and for all y, if "x = y," then necessarily "x = y."

In a formalized language, those symbols which name things will be those for which it is meaningful to assert that *I* holds between them, where '*I*' names the identity relation... If 'x' and 'y' are individual names then

$$(1) x I y$$

Where identity is defined rather than taken as primitive, it is customary to define it in terms of indiscernibility, one form of which is

$$(2) x \text{ Ind } y =_{df} (\varphi)(\varphi x \text{ eq } \varphi y)$$

$$(3) x \text{ eq } y = x I y$$

Statement (2) is Leibniz's Law, the indiscernibility of x from y, by definition means that for every property φ , both x and y have that same property, $\varphi x \text{ eq } \varphi y$.

In her third article back in 1947, Barcan Marcus had first proved the necessity of identity. This result became a foundational principle in the modern incarnation of Leibniz's "possible worlds" by Kripke and David Lewis.

Fourteen years after her original identity article, Marcus presented her work at a 1961 colloquium at Boston University attended by Quine and Kripke.

A few years after Marcus' 1961 presentation, David Wiggins developed a five-step proof of the necessity of identity, using Leibniz' Law, as had Marcus. Wiggins did not mention her.

38 Marvus (1961) *Modalities and Intensional Languages*, pp. 5-7



Moreover, the great work on necessity and identity cited by most modal logicians is usually credited to Kripke's 1965 article "Identity and Necessity." This has stirred a great deal of controversy about giving proper credit to women working in academic fields formerly occupied primarily by men.³⁹

Trenton Merricks

Trenton Merricks is a relatively young professor of philosophy and metaphysics at the University of Virginia. He is one of the staunch defenders of *mereological nihilism*, the idea that there are no composite objects, only "simples" arranged to look like objects. There are "no tables, only simples arranged tablewise," said Peter van Inwagen in his 1990 book *Material Beings*.

Van Inwagen made an exception for living things, an abstruse argument based on Descartes' idea that humans are thinking beings and "I think, therefore I am (existing?)."

Merricks follows van Inwagen in accepting human organisms as existing objects. But he goes beyond van Inwagen by denying reductionist arguments that the physical world is "causally closed" from the "bottom up."

Merricks adapts the reductionist claims of JAEGWON KIM that say properties in a complex system can be "reduced" to the lower-level properties of the system's components. For example, the laws and properties of chemistry can be reduced to the laws of physics.

More specifically, the properties of molecules can be reduced to those of atoms, the properties of biological cells can be reduced to those of molecules, plants and animals can be reduced to those of cells, and mind can be reduced to neurons in the brain. So far, Merricks agrees, any composite object is reducible to its simples - atoms or whatever the latest physics tells us are the most fundamental material objects.

Kim argues that mental events are redundant because for every event in a "mind," there must be a corresponding physical event in the brain that is doing the real causal work. Kim calls for "excluding" the mental events, describing them as "overdetermining" actions.

39 Humphreys, P., & Fetzer, J. H. (Eds.). (1999). *The New Theory of Reference: Kripke, Marcus, and its Origins*



Merricks develops a powerful analogy between Kim's mental events and van Inwagen's non-existing composite objects. His prime example is a baseball breaking a window, which he calls his 'Overdetermination Argument'.

"Consider the following argument about an alleged baseball causing atoms arranged windowwise to scatter, or, for ease of exposition, causing 'the shattering of a window'.

- (1) The baseball—if it exists—is causally irrelevant to whether its constituent atoms, acting in concert, cause the shattering of the window.
- (2) The shattering of the window is caused by those atoms, acting in concert.
- (3) The shattering of the window is not overdetermined. Therefore,
- (4) If the baseball exists, it does not cause the shattering of the window."⁴⁰

For Merricks, the idea of the composite "baseball" can be excluded as overdetermining the shattering of the window. The analogy is powerful because the baseball is just an idea, just some information about the structure of the object, just its "form," like the form of a statue in the famous metaphysical puzzle of The Statue and the Clay.

The statue cannot survive the squashing of a lump of clay, but the lump can survive. Metaphysicians claim that the lump of clay and the statue have different persistence conditions.

Eliminative materialists deny the causal power of such abstract ideas or "forms." For them, only matter enters into causal relations. Form is separated from matter in many metaphysical puzzles and paradoxes. Form was imagined to be a numerically distinct object by the ancient Skeptics, but such pure ideas in minds are thought unable to move material.

Why Humans Exist

Merricks' argument for the existence of humans goes well beyond that of van Inwagen. It brings up more subtle metaphysical problems and leads to some surprising conclusions, including the fact that humans have free will.

⁴⁰ Merricks (2003) *Objects and Persons*. p.56



He begins by arguing that Kim's Exclusion Argument does not succeed in denying mental causation in humans! And his own Overdetermination Argument, based originally on Kim's Exclusion, also does not apply, because humans have causal mental properties that cause things that are not caused by our constituent atoms.

"Sometimes my deciding to do such and such is what causes the atoms of my arm to move as they do. Presumably my so deciding won't ever be the only cause of their moving. There will also be a cause in terms of microphysics or microbiology, in terms of nerve impulses and the like. But at some point in tracing back the causal origin of my arm's moving (if it is intended), we will reach a cause that is not microphysical, that just is the agent's deciding to do something."⁴¹

Composite objects that cause things that their parts do not redundantly cause can resist the eliminative sweep of the Overdetermination Argument. We humans—in virtue of causing things by having conscious mental properties—are causally non-redundant. So the Overdetermination Argument fails to show that we do not exist. So I conclude that we do. For we should assume that we exist unless we are shown otherwise. Any conscious composita presumably survive the Overdetermination Argument just as we do. So I conclude that dogs and dolphins, among other animals, exist.⁴²

"Human organisms do not dodge the Overdetermination Argument on a mere technicality of which baseballs, for example, cannot avail themselves for some intuitively irrelevant reason. Rather, human organisms have non-redundant causal powers and so can exercise downward causation. Baseballs, on the other hand, would not—even if they existed—have nonredundant causal powers or exercise downward causal control over their parts. This deep, fundamental difference between the powers of human organisms and the powers of alleged baseballs (and statues and rocks and stars and so on) makes all the difference with respect to the Overdetermination Argument."⁴³

Merricks' defense of free will is straightforward. He denies the thesis that "humans have no choice about what their constituent atoms do or are like." He says that

41 *Ibid.*, p.110

42 *Ibid.*, p.114

43 *Ibid.*, p.116



“human persons have downward causal control over their constituent atoms. And surely downward causal control of this sort is sufficient for having a choice about what one’s atoms do or are like...

On the assumption that we are human organisms, I have argued that we exercise downward causation...

I say that the downward causal control we exercise over our atoms makes room for our having free will. And, as we saw in the previous section, that same downward causal control undermines the Micro Exclusion Argument for mental epiphenomenalism. I think free will requires mental causation. So I think it bodes well for my metaphysics that its defence of free will turns on the same fact about humans as does its defence of mental causation.”⁴⁴

Merricks is correct that we have some downward mental control over some of our atoms.⁴⁵

Huw Price

Huw Price was born in Oxford, England and was a professor of logic and metaphysics at Edinburgh. But he developed his original philosophical ideas in Australia as professor of philosophy at the University of Sydney. He is now Bertrand Russell Professor of Philosophy and a Fellow of Trinity College at the University of Cambridge. There he directs the Centre for Time and propose that physicists and philosophers look at the world from the perspective of an “Archimedean point” outside space and time that provides a symmetric view of the past and the future.

