WHAT IS IT LIKE TO BE A BRAIN?

The Problem of Psychophysical Reduction

(The Bat in the Vat and the Cat on the Mat)

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- Outline -

1. Introduction

2. Note about notation

3. Theoretical Reduction

4. Nagel's Logical Equivalence

5. Argument I - The Analogical Inference for 'Other Minds'

   a. General Form of the Analogical Inference

   b. requirements for an effective analogical inference

      i. similarity, coherence, relevance, non-detracting elements, common domains

      ii. causal relations between terms in the inference

6. Problems and Limitations of the Analogical Inference for 'Other Minds'

7. Argument II - The Artificial Memory Transplantation Argument for Other Minds

   a. Questions raised by the Experiment

   b. Conditions necessary for a successful experiment

8. Argument III - The Independence of Viewpoints from Mental Phenomena

   a. relation of this theory to Intentionality

   b. significance of view to the theoretic non-reducibility of conscious-states, narrowly construed, to brain-states.

9. Bibliography

Introduction

What is striking about Nagel's 'What is it like to be a bat' is that he poses a 'mind-body' problem, i.e., the reducibility of consciousness to brain states, as an 'other minds' problem, i.e., the difficulty or impossibility of one viewpoint concurrently adopting another viewpoint. For Nagel, it is precisely this 'other minds' problem which indicates an essential quality, unique to consciousness, that makes the conscious-state-brain-state reduction inplausible. This paper, as it is a response to Nagel's article, is properly an examination of the mind-brain reduction, in terms of 'other minds' arguments.

I distinguish between three strengths of 'other minds' arguments. The weakest is the analogical inference, which infers the subjective character of experience of other minds by analogy of their sensory apparatae, brain structure, and behavior, to our own. The inference is limited to facts with some degree of similarity between first and third person, and limited by the first person's imagination. A stronger argument is to assume that physical barriers, which normally prevent directly observing the contents of other minds, can be removed, by some imaginative experiment. This 'direct mental observation' argument is limited in that the contents of another subject's experiences may not render a complete account of what it is like to be that subject. The strongest, and most perplexing argument, is one which investigates the possibility of the first person adopting the third person's viewpoint, without, simultaneously, sacrificing his own.

Note about Notation

No formal symbolism is especially developed in this essay. Nonetheless, certain symbols require some explanation.

'x' is a variable of an extremely general nature that signifies any physically observable phenomena that may characterize a being. Hence, 'x' roughly corresponds to 'bodies,' in the problems of 'other-bodies' as related to 'other minds,' and as stated in the 'mind-body' problem. Roughly broken down, 'x' includes sensory apparatae and input, neurophysiology and neuroanatomy, and motor output or behavior, and more generally, anything physical about a being. Narrowly, 'x' refers to neurophysiology alone, which is assumed to be the ultimate physical basis of experience. The argument for this view, is simply, a subjective experience can correspond to a neurophysiological event alone, in the absence or presence of sensory input or motor output, but the same can be said for neither sensory nor motor apparatae.

In Argument II, 'z' refers to the physical being of a bat; while 'x' is restricted to that of a human. 'y' always refers to the subjective event correlated with the physical fact it parenthesizes.

It need first be clarified that Nagel is objecting to the plausibility of one kind of conscious-state - brain-state reduction: theoretical reduction. There are other types of reduction, such as compositional reduction, which make the mind-brain reduction seem inplausible; but, Nagel's essay is not a response to these.[1] He is concenned with the more prevalently successful type of reduction.

An excellent account of theoretical reduction has been formalized, coincidentally, by Ernest Nagel.[2] Here, one branch of science, say Psychology, is theoretically reduced to another branch of science, say Physics, if:

B_1 = Physics; B_2 = Psychology

There is a theoretical vocabulary consistent with and derived from true observation-statements of B_1; the same is true of B_2.

P is any term in the theoretical vocabulary of B_2

M is any term in the theoretical vocabulary of B_1

There is a biconditional such that: $(x)\left[Px \equiv Mx\right]$

The biconditional is well-established

B_1 explains (=predicts, given present knowledge) all or more observations than B_2.

If all of the above conditions obtain, then, Psychology theoretically reduces to Physics. Nagel's account of theoretical reduction

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1 An example of compositional reduction is the ability of a fly to adhere to vertical planes. The fly's feet are pad-

2 'On Reduction' John G. Kennedy and Paul Oppenheim

applies within scientific branches as well as between them.

