DAVID WIGGINS

ESSENTIALISM, CONTINUITY, AND IDENTITY

THREE QUESTIONS

I. *The Problem of Identity, Persistence and Coincidence*

What is it for Hesperus to be one and the same planet as Phosphorus? In what does it consist for the consul of 63 B.C., Marcus Tullius Cicero, to be the very man who denounced Mark Antony twenty years later, and paid for that with his life?

II. *Frege's Problem and Its Variants*

Does 'Hesperus is Phosphorus' fall short of matching 'Hesperus is Hesperus' in necessity, or in sense or truth-grounds, or in any semantical respect?

III. *The Problem of Essence*

If there is some necessity that Hesperus be Hesperus and Tully Tully, then is there a similar necessity (and how grounded) that Hesperus be a heavenly body, or Tully be a human being?

After all the thought which so many scholars have invested in them, these are familiar questions. But how exactly are they connected? Because I feel we are still unsure, I offer here an attempt to trace the interrelations of (I) (II) and (III). On one construal, this task might have involved a survey of eighty years worth of scattered contributions in logic, philosophy and formal and informal semantics. But a recital of the illustrious names associated with every issue, like a serious attempt to pursue and interrelate everything germane to each, might prove less useful in practice than a more modest attempt at one overall perspective, however idiosyncratic, oriented from an argued discussion of a small selection of representative writings under each head.

The more ambitious project would certainly have to stretch longer than

Synthese **23** (1974) 321–359.

my essay: and if the selection on which the essay is based seems capricious that may be explained, if not actually excused, by the original source of its maker's impulse to find a way to relate problems (I)' (II)' and (III). This was his reading of a recent collection on identity and individuation.[1] What distinguishes the collection from others of the same kind is only that it is graced by the contributions of at least two scholars whom any survey of the literature would ignore at its peril; and that it is to one of them, Saul Kripke, that I think philosophy owes the idea that such questions as (I)' (II)' and (III) must be closely connected. Kripke says little or nothing directly about the first question, but he must bear some of the responsibility for the general observation with which I shall broach even that. This is the observation that most work upon (I) has in one way or another underestimated the conceptual importance to individuation of both *causality* and *natural law*.

QUESTION I: THE QUESTION OF COINCIDENCE AND PERSISTENCE THROUGH TIME

Suppose you take all the natural kinds there are, and then the extension of each one. Between them these extensions exhaust many times over the matter of the world. Suppose one then asks: 'How do the natural laws of the world bear upon the sense of the names of the natural kinds to be encountered in the world?' If we look at the usual accounts of thing-kind words in the tradition of Locke's nominal essence they are all, as Putnam[2] has pointed out, curiously unrealistic on this point. They seek to fix the sense of *sun* or *horse* or *tree* by a description (which always fails of either necessity or sufficiency) in terms of qualities and appearances. Putnam's counter-suggestion is that x is an f (elephant, cypress tree, orange...) if and only if x is grouped by the most explanatory comprehensive true scientific theory with a set of arbitrarily selected *normal exemplars* of the natural kind f. It follows from Putnam's proposal, as it does from an independent and similar theory of Kripke's, that if the correct articulation of natural kinds ultimately depends on good theory, and if good theory is part and parcel of true statement of natural laws, then any putative definition of a natural kind f will stand or fall with the existence of some set of laws which collect together its actual extension. The holding of such laws is nothing less than constitutive of the very existence of fs: and these

laws will determine both the characteristic development of an *f* and the limits of any possible development or history of one.

What is the relevance of this to question (I)? Well, if it is right then, when we consider the problem of the identity of *f*s through change (where *f* is a natural kind), the logic of the definition of *f* must exempt us from taking into account any but situations which conform to the actual laws of the actual world. For these serve in an indispensable role to define the particular kind *f* which we meant; and the definition will have the effect that in no other situation *are there* any *f*s.

Both the point and its application to question (I) require longer argument perhaps, but illustration may be more telling. In the same volume as Kripke's 'Identity and Necessity', Eli Hirsch[3] remarks (p. 39) that the spatio-temporal and qualitative continuity of a certain, never unoccupied, spatio-temporal path is not enough to guarantee that the path defines some one space-occupying object. "Let *Q* be the space-time path traced according to the following rule: at any time *t* between 12.00 and 12.05, *Q* contains just that portion of some tabletop that is directly below your [constantly moving] hand at *t*." His response to the problem posed by *Q* is the same as mine would be. He draws attention to the role of sortal words. Here we catch a glimpse of the connection between question (I) and question (III). But Hirsch does not point out that there could scarcely be a set of *laws* which would define a good kind with *Q* as a member. Instead, Hirsch plunges straight into an attempt to fix up the whole difficulty perfectly generally, without any reference at all to natural kinds, by recourse to the mathematics of continuity. He instantly collides with the problems of part-subtraction and part-addition, of intermittent manifestation, and of homeomerous entities (such as the Pope's crown[4]). It is the real virtue of Hirsch's piece to reveal a quite general difficulty in any purely mathematical definition of spatio-temporal continuity with pretensions to match our intuitive notion of what it is for this *f* to coincide with that : one will never be able to dispense in an account of such continuity with information about what is causally characteristic of the particular kind in question. Once this is available, however, and provided a genuine natural kind is present, this information will determine a notion of continuity for *f*s which is good enough in itself to guarantee identity and furnish a conceptually constitutive (i.e. for all possible worlds adequate) criterion of identity for *f*s. Or so it seems to me. But it is now time

to turn to question (II), and to Kripke. Kripke's insights connect (II) with (III), but if any reader is persuaded by what has been said so far under (I) then he will have formed the expectation that the essentialism we encounter under (III) must carry us back in the end, by an elliptical circuit, to the same questions of kind and essence which must now be adjourned.

QUESTION II: FREGE'S PROBLEM AND ITS VARIANTS

1. *Exposition of Kripke*

There is some expository virtue in following a recent tradition which has in a certain respect distorted Frege's problem of the evening star by making of it a problem of modality. (The record will be set straight here in due course.) Of all discussions the most remarkable for its wit, scope and invention as well as for the fact that it is the first treatment to make explicit the problem of the connexions of (I) (II) and (III) – is Kripke's. His 'Identity and Necessity' is a defence of the principle that for any x and any y, if $x = y$, then necessarily $x = y$.

Kripke observes that some have been disturbed by the following derivation.[5] Begin with Leibniz' Law

(1) $\quad (x)\,(y)\,(x = y \supset (Fx = Fy))\,.$

As one instance of (1), provided that the letter F may stand proxy for such modal properties of objects as *is necessarily identical with* x, we get

(2) $\quad (x)\,(y)\,(x = y) \supset (\Box(x = x) \equiv \Box(y = x))\,.$

But by the truth of $(x)\Box(x = x)$ – reading $\ulcorner\Box\varphi a\urcorner$ as saying that $\ulcorner\varphi a\urcorner$ is true with respect to any world containing a[6a] – and by the consequent superfluity of the third clause, viz.,

(3) $\quad \Box(x = x)\,,$

(2) must entail

(4) $\quad (x)\,(y)\,[(x = y) \supset \Box(y = x)]\,.$

But how, it has been asked, can this be accepted? If we must normally discover identities empirically, they cannot be true necessarily.

Kripke's reply may be seen as falling under three heads: (A) he shows how to find a way to accept (4); (B) he shows why one should want to

accept (4); and (C) he draws out the supposed consequences of accepting (4).

(A) Sentence (4) generalizes upon the case where we have a particular identity statement made by the use of names or demostratives. Where identities are stated by means of definite descriptions, and where a sentential operator such as 'not' or 'necessarily' is present, we must according to Kripke pay careful heed to matters of scope. Consider

(5) The first Postmaster General of the United States is identical with the inventor of bifocals.

Kripke insists that it is a contingent matter that (5) is true – and that this does not count against (4).

> If we substitute these descriptions for the universal quantifiers in (4) the only consequence we will draw [from (4)] is that there is an object x such that x invented bifocals, and (as a matter of contingent fact) an object y such that y is first Postmaster General of the U.S., and, finally, it is necessary that x is y. What are x and y here? Here x and y are both Benjamin Franklin and it can certainly be necessary that Benjamin Franklin is identical with himself. So there is no problem if we accept Russell's notion of scope.... That Russell's distinction of scope eliminates modal paradoxes has been pointed out by many logicians,[6b] especially Smullyan.

In other words, all (5) should lead us to expect, if we follow Russell's theory of descriptions, is

(5′) $(\exists x)\,(\exists y)\,[(w)\,(\mathrm{FPMG}w \equiv w = x)\ \&\ (z)\,(\mathrm{IBF}z \equiv z = y)\ \&$ (necessarily $(x = y)$)].

The necessity attaching to the third clause of this expansion of (5) results from intersubstituting what (4) demonstrates to be equivalents.

Most of the residual resistance to the idea of (4)'s holding will rest, according to Kripke, on a confusion of the categories of *necessity* and *a priority*. If x is necessarily y then x *must be* y, *cannot not be* y. But to say this, which is a metaphysical claim, is not the same as to say that x's identity with y is *a priori*. By *a priori* is or should be meant that this can be told independently of all experience. That is an epistemological claim and irrelevant to (4). The supposed coextensiveness of the two claims would "require some philosophical argument to establish it".

(B). When these obstacles are cleared away what is there positively to recommend (4)? Well, there are still (1) and (3), which on Kripke's view do no less than entail (4). Any sentence (1′) or (3′) which instantiates

either (1) or (3) with regard to entities *a*, *b* is manifestly *about a*, *b* themselves, not the senses of their names, or their associated concepts, or their 'counterparts' in other worlds, or about anything at all other than *a* and *b*. To someone who doubted this I think Kripke might reply that (3') says that *a* can't but be *a*; the fact that this is the outcome of logical or conceptual rather than causal constraints hardly constitutes grounds to deny that it has in all relevant respects the same logical form as '*a* can't throw further than *a*'. And this last must surely be like '*a* can't throw further than *b*' in being about *a*. So surely there is no easy escape from (4). But, in the absence of more positive support for (4), perhaps this exacerbates what some already see as a situation of paradox. Kripke's strategy is to provide an informal argument for (4), in addition to the formal argument.

Kripke is not the first to have wished to champion (4). Ramsey supposed that true statements of the form '$a = b$' would have to be necessary truths.[7] Ruth Barcan Marcus, who appears to have been the first to present a formal derivation of (4), has long accepted this conclusion and defended it on lines strongly reminiscent of *Tractatus Logico-Philosophicus* 4.243.[8] That passage depends on a special view of proper names, however. In Kripke's argument, the proper names which are in question are common or garden ones, naturalistically viewed. His position depends not at all on the distinction between logical and other proper names: according to him it depends on the distinction between rigid designators, such as proper names or functors like '$\sqrt{25}$' (p. 144), and non-rigid designators. A designator is rigid (p. 145) iff it designates the same object in all possible worlds. So equipped Kripke argues as follows (p. 154):

> If names are rigid designators then there can be no question about identities being necessary, because '*a*' and '*b*' will both refer to this same object *x*, and to no other, and so there will no situation in which *a* might not have been *b*. That would be a situation in which the object which we are now also calling '*x*' would not have been identical with itself... One could not possibly have a situation in which... Hesperus would not have been Phosphorus.