Price’s ideas are inspired by the “block universe” of Einstein-Minkowski special relativity. A generation before Price was in Sydney, Australian philosopher J. J. C. SMART developed a “tenseless” theory of space and time and maintained that there is but one possible future.

Smart was one of the original architects of the standard argument against free will and Price developed an argument based on the work of JOHN BELL that giving up free will (what NIELS BOHR and

⁴⁴ *Ibid.*, p.159-160

⁴⁵ See Doyle (2016) *Mental Causation, Great Problems in Philosophy and Physics*, chapter 16.



WERNER HEISENBERG called the “free choice” of the experimenter) could remove a conflict between special relativity and the measurements of entangled systems in which something appears to be traveling faster than the speed of light.

The free choice of the experimenter was explored by JOHN CONWAY and SIMON KOCHEN. They claim that if free choice exists, it shows that atoms themselves must have free will, something they call the *Free Will Theorem*.

In his 1996 book, *Time’s Arrow and Archimedes’ Point*, Price proposes an Archimedean point “outside space and time” as a solution to the problem of nonlocality in the Bell experiments in the form of an “advanced action.”

JOHN BELL, and more recently, following Bell, NICHOLAS GISIN and ANTOINE SUAREZ claim that something might be coming from “outside space and time” to correlate the results in the spacelike-separated experimental tests of Bell’s Theorem.

Rather than a “superdeterministic” common cause coming from “outside space and time” (as proposed by Bell, Gisin, Suarez, and others), Price argues that there might be a cause coming *backwards in time* from some interaction in the future. ROGER PENROSE and STUART HAMEROFF have also promoted this idea of “backward causation,” sending information backward in time in the Libet experiments and in the EPR experiments.

JOHN CRAMER’s *Transactional Interpretation* of quantum mechanics and other Time-Symmetric Interpretations like that of Yakir Aharonov and K. B Wharton also search for Archimedean points “outside space and time.”

But there is another way to get a time-symmetric point of view that resolves the EPR paradox of “influence” traveling faster than the speed of light. In his chapter on John Bell in *Time’s Arrow...*, Price cites a BBC interview in which Bell suggested that a preferred frame of reference might help to explain nonlocality and entanglement.

The standard explanation of entangled particles usually begins with an observer A, often called Alice, and a distant observer B, known as Bob. Between them is a source of two entangled particles.



The two-particle wave function describing the indistinguishable particles cannot be separated into a product of two single-particle wave functions.

The problem of faster-than-light signaling arises when Alice is said to measure particle A and then puzzle over how Bob's (later) measurements of particle B can be perfectly correlated, when there is not enough time for any "influence" to travel from A to B.

Price describes the problem:

"the results of measurement on one particle enable us to predict the results of corresponding measurements on the other particle. For example, we might predict the position of particle 1 by measuring the position of particle 2, or predict the momentum of particle 2 by measuring the momentum of particle 1."⁴⁶

Information physics has explained entanglement as the instantaneous collapse of the two-particle wave function everywhere when it is measured anywhere.⁴⁷

Willard Van Orman Quine

In the early 1950's, Quine challenged the ancient analytic-synthetic distinction, arguing that in the end the "truth" of analytic statements, the proofs of mathematical theorems, and the use of logic, also depend on empirical verification.

The key idea of Quine's empiricism (and of DAVID HUME's) is to deny the existence of any *a priori* knowledge of the world, whether analytic or synthetic.

As CHARLES SANDERS PEIRCE had said, nothing is logically and necessarily true of the physical world. Logical truths like the *Principles of Non-Contradiction* and *Bivalence (Excluded Middle)* might be true in all possible worlds, but they tell us nothing about our physical world, unless they are applicable and empirically verified.

Epistemology Naturalized

Nearly twenty years later, Quine argued that epistemology, the justification of knowledge claims, should be "naturalized." All

46 Price (1997) *Time's Arrow and Archimedes' Point*, p.202

47 See chapter 20 above and chapter 21 of Doyle (2016) *Great Problems in Philosophy and Physics*.



knowledge claims should be reduced to verification by the methods of natural science. “For suppose we hold,” he says, “with the old empiricist Peirce, that the very meaning of a statement consists in the difference its truth would make to possible experience.”

Every term and every sentence is a label attached to an idea, simple or complex, which is stored in the mind. When on the other hand we take a verification theory of meaning seriously, the indeterminacy would appear to be inescapable. The Vienna Circle espoused a verification theory of meaning but did not take it seriously enough. If we recognize with Peirce that the meaning of a sentence turns purely on what would count as evidence for its truth, and if we recognize with Duhem that theoretical sentences have their evidence not as single sentences but only as larger blocks of theory, then the indeterminacy of translation of theoretical sentences is the natural conclusion. And most sentences, apart from observation sentences, are theoretical. This conclusion, conversely, once it is embraced, seals the fate of any general notion of propositional meaning or, for that matter, state of affairs.⁴⁸

Ontology

Quine began his famous essay “On What There Is” claiming it has a trivial answer,

A curious thing about the ontological problem is its simplicity. It can be put in three Anglo-Saxon monosyllables: ‘What is there?’ It can be answered, moreover, in a word—‘Everything’—and everyone will accept this answer as true. However, this is merely to say that there is what there is. There remains room for disagreement over cases; and so the issue has stayed alive down the centuries.⁴⁹

Alexius Meinong disagreed, and in a way most disagreeable to Quine, insisting that “objects exist which do not exist,” by which he meant things that do not have an ordinary material existence, such as *abstract entities* like numbers and Platonic Ideas. Meinong also meant impossible objects, like the “round square,” which have meaning but do not have denotation, any reference to an example or an instance of such an object.

48 Quine (1969) ‘Epistemology Naturalized,’ *Ontological Relativity and Other Essays*, pp.80-3

49 Quine (1961) ‘On What There Is,’ *From a Logical Point of View*, p.1



Quantified Modal Logic and Identity

Quine was perhaps best-known in the philosophy of logic for his views on quantification, which was an essential part of ARISTOTLE'S *Prior Analytics* and was formalized by GOTTLIB FREGE in 1879 in his *Begriffsschrift* or "Concept Writing."

Frege replaced the familiar sentences (or statements or propositions) of the "first-order" predicate logic of Aristotle's syllogisms - "All men are mortal" - with the notion of quantification operators working on propositional functions, formulas that include variables, some of which are "free" and others "bound" by the quantification operator.

The idea of "for all x" becomes $\forall x$ and is called the universal quantification operator. The notion of "for some x" is called the existential operator $\exists x$. This is often read "there exists an x such that..."

In his 1940 book *Mathematical Logic*, Quine commented on identity, explaining it in terms of class membership.