Examples of successful theoretical reductions abound in physical science. A familiar example is the water-H_2O example. A macrophenomenon, water, corresponding to B_2, including all of its phenomenal properties, such as liquidity and translucence, corresponding to P, reduces to a microphenomenon, H_2O, corresponding to B_1, including all of its micro-properties, such as bond strength, and kinetic energy, because there is a well established biconditional between all of the micro-properties of H_2O and all of the macro-properties of water, and H_2O predicts more observations, i.e., those of acids and bases, among others, than water. In a theoretically reductive sense, 'water <u>is</u> H_2O, even though the macrophenomenon, wet, translucent stuff, doesn't seem anything like the microphenomenon, i.e., electronic, whizzing stuff.

By inducing from the superabundance of analogous examples, some scientists are confident that all macrophenomena are reducible to microphenomena, i.e., that conscious-states are reducible to brain-states, which are further reducible to complex physical-states. However, Nagel correctly sites that the reduction of conscious-states to brain-states cannot correctly be induced, if conscious-states are disanalogous with other macrophenomena in a way that might obstruct the normal theoretical reduction procedure.

Nagel believes that conscious-states cannot be theoretically

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[1] (continued) See the footnote at the end of this paper which demonstrates why conscious-states may not be compositionally reducible to brain-states.

reduced to brain-states because conscious states, narrowly construed, as distinct from any mental state, possess the unique quality of 'viewpointedness.' Since the theoretical reductionist's programme is a logical operation on terms in a theoretic vocabulary, and since such terms are originally derived from observation-statements, and since these, in turn, are derived from observations, it follows that no theoretical reduction, as formalized by Ernest Nagel, is plausible for consciousness, narrowly construed, because 'viewpointedness' cannot be observed. The uniqueness and non-observability, in any sense, visual, visual through instruments, or by <u>any</u> means (broadly construed, 'observability,' here, means 'adoptability, knowledgeability') is the mainstay of Nagel's argument. It is to this notion of 'viewpointedness' that our attention now must turn.

Nagel makes the logical equivalence:

x is conscious $\leftrightarrow$ there is something it is like to be x

The notion, though from a linguistically analytic point of view, vague, redundant, and idiomatic, is surprisingly good in application. It seems that the set of things which we conceive of as conscious is co-extensive with the set of things of which we may imagine there is something like it is to be. If we let x equal a rock, then it seems true that a rock is not conscious, and it also seems true that there is nothing it is

like to ba a rock. If we let x equal another human being, then it seems true that that human being is conscious if it also seems true that there is something it is like to be that human. For if that human were anesthetized, we would not ask him what it was like to be anesthetized, expecting that it is like anything to be anesthetized; although, it there may be something it is like to become anesthetized or to regain consciousness. And of creatures whose consciousness is questionable, like insects, we are also unsure that there is anything it is like to be an insect. Of course, it is possible to imagine what it is like to be a rock; but, no mature and lucid mind would contend that such an imagination is unfictitious.

It is not the truthful applicability of Nagel's logical equivalence that I aspire to question, but the vague construal of a valuable notion. By formally analyzing the equivalence, the essential notions of this quality of consciousness can be made explicit, as well as some distinctions as to its applicability. It is important rigidly analyze the equivalence, since the right-hand component is, roughly, Nagel's notion of viewpointedness, which is the mainstay of his argument against reduction.

It may be the case that there is some thing, such that there is something it is like to be that things, but where that thing is not conscious. Or, it may be the case that something is con-

scious; yet, there is nothing it is like to be that thing. It may also be the case that the equivalence does not apply to the first person as it does to the third person. Each of these questions is answered by the following analysis.

Let consciousness be replaced by q, where q is a quality of x other than consciousness. Then Nagel's statement abstracts to the form:

x is q ↔ there is something it is like to be x

It can be tested, whether the right-hand component, roughly, 'viewpointedness,' is unique to consciousnes, by finding a single instance of q that will make the logical equivalence true. No such instance can be found. If any x or q is supplemented into the equation, it becomes false.

x = water

q = wet

water is wet ↔ there is something it is like to be water

*false

Hence, if there is something to be x then x is conscious.

Let 'x is v' replace the right-hand component, such that v roughly equals 'something of which it can be said there is nothing it is like to be,' so that Nagel's statement becomes:

x is conscious ↔ x is v

It can be tested, whether the left-hand component, 'consciousness,' is unique to the right-hand component, roughly, 'viewpointedness,' by finding a single instance of v that will make the logical equivalence true. No such instance can be found. Supplementing any x or v into the equivalence makes it false.

x = patient

v = anesthetized

a patient is conscious $\leftrightarrow$ a patient is anesthetized

where 'anesthetized' is something of which it can be said there is nothing it is like to be.

*false

Hence, if there is something it is like to be x then x is conscious.