Those who resist this conclusion, and claim that they can imagine the circumstance of Hesperus not being Phosphorus, are confusing the hypothetical circumstance of our not *calling* Hesperus 'Hesperus' and the (putative but impossible) circumstance of Hesperus not *being* Phosphorus. The world in which things are differently *called* is irrelevant to the prob-

lem. The problem is what is to be said by us about a possible world in which Venus has a different position in the evening from its position in ours.

That would not be a situation in which Phosphorus would not have been Hesperus... A difference in position in the same world is not grounds for thinking that such identity statements are contingent. To take them so is to misconstrue the relation between *a name* and a description *used* in and of our world *to fix its reference*, to take them to be synonyms.[9]

(C). What follows from this, according to Kripke, is a complete transformation of the status to be accorded to that philosopher's standby

(6) 'Heat is molecular agitation.'

This is a true identity, but not a contingent one.

Naturally, (6) is *a posteriori*. But how could it be contingent? It is true that there is a certain external phenomenon which we sense by touch, which produces a sensation which we call 'the sensation of heat', and which we discover to be a high degree of molecular agitation in the object touched. But 'heat', like 'molecular agitation', is a rigid designator of that external phenomenon. It is neither synonymous nor necessarily co-extensive with that description by which we pick it out – "cause of the sensation human beings call 'the sensation of heat'". To imagine a situation in which the latter happens to be satisfied by some different phenomenon shows nothing about heat itself.

Now consider

(7) Being in pain at time t is being in neural state n at time t.

This is supposed by those who champion it to hold contingently. But if it is contingent at best, then it is false. And, the reason it is contingent at best is that we *can*, according to Kripke, coherently imagine neural state n not being what affects us with the sensation of pain. "What affects us painfully, or with the sensation of pain", unlike "cause of the sensation of heat", is a rigid designator. Coherently to imagine state n *not* being what affects us painfully is to imagine n's not being *pain*. It is to conceive the possibility of (7) being false.

Although we can say that we pick out heat contingently by the contingent property that it affects us in such and such a way, we cannot similarly say that we pick out pain contingently by the fact that it affects us in such and such a way... The experience

itself has to be *this* experience, and I cannot say that it is [a] contingent property of the pain I now have that it is a pain....

Of *n*, on the other hand, we can say this. So (7) does not withstand the threat posed to it by the conceivability of *n*'s not being what affects us with the sensation of pain.

This is a summary of Kripke's argument for (4) and not (7), bare but not innocent of a measure of interpretation and reorganization. My comments unravel it in the sequence: Preliminaries, (C), (B). Later on certain questions about (A) will be aired in connexion with Cartwright's article on substitutivity and Leibniz' Law.

2. *Preliminaries*

It will be useful to begin by removing one source of possible or actual confusion in the minds of both expositors and detractors of Kripke. Kripke's argument sometimes seems to depend on true identity statements being necessarily true if rigid designators flank the '=' sign. For instance Kripke writes

We use both 'heat' and 'the motion of molecules' as rigid designators for a certain external phenomenon. Since heat is in fact the motion of molecules, and the designators are both rigid,... it is going to be necessary that heat is the motion of molecules.

But some may object that theorem (4) – if that is meant to be the formal counterpart of this argument – is not a claim about rigid designators at all. It says that whatever x may be and whatever y may be if x is y then necessarily x is y. Maybe there is something metalinguistic latent in the 'necessarily'. We shall argue about that in due course: and if there is something metalinguistic in the 'necessarily' then this will occasion certain difficulties for the derivation. But there is nothing about rigid designation in theorem (4). So why does it figure in the informal argument?

One way of proceeding here is by the observation that, on the Russell-Smullyan treatment of definite descriptions favoured by Kripke, descriptions are not direct substituends for 'x' and 'y' in (4). One must write out the identity (6) in primitive notation without using a description operator, at the same time fortifying the rigidly designative clauses with a $\Box$, thus:

$$(\exists x)\,(\exists y)\,[(\Box((z)\,(z \text{ is heat} \equiv z \text{ is } x)) \,\&\, \Box((w)\,(w \text{ is high molecular agitation} \equiv w = y)) \,\&\, (x = y)]$$

The utility of Theorem (4), then, is to license the prefixing of a box $\Box$ to

the last clause above too, $\Box x = y$. We may then use the modal theorems:

$$[\Box p \,\&\, \Box q \,\&\, \Box r] \supset [\Box (p \,\&\, q \,\&\, r)]$$
$$[(\exists x)(\Box(\varphi) \,\&\, \Box(\psi) \,\&\, \Box(\chi)] \supset [(\exists x)\Box(\varphi \,\&\, \psi \,\&\, \chi)]$$

to derive

$$(\exists x)(\exists y)[\Box[(z)(z \text{ is heat} \equiv z \text{ is } x) \,\&\, (w)(w \text{ is high molecular agitation} \equiv (w = y)) \,\&\, (x = y)]]$$

On this view, Kripke's point must be that a proposition like the one here with three occurrences of $\Box$ – and entailing a proposition of the latter kind – will be available when and only when both terms in an identity statement are rigid designations. The asymmetry between (6) and (7) then comes down to this. The $(\exists x)(\exists y)\Box[\ldots]$ statement corresponding to (6) is true, but a certain conceiving is supposed to show that any $(\exists x)(\exists y)\Box[\ldots]$ statement corresponding to (7) is false. And, if this statement is false then (7), which implies it, is false too.

This will do very well (and I shall read Kripke so) for the time being. But on this view the ⌜necessarily φ⌝ of Theorem (4) is still apparently to be explained in terms of some invariance in the truth of the statement ⌜φ⌝ (e.g. in terms of φ's holding true in respect of all worlds w such that w is so & so world, where the 'so and so' condition may be specified in various different ways into which there is no need yet to enter). The approach to the 'necessarily' still seems to derive from the *de dicto* and may be infected with all the problems of quantifying into opaque contexts which Quine has made infamous. We may be led to wonder whether Kripke's attack on (7) can be phrased in such a way as to be free of these problems, to make 'necessarily' more purely *de re*, and to be independent of rigid designation. In due course I shall try to do precisely this, and shall try to motivate a different view from Kripke's of the 'necessarily' involved in (4). I shall try to see (4) as simply saying of anything x and anything y, however described, that if x is y then x necessarily is y, however x and y are described.[10a] But at this preliminary point I am only concerned with the extent to which the distinction of rigid and non-rigid designation is essential to the proper deployment and/or defence of (4).

It seems to me that, though the distinction figures in this interpretation of one method of *application* of (4), the distinction is actually inessential to the *defence* of (4). For we can recast Kripke's argument as follows: if individuals x and y in this world are identical, then anything in any other

possible world which is identical with x will be identical with y. For if x *is* y there is no being identical with x without being identical with y. We shall consider this argument in due course, but let us first glance at Kripke's contentions concerning the consequences of (4). At risk of digression they will admirably illustrate the full purport of the necessity of identity.

3. *Comments on C*

Reformulated to conform with this interpretation the argument against (7) will go like this. Consider the property of being what necessarily affects us (in some specific way s) painfully, (λy) $[(z)$ (nec z affects us s-painfully$) \equiv (z = y)]$. According to Kripke, this property applies to pain and not to state n. So it may seem (7) must be false.

Whether his argument be rephrased like this or left as he himself originally put it, Kripke has certainly thrown new light from an unexpected quarter upon an old dispute.[10b] Any evaluation of his thesis must take off from the radical difference Kripke finds between (6) and (7). If there is this contrast, then surely the grounds for thinking (6) true should be better than, and importantly different from, those for thinking (7) true. For the grounds for (6), whatever they may be, suffice to show that heat is necessarily molecular agitation. How, one wonders, do the grounds for (7) fall short of this? Why don't the grounds themselves, if they really are grounds for believing (7), carry us the whole way to the necessity? Why can't we use (4) to show that, contrary to what might have been supposed, n is *necessarily* pain?

Here, evidently, we must ask: What are the grounds for thinking (6) true? For our certainty that (6) is true *may* not be matched by any certainty about *why* it is true.

One argument which I piece together from Kripke himself for (6) is this:

(8) Heat is the cause of the sensation of heat
(9) Molecular agitation is the cause of the sensation of heat
$\therefore$ (6)

An argument like this may certainly supplement the scientific reductions of thermo-dynamics to statistical mechanics. (Cp. the argument –: Increase in heat is what causes metals to melt, increase in molecular agitation (mean kinetic energy) is what causes metals to melt, therefore (6).) The trouble is that there seems to be a parallel argument for materialism

(10) pain is what affects us painfully
(11) neural state *n* is what affects us painfully
∴ (7)

If this really is the situation, however, then any comment must begin by noting what Kripke does not point out, that on any description-theory both arguments are deductively valid. If they are sound as well, then Theorem (4) already assures us that *n* necessarily is pain.

Kripke finds an asymmetry between the rigidity of 'what affects us painfully' and the alleged non-rigidity of 'cause of the sensation of heat'. To imagine (11) failing is to imagine (7) failing because 'pain' and 'what affects us painfully' are both rigid and codesignative. They cannot come apart. Whereas, 'cause of the sensation of heat' being non-rigid, to imagine (9) failing is not in itself to imagine (6) failing. Very well. But the whole impact which the distinction between rigid and non-rigid designation can have on an argument is already registered completely in its translation by means of the theory of descriptions, and so far as validity is concerned the arguments are on a level. So it seems that Kripke ought to find the conceivability of not-(7) reason to fault either the *truth* of (10) or the *truth* of (11) or the *univocality* of 'affect'. His argument and his method are seriously incomplete on this point, I feel.