"WE TURN now to the problem of so defining 'x = y', in terms of '∈' and our other primitives, that it will carry the intended sense 'x and y are the same object'. In the trivial case where y is not a class, indeed, $x \in y$ if and only if $x = y$ in this sense (cf. § 22); but our problem remains, since 'x ∈ y' diverges in meaning from 'x = y' in case y is a class. We must find a formula, composed of 'x' and 'y' by means of '∈' and our other primitives, which will be true just in case x and y are the same object — whether a class or a non-class. The requirement is met by:

$$(1) (z)(z \in x . = . z \in y)$$

when x and y are classes, since classes are the same when their members are the same (cf. § 22). Moreover, (1) continues to meet the requirement when x and y are not classes. For, in this case 'z ∈ x' and 'z ∈ y' identify z with x and with y; and (1) as a whole then says that whatever is the same as x is the same as y, thus identifying x and y. Both where x and y are classes and where they are not, therefore, (1) meets our requirements; (1) is true if and only if x and y are the same. We are thus led to introduce 'x = y' as an abbreviation of (1)...



Variables and abstracts will be spoken of collectively as terms. Now let us supplement our Greek-letter conventions to this extent: just as we use ‘ φ ’, ‘ ψ ’, and ‘ χ ’, to refer to any formulae, and ‘ α ’, ‘ β ’, ‘ γ ’, and ‘ δ ’ to refer to any variables, so let us use ‘ ζ ’, ‘ η ’, and ‘ θ ’ (along with their accented and subscripted variants) to refer in general to any terms. With help of this convention we can express the general definition of identity as follows, for application to variables and abstracts indifferently:

D10. $\ulcorner (\zeta = \eta) \urcorner$ for $\ulcorner (\alpha) (\alpha \in \zeta . = . \alpha \in \eta) \urcorner$.⁵⁰

In 1943, a few years before RUTH BARCAN MARCUS introduced her two new modal operators, \diamond for possibility, and \square for necessity (the square was suggested by her thesis adviser, F. B. Fitch), Quine published an important paper on existence and necessity.

Here is the converse of Leibniz’s Law, first given its converse name by Quine:

“One of the fundamental principles governing identity is that of substitutivity - or, as it might well be called, that of indiscernibility of identicals. It provides that, given a true statement of identity, one of its two terms may be substituted for the other in any true statement and the result will be true. It is easy to find cases contrary to this principle. For example, the statements:

- (1) Giorgione = Barbarelli,
 - 2) Giorgione was so-called because of his size
- are true; however, replacement of the name ‘Giorgione’ by the name ‘Barbarelli’ turns (2) into the falsehood:
Barbarelli was so-called because of his size.”⁵¹

Frege had warned about the confusion possible between the bare denotation or name and the sense intended by the speaker and interpreted by the listener. C. I. LEWIS said we need to consult the intension, the meaning, to draw the right logical conclusions. Lewis felt Quine’s extensionality, based on set membership, is not enough.

The proper resolution of this word quibble and quasi-paradox is to take the intension of “Barbarelli” as a second name for the same thing named by “Giorgione” - “big George.” Barbarelli, *qua* Giorgione, was so-called because of his size.

50 Quine (1940) *Mathematical Logic*, p.134 in the 1951 edition.

51 Quine (1943) ‘Notes on Existence and Necessity’, *Journal of Philosophy* 40(5)



In his brief discussion of necessity, Quine, following Rudolf Carnap, said

Among the various possible senses of the vague adverb ‘necessarily’, we can single out one - the sense of *analytic* necessity - according to the following criterion: the result of applying ‘necessarily’ to a statement is true if, and only if, the original statement is analytic.

(16) Necessarily no spinster is married,
for example, is equivalent to:

(17) ‘No spinster is married’ is analytic,
and is therefore true.

Quine concludes that the notion of necessity may simply not be susceptible to quantification, and suggest extensionality is the best approach, because there is no need for intensionality in mathematics!

The effect of these considerations is rather to raise questions than to answer them. The one important result is the recognition that any intensional mode of statement composition, whether based on some notion of “necessity” or, for example, on a notion of “probability” (as in Reichenbach’s system), must be carefully examined in relation to its susceptibility to quantification. Perhaps the only useful modes of statement composition susceptible to quantification are the extensional ones, reducible to ‘-’ and ‘.’ Up to now there is no clear example to the contrary. It is known, in particular, that no intensional mode of statement composition is needed in mathematics.⁵²

In 1947, Ruth C. Barcan (later Marcus) wrote an article on “The Identity of Individuals,” the first assertion of the “necessity of identity.” Five years later, Marcus’s thesis adviser, Frederic B. Fitch, published his book, *Symbolic Logic*, which contained the simplest proof ever of the necessity of identity, by the simple mathematical substitution of *b* for *a* in the necessity of self-identity statement.

23.4

(1) $a = b$,

(2) $\Box [a = a]$,

then (3) $\Box [a = b]$, by identity elimination.⁵³

52 Quine (1943) ‘Notes on Existence and Necessity,’ p.124-5

53 Fitch (1952) *Symbolic Logic*, p.164



Fitch substitutes b from (1) for a in the modal context of (2). This is mathematically and logically sound. This would be fine if these are just mathematical or logical equations (as Quine hoped). But as Barcan Marcus knew very well from C.I. Lewis's work on strict implication, substitutivity in statements also requires that the substitution is *intensionally meaningful*. In the sense that b is actually just a , substituting b is equivalent to keeping a there, a tautology, something with no new information. To be informative and prove the necessary truth of the new statement, we must know more about b , for example, that *intrinsic* information in b is identical to that of a .

Fourteen years after her original identity article, Marcus presented her work at a 1961 colloquium at Boston University attended by Quine and Saul Kripke.

Marcus reprised the proof of her claim about the necessity of identity. She explicitly added Leibniz's Law relating identicals to indiscernibles to her argument.

$$(x)(y) (x = y) \subset \Box (x = y)$$

Many years after Quine's attempts to refute Marcus' arguments quantifying into modal logic, her work is widely accepted by present-day metaphysicians.

Michael Rea

Rea is a professor of philosophy at Notre Dame and director of the Center for Philosophy and Religion. He is also a professorial fellow at the University of St. Andrews, specializing in analytic and exegetical theology.

Rea's 1997 book, *Material Constitution: A Reader*, is an anthology of 17 articles on the problems of coincident entities, contingent identity, mereological nihilism, and problems of identity.

In a landmark 1995 article in the *Philosophical Review*, Rea arranged some classic puzzles and paradoxes in material constitution (The Statue and the Clay, The Ship of Theseus, Dion and Theon, Tibbles, the Cat, and The Growing Problem, as criticized by Chrysipus).



Rea saw all these problems could be grouped together under a single problem of material constitution.⁵⁴

“What I intend to show is that there is one problem underlying these four familiar puzzles (and their many variants). This problem I will call “the problem of material constitution.” I say it underlies the four puzzles for the following reason: every solution to the problem of material constitution is equally a solution to each of these four puzzles, though not vice versa.”⁵⁵

Rea saw five assumptions at the core of each of the puzzles.