Since, 'if x is q then x is v,' and 'if x is v then x is q,' 'x is q $\leftrightarrow$ x is v.' Nagel's logical equivalence is well established.

Now, I will examine the essential notions and the strict applicability of Nagel's equivalence. There are several striking features in the right-hand expression. The verb 'to be' occurs three times. 'There, something,' and 'it' lack identifiable references, or even a set of identifiable references. The word 'like' typically implies a comparison. The right-hand expression is extremely obtuse by its redundancy and vagueness. I believe, however, the precise significance of the statement is yielded by the following analysis.

The idea of 'being' is essential to Nagel's equivalence. If the equivalence is reconstrued to read:

x is conscious $\leftrightarrow$ there is something like x is

omitting the verb 'to be,' then it is true that a rock is conscious. There is something like a rock: a stonewall, or petrified wood. Since, the omission of 'to be' alters the truth value

of the equivalence, the idea of 'being' is essential to the idiom, and essential to 'viewpointedness,' boradly construed.

Similarly, if 'like' is omitted form the preceeding construal, Nagel's equivalence becomes:

x is conscious ↔ there is something x is

which for some x is false. A rock is something; yet, a rock is not conscious. Now, since 'like' typically implies a comparison, this statement demonstrates that the essence of 'viewpointedness' as 'being' is appliaable to first person, or, as by the preceeding analysis, to a comparison between first and third person.

However if the expression 'to be' is replaced in the right-hadd expression, and omit 'like,' we alter the use of the statement, but not the truth value. So:

A human is conscious ↔ there is something it is to be human

and

A rock is not conscious ↔ there is nothing it is to be a rock

are both true. Since the ommission or replacement of 'like' does not alter the truth value of the equivalence, its function is not essential to the rough idea of 'viewpointedness.' Either it has no function, other than being idiomatic, or its function is to infer the consciousness of other subjects. Nagel, himself contends that the use of 'like' is idiomatic. I contend, however, that the distinction between 'what it is like to be x,' and what

it is to be x' is fundamental, and ignored by Nagel, even though he is correct in observing that the two construals of' this expression are used interchangeably in the common idiom.

In the statement, 'there is something like R is,' it is false that'something' refers to R. 'Something' refers to some thing R', other than R, which bears certain similarities to R. It is possible to respond, 'there is nothing like R is,' but still conceed that 'R is,' in the case where R is unique. But, if 'something' in 'there is something like R is,' refers to R, and not R'; then, the perfectly acceptable response,'no, there is nothing like R is' because R is unique, is self-contradictory. If R is unique,' R is;' yet, if there is no thing like R is, where 'thing' refers to R (the inverse of some thing), then 'R is not.' But, then, 'R is' and 'R is not' is self-contradictory. It is therefore logically impossible that 'something' refers to R itself.

In the statement, 'there is some thing R is,' 'something' refers to R itself. A possible response to this assertion is, "no, there is no thing R is." Unlike the assertion, 'there is no thing like R is,' where one can logically maintain both the truth of this assertion, and that 'R is,' because 'R is unique,' one cannot validly maintain both 'there is no thing R is,' and 'R is.' The only possibility way to maintain this and not be self-contradictory is if 'R is not a thing.' But, what, if any, is the difference between 'R is not,' and 'R is nothing?' This would imply a world in which there is R such that R is not a thing. If it is true that persons, Being, and states of being are not things, which has been contended in philosophical literature,

there could be the case that 'there is something it is like to be R' ↔ 'there is something it is to be R.' This is quite possible, as it is clear that in Nagel's use of R, regardless of whether he confuses 'what it is like to be,' with 'what it is to be,' R refers to the subjective experience of a person, as well as a bat, and, in some sense, then, to 'a state of being,' and a 'person. However, if 'personal states of being' are identical to 'brain states,' it is clear that 'brain states' are things. In this case the two construals of his logical equivalence would be logically non-equivalent.

Whether the two construals of "Nagel's 'consciousness principle are logically equivalent or non-equivalent depends on whether persons and states of being are not things, i.e., whether they are not brain states. But, this is the very question we hope to answer. The method I choose is to adopt Nagel's position that personal states of being are not brain states, and then see if I can refute this position. By adopting Nagel's position, it is necessary that the two construals of his logical equivalence are logically non-equivalent. As has been proven, 'there is something it is like to be R' implies both 'R is,' and 'R' is, such that R' is similar to R. Therefore R and R' can be compared, since any two things can be compared Where R = A, first person experience, and R' = B, third person experience, the most typical method of comparison is the analogical inference for other minds.