To take this matter further would distract us from our central question, which is Theorem (4) and the light it casts on question (II); so I shall leave (C) with two further comments. First, it is not easy to be entirely satisfied that Kripke has demonstrated that merely imagining *n*'s not affecting us painfully shows that it (really) conceivably might not affect us painfully. (11) imposes a very strict condition on any candidate for the role of *n*. It will surely have to be a *generic* state identified in functional terms which transcend the specifically neurophysiological. Otherwise (11) will fail. But if that is what *n* is, can it really fail to affect us painfully? (Yet there is no reason to think that *n* is therefore not a physical, matter-involving, state.) Secondly, the true outcome of Kripke's onslaught on contingent (central-state) materialism seem to be to revive for consideration and refinement the claims of a much older thesis which one might call conceptual materialism, namely the position of Thomas Hobbes. This seems to advance it as a *necessary* truth that all mutation is motion[11], that any true subject of discourse is a material object[12], and that spiritual

phenomena or divine apparitions, if real at all, must as a matter of conceptual necessity be "subtile Bodies" or "thin substances" and "not Ghosts incorporeall, that is to say Ghosts that are in *no place*; that is to say are *no where*; that is to say, that seeming to be somewhat, are nothing."[13]

4. *Question II continued: Comment on Kripke's B*

Kripke's argument for (4), to which I now return, is likely to encounter two different forms of opposition. Some will feel that they can make good sense of the apparatus of possible worlds. What they will object to is the free and easy way in which Kripke identifies und reidentifies the same entity in different possible worlds. If he did not then there would be no rigid designators. Others will be utterly sceptical of the whole apparatus of possible worlds, but not all of these people will want to treat *necessity* lightly. They will think (4) raises a question worth answering. But they will look for a different sort of argument from Kripke's. I shall try in due course to provide that; but, first, I seek to support the position Kripke takes within possible world theory.

What relation must x_i in possible world W_m bear to x_k in world W_n if x_i is to be identical with x_k? Hintikka speaks for many scholars when he says[14]

> Each possible world contains a number of individuals with certain properties and with certain relations to each other. We have to use these properties and relations to decide which member (if any) of a given possible world is identical with a given member of another possible world.

It is this point of view which leads to the search for individual essences, haecceitates, particularized forms &c. But it is difficult to see any reason to hope that by making predicates longer and more and more complicated we shall be able to overcome the obvious non-sufficiency, or evident non-necessity, for identity with just x_k which infects all the relatively simple predicates true of x_k. Disappointment in the search for a more complex and adequate specification of the essence of x_k either issues in 'counterpart' theory,[15] which means we are not thinking about what we suppose we are thinking about when we entertain subjunctive conditionals, or else brings total disillusionment with possible worlds as a vehicle for philosophical understanding.

Fortunately for the notion of a rigid designator Kripke has a striking new insight which tells against Hintikka's view of the whole problem. Possible worlds are not things we discover or observe with a telescope.

They are constructions which *we*, who entertain and explore the suppositions to which they correspond, *make for ourselves*. There is no more problem, according to Kripke, about identifying the individuals about which we are making suppositions than there is about identifying the properties and relations which enter into the supposition. If one cannot even use Julius Caesar's *proper name* to think through what would have happened if Julius Caesar (the victim of Brutus, the conqueror of Gaul, the consul of 59 B.C.) had not crossed the Rubicon, then what on earth can one use?[16]

Within the possible world approach, this observation is enough to justify Kripke's treating proper names as rigid designators. All the same, as Kripke recognizes, we have not reached here the end of the problem. For we are not free to construct *any* world we wish, and we cannot insert any individual we wish into any arbitrary role in any possible world we please. It is not open to us to construct the possible world in which Julius Caesar is a clay pipe or a paddle steamer or the number fifty-seven. Until we spell out the restrictions which exclude the construction of such worlds, we shall have a very incomplete understanding. If we pursue Kripke's scattered thoughts about this problem, however, then we shall also ascertain the prospects of a sane *essentialism*, and we shall begin to get questions (II) and (III) into some unifying perspective. So I shall pause for a moment to take up Kripke's thoughts about essentialism, before resuming the examination of (4).

The required constraints on possible world construction appear to fall under two heads in Kripke, constraints of *origin* and *make-up* and constraints of *thing-kind*. (By the *thing-kind of x* I mean the answer to the Aristotelian question 'what is x?'.)

Under the first head, Kripke claims (p. 153) that, given that a certain lectern is not made of ice, is in fact made of wood, one cannot conceive of any circumstances under which this very lectern is made of ice.

> It could have been in other room ... but it could not have been made from the very beginning from water frozen into ice (p. 152).
> One certainly could have made a lectern of water from the Thames, frozen it into ice by some process, and put it right there in place of this thing. If one had done so [however] one would have made of course a very different object. It would not have been this very lectern ... the question whether it could afterwards, say a minute from now, turn into ice is something else ... In any counterfactural situation of which we would say this lectern existed at all, we would have to say that it was not made from water ....

There is a little more about the difference between such attributes as *being in this or that room* and *not being made of ice* in the Princeton lectures.[17] We find there a discussion of the supposed necessity that a given person should have sprung from the very sperm and egg which he did spring from.

> What right would we have to call this baby from completely different parents – in what sense would she be – *this very woman*? One can imagine, *given* the woman, that various things in her life could have changed... one is given, let us say, a previous history of the world up to a certain time, and from that time it diverges considerably from the actual course. This seems to be possible. It is possible ..., even though she were born of these parents, like Mark Twain's character who was switched off with another girl. But what is harder to imagine is her being born of different parents. It seems to me that anything coming from a different origin would not be this object (p. 314).

The argument is more suggestive than explicit, but it would appear to comprise two strands.

The first strand seems to be this. There is only one way to construct possible worlds containing a given individual. This is by a process which begins with the world we actually have, fixes upon a historic state of the actual world, modifies a feature of that and then, after making whatever adjustments the modification entails, traces the consequences ensuing upon the modification.[18] The principle of contingency is something like this –: For any φ, Julius Caesar might have been φ at t'' iff there is a historic state of affairs s at a time t', $t' < t''$ and an actual feature f of that state of affairs, such that if s had not had f at t' then Julius Caesar, the man himself, would have been φ at t''. It is certain that this principle would confer a special status upon the origin of anything. But *is* there really any such principle limiting the construction of possible worlds? Without violating the laws of nature, or even physical determinism, one may coherently conceive and speculate about quite different courses of events, any of which might have *led up to* Julius Caesar's crossing the Rubicon – or so someone may insist. And even modifying a state of affairs in Kripke's prescribed manner in respect f must itself involve asking: What, if f had *not* obtained at time t', would have had to have obtained at t, where $t < t'$? How then can there be a general prohibition on 'backward' conditionals? It is not even obvious that there is any general need for possible worlds to be arrived at by a process of modification of states of the actual world – especially if laws of nature are respected. But perhaps Kripke's contentions are intended to touch only those back-

ward conditionals which concern particular (and therefore actual) individuals. But here too we are left groping for his argument. Somehow it must show that, unless we respect the prohibitions against backward conditionals, we 'lose' the very object we mean to be speculating about. What is this argument?

Kripke asks "by what right" one would call a person sprung from different sperm and egg "this very woman". If this implies that every counterfactual speculation about Julius Caesar involves the thinker who undertakes it in establishing his *title* to call the individual concerned Julius Caesar then this is dangerously close to the Hintikka-Lewis position. But this problem we have seen reason to applaud Kripke's method of avoiding. We do not have to find something *in virtue of which* the object of speculation is Julius Caesar. Let me go one step to meet Kripke however. Perhaps the speculator has to be able to *rebut* the charge that he has actually lost his subject of discourse if he changes its parents or origin. But I ask: can he not *rebut* the charge by claiming to speculate about how *the man whom Brutus murdered in 44 B.C.* would have fared if (say) Marius had been his father? To rebut the charge of losing the individual perhaps there must always be available to the speculator, *consistently with his speculation*, some such specification of whom he means by Julius Caesar. But even if this principle were self-evidently just – which is perhaps dubious – it does not favour any particular specification of who Julius Caesar is, let alone the sperm and egg he sprang from.

The other constraint which Kripke puts upon possible world construction, though on this he lays lighter stress, is the *thing kind* of the individual concerned. Here the rebuttal principle which we have tentatively suggested does suggest a useful way of exploiting another thought to which Kripke gives voice. "... I am not suggesting that only origin and substantial make-up are essential. For example, if the very block of wood from which the table was made had instead been made into a vase, the table never would have existed. So (roughly) *being a table* seems to be an essential property of the table...". This is a different and perhaps much more familiar thought. Suppose we develop it in the following way. A man who entertains a contrary-to-fact speculation about Julius Caesar must leave himself room to rebut the charge that he has lost Caesar. This Roman consul need not have been consul, need not have been Roman, need not have been male perhaps..., but unless anything might be anything there must be

some *f* such that, no matter what else he is, he can be picked upon as *this f*. And what else can *f* stand for here than the most general sortal specification of the object which is capable of individuating it fixing its existence or persistence condition and answering the question "what is it?".[19] Perhaps there must be some true description to make clear *which f* it is, and perhaps this description must conform to the requirement of consistency with the speculation, but as remarked there is no particular description which must remain available beside *f* and what is entailed by *f*.

What results from this is not an essentialism of *individual* essences. Contrast the origin doctrine. It is something much more interesting, I think, and closer to science. It accomplishes what Locke so badly mismanaged with his doctrine of real essence. The real essence of a thing was meant to be the particular constitution of the insensible parts of the thing from which the sensible qualities flowed. Locke lost sight of his objective when confusion or desperation about how the sense of a putative real essence word could be learned in experience led him to supplant the real essence of a natural thing in his semantical account of substance words by the (invariably inaccurate) phenomenal description which he called the nominal essence.[20] With Putnam's proposal to hand, however, which gives the real essence *par excellence*, we may not only solve Locke's problem but also derive substantive consequences from essentialism, e.g. that Julius Caesar had necessarily those genetic properties which flowed from his being a man. We also reach a distinction which Kripke does not make. There are virtually no natural laws about tables or lecterns as such. These articles may be made of different kinds of material and put together in radically different ways. And conversely, unlike natural things, there are no difficulties in framing *nominal* essence for them. They are defined via purpose not via their extension. Having no real essence to speak of, an artifact like Kripke's lectern or table will possess relatively few essential properties. But a member of a kind whose definition must be by real essence à la Putnam, a natural thing say, must be expected to have interesting empirically discovered essential properties.

These questions will surface again when we try to reach a final view of question (III). So far as question (II) goes, the final outcome is this: nothing prevents the discovery and invention of principles of possible world construction (which will be rather exigent in the case of natural things and relatively undemanding in the case of artifacts) to secure iden-

tity between individuals in different possible worlds. And if the notion of rigid designators (which depends on this), can stand then certainly Kripke's (4) may stand. But this leaves much of question (II) unanswered. We have at best an answer to one variant of Frege's problem and this answer depends, at least in Kripke's presentation, on making sense of all the strange things which possible worlds have been supposed to involve. Even if within that system of thought Kripke's argument for (4) is unassailable, there are many for whom that is not the question. The question is what we are to make of the derivation of (4) if we deny ourselves a conceptual apparatus with the expressive power of possible world talk, and if we worry more about the propriety of quantification into arguably opaque contexts than modal logicians usually do. Surely, if it is true, (4) is a more certain result than any possible world speculation. Let us retreat in order to advance better, and review question (II) in its traditional form, keeping within a more austerely extensional framework: and, before we revert to the credentials of (4), let us see what we can make there of the original insights and intentions which probably prompted Kripke's notion of a rigid designator in the first place.