“Informally, they are: (i) there is an F and there are ps that compose it, (ii) if the ps compose an F, then they compose an object that is essentially such that it bears a certain relation R to its parts, (iii) if the ps compose an F, then they compose an object that can exist and not bear R to its parts, (iv) if the ps compose both a and b, then a is identical with b, and (v) if a is identical with b then a is necessarily identical with b. Let us call these assumptions, respectively the Existence Assumption, the Essentialist Assumption, (with apologies to Frankfurt) the Principle of Alternative Compositional Possibilities (or PACP for short), the Identity Assumption, and the Necessity Assumption.”⁵⁶

Information philosophy maintains that there is no necessity in the material world. Necessity is an essential concept in the logical world of ideas. Rea showed that any possible solutions to these puzzles can be grouped in a taxonomy of assumptions. He divided the possible solutions into those that deny the Identity Assumption, those that deny the Necessity Assumption, and those that deny one or more of the remaining three. The Identity Assumption is roughly the idea that “constitution is identity.” At least one assumption must be incompatible with the others, he says.

The most flawed assumption, from an information philosophy point of view, is the identity assumption, especially the idea that material constitution is identity. This assumption, which dates from the pre-Socratics, was challenged by the Stoics, especially by Chrysippus’ puzzling description of Dion and Theon.

54 See chapter 9.

55 Rea (1995) “The Problem of Material Constitution.” *Philosophical Review*, 104(4), 525

56 *Ibid.*, p.527.



Dion/Theon is best interpreted as an attack on the Growing Argument, which the Academic Skeptics used to challenge the Stoic claim that their “peculiarly qualified individuals” can survive material change. The Stoics accepted the ancient claim that a change of material causes an object to cease to exist and a new “numerically distinct” object comes into existence.

But the Stoics argued that this sort of material change should be called generation and destruction, since they transform the thing from what it is into something else. This is the Heraclitean philosophy of Becoming, that all is in flux, you can’t step into the same river twice. If everything is always changing its material, what is to constitute its Parmenidean Being, especially a human being?

The Academic Skeptic version of the Growing Argument was that matter is the sole principle of individuation, so that a change of matter constitutes a change of identity.

But according to the Stoics, material change is not growing. Something that grows and diminishes must subsist. It must retain its identity over time. Otherwise we cannot say that “it” is growing.

For the Stoics, what comes into existence, grows, then diminishes and dies, is the peculiarly qualified individual (ιδίος ποιόν) that is coincident with a different amount of matter from time to time.

But material constitution is not identity, individuals are not their material substrate (ὑποκείμενον), but their unique qualities, which we can take to be Aristotle’s *immaterial* form and our *information*.

The Stoics have therefore rejected matter as the principle of individuation.

Alan Sidelle

Sidelle is a professor of philosophy at the University of Wisconsin who argues that many “truths” in philosophy are merely conventional. This should include all the analytical language statements that are true by definition, because these are clearly conventional.

Information philosophy assumes that the concept of truth should be limited to logic. Truths are logical *a priori* statements. Facts are empirical *a posteriori* statements.



Despite IMMANUEL KANT's failure to prove the existence of *synthetic a priori* truths, some metaphysicians talk about some that are *necessary a posteriori*. This is the idea that once something is a fact, it is now a *necessarily true* fact.

Information philosophy considers claims such as "If P, then P is true" to be redundant, adding no information to the (true) assertion of the statement or proposition "P." Further redundancies are equally vacuous, such as "If P is true, then P is necessarily true" and "If P is true, then P is necessarily true in all possible worlds."

In fact, that is to say in the empirical world, any fact F is only probably true, with the probability approaching certainty in cases that are adequately determined. And, in any case, any past F could have been otherwise. That is to say, ontologically real possibilities exist as ideas, pure abstract information, alongside material objects.

In metaphysics, Sidelle's "No Coincidence Thesis" denies the existence of *coinciding objects*.

"One central such view I call 'The No Coincidence Thesis' (NC): There cannot be two material objects wholly located in the same place at the same time (some prefer: No two objects can wholly consist, at a time, of just the same parts). This principle conflicts with our everyday judgments that there are both ordinary objects-sweaters, trees and cows-and 'constituting' objects-pieces of yarn and wood, maybe aggregates of cells or quarks combined with our views about how these things move through time, which, more theoretically, underlie our views about the persistence conditions for these sorts of things. Since the 'macro' objects can go from existence while the constituting objects persist, and more generally, since the histories traced by each can differ, an object and its 'constituting' object cannot, in general, be identified, so we are committed to coinciding objects (Wiggins (1968)). NC also plays a role in Van Inwagen's (1981) modern version of the ancient Dion/Theon puzzle; he shows that this principle is inconsistent with our belief in arbitrary undetached parts, combined with the view that objects can lose parts (plus an intuitive judgment that undetached parts persist if all their parts persist arranged in just the same way)." ⁵⁷

57 Sidelle (2002) 'Is There a True Metaphysics of Material Objects?', *Noûs*, Vol. 36, Supplement: Philosophical Issues, 12, Realism and Relativism (2002), p.118



Sidelle also questions the use of arbitrary distinctions, such as those involved in PETER VAN INWAGEN'S Doctrine of Arbitrary Undetached Parts. This is the problem that Plato called "carving nature at the joints"

"Another theoretical idea often invoked in criticism of ordinary (and other) views is a proscription against arbitrary distinctions. Arbitrariness, or its appearance, can show up in judgments about which portions of the world do, and which do not, contain objects, and in judgments about how things persist through change - what changes are 'substantial', and how things move through time. For instance, we commonly think cells arranged in certain ways constitute cows, but that no object is constituted by this paper and my eye. But one may wonder whether there is any difference here which can, in an appropriate way, substantiate such a distinction, especially when science reveals how much space there is between small particles making up cows. What of our judgment that something ceases to exist when a cow dies, but not when a hoof is clipped, or it catches cold? In each case, it seems that something persists, but some properties change. Or why does a car become larger when bumpers are attached, but not when a trailer is?"⁵⁸

Arbitrariness is invoked in the problem of composite objects. Mereological nihilists deny there are any composite objects, with Peter van Inwagen and others making an ill-justified exception for living things.

For mereological universalists, David Lewis for example, arbitrary mereological sums are considered to be composite objects. Considering the Statue of Liberty and Eiffel Tower a composite object is an example of arbitrary unrestricted composition. Considering Theon (Dion missing his left leg) or Tibbles minus one hair are arbitrary disjunctions. Such arbitrariness hardly carves nature at the joints.

Between these two absurd extremes of mereological nihilism and universalism, information philosophy provides strong reasons for why things are composite objects. They also include "proper parts" that are composite objects. We can call these "integral" parts as they have a function in the integrated object.

These same reasons show that artifacts are composite objects.

58 *Ibid.*, p.119



Artifacts and living things have a purpose which Aristotle called final cause or “telos.” They are “teleonomic.” For example, “simples arranged tablewise” have been arranged by a carpenter, whose “telos” was to make a table. This telos carves the artifact at the joints (legs, top). The arrangement or organization is pure abstract information.

Living things were described by Aristotle as “entelechy, “having their telos within themselves.” They are more than just matter and static form like an artifact. They have internal messaging between their integral parts that helps to achieve the teleonomic end of maintaining themselves against degradation by the second law of thermodynamics. Many such integral parts are themselves wholes, from vital organs down to the individual cells. The boundaries of integral parts “carve nature at the joints.”

Living things also contain many “biological machines” that include “biological computers” or information processors that respond to those messages. The messages are written in meaningful biological codes that are analogous to and the precursor of human languages.

Ted Sider

Sider is a leading metaphysician who defends four-dimension-ism, the idea that objects persist over time as distinct “temporal parts.” Here is his definition

“According to ‘four-dimensionalism,’ temporally extended things are composed of temporal parts. Most four-dimensionalists identify ordinary continuants—the persisting objects ordinary language quantifies over and names—with aggregates of temporal parts (‘space-time worms’), but an attractive alternate version of four-dimensionalism identifies ordinary continuants with instantaneous temporal slices and accounts for temporal predication using temporal counterpart theory.”⁵⁹

Four-dimensionalism is a variation of the Academic Skeptic argument about growth, that even the smallest material change destroys an entity and another entity appears. In this case, a change in the instant of time also destroys every material object, followed instantaneously by the creation of an “identical” object.

⁵⁹ Sider (2001) *Four-Dimensionalism: An Ontology of Persistence and Time* (abstract)



WILLARD VAN ORMAN QUINE proposed a similar idea that he called object “stages.” The great Anglo-American philosopher ALFRED NORTH WHITEHEAD attributed the continued existence of objects from moment to moment to the intervention of God. Without a kind of continuous creation of every entity, things would fall apart. This notion can also be traced back to the American theologian JONATHAN EDWARDS, for whom God intervenes in all human actions, creating the world anew at every instant. DAVID LEWIS’s theory of temporal parts argues that at every instant of time, every individual disappears, ceases to exist, to be replaced by a very similar new entity, with its own properties that he calls “temporary intrinsics.”

Lewis proposed temporal parts as a solution to the problem of *peristence*. He calls his solution “perdurantism,” which he distinguishes from “endurance,” in which the whole entity exists at all times.

In his thinking about persistence, Sider has been inspired (as have many metaphysicians) by Einstein’s theory of special relativity. The idea of a four-dimensional manifold of space and time supports the idea that the “temporal parts” of an object are as distinct from one another as its spatial parts. This raises questions about the continued identity of an object as it moves in space and time.

There is no physical basis for the wild assumptions of past metaphysicians and theologians that the contents of the universe cease to exist and then reappear *de novo* at the next instant. This notion violates one of the most fundamental of physical laws, the conservation of matter and energy.

More metaphysically significant, neither temporal nor spatial “slices” carve nature at the joints. They are arbitrary mental constructions imposed on the world by philosophers that have little to do with “natural” objects and their “integral” component parts.

Ironically, Sider claims that the fundamental nature of reality is to be found in his latest claim that “structure” is the most fundamental “underlying” notion that includes concepts, notions, primitive expressions, in short an ideology that carves nature at the joints.

“In order to perfectly describe the world, it is not enough to speak truly. One must also use the right concepts - including the



right logical concepts. One must use concepts that “carve at the joints”, that give the world’s *structure*. There is an objectively correct way to “write the book of the world”. Metaphysics, as traditionally conceived, is about the fundamental nature of reality; in the present terms, metaphysics is about the world’s structure. Metametaphysics - inquiry into the status of metaphysical questions - turns on structure. The question of whether ontological, causal, or modal questions are “substantive” is in large part a question of whether the world has ontological, causal, and modal structure - whether quantifiers, causal relations, and modal operators carve at the joints.

Although philosophical doubts can be raised about structure, it is sensible to follow David Armstrong and David Lewis in taking the idea at face value. As will be seen in the rest of the book, the idea illuminates metametaphysics. Some critics think that certain questions of metaphysics are “insubstantial” (or merely verbal), in something like the way in which the question of whether the pope is a bachelor is insubstantial. Whether they are right depends on whether the key notions in the questions carve at the joints.”⁶⁰

Information philosophy offers a model close to Sider’s notion of “structure” as fundamental reality, we maintain that the world consists of information structures, bits of matter arranged with an abstract form that can be quantified over. Some of these information structures have internal integrity that depends on the way they were formed. For example, astronomical and geological objects were formed respectively by gravitation and chemical forces that gave them their forms.

Artifacts, by contrast, are created for a *purpose*. Some of their “proper parts” may be essential (though not logically necessary) to that purpose, in which case they are parts that are essential to the whole and can be called “integral parts,” since they perform a function and contribute to the holistic integrity of the entity.

Sider says that he is a mereological nihilist, like PETER VAN INWAGEN, whereas DAVID LEWIS, Sider’s source of naturalness (carving nature at the joints), favors mereological sums or unrestricted composition.

60 Sider (2011) *Writing the Book of the World*. Oxford University Press.



Now the “time slices” that are the “temporal parts” of Sider’s four-dimensionalism do not “carve nature at the joints,” any more than his putatively analogous slices in any spatial dimension. Indeed, any two-dimensional spatial slice perpendicular to the third spatial dimension would normally destroy a physical object and kill any living thing.

An actual temporal slice, cutting the continuity between an object and its future existence, would also destroy the object, which was the ancient view of the Greek philosophers and the commonsense view today.

Perhaps Sider thinks of his arbitrary slicing as not “real” but merely as an analytic tool, like the CAT scan of the human brain that gives us the information in the slice without harming the patient? But David Lewis insisted that his extravagant proliferation of infinite possible worlds was real and he probably meant his temporal parts with their “temporary intrinsic” properties to be numerically distinct real objects?

Peter Unger

In 1980, Unger formulated what he called “The Problem of the Many.” It led Unger to propose that nothing exists and that even he did not exist, a position known as *nihilism*.

Today this includes the metaphysical problems of *material composition* and of *vagueness*.

“let us start by considering certain cases of ordinary clouds, clouds like those we sometimes seem to see in the sky.

As often viewed by us from here on the ground, sometimes puffy “picture-postcard” clouds give the appearance of having a nice enough boundary, each white entity sharply surrounded by blue sky...But upon closer scrutiny, as may happen sometimes when you’re in an airplane, even the puffiest, cleanest clouds don’t seem to be so nicely bounded. And this closer look seems a more revealing one. For, as science seems clearly to say, our clouds are almost wholly composed of tiny water droplets, and the dispersion of these droplets, in the sky or the atmosphere, is always, in fact, a gradual matter. With pretty much any route out of even



a comparatively clean cloud's center, there is no stark stopping place to be encountered. Rather, anywhere near anything presumed a boundary, there's only a gradual decrease in the density of droplets fit, more or less, to be constituents of a cloud that's there.

With that being so, we might see that there are enormously many complexes of droplets, each as fit as any other for being a constituted cloud. Each of the many will be a cloud, ..where, at first, it surely seemed there was exactly one.”⁶¹

In his 1990 book *Material Beings*, PETER VAN INWAGEN said Unger's original insight that there are many ways to compose a cloud from innumerable water droplets should be called “*mereological universalism*.” Van Inwagen denies there is any way for simples to compose anything other than themselves, which van Inwagen calls “*mereological nihilism*.”

Free Will

Unger developed a unique theory combining science and philosophy that he called “Scientiphicalism.” He wrote about free will:

“In the terms of our dominant Scientiphical Metaphysic, it's hard to think of myself as an entity that engages in activity he himself chooses from available alternatives for his action.

Rather than discussing a form of Incompatibilism discussed for centuries, I'm now trying to introduce for discussion new forms of Incompatibilism.

Let's return to consider our Scientiphical Jane. Composed of very many Particles, and nothing else metaphysically basic, all Jane's powers must derive, in such a straightforwardly physical fashion, from the basic propensities of her quite simple physical constituents...