5. *Question II in its traditional form; and Sense and Reference*

Frege himself had been perplexed not so much by the supposed difference in modality as by the manifest difference in *a priority* and *a posteriority* of sentences of the forms '$a = a$' and '$a = b$'. His answer seems to have been this:

(α) the thought that $a = b$ is a valuable extension of our knowledge.

(β) the thought that $a = a$ is not a valuable extension of our knowledge.

(γ) Since the thought that $a = b$ has at least one property not enjoyed by the thought that $a = a$, these are not the same thought.

(δ) The identity of a thought or proposition such as the proposition that $a = b$ or that $a = a$ is determined [by context and] by the *sense* of the sentence which makes it. Therefore the sentences $\ulcorner a = a \urcorner$ and $\ulcorner a = b \urcorner$, as used here in some fixed context, must have different senses.

(ε) The sense of a sentence is a function of its syntax and the senses of the words which compose it. The only way of giving $\ulcorner a = a \urcorner$ and $\ulcorner a = b \urcorner$ different senses is thus to distinguish the sense from the reference of constants and proper names. Even though $a = b$, we must distinguish the sense of $\ulcorner a \urcorner$ from the sense of $\ulcorner b \urcorner$[21].

The difficulties of (ε) for constants and proper names, and for such identities as 'Hesperus = Phosphorus', have been familiar for some time; and Kripke himself is conspicuous amongst those who have criticized the descriptivist theory of proper names it seems to involve.[22] If Aristotle might not have been the pupil of Plato or the teacher of Alexander then such descriptions cannot themselves *specify* or *constitute* the sense of Aristotle's name.[23] If both apply to him they can however serve to *fix* its sense.[24] For either or both can lead to a mind-independent external object with an objectively ascertainable history, any part of which history one who has grasped which thing is meant by 'Aristotle' may set himself to discover. For any description which identifies Aristotle leads to one and the same object, and puts one who comprehends it onto one and the same principle of identity, as any other description which identifies Aristotle. And in leading to the same continuant with the same history I myself should maintain that all descriptions or ostensions of it serve to fix one and the same sense.

Kripke himself claims that genuine proper names have no sense;[25] but if the sense of an expression is what Frege claimed it to be, viz., the contribution the expression makes to the truth-grounds of sentences in which it occurs[26], then what has been shown by Frege's difficulties at (ε) is not that proper names have no sense but that the sense of a proper name simply consists in its having been assigned whatever reference it has been assigned[27]. To know the sense of n is then to know to which entity n has been assigned – a piece of knowledge which may be given in countless different ways. If standing for its referent is what a proper name's having a sense consists in, then there is no room for discriminations of sense arising from the particular circumstances under which a proper name may happen to have been learnt. Such contingencies are overcome as they are overcome in the learning of the sense of any other sort of expression. Any competent speaker who properly grasps a description or ostension given in such a context grasps it as leading him to the thing itself, identified by the name of the thing. If we attach the name n_i to bearer b_i and the name n_j to bearer b_j (if the 'onus of match' here is on the sense not the reference) and if $b_i = b_j$ then, whether we wish it or not, the sense of n_i will be the same as the sense of n_j.

This contention will strike some people[28] as absurd. They may say that since it is we, the users of the language, who call into being the senses of

its expressions it follows that if two words have each, by our own making, the same sense then we must know they have the same sense. Even as an analogy, however, this Vicoesque conception is full of difficulty. We make all sorts of things and many of them surprise us sooner or later by their active or reactive properties. Authorship is not the same as omnipotence or omniscience. In the case of some of the constructions of the human mind – mathematical objects for instance, and the expressions designating these – there is much more to be said. But the attempt to see the senses of expressions denoting the things we *find* in the world as mental constructions misrepresents the working of these expressions as they are used in human thought and speech, where they purport to represent what is truly independent of mind or will and has a history of its own. We are no better placed to guarantee the distinctness of the senses of 'Hesperus' and 'Phosphorus' than the distinctness of Hesperus and Phosphorus. Only if we already know for sure the distinctness of b_1 and b_2 can we undertake to guarantee the distinctness of the senses of n_1 and n_2.[29]

Obviously all of this, which militates against Frege's solution of the Hesperus-Phosphorus question can only appear to *aggravate* several of the problems which we have collected under (II), and which Frege's theory was meant to answer. To these we shall revert in a moment. But Kripke's and Barcan's positive contention (4), the necessity of identity, may appear to flourish when transplanted here. Consider the two propositions

(10) Hesperus = Phosphorus
(11) Hesperus = Hesperus

The sentences which express (10) and (11) are composed in exactly the same way from expressions (rigid designators) which have not only the same reference but also the same sense[30]. Given the relation of sense and truth-grounds, it would seem that nothing which constituted the truth (or falsity) of (10), no fact situation or state of affairs, could fall short of constituting the truth (or falsity) of (11). (Cp. (δ) and (ε) above.) So whatever necessity (11) has, (10) must apparently have too. Perhaps it was something of this sort, a relatively austere argument and innocent of possible worlds, which was really driving Kripke's argument through to its conclusion.

Here we encounter what may seem like a new difficulty, however, though it was always latent, I believe, in the possible world version of the argu-

ment for (4). By Kripke's own account it is *a priori* that (11), and it is *a posteriori* that (10). But the doctrine of rigid designation apparently leaves no room for any differences of *meaning* in the sentences used to express (10) and (11). I think this problem is pretty nearly the same as Frege's original problem, which it may be timely to rephrase as follows. If there is no way to do what assumption (ε) requires, and if there is no promise of a systematic modification of (δ), then it would seem that he who says (11) says (10). But that is impossible. He who says (11) may not even be in a position to say (10). For to say (10) may require *a posteriori* knowledge.

For these and like reasons Frege would deny that Kripke's analysis has found itself a stable resting point, and would doubt that it is even an analysis of the problem situation at all. Either it must go backwards (into a descriptivist theory of the meaning of proper names) it may be said, or it must go forwards. But, as against the position a neo-Fregean would champion here, it seems to me that there is enough room for Kripke to move forwards; and that what underlies and explains Frege's original perplexity is an assumption Kripke need not make. It is the assumption that, provided 'Hesperus' and 'Phosphorus' did match in sense, they should have been intersubstitutable in

(12) It is a valuable extension of our knowledge, i.e. it is *a posteriori*, that Hesperus = Phosphorus.

It is the same assumption which the objector to Kripke is making, but under another guise. His assumption is that there is some one thing, a thing whose identity is determined by the meanings of sentences or whatever – people may call it a proposition or thought –, which threatens to be both *a posteriori* and *a priori:* and that the logical form of (12) is to predicate something ("being *a posteriori* or a valuable extension of our knowledge") of this sense-identified thing.

If we want a way forward here, it is to question these assumptions, undermine Frege's interpretation of his own steps (α) and (β) and attack the ontology presupposed to his assumptions (γ) and (δ). For this it would be best to have, first, an independent reason to try to do this, second a better parsing of the logical form of such sentences as (α) (β) and (12). Both can be supplied.

To insist in Frege's fashion on the intersubstitutability *salva veritate* of words with matching sense in indirect speech is to start on a path

whose last step is the absurd-seeming denial that there *are* any words with matching sense. (The paradox of analysis.) Surely 'pail' reproduces the sense of 'bucket'. But "He said that a pail was a pail" does not entail that "He said a pail was a bucket". Surely 'Greek' reproduces exactly the sense of 'Hellene'. But, as Benson Mates has remarked, it is true that nobody doubts that everybody believes that a Greek is a Greek, and most likely false that nobody doubts that everybody believes that a Greek is a Hellene. Surely what we encounter here is a general problem about synonyms in *oratio obliqua.* But, if this is so, then we must heed the very real possibility (voiced in very different ways by both Davidson [31] and Church [32]) that the *Hesperus-Phosphorus* problem is no more than a special case of the paradox of analysis. What that paradox seems to me to show about indirect speech is that the particular *words* figuring within a sentence imbedded in reported speech must be accorded a role they cannot have in Frege's theory of sense. This role must be made manifest in the explication of the logical form of indirect discourse. Otherwise the failure of the intersubstitution of synonyms will be left unexplained. But once it is explained we shall not need a theory assigning different senses to names of the same thing to explain why *He said Hesperus was Hesperus* does not entail *He said Hesperus was Phosphorus.*

There is no need to invent a new account of this logical form. An account exists already in Davidson's paratactic theory [33]. It suggests that the logical form of (12) be seen as

(13) Something tantamount to what follows is *a posteriori* and a valuable extension of our knowledge –:

Hesperus = Phosphorus.

Inasmuch as the captive sentence 'Hesperus = Phosphorus' is referred to as well as *used* in its own right, there is no longer rational ground to expect that *salva veritate* intersubstitution will hold, even for words of matching sense. The criterion of fair reportage is shifted to the place where it belongs – namely context and purpose of report and purpose and context of item reported. For a man who does not already know that Hesperus is Phospherus it can extend his knowledge to be told something tantamount to this –: Hesperus is Phosphorus. If someone does tell him just that, then he is misreported as having said that Hesperus is Hesperus,

even though the alternative sentences may match in sense. That is not what was *said.*

If we give up the doctrine of propositions and adopt a theory like Davidson's, then we can supersede the assumptions which create both Frege's paradox of the evening star and the new paradox which threatened Kripke's defence of (4). This is real progress with question (II) in some of its variants. But I think we pay for this by one new obscurity in the Barcan-Kripke variant of question (II), and the purported 'austere' argument for (4). We cannot now make the lexical synonymy of (10) with (11), and the truth of

(14) It is necessary that Hesperus is Hesperus,

into an argument for the conclusion

(15) It is necessary that Hesperus is Phosphorus.

For on the theory we have adopted 'it is necessary that Hesperus is Hesperus' appears to introduce a forward reference to the particular sentence (11). And (10) is not the same sentence as (11), nor for all purposes tantamount to it. Nor is this our only difficulty in the construction of an austerer argument for (4). There is a related difficulty in the contention that "nothing which constituted the truth (or falsity) of (11) could fall short of constituting the truth (or falsity) of (10)". For everything hangs in this far from straightforward claim on a strict reading of 'constitute'. It makes an important and quite puzzling difference, for instance, if we switch to 'probabilify'.

The failure of this attempt to provide an austerer argument than the modal logicians' formal or informal arguments for the necessity of identity starts the suspicion that any argument for (4) will after all depend on some expressive power peculiar to possible world talk: that we cannot honestly claim that such talk is used here as a mere calculating device. It is time then to look again at the formal derivation of $(x = y) \supset$ (*necessarily* $x = y$).