More philosophers now take an urgent interest in another issue concerning full choice that, at least nowadays, may be the real heart of “the problem of free will.” This more urgent issue may be presented by way of an argument strikingly forceful for reasoning so sketchy and bare:

61 Unger (1999) ‘Mental Problems of the Many.’ *Oxford Studies in Metaphysics*, 23, Chapter 8. p.197.



First Premise: If Determinism holds, then, as everything we do is inevitable from long before we existed, nothing we do is anything we choose from available alternatives for our activity.

Second Premise: If Determinism doesn't hold, then, [while some things we do may be inevitable from long before our existence and, as such, it's never within our power to choose for ourselves] it may be that some aren't inevitable - but, as regards any of these others, it will be a matter of chance whether we do them or not, and, as nothing of that sort is something we choose to do - nothing we do is anything we choose from available alternatives for our activity.

Third Premise: Either Determinism holds or it doesn't.

Therefore,

Conclusion: Nothing we do is anything we choose from available alternatives for our activity.

This argument is quite disturbing. Indeed, nowadays, able thinkers often take it to suggest that our concept of full choice is an incoherent idea, never true of any reality at all.”⁶²

Peter van Inwagen

Van Inwagen made a significant reputation for himself by bucking the trend among philosophers in most of the twentieth century to accept compatibilism, the idea that free will is compatible with a strict causal determinism. This fits in with the majority of thinkers who embraced some form of eliminative materialism and behaviorism.

Van Inwagen's major contribution was to change the language and the framing in the free will debates. Opposing compatibilism, he proposed the idea of *incompatibilism* that has been very popular in the last few decades. He asserted that the old problem of whether we have free will or whether determinism is true was no longer being debated. In the first chapter of his landmark 1983 book, *An Essay on Free Will*, van Inwagen says:

“1.2 It is difficult to formulate “the problem of free will and determinism” in a way that will satisfy everyone. Once one might

⁶² Unger (2002) 'Free Will and Scientiphicalism.' *Philosophy and Phenomenological Research*, vol. 65(1), 1-24.



have said that the problem of free will and determinism — in those days one would have said ‘liberty and necessity’ — was the problem of discovering whether the human will is free or whether its productions are governed by strict causal necessity. But no one today would be allowed to formulate “the problem of free will and determinism” like that, for this formulation presupposes the truth of a certain thesis about the conceptual relation of free will to determinism that many, perhaps most, present-day philosophers would reject: that free will and determinism are incompatible. Indeed many philosophers hold not only that free will is compatible with determinism but that free will entails determinism. I think it would be fair to say that almost all the philosophical writing on the problem of free will and determinism since the time of Hobbes that is any good, that is of any enduring philosophical interest, has been about this presupposition of the earlier debates about liberty and necessity. It is for this reason that nowadays one must accept as a *fait accompli* that the problem of finding out whether free will and determinism are compatible is a large part, perhaps the major part, of “the problem of free will and determinism.”⁶³

Incompatibilism

Just as PETER. F. STRAWSON in 1962 changed the subject from the existence of free will, from the question of whether determinism or indeterminism is true, and just as HARRY FRANKFURT changed the debate to the question of the existence of *alternative possibilities*, so Van Inwagen made a major change, at least in the terminology, to the question of whether free will and determinism are compatible, indeed whether free will entails determinism, as he says above.

Van Inwagen replaces the traditional problem of “liberty and necessity,” finding out whether determinism is true or false, and thus whether or not we have free will, with a new problem that he calls the compatibility problem.

“I shall attempt to formulate the problem in a way that takes account of this *fait accompli* by dividing the problem into two problems, which I will call the Compatibility Problem and the Traditional Problem. The Traditional Problem is, of course, the problem of finding out whether we have free will or whether

63 Van Inwagen (1983) *An Essay on Free Will*, p.1



determinism is true. But the very existence of the Traditional Problem depends upon the correct solution to the Compatibility Problem: if free will and determinism are compatible, and, a fortiori, if free will entails determinism, then there is no Traditional Problem, any more than there is a problem about how my sentences can be composed of both English words and Roman letters.”⁶⁴

Despite the obvious over-reaching claim that the Traditional Problem would disappear, which was nonsense, van Inwagen’s new framing proved immensely popular over the next few decades. And the new framing introduced a new jargon term that is in major use today, the position of “Incompatibilism.” Earlier writers, CARL GINET and WILFRED SELLARS, for example, had said that free will is “incompatible” with determinism. But that was simply the original position of all libertarians, in opposition to both the determinists and the compatibilists (WILLIAM JAMES’ “soft” determinists), who were following what Sellars called the traditional Hume-Mill solution, which “reconciled” free will with determinism, liberty with necessity.

Before van Inwagen then, incompatibilists were libertarians, opposing the idea that free will is compatible with determinism.

But after van Inwagen, the new emphasis on “incompatibilism” drew attention to the idea that James’ “hard” determinists were also incompatibilist in the sense of denying compatibilism.

Unfortunately for the clarity of the dialectic, this new category of incompatibilism is very confusing, because it now contains two opposing concepts, libertarian free will and hard determinism!

And like determinism versus indeterminism, compatibilism versus incompatibilism is a false and unhelpful dichotomy. J. J. C. Smart once claimed he had an exhaustive description of the possibilities, determinism or indeterminism, and that neither one neither allowed for free will. (Since Smart, dozens of others have repeated this standard logical argument against free will.)

64 *Ibid.*, p.2



The Consequence Argument and Mind Argument

Van Inwagen developed his own terminology for the two-part standard argument against free will, dividing it into what he now called the Consequence Argument and the Mind Argument.

Van Inwagen defines determinism very simply. “Determinism is quite simply the thesis that the past determines a unique future.”⁶⁵

He concludes that such a determinism is not true, because we could not then be responsible for our actions, which would all be simply the consequences of events in the distant past that were not “up to us.”

Van Inwagen’s Consequence Argument is just a renaming of the perennial determinism objection in the standard argument against free will.⁶⁶ The Consequence Argument has proved very popular in philosophy courses taught by professors with little knowledge of the history of the free will problem.

In recent decades, centuries-old debates about free will have been largely replaced by debates about moral responsibility. Since Peter Strawson, many philosophers have claimed to be agnostic on the traditional problem of free will and determinism and focus on whether the concept of moral responsibility itself exists. Some say that, like free will itself, moral responsibility is *an illusion*. Van Inwagen is not one of those. He hopes to establish moral responsibility based on a libertarian free will, in opposition to prevailing compatibilist views.

Van Inwagen also notes that quantum mechanics shows indeterminism to be “true.” He is correct. But we still have a very powerful and “adequate” determinism. It is this adequate determinism that R. E. HOBART and others have recognized when he wrote that “Free Will Involves Determination and is Inconceivable Without It.” Our will and actions are *adequately determined*, by our reasons, motives, feelings, etc., not in any way *pre-determined* from before we begin thinking, evaluating, and selecting one of the *alternative possibilities* in our thoughts. It is our thoughts and the open future that are undetermined.

65 *Ibid.*, p.2

66 See Doyle (2011) *Free Will: The Scandal in Philosophy*, chapter 4



Sadly, many philosophers mistake indeterminism to imply that nothing is causal and therefore that everything is completely random. This is the Randomness Objection in the standard two-part argument against free will.