I shall submit that there is one clear way of interpreting the derivation (1) (2) (3) $\vdash$(4) as sound; that this frees the question which (4) answers from all designative or referential issues; and that, interpreting (4) as I shall suggest, anyone who accepts the genuinely *de re* modalities to which speaking ordinary English already commits us must accept (4).

6. *Question II continued: the Barcan-Kripke Derivation Reexamined*

It is natural to begin a scrutiny of this with a look at the transition from (1) to (2). What kind of property is being *necessarily identical with x* (e.g. with Cicero)? In an earlier account of some of these matters Kripke defined $\ulcorner\Box\varphi a\urcorner$ to be true in the real world iff $\ulcorner\varphi a\urcorner$ holds in every world which is possible relative to the real world. But this is not quite the same definition as he offers in 'Identity and Necessity', and the change may have been made in order to distinguish clearly the *de re* from the *de dicto* occurrence of 'necessarily' and so defeat the problem of opacity. It may also be connected with a possible difficulty at step (3).

It is not enough for the argument to appeal at (3) to a premiss $\Box(x)\,(x = x)$ which says: – take whatever world w you will and take what individual x you will in that world, it holds in w that $x = x$. This is surely true, but scarcely the premiss then argument needs. What is needed is this: take any individual x you will then whatever world w you pick, it holds that $x = x$ in world w. But the difficulty with that premiss is that many worlds lack many individuals which other worlds have. Kripke's response to this problem (p. 137) is to make a ruling whose consequence for e.g. $\Box(y = x)$ is that it shall mean that *wherever x and y exist, the statement that* $y = x$ *is true*. This secures (3) for him, but it only raises another problem about steps (1) and (2) of the Barcan argument. Is there any reason to think that, if it be explained so in terms of *statements*, '$\Box(\ldots = x)$' (or '*is necessarily identical with x*') stands for a genuine property?

Why for the purposes of the soundness of the argument should this matter, it may be asked? I believe that Richard Cartwright has shown why it matters in 'Identity and Substitutivity', in the same volume as Kripke's 'Identity and Necessity'. It is not true that designations of the same thing are *everywhere* intersubstitutable. If steps (1) and (2) of the Barcan proof represented this idea then the proof would not be sound. What really is true is that *if* $x = y$ *then every property of x is a property of y*. Why is even this true? Suppose there were terms t_1 and t_2 designating z, and there was a context of t_1, $\varphi(t_1)$, and a context of t_2, $\varphi(t_2)$ such that the first was true and the second false. Suppose the purported property – call it Q – is e.g. that property which '... is necessarily identical wih Cicero' stands for, and that this be explained à la Kripke as "wherever... exists the statment that... is Cicero is true". Then Cartwright's way with

scholars like E. J. Lemmon[35] who have wished, unlike Kripke, to allow this as a real attribute to Cicero and deny it to Tully, is to ask: How can there be some one thing (the thing identical with Cicero and with Tully) which both has and lacks Q? The question is unanswerable. That is why (1), or Leibniz' Law, properly understood, *must* be true. But now what about the credentials of Q? Cartwright would press against such an attribute as Q, defined à la Kripke, the question "Are we sure that Q is a well defined property?" For surely if there is no such thing as *the* statement that z is Cicero, Q is illegitimately defined by Kripke's method. And once this question is raised one sees immediately that there isn't any such thing as *the* statement to that effect.

Let us see what can be done to refurbish *being necessarily identical with Cicero* as a genuine property. This will make it possible to interpret (1) as relating to properties and restore the soundness and validity of the argument for (4). A device suggested by W. V. Quine for dealing with some apparent quantifications into opaque contexts[36] may prompt an elucidation of $\Box(z = \text{Cicero})$ along these lines: what is true with respect to any world w containing z is the statement *about* z which says *of* z that it is identical with Cicero. The Cartwright point now reads: However clear and definite you make your choice of z, there is still no such thing as *the* statement to that effect. For there will be at least as many statements of the form '... = Cicero' as there are ways of referring to z. Someone might try saying that $\Box(z = \text{Cicero})$ means that whatever world you pick, if z exists in that world, then *any* statement about z to the effect that z is Cicero is true with respect to that world. The trouble is, that isn't true. Consider the statement that the author of the line "O fortunatam natam me consule Romam" is Cicero. This is not true with respect to the world in which Cicero is neither consul nor a self-congratulatory denouncer of Catiline. Here of course is where rigid designation may come in. Perhaps the explanation of $\Box(z = \text{Cicero})$ is then: whatever world you choose, if z is in that world, then *any statement made about* z *by means of rigid designators* and saying of z that it is identical with Cicero will be true with respect to that world.

This amendment appears to be reasonably faithful to Kripke's general style of explanation of *de re* necessity. Rigid designation has its uses after all. But, if this is what 'necessarily' is meant to mean as it figures at step (2), then what would have happened if we had taken as a value for z

something without any proper name. Then since there *is* no rigid designator for the thing, we reach the result that any statement about it saying of it by means of a rigid designator that this nameless thing is Cicero is true. For there would be no such statement. Hence this or anything nameless is necessarily Cicero: Such difficulties are not always allowed to matter, but one may find them symptomatic of a blurring of the distinction between the *de re* and the *de dicto*.

If we look again at the amended definition we shall see that the trouble is gratuitous in fact, if only we may be allowed to abandon the enterprise of reducing the *de re* to the *de dicto*. The definition we have arrived at forces us to read the phrase 'about *z*' and 'saying of *z*', as Quine would say, transparently. Intersubstitution of identicals and existential generalization must be already guaranteed at this place. What then does all the other metalinguistic material, 'statement', 'rigid designator' etc. accomplish? Why not say '*a* is necessarily Cicero' simply means '*a* cannot help but be Cicero' or 'nothing can be *a* unless it is Cicero'? What could be more *de re* than that? These analyses do not eliminate modality in favour of something else. They are at best *elucidations* of what ordinary people already understand (see below D). They are that or nothing. But they do suffice to dispel the illusion that the relevant necessity is linguistic. And in the same spirit, for the benefit of those who are lost without possible world talk, we may say: *nothing in any possible world is a unless it is Cicero.*

If we say of *a* in this style that *a* must be Cicero what does the 'must' govern? It does not say that the sentence '*a* is Cicero' is true in every world possible relative to our world. No sentence of this form has the slightest chance of being true in every such world. I once suggested that what this sort of 'must' governed was not the sentence but its predicate.[37] If this were granted, then the transparency of the predicate *necessarily identical with* would follow immediately, together with the intersubstitutability of identicals and the accessibility of subject place(s) to the variables of quantification.

Freed of problems of opacity and of special pleading about rigid desigtion the argument for any substitution instance of (4) will then go as simply as this:

$a = b \supset (Fa \equiv Fb)$,
(a) nec – is (a),
(b) nec – is (a).

And we shall be able to prove quite generally that if x and y have the relation *identical* then they have the relation *necessarily identical.*

$$(1) \quad (x)\,(y)\,(x = y) \supset (Fx \equiv Fy),$$

$$(2\lambda) \quad (x)\,(y)\,(x = y) \supset ((x \text{ has } (\lambda z)\,[[\text{nec}\,[(\lambda r)\,(\lambda s)\,[s = r]]], \equiv [x, z]]) \; (y \text{ has } (\lambda z)\,[[\text{nec}\,[(\lambda r)\,(\lambda s)\,[s = r]]], [x, z]])),$$

$$(3\lambda) \quad (x)\,(x \text{ has } (\lambda z)\,[[\text{nec}\,[(\lambda r)\,(\lambda s)\,[s = r]]], [x, z]]),$$

$$(4\lambda) \quad (x)\,(y)\,((x = y) \supset (y \text{ has } (\lambda z)\,[[\text{nec}\,[(\lambda r)\,(\lambda s)\,[s = r]]], [x, z]])).$$

Unlike demonstrations of the necessity of identity which employ possible worlds to define necessary identity and which, by using Smullyan's method with descriptions, leave unanswered the question (which Kripkean possible world semantics prejudge) whether substitution of genuine proper names is blocked in the context 'necessarily a is b', this proof is exempt from all problems of opacity or possible worlds. Indeed a champion of possible worlds might use it to justify setting up such an apparatus.

At this point we may perhaps venture a step further and conclude from the fact that a must be b that it is inconceivable (*de dicto*) that a should not be b. But in ascribing to the sentence 'a is b' (or to some conditionalized version of it) the property of having an inconceivable negation – if we take this step – we are not ascribing logical or strict analytical necessity to it. Nor is this *de dicto* inconceivability of the thought that $a \neq b$ what (4) itself claims. The inconceivability is a new and additional claim of a different sort based, insecurely I think, upon (4).

Cartwright gestured providently in this general direction in 1968 when he remarked[38] that Smullyan's method of treating modality with definite descriptions could not be expected to distinguish every ambiguity in the scope of 'necessarily'. In his new piece Cartwright uses his old insight again to make a point parallel to my claim about (4) and to identify the crucial ambiguity in the notorious sentence 'it is necessary that the number of planets is greater than 7'. In its *de re* as opposed to its *de dicto* reading it implies nothing about the necessity of the *sentence* 'the number of the planets is greater than 7'. It ascribes a property which 9 and the number of planets, being the same number, have quite safely in common, namely (nec(λx(x is greater than 7))). We see that the scope of the 'necessarily' in Quine's infamous sentence may, under one interpretation, be even smaller than Smullyan realized. Cartwright shows that the interpretation emerges unscathed by Quine's attack: or rather he shows this *provided*

it can be made sufficiently clear what 'x must be greater than 9' or 'a must be Cicero' *mean*.[39]

With this we conclude question (II). Kripke's (4) is incontrovertible when its logical form is made plainer. Its proper defence is independent of theories of reference and rigid designation, and is independent of any particular lexical analysis of necessity. Provided only that (4) can be significantly expressed, and that the 'necessarily' it involves governs not the sentence, but the predicate, (4) can be derived from true premisses by the safest conceivable principles of inference. The time is come then to trace the connexions between question (II) and question (III) and then, unravelling the whole skein, the connexions of question (III) and question (I), where we began.

QUESTION III: THE PROBLEM OF ESSENCE

An essentialist will assert not only that Hesperus is necessarily Phosphorus but also that Hesperus is necessarily a heavenly body; similarly, that Caesar is necessarily a man. The necessity the essentialist is concerned with is of a piece with that which occurred in (4). What is said here is:

(16) [nec(λx) heavenly body x)], [Hesperus], and
(17) [nec(λx) (man)], [Cicero]

Anything that is Hesperus must be a heavenly body, and anything that is Cicero cannot help but be a man. Why so? Might Caesar not have been 57, or the last paddle steamer on the Stonington-New York run, or at least some parrot? We have seen that he might not – unless anything might be anything. If contrary to fact speculation about Caesar does not lose grip on its purported object then there is an f such that Caesar must be this or that particular f, and f is a genuine thing kind and answers the question what sort of a thing he is. This role f cannot fulfil if it falls short of providing a passable criterion of identity and persistence for members of its extension. As our discussion of question (I) has already brought out, this entails that f be a causally conditioned concept. So to f will be due all the honour accorded by Leibniz or Aristotle to the *infima species*.[40] Perhaps the kind f need not be quite *infima species*, but if it comes too close to the level of mere *genus* then there will be no sufficiently specific causal generalizations to provide effective conditions of identity and persistence

for *f*s. (The situation would be perceptibly different if an artifact were under discussion, for reasons already expounded. But the lack of a real essence for artifacts constrains speculation about an artifact if anything even more closely – on pain of disappearance of the reputed object, or the reinterpretation of the speculation as relating only to the matter composing the artifact.)

With so much established about the logical form of essentialist claims we may carry the whole business one step further than (17). Espousing Putnam's and Kripke's theory of natural kinds, we have:

(18) $(y)\,(\varphi)\,[(\varphi$ is *s*-fundamental for man-exemplars $E_1, E_2, E_3, \ldots) \supset (y$ has the property $(\mathrm{Nec}(\lambda x)\,(\mathrm{man}\ x \supset \varphi x))]$.

Suppose ψ to be scientifically fundamental to E_1, E_2, E_3. Then nothing has a claim to belong to the same fundamental explanatory kind as E_1, E_2, E_3 unless it has ψ. There is no world then which contains *men* without ψ. Now suppose

(19) Genetic property G is scientifically fundamental to E_1, E_2, E_3.

Then by instantiation, G for ψ and Caesar for y,

(20) Caesar has $(\mathrm{Nec}(\lambda x)\,(\mathrm{man}\ x \supset Gx))$.

Now we have already

(17) Caesar has $(\mathrm{Nec}(\lambda x)\,(\mathrm{man}\ x))$.

So it is natural to ask whether the modal principle

$$((\Box(p \supset q)\ \&\ \Box p) \supset \Box q)$$

has a counterpart for *de re* properties

(21) $(z)\,[(z$ has$(\mathrm{Nec}\,\lambda x(\varphi x \supset \psi x))\ \&\ (z$ has$(\mathrm{Nec}\,\lambda x(\varphi x)) \supset$
$\supset (y$ has$(\mathrm{Nec}\,\lambda x(\psi x)))]$.

Suppose that nothing can be z unless it has φ, and that nothing can be z unless it has *not* φ *unless* ψ; then nothing can be z unless it has ψ. So (21) holds.[41] But then, by (17) and (20),

(22) Caesar has $\mathrm{Nec}\,\lambda x(Gx))$.

Kripke reaches a similar conclusion concerning the necessity that gold have

the atomic number 79. I venture to offer this argument to him for that contention.

It is easy to imagine that the prospect of the essentialists' producing demonstrations of *interesting* necessities may provoke an even more hostile reaction then earlier efforts, but it is a plausible speculation that there are many anti-essentialist philosophers whose real difficulty is not any obscurity in the essentialist 'must'. The difficulty is that they can see no way for the essentialists' claim – however clear it is made – to be *true*. How, in the nature of things, is there room for such a thing as *de re* necessity? Where could it come from? The difficulty, at least for these people, is not really incomprehension, but *incredulity* which may persist even after Cartwright's careful explanation that the essentialist never meant that it was logically necessary that the number of planets was greater than seven, only that the number of the planets (that number itself) *had to be* greater than seven.

Let me try to explain then how non-linguistic *de re* necessity is even possible. Perhaps the first thing to notice here is that there are weaker (even if no less troublesome) forms in which transparent *de re* necessity is both actual and more or less indubitable. Lord Byron could swim, and if he could, so could the author of Beppo. Lord Byron could not help but limp – like the author of *Beppo*. If Byron, when he had the opportunity, could not help (because of his character) but emulate the supposed achievements of Leander who swam from Sestus to Abydos; then not only the man who in 1813 published *The Bride of Abydos* but also the author of *Beppo* inevitably emulated Leander. For these were one and the same person as Byron. The chances of giving a plausible *de dicto* analysis of these capacities and inevitabilities in terms of sentences seem to me to be negligible. Neither can they be discounted or reduced to something else. Why not recognize them for what they are, as arising in this case out of the facts about Byron, or Byron in particular circumstances? Some were more unalterable than others. But the only general difference, it seems to me, between these *de re* modalities and essentialist's *de re* possibilities and necessities is (a) the hardness of the essentialists' 'must' (and the dual weakness of his 'can'), and (b) the source of the 'must' (or 'can') – what grounds it. (In fact (a) and (b) are two aspects of the same thing.) What I suggest is that we should see the *de re* necessity of essence as the limiting case of the other *de re* necessities which we are already stuck with. (Will

not some anti-essentialist oblige me by contradicting this last claim exactly as it stands?) Suppose that all the various necessities and grades of necessity which we account as *de re*, nec-φ, nec-ψ ... are ordered in respect of their notional separability from their bearer, having regard to how easy or difficult it is to conceive of removing φ, ψ ... from the owner of the attribute. Then essentialist necessity arises at that limit where the removal of the feature in question destroys the bearer itself. Here, at this point, a feature is fixed to its bearer by virtue of being inherent in the very individuation of it.

If individuation itself is where essentialist *de re* necessity comes from, then it is no accident that the clearest examples we have found are such particular properties as *being necessarily identical with Tully*, and such generic properties as *being necessarily a man*, together with what that classification turns out under scrutiny to entail, *being necessarily G*. The closer the source of the feature to the singling out of the thing itself – the more it is bound up with the whole mode of articulating reality to discover such an object in reality at all – the more exigent, obviously, is the necessity that, if there exists any such thing as the bearer, it should have the feature in question. The causally inflexible here passes over at a certain threshold into an inflexibility which is conceptual but only loosely speaking logical. There is no reason why this should make the essentialistic *de re* attribute any less of a real attribute of the thing itself. Just as attributes of height, weight and colour pass over into what are still attributes, but logically inseparable from the thing (such as *equal in size to itself, identical with itself* etc.), so *must limp* passes over into *nec-identical with Byron, nec-animal*. Nor is there any reason why the necessity should be somehow *lax*.

Of course the inconceivability of Julius Caesar's not being a man is not *logical* inconceivability. The point of calling a sentence a logical truth is that its denial can be shown by logic alone to involve contradiction. A logical truth is a truth forced upon us by the meanings of the logical constants. By this criterion not even 'all bachelors are unmarried' qualifies[42]. For 'bachelor' is no more a logical constant then 'Caesar' is. That doesn't, I think, mean that thought is any less constrained by 'all bachelors are unmarried' than by a logical proposition. For in this case we can point to an uncontroversial explicit verbal definition which fixes the relationship of 'bachelor' and 'unmarried'; and we can plausibly claim that

to change the definition of the former in terms of the latter would be to change the identity of the semantical unit under discussion. So it is inevitable and inescapable that a bachelor is unmarried. The constraint on thought is in one respect different with Caesar's being a man, or with Cicero's being Tully, but scarcely less stringent. (If it is Cicero we are concerned to single out, then what we single out, if it is indeed Cicero, *must* be a man. *Being a man* is an individuative prerequisite, *however* things change, of any candidate for identity with Cicero actually *being* Cicero. It is a prerequisite in a way that being an orator, or bald, or vain, or a friend of Maecenas, or having any other merely qualitative characteristic is not. Similarly, once it is Tully we individuate and Cicero (who is the same as Tully) we individuate the things we individuate must on pain of eventual incoherence be the same. Thought is not, it is true, constrained here by anything like the definition of logical constants, – the source of strict logical necessity – or by explicit stipulations, definitions or meaning postulates. Nor by any form of words. For the meaning of 'Cicero' is not fixed or stipulated by any definition. Since names are not given their sense by being annexed to an enumeration of properties nor defined at all, no *analytic* truths can be generated from the meanings of such expressions. But why should this result in looser constraints upon the conceivability of the thoughts involving them? All that follows is that the constraints must be of different provenance. The constraints are still constraints of meaning, even though, where reference fixes sense, this meaning iteself is conferred in a significantly different way from the meaning of, e.g., 'bachelor'. The difference is just the difference one would expect given the correct theory of the meanings of such expressions as proper names and natural kind names. See again what was said under the heading of problems (I) and (II).

I advance the following hypothesis. Opposition to essentialism arises out of a special conception of individuation, and this conception is derived by a mistake from something else which, though it is most likely true, does not entail what the anti-essentialist supposes.

(1) It is perfectly conceivable that in the absence of creatures capable of thought as we know it, the individual substances we ourselves recognise in this world would never have been discovered. (Indeed nothing forces anyone to discover in a place what is there to be conceptualized even in

terms of his own concepts.) In that place, in the room of what we ourselves find there and out of its matter, another race of creatures might[43] have singled out and individuated quite other kinds of things with very different principles of individuation.

From this plausible premiss the anti-essentialist goes on to conclude:

(2) It is perfectly possible for what is there to be discovered in a given place, for the substance which is there, to be conceptualized in at least two quite different ways. But then

(3) The constraints which arise out of the conceptualization and individuation of the particulars we actually recognize in the world cannot be represented as necessities on what is actually there, independently of mind or thought. What we encounter in individuation is at best a constraint upon how we, who operate a certain conceptual scheme, should describe what we discover in reality. That scheme is impotent to spawn metaphysical necessities upon the world.

Everything which goes wrong here goes wrong at (2). What is this substance out there which can be conceptualized in radically different ways, which can be seized upon in thought by the anti-essentialist, but which can have radically different principles of existence and persistence ascribed to it? Surely this is an entity with self-contradictory attributes. Anti-essentialists have sometimes ridiculed essentialists as believing in some absurd idea of substance; but if this charge sticks anywhere it sticks on the very philosophers who have urged it against essentialism.