Van Inwagen states his Consequence Argument as follows:

“If determinism is true, then our acts are the consequences of the laws of nature and events in the remote past. But it is not up to us what went on before we were born, and neither is it up to us what the laws of nature are. Therefore, the consequences of these things (including our present acts) are not up to us.”⁶⁷

Exactly how this differs from the arguments of centuries of Libertarians is not clear, but van Inwagen is given a great deal of credit in the contemporary literature for this obvious argument. See for example, Carl Ginet’s article “Might We Have No Choice?”⁶⁸

We note that apparently Ginet also thought his argument was original. What has happened to philosophers today that they so ignore the history of philosophy?

Mereological Universalism

Van Inwagen has been an outspoken opponent of mereological universalism, the idea that an arbitrary collection of objects or parts of objects can be considered a conceptual whole – a “mereological sum” – for some purpose or other (mostly to provoke an empty debate with other metaphysicians).

Modern metaphysics examines the relations of parts to whole, whole to parts, and parts to parts within a whole using the abstract axioms of set theory, a vital part of analytic language philosophy today. Because a set can be made up of any list of things, whether they have any physical integrity or even any conceivable connections, other than their membership in the arbitrary set. Remember the “whole” made up of the Eiffel Tower and the Statue of Liberty!

Mereology is a venerable subject. The Greeks worried about part/whole questions, usually in the context of the persistence of an object when a part is removed and the question of an object’s identity. Is

⁶⁷ *Ibid.*, p.16

⁶⁸ Ginet (1966) ‘Might We Have No Choice’, *Freedom and Determinism*, Ed. K. Lehrer, 1966



the Ship of Theseus the same ship when some of the planks have been replaced? Does Dion survive the removal of his foot?

The idea that an arbitrary collection of things, a “mereological sum,” can be considered a whole, does violence to our common sense notion of a whole object. It is an extreme example of the arbitrary connection between words and objects that is the bane of analytic language philosophy.

Mereological universalism also leads to the idea that there are many ways to compose a complex material whole out of a vague collection of simple objects. This is what Peter Unger called the Problem of the Many.

It led Peter van Inwagen to his equally extreme position of *mereological nihilism*, that there are no composite wholes of any kind. Van Inwagen says there are no tables, only “simples arranged table-wise.” The “arrangement” is the *information structure* in the table. When we can identify the origin of that information, we have the deep metaphysical reason for its essence. Aristotle called the arrangement “the scheme of the ideas.”

By matter I mean, for instance, bronze; by shape, the arrangement of the form (τὸ σχῆμα τῆς ιδέας); and by the combination of the two, the concrete thing: the statue (ἀνδριάνς).⁶⁹

Van Inwagen makes an exception of living things, and Unger has abandoned his own form of nihilism in recent years. Both Unger and van Inwagen now accept the idea that the two of them exist as composite objects.

Van Inwagen says that his argument for living beings as composite objects is based on the Cartesian “cogito,” *I think, therefore I am*. He proposes,

($\exists y$ the x s compose y) if and only if the activity of the x s constitutes a life.

If this answer is correct, then there are living organisms: They are the objects whose lives are constituted by the activities of simples, and, perhaps, by the activities of subordinate organisms such as cells; they are the objects that have proper parts...My argument for the existence of organisms, it will be remembered, involved in an essential way the proposition that I exist.⁷⁰

69 Aristotle, *Metaphysics*, Book VII, § vii

70 Van Inwagen (1990b) *Material Beings*, p.213



Living things involve many, many “proper parts,” above the cellular level and below, all of them full of teleonomic purpose. And van Inwagen’s tables also have a purpose, albeit external, namely the carpenter who gave it its form, the holistic shape that makes it a table.

David Wiggins

Wiggins speculated on the *necessity of identity* in 1965.

“The connexion of what I am going to say with modal calculi can be indicated in the following way. It would seem to be a necessary truth that if $a = b$ then whatever is truly ascribable to a is truly ascribable to b and vice versa (Leibniz’s Law). This amounts to the principle

$$(1) (x)(y)((x = y) \supset (\phi)(\phi x \supset \phi y))$$

Suppose that identity-statements are ascriptions or predications.! Then the predicate variable in (1) will apparently range over properties like that expressed by ‘ $= a$ ’ and we shall get as consequence of (1)

$$(2) (x) (y) ((x = y) \supset (x = x \cdot \supset \cdot y = x))$$

There is nothing puzzling about this. But if (as many modal logicians believe), there exist de re modalities of the form

$$\Box (\phi a) \text{ (i.e., necessarily } (\phi a)),$$

then something less innocent follows. If ‘ $= a$ ’ expresses property, then ‘ $\Box (a=a)$ ’, if this too is about the object a , also ascribes something to a , namely the property $\Box (= a)$. For on a naive and pre-theoretical view of properties, you will reach an expression for a property whenever you subtract a noun-expression with material occurrence (something like ‘ a ’ in this case) from a simple declarative sentence. The property

$\Box (= a)$ then falls within the range of the predicate variable in Leibniz’s Law (understood in this intuitive way) and we get

$$(3) (x) (y) (x = y \supset (\Box (x = x) \cdot \supset \cdot \Box (y = x)))$$

Hence, reversing the antecedents,

$$(4) (x) (y) (\Box (x = x) \cdot \supset \cdot (x = y) \supset \Box (x = y))$$

But $(x) (\Box (x=x))$ ‘ is a necessary truth, so we can drop this antecedent and reach

$$(5) (x)(y)((x = y) \cdot \supset \cdot \Box (x = y))”⁷¹$$

71 Wiggins (1965) ‘Identity Statements’, in *Analytical Philosophy*, Second Series, 1965, Oxford: Blackwell. pp.40-41



Peter Geach worked on problems of identity and debated for years with David Wiggins about *relative identity*.

For Geach and Wiggins, relative identity means “x is the same F as y,” but “x may not be the same G as y.”

Wiggins argued against this idea of relative identity, but accepted what he called a sortal-dependent identity, “x is the same F as y.” Geach called this a “criterion of identity.”

Free Will

Inspired by the libertarian philosophers RODERICK CHISHOLM and RICHARD TAYLOR, Wiggins provided a vigorous defense of libertarianism (or an attack on compatibilism) in a 1965 paper read to the Oxford Philosophical Society. Part of that paper was rewritten as “Towards a reasonable libertarianism” in Ted Honderich’s 1973 *Essays on Freedom of Action*.

This paper caught the eye of DANIEL DENNETT, who expanded on Wiggins’ theme of figuring out what libertarians say they want, and trying to give it to them. Wiggins described his goals:

“One of the many reasons, I believe, why philosophy falls short of a satisfying solution to the problem of freedom is that we still cannot refer to an unflawed statement of libertarianism...Compatibilist resolutions to the problem of freedom must wear an appearance of superficiality, however serious or deep the reflections from which they originate, until what they offer by way of freedom can be compared with something else, whether actual or possible or only seemingly imaginable, which is known to be the best that any indeterminist or libertarian could describe.