There is a point in saying that the concepts under which we single out the things we recognize in nature are to some extent or other our inventions. (Though a truthful account of the matter would need to reckon with certain complications rehearsed at the outset under (I), and with the element of *discovery*). But, *pace* many of the writers who have made this point,[44] it does not follow (and is surely false) that, before we invented or discovered these concepts, their extensions did not exist autonomously – independently I mean of whether or not the concepts were destined to be fashioned and their compliants to be discovered.[45] Horses, leaves, sun and stars are *not* our inventions or artifacts – even though to pick out these things we have to deploy a conceptual scheme which has been fashioned in such a way as to make it possible to do so. You may insist on that if you please. But it is to insist on no more than this: that to single out these things you must single *them* out. Or that what is thus singled

out must have the right principle of individuation for a leaf, or a horse or.... For you cannot single out in a place a bare unqualified space-occupier. The reason for this last is *close* to something which the anti-essentialist himself wants to urge: that there are too many things with too many distinct principles of individuation you might find in that space.[46] How we do our singling out however, and what individuative scheme we elect to bring to bear, also determines *what* we shall single out (an *f* or a *g* or whatever). Once the individuative project is determinate, and once a set of concepts is fixed upon, nothing we can do will determine whether or not something at a certain place actually satisfies it. Recognizing the thing we discover using the concepts we have fashioned, recognizing it for whatever it is, we *are* then objectively constrained in how we can coherently conceive of that feature of reality which we have discovered – on pain of losing our grip of precisely that feature. That nothing could count as verifying either 'gold has atomic number 38' or 'Caesar was not a man' can be seen if we look hard enough at what Caesar and gold themselves are – at how we picked them out in the first place. Of *what* would we be predicating 'not a man' or 'does not have atomic number 79'?

What concepts *f* a thinker applies to the world may (to an extent to be investigated) depend on his interests. Whether there are *f*s or not does not depend on his interests; nor, once *f* is fixed upon and its extension comes to light, is it for thought to renege upon the determination of how a thing had to be in order to be an *f*. If *f* is an ultimate kind[47] (in the sense that it is a concept which determines a principle of individuation and is purged of phasal specification, temporal qualification and all 'restrictions') then there is nothing else an *f* could oblige the conventionalist by resigning itself to becoming instead. To be, for such an *f*, is to be *f*.

Bedford College, University of London

NOTES

[1] Milton K. Munitz (ed.), *Identity and Individuation*, New York University Press, New York, 1971. See especially Saul A. Kripke 'Identity and Necessity' and Richard Cartwright 'Identity and Substitutivity'.

[2] 'Is Semantics Possible?', in Milton K. Munitz (ed.), *Language, Belief* and *Metaphysics*, New York University Press, New York, 1970; and *Metaphilosophy* **1** (1969). See also lecture III of Kripke's 'Naming and Necessity', in Davidson and Harman (eds.), *Semantics of Natural Language*, Reidel, Dordrecht, 1972

With this compare Leibniz, *Nouveaux Essais*, e.g., p. 291 and pp. 304–5, Gerhardt. On the wider issue see Ian Hacking, 'Individual Substances', in Harry G. Frankfurt (ed.), *Leibniz: A Collection of Critical Essays*, Doubleday, New York, 1972; Hide Ishiguro and 'Leibniz and the Idea of Sensible Qualities', in *Reason and Reality*, S. Brown and G. Vesey (eds.), Macmillan, London, 1972; Vernon Pratt, 'Biological Classification', *British Journal of Philosophy of Science* **23** (1972), 305–327.

[3] Eli Hirsch, 'Essence and Identity'. Had Roderick Chisholm in 'Problems of Identity' (*ibid.*) accepted the point – had he taken less seriously the cases where, in the absence of such laws, there is little prospect of a convincing criterion of identity through change (unless things are brought under a new aspect and considered, as artifacts sometimes have to be, as just so much *stuff*) – he might never have allowed certain fairly dubious cases of things splitting to push him into the unhelpful notion of a *primary thing* as the key to true identity. A primary thing in Chisholm's sense is something which exists uninterruptedly and has all the same parts throughout its existence. One wonders "What about the criteria for parts? Can these change?". If parts of parts are parts, and surely they are, it is dubious that any concrete continuants can count as primary things in Chisholm's sense.

[4] He does consider 'dissective' entities (cp. Nelson Goodman, *Structure of Appearance*, Bobbs-Merrill, Indianapolis, 1966, p. 53) *f*-entities all of whose parts are *f*. He gives them a special and separate status connected with the category of mass terms. But *f*s which are not strictly dissective but simply have *f*s as parts (cp. my *Identity and Spatio-Temporal Continuity*, Blackwell, Oxford, 1967, pp. 39–40, 60–61) may be substances, and they are equally disruptive of Hirsch's revised definition of continuity. For that reads: a is the same f as g iff a is instanced on P at t_1 and b is instanced on P at t_2, and f is instanced on every point of P, where P is a continuous path in the following sense (cp. p. 41) –: for any time t_0 in P there is a time interval I around t_0 such that any t in I the (extended) place for P at time t overlaps the (extended) place for P at time t_0.

[5] Including long ago the present writer. Since Kripke has fixed on him as hostage, I yield to the temptation to declare that before the article Kripke cites ('Identity Statements', in R. J. Butler (ed.), *Analytical Philosophy, Second Series*, Blackwell's, Oxford, 1965) emerged from the press in 1965 the acts of writing down and defending the view disenchanted the writer with almost every aspect of it. Explicitly it was recanted in *Identity* (1967), *op. cit.*, fn. 7. An alternative view was sketched in 'Sentence-Sense, Word-Sense, and Difference of Word-Sense', in Jakobovits and Steinberg (eds.), *Semantics: An Interdisciplinary Reader*, Cambridge University Press, Cambridge, 1971, note (b), p. 16 – a view of the matter partly formed by reflection on Geach's remarks at the end of the chapter on Frege in P. T. Geach and G. E. M. Anscombe, *Three Philosophers*, Blackwell's, Oxford, 1969; see also P. T. Geach, *Reference and Generality*, Cornell University Press, Ithaca, New York, 1962, p. 133ff.

[6a] Cp. Kripke, *op. cit.*, p. 137, "Let us interpret necessity here weakly. We can count statements as necessary if whenever the objects mentioned therein exist, the statement would be true".

[6b] Kripke refers here to A. Smullyan, 'Modality and Description', *Journal of Symbolic Logic* **13** (1947), 31–37, reprinted on pp. 35–43, in L. Linsky (ed.), *Reference and Modality*, Oxford University Press, London, 1971. In this connection note also Cartwright's 'Some Remarks on Essentialism', *Journal of Philosophy* **65** (1968), 615–626.

[7] *Foundations of Mathematics*, Kegan Paul, London, 1931, pp. 59–60.

[8] See Marx Wartofsky (ed.), *Boston Studies in the Philosophy of Science*, Vol. 1, D. Reidel, Dordrecht, 1963; pp. 71ff. and *Journal of Symbolic Logic* **12** (1947), p. 15.

[9] Page 155, Cp. my 'Sentence Sense', *op. cit*, pp. 26–7, note (c).

[10a] This is how Kripke himself wants to see (4). See *op. cit.*, p. 138. But he adds: "But from statement (4) one may be apparently able to deduce [that] various *particular statements of identity* must be necessary" (my italics). On the account of 'necessarily' to be presented here it is dubious that the necessity of any *statements* will be strictly logically deducible.

[10b] On which see David K. Lewis, 'An Argument for the Identity Theory', *Journal of Philosophy* **63** (1966), 17–25; and Donald Davidson, 'Mental Events', in L. Foster and J. W. Swanson (eds.), *Experience and Theory*, University of Massachusetts Press, Amherst, 1971, pp. 79–101.

[11] A kind of transcendental demonstration that all mutation is motion is offered at *De Corpore* 9.9, depending only upon the causal cum representative theory of perception.

[12] The preeminence of body is built into Hobbes' fourfold distinction of *bodies, accidents, phantasms* and *names*, and his reductivist approach to the abstract. His whole philosophy of logic requires that the subject of Descartes' verb 'cogito' belong to the category of body. Cp. second *Objection* to Descartes *Meditations* "... from this [the cogito] it seems to follow that a conscious being is something corporeal; for the subject of all acts seems to be conceived only in terms of body or matter".

[13] *Leviathan*, Part 3, Chapter 34, "Of the significance of SPIRIT, ANGEL and INSPIRATION in the books of Holy Scripture". Cp. Fifth and Fourteenth *Objections* (*op. cit.*) *ad init.*, and Fourth *Objection ad fin.*

[14] 'The Semantics of Modal Notions', *Synthese* **21** (1970), 408–424.

[15] Cp. David K. Lewis, 'Counterpart Theory and Quantified Modal Logic', *Journal of Philosophy* **65** (1968), 113–126, criticised at 'Identity & Necessity' page 147.

[16] A possible rationale for Hintikka's point of view might be found in the supposed eliminations of '=' for which Quine has given the recipe (*Word and Object*, MIT Press Cambridge, Mass., 1960, p. 230). But the "mild identification of indiscernibles" (cp. *From a Logical Point of View*, Harvard, 1953, pp. 70 and 117ff.) which results from the project is so astonishing, and the impossibility of reidentifying one stable '=' predicate between first order theories (except by describing it in second order terms) is so counterintuitive, that one may be excused for seeing Quine's researches as the best possible demonstration that the theoretical price of regarding what we *normally* intend '=' as eliminable is too high. Cp. my *Identity, op. cit.*, fn. 9 and John Wallace, *Philosophical Grammar*, Ph.D. Dissertation, Stanford, 1969, p. 80ff.

[17] 'Naming and Necessity', in *Semantics of Natural Language, op. cit.* p. 314ff., with footnotes 56, 57, 58.

[18] Cp. footnote 57, line 20, Princeton Lectures. "Ordinarily when we ask intuitively whether something might have happened to a given object, we ask whether the universe could have gone on as it actually did up to a certain time, but diverge in its history from that time forward so that the vicissitudes of that object would have been different from that time forth. *Perhaps* this feature should be erected into a general principle about essence." Cp. earlier in the same note "... it is ordinarily impossible to imagine the table made from any substance other than the one of which it is actually made without going back through the entire history of the universe, a mind-boggling feat".

[19] Cp. the discussion of ultimate sortals at *Identity, op. cit.*, II, 2.1, p. 23.

[20] Cp. Leibniz' criticisms in *Nouveaus Essais* at Gerhardt pp. 291, 296, 272–3, *et passim.*

[21] At one point Frege seems to hold that unless this can be done every statement of identity will collapse into a statement of self-identity: "...it would seem that '$a = b$'

could not differ from '$a = a$', provided that '$a = b$' is true. A relation would thereby be expressed of a thing *to itself*, and indeed one in which every thing stands to *itself* but no other thing". The sense reference distinction is meant to show why this is harmless. The same thought about self-identity is still alive today. "It is for example [wrongly] thought that: if you have two names like 'Cicero' and 'Tully' and say that Cicero is Tully you can't really be saying of the object which is both Cicero and Tully *that it is identical with itself*"(my ital.). Kripke, *Princeton Lecture* III, *op. cit. ad init.* (Cp. p. 261.) But it is a confusion on both sides to suggest we might be saying *that*. (Cp. Geach *loc. cit.*, footnote 3.) He who says that $a = a$ predicates of a what only a can have, the one place property $(\lambda x(x = a))$. Or (if you will) be predicates of the couple $\langle a, a\rangle$ the two-place relation $(\lambda x \lambda y(x = y))$. But he does *not* thereby ascribe to a that completely universal one place property which is ascribed by a man who says '$(\lambda x(x = x))$, $\langle a\rangle$' or 'a is identical with itself'. $(\lambda x(x = a))$ and $(\lambda x(x = x))$ are utterly different properties: as can be seen by tracing their relationship, which may be displayed as follows. Start with $(\lambda x \lambda y(x = y))$, which may be satisfied by a pair $\langle w, z\rangle$, as recorded by $(\lambda x \lambda y(x = y))$, $\langle w, z\rangle$. To get a's own peculiar predicate, $(\lambda x(x = a))$ or (λw) $[(\lambda x \lambda y(x = y)), \langle w, a\rangle]$ substitute a designation of a for z in the second free argument place in $\lambda x \lambda y(x = y))$, $\langle w, z\rangle$, and bind the only free variable with λ. To get the universal predicate $(\lambda x(x = x))$ or (λw) $[(\lambda x \lambda y)$ $(x = y)$, $\langle w, w\rangle]$ substitute the first argument for the second argument, in the second argument place and bind the free variable with λ.

[22] Kripke's formulations have attracted some objections from which a slightly different and older formulation may be at some points exempt. Let φ be any candidate whatever to be a specification or citation of the sense of a proper name n, and sufficient to determine its reference. Then where b_1 is n_1's bearer, "if there is any such thing as b_1, b_1 is φ" could not, if φ gave or analysed the *sense* of n_1, be false. But any such statement as this, predicating φ of b_1 (if b_1 is an ordinary particular and not, say, a number) cannot be any better than contingent. If so, genuine proper names cannot have their sense in the manner which Frege's theory apparently requires them to have it. Cp. my 'Identity Statements' in R. J. Butler (ed.), *Analytical Philosophy, Second Series*, Blackwell's, Oxford, 1965, p. 66.

[23] Cp. Geach and Black (trs. and eds.), *Translations from the Philosophical Writings of Gottlob Frege*, Blackwell's, Oxford, 1952, p. 58, footnote *.

[24] See my 'Sentence Sense, Word Sense, and Difference of Word-Sense', *op. cit.*, p. 26, footnote (c).

[25] Cp. Princeton Lecture II. Kripke tends to equate Millian connotation with Fregean sense. But their explanations are different (see the following footnote for Frege's) and applications coincide only very poorly. Consider the case of predicates for instance. The denotation of 'white' is for Mill the class of white things. This is neither the Fregean sense nor the Fregean reference of 'white'. The reference of 'white' is for Frege the concept *white* or *what it is to be white*. Since the only thing in Mill's scheme which is at all like this is *whiteness* and since whiteness is what Mill counted the *connotation* of 'white', the only possible correlation one could find between Frege's doctrine and Mill's would be an equivalence of connotation and reference, not denotation and reference.

[26] Cp. Frege, *Grundgesetze*, Vol. I, p. 32 (quoted and commented upon at p. 17 of my 'Sentence Sense, Word Sense, and Difference of Word-Sense', *op. cit.*).

[27] Cp. my 'Identity Statements', p. 58, *op. cit.* See also Frege's *Nachgelassene Schriften*, p. 133, and his explanation of how 'μωλυ' and 'Nausicaa', in the absence of any reference for them, have their sense. 'Nausicaa' gets a sense for itself by behaving *as if* it named some girl. Applying this to the case where there is reference as well as sense we arrive at

something akin to the contention about proper names in the text – 'Tully' gets its sense by naming Tully.

[28] Cp. M. A. E. Dummett *Frege*, Vol. I, Duckworth, London, 1973, p. 93ff. "The underlying assumption is the compelling principle that if someone knows the sense of two words, and the two words have the same sense he must know they have the same sense; hence if the sense of a name consists merely in its reference, anyone who understands two names having the same referent must know they have the same referent." Cp. *Tractatus Logico-Philosphicus* **4**, 243.

[29] It is a consequence of all this, no doubt, that there should be some thing odd about empty names. Their bearers do not have a life or identity of their own, and the names which purport to name them latch onto nothing. It is this, and the resulting inherent *indeterminacy* of assertions predicating properties of the actually non-existent, not a doctrine which overlooks some possible intentionality of '... names – ', which justifies viewing empty names as a special case. Compare the difficulty of applying Putnam's account of natural kind names to 'unicorn' or 'centaur'. (Cp. Kripke Princeton lectures I ad unit.) All such names both require and merit special treatment.

Champions of the designational view of proper names defended here are sometimes asked, when (unlike Kripke) they present their view in an in other respects Fregean framework, what is the residual utility of the notion of sense? The answer is that the thing designated is still in a different category from the sense of its name, and that sense is still needed to state the relationship of the meaning of the name and the meanings of the sentences in which it figures. Sense mediates between the truth grounds of the latter and the contribution of the former to truth-grounds.

[30] We need not quantify over senses here. We may say (10) and (11) and their constituent expressions match arbitrarily closely in sense, where sense is conceived simply as a property with which language users invest expressions. The same remark applies *mutatis mutandis* to all uses of the word 'sense' in this article.

[31] In his piece on the methods of extension and intension in P. A. Schilpp (ed.), *The Philosophy of Rudolf Carnap* (Library of Living Philosophers, Open Court, La Salle, Ill., 1963), pp. 311–349.

[32] In the Shearman lectures given at University College London, 1961.

[33] See 'On Saying That' in Davidson and Hintikka (eds.), *Words and Objections*, D. Reidel, Dordrecht, 1969. Cp. Geach, *Mental Acts*.

[34] 'Semantical Considerations on Modal Logic', *Acta Philosophica Fennica* **16** (1963), 83–94; reprinted in L. Linsky (ed.), *Reference and Modality*, *op. cit.*, pp. 63–72.

[35] 'A Theory of Attributes Based on Modal Logic', *Acta Philosophica Fennica* **16** (1963), 95–122; cp. Richard Montague and Donald Kalish, 'That', *Philosophical Studies* **10** (1959), 54–61.

[36] 'Quantifiers and Propositional Attitudes', in L. Linsky (ed.), *op. cit.*, pp. 101–111.

[37] Cp. my *Indentity* (1967), *op. cit.*, Part III, 3.2 (ii) (old edition) "although my conclusions (e.g. Dvii) reinstate some *de re* modalities of the form $\Box fa$ where f is a substance sortal, they do nothing to suggest that the correct way of generalizing such is the mysterious $\Box [\exists x) (f(x))]$ – which would presumably have the mysterious consequence that this was ontologically the poorest of all possible worlds –, rather than $(\exists x) (\Box f(x))$" What may have been wrong with this was to have used $\Box$ instead of a distinct predicate-modifier nec. It remains to be investigated whether or not a unitary account can be given of nec as a predicate-modifier and $\Box$ or 'necessarily' as a sentential operator (e.g. by defining the latter in terms of the former. Cp. negation?) A number of difficult problems would arise, e.g. about the opacity or transparency of 'necessarily' as a

sentential operator in English – problems from which at least the proof of (4) from (1)' (2), (3), is here shown to be free.

[39] See 'Remarks on Essentialism', *op. cit.* See also P. T. Geach, *Logic Matters*, p. 174, the reprint of an article originally published in Polish in *Ksiega Pamiatkowa ku czi Kotarbinskiego* (Państowe Wydawnictwo Naukowe, Warsaw, 1967). See also R. Stalnaker and R. Thomason, 'Abstraction in First Order Modal Logic', *Theoria* 3 (1968).

[40] E.g. Aristotle, *Metaphysics Z*: Leibniz, *Nouveaux Essais*, e.g. pp. 305–6, p. 268 (Gerhardt).

[41] In language some may prefer: If z is φ in every world where it exists if z is either not φ or ψ in every world where it exists, then z is ψ in every world where it exists.

[42] And its negation is *logically* possible – which is not to say that it is conceivable or conceptually possible. It is not. Because logical necessity in the useful and strict sense is exigent, the species of a possibility which is its dual is hopelessly permissive. 'But it's logically possible that not-Q' is the principal weapon in some analytical philosophers' armoury. But it is a useless one – unless they mean by 'It's logically possible' 'It's conceptually possible'. But that is usually the question at issue, and one may need to have thought into the *implications* of Q to decide that question. Ignorance of these should not enlarge one's powers of conceiving! Cp. Arnauld's Objection 'De Natura Mentis Humanae' to Descartes, p. 201 in Adam and Tannery, *Oeuvres de Descartes*, Vol. VII.

[43] Or might not. The desire to understand the world, to articulate its elements in such a way as to make causality intelligible and formulate laws of nature about various kinds of thing, will surely constrain any system of anything we can recognize as thought. Is there another way beside ours, a radically different one, which will make causality intelligible? I don't say there isn't. I only ask if there is. It would be a modest beginning with the question to consider a system of classification which Foucault mentions that Borges ascribes to "a 'certain Chinese encyclopaedia' in which it is written that 'animals are divided into: (a) belonging to the Emperor, (b) emblamed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) *et cetera*, (m) having just broken the water pitcher, (n) that from a long way off look like flies'. In the wonderment of this taxonomy, the thing we apprehend in one great leap, the thing that, by means of fable, is demonstrated as the exotic charm of another system of thought, is the limitation of our own, the stark impossibility of thinking *that*". M. Foucault *The Order of Things*, Pantheon, New York, 1970. It is not really the difficulty of thinking these concepts (for as Foucault himself says they are perfectly well defined), but the difficulty of conceiving that such a taxonomy could make any headway with causality – with the *explanation of anything*.

[44] E.g. Leszek Kolakowski, *Towards a Marxist Humanism*, Grove Press, New York, 1968, pp. 57–48. "The picture of reality sketched by everyday perception and by scientific thinking is a kind of human creation (not imitation) since both the linguistic and the scientific division of the world into particular objects arise from man's practical needs. In this sense the world's products must be considered artificial. In this world the sun and stars exist because man is able to make then *his* objects, differentiated in material and conceived as 'corporeal individuals'. In abstract, nothing prevents us from dissecting surrounding material into fragments constructed in a manner completely different from what we are used to. Thus, speaking more simply, we could build a world where there would be no such objects as 'horse', 'leaf', 'star', and others allegedly devised by nature. Instead, there might be, for example, such objects as 'half a horse and a piece

of river', "my ear and the moon", and other similar products of a surrealist imagination".

[45] Cp. Hobbes' definition – *a body is that, which having no dependence upon our thought, is coincident or coextended with some part of space. De Corpore* II, **11**, Molesworth, p. 136.

[46] On this point see my 'On Being in the Same Place at the Same Time', *Philosophical Review* **77** (1968), 90–95.

[47] Cp. note 19.