A sympathetic and serviceable statement of libertarianism cannot be contrived overnight, nor can it be put into two or three sentences, which is all that some utilitarian and compatibilist writers have been willing to spare for the position. If they were more anxious to destroy or supersede libertarianism than to understand and improve it, this was natural enough; but time or human obstinacy have shown that the issue is too complex for such summary treatment. What follows is offered as a small step in the direction of a more reasonable exposition... I still hope to have shown that the libertarian perceived something which



was missed by all extant compatibilist resolutions of the problem of freedom; and that the point the libertarian was making must bear upon any future reconstruction of our notions and practices.”⁷²

Wiggins proposed a specific form of (quantum mechanical) indeterminism as a variation on an idea of ARTHUR STANLEY EDDINGTON and BERTRAND RUSSELL. Here is Russell’s suggestion

“for those who are anxious to assert the power of mind over matter it is possible to find a loophole. It may be maintained that one characteristic of living matter is a condition of unstable equilibrium,...so delicate that the difference between two possible occurrences in one atom suffices to produce macroscopic differences in the movements of muscles. And since, according to quantum physics, there are no physical laws to determine which of several possible transitions a given atom will undergo, we may imagine that, in a brain, the choice between possible transitions is determined by a psychological cause called “volition.” All this is possible, but no more than possible; there is not the faintest positive reason for supposing that anything of the sort actually takes place.”⁷³

Dennett called this “Russell’s Hunch” in his 1978 book *Brainstorms*. Note that Wiggins’ variation does not get away from the error of making chance a direct cause of action, since he simply amplifies microscopic indeterminacy to macroscopic indeterminacy, as Eddington and Russell had done.

Dennett cleverly avoided that error in his two-stage decision model (which was based on Wiggins’ work, Paul Valery’s comments, and perhaps ARTHUR HOLLY COMPTON’s ideas as interpreted by KARL POPPER). Dennett limits the indeterminism to the early stages of deliberation (where in a two-stage model they can generate *alternative possibilities*). But Dennett refused to endorse his own excellent model, because as a determinist he denied any role for quantum uncertainty. And with his computational model of mind he thought pseudo-random number generation was all a mind needed.

⁷² Wiggins (1973) *Towards a reasonable libertarianism*, p.33

⁷³ Russell (1948) ‘The Physiology of Sensation and Volition,’ Part One, Chapter V, *Human Knowledge: Its Scope and Limits*, 1948, p.52



Wiggins had amplified the quantum indeterminacy directly.

“For indeterminism maybe all we really need to imagine or conceive is a world in which (a) there is some macroscopic indeterminacy founded in microscopic indeterminacy, and (b) an appreciable number of the free actions or policies or deliberations of individual agents, although they are not even in principle hypothetico-deductively derivable from antecedent conditions, can be such as to persuade us to fit them into meaningful sequences. We need not trace free actions back to volitions construed as little pushes aimed from outside the physical world. What we must find instead are patterns which are coherent and intelligible in the low level terms of practical deliberation, even though they are not amenable to the kind of generalisation or necessity which is the stuff of rigorous theory. On this conception the agent is conceived as an essentially and straightforwardly enmattered or embodied thing. His possible peculiarity as a natural thing among things in nature is that his biography unfolds not only non-deterministically but also intelligibly; non-deterministically in that personality and character are never something complete, and need not be the deterministic origin of action; intelligibly in that each new action or episode constitutes a comprehensible phase in the unfolding of the character, a further specification of what the man has by now become.”⁷⁴

This indeterminism at each new step of character formation is essentially the basis for ROBERT KANE’S theory of “Self-Forming Actions.”

“I was not a fully formed person before I chose (and still am not, for that matter). Like the author of the novel, I am in the process of writing an unfinished story and forming an unfinished character who, in my case, is myself.”⁷⁵

Timothy Williamson

Timothy Williamson is a principal architect of *necessitism*, the claim that everything that exists necessarily exists. Ontology is necessary. Things could not have been otherwise. The universe could not have evolved differently.

74 Wiggins (1973). *Towards a reasonable libertarianism*, p.52

75 Kane (2009) ‘Libertarianism.’ in Fischer et al. *Four Views on Free Will*, p.42.



Necessitism is opposed to the idea of contingency, which denies that necessarily everything that is something is necessarily something. Ontology is contingent. Things could have been otherwise. There is ontological chance in the universe.

Necessitism grows out of the introduction of modal logic into quantification theory by Ruth Barcan Marcus in 1947, in which she proved the necessity of identity.

Before Marcus, most philosophers limited the necessity of identity to self-identity. Since her work, David Wiggins in 1965 and Saul Kripke in 1971 suggested there is no *contingent* identity.

Williamson reads Barcan Marcus as proving that everything is necessarily what it is, everything that exists necessarily exists. Williamson writes her argument as

“The logical arguments for the necessity and permanence of identity are straightforward, and widely accepted in at least some form. Suppose that *x* is identical with *y*. Therefore, by the indiscernibility of identicals, *x* is whatever *y* is. But *y* is necessarily identical with *y*. Therefore *x* is necessarily identical with *y*. By analogous reasoning, *x* is always identical with *y*. More strongly: necessarily always, if *x* is identical with *y* then necessarily always *x* is identical with *y*. Of course, we understand ‘*x*’ and ‘*y*’ here as variables whose values are simply things, not as standing for definite descriptions such as ‘the winning number’ that denote different things with respect to different circumstances.”⁷⁶

There is a serious flaw in the reasoning that “*x* is whatever *y* is. But *y* is necessarily identical with *y*. Therefore *x* is necessarily identical with *y*.” Wiggins and Kripke also made this error. The proper reasoning is “*x* has the same properties as *y*. But *y* is necessarily self-identical with *y*. Therefore *x* is necessarily self-identical, i.e., with *x*.”

Numerically distinct objects cannot have identical extrinsic external information, the same relations to other objects in their

76 Williamson (2013) *Modal Logic as Metaphysics*, pp.25-26



neighborhood, the same positions in space and time, unless they are one and the same object.

Barcan Marcus' work is correct as it applies to a universe of discourse described by first-order logic. As Rudolf Carnap proposed, the first-order object language can be analyzed for truth values of propositional functions in a second-order meta-language.

But these are literally just “ways of talking.” And information philosophy is an attempt to go “beyond logic and language.”

Propositions that are perfectly *substitutable* in quantified modal logic contexts are necessarily identical. But there are no numerically distinct physical objects that are perfectly identical. Information philosophy shows that numerically distinct objects can have a *relative identity* if their intrinsic internal information is identical.

Information philosophy has established the existence of metaphysical possibility in two ways. The first is quantum mechanical indeterminacy. The second is the increasing information in the cosmological and biological universe. There can be no new information without possibilities, which depend on ontological chance.

Since information philosophy has shown that the increase in information in our universe is a product of chance events, without possibilities there can be no new information created. In our metaphysics, ontology is irreducibly contingent. *Nothing is necessary.*

Since information philosophy has shown that the increase in information in our universe is a product of chance events – without possibilities there can be no new information created – in our metaphysics, the ontology of is irreducibly contingent.

In a deterministic universe (one without contingency or possibility), the total information is a constant, there is but one possible future, the evolution of the universe is entirely present at all times.

This might fit well with Williamson's parallel interest in permanentism, which is a form of pre-determinism or pre-destination that fits with some theological views.