~~Footnote:~~

'What it is to be' applies only to first person. 'What ~~is~~ is like to be' applies only to third person. When someone drives a forklift over my foot, I know what it <u>is</u> to be in pain; I do not know what it is <u>like</u> to be in pain. The latter construal implies, as has been proven, that when the forklift drives over my foot, I ask someone who has also had a forklift driven over their foot, "How does it feel to have a forklift driven over your foot?" This third person may respond, "it feels like your foot-bones have been ground into porridge." So, I imagine what this feeling is like, in order to know what sort of pain I'm in. Clearly this account is absurd. So, the latter account does not apply to first person. However, it is perfectly consistent with our experience that when a forklift drives over my shop-mate's foot, I do not experience his pain, i.e., I do not know what it is to be in his pain. But, I may imagine that his foot feels like porridge (by the fact that it looks like porridge, and he tells me so), i.e., I may know what it is like to be in his pain.

imaginary

'Knowing what it is like to be' is always a case of 'imagining.' Although, the converse is not the case. Certainly, I can 'imagine' an apple on a table. But, I do not 'know what it is like to be' an apple on a table. However, I cannot 'know what it is like to be' a comedian being jeered off stage without 'imagining' being a comedian being jeered off stage. Although, when a forklift drives over my foot, I do not, in any way, imagine what it is to be in pain. It is clear that 'imagination' is 'knowledge in the absence of experience,' because, 'imagination' applies in all and only those situations in which there is no experience of the thing, by the first person. So, I don't imagine an apple on the ~~table~~

table, when it is there; I see it. I don't 'imagine' my pain, when a forklift runs over my foot; I feel it. But, I 'imagine' an apple on the table, when there is no apple on the table, or when I can't see it. I 'imagine' ~~myxshmp~~ the pain of having a forklift run over my foot, when this happens to my shop-mate.

So, a distingtion between 'what it is to be' applying to the first person account, and 'what it is like to be' applying to the third person account, must be made.

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4.5 The Formal Symbolism of this Essay

I will here digress on the symbolism I wish to employ to help clarify my three arguments.

I assume there are three domains: the physical, or, narrowly construed, the neural; the domain of consciousness, narrowly construed, the domain of things of which it may properly be said "there is something it is to be that thing"; and a third domain, which is, in some sense, the product of the first two domains, composed of neutral, psychophysical substance. I designate these domains: $\Delta\phi$, $\Delta\psi$, $\Delta\gamma$ ($=\Delta\phi\psi$), respectively.

I then suppose that there are two beings, A, and B, first and third person, respectively, in $\Delta\gamma$. (Diagram 1)

I, then, refer to x, and z, in $\Delta\phi$, as the sets of all in principle observable facts of beings A, and B, respectively. I refer to the subset of such facts, unique to x, as (l,m,n,o). I refer to the subset of such facts, unique to z, as (t,u,v,w). And I refer to the intersection, $x \cap z$, of such facts, as (p,q,r,s) Narrowly construed, $x \cup z$ are neural facts, since, in this world, the physical basis of experience is ~~[illegible]~~ essentially neural. So, it may be a physical fact that I see an apple, but I cannot do so if my optic nerve is severed; it may be a physical fact that I can move my arm, but, I cannot do so if my spinal ganglia are missing. So, although perceptual apparatae, and behavior, indicate something about the physical basis of experience, the essential physical basis of conscious states is neural. (Diagram 2)

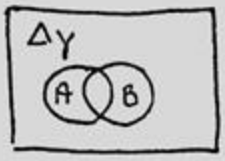

Diagram 1

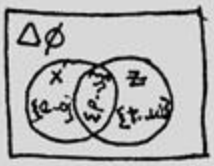

Diagram 2

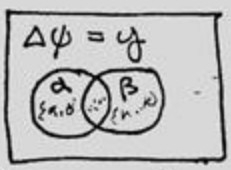

Diagram 3

I, then, refer to a(alpha) and b(beta) as the sets of all conscious states of beings A and B, respectively. I refer to the conscious states unique (a subset of) to A as (a,b,c,d); the same of B as (h,i,j,k); and the intersection of $A \cap B$ in as (e,f,g).

The logical equivalence I assume from a 'when and only when' correlation between neural and conscious states indicates something about the way $\Delta\phi$ and $\Delta\psi$ combine. It certainly is the case that not all elements of x are elements of alpha, i.e., autonomic and reflex states. It is less certain, but possible, that some elements of alpha are not elements of x, i.e., there might be some conscious state that has no physical basis, as 'viewpoint-edness.'

Once I have established the logical equivalence mentioned above, I will use the notation y(x) to refer to those elements in alpha which, and only which, have ≠ logically equivalent elements in x referring to elements in beta. I will do likewise for y(z) or any combination of y(x) and y(z).

I assume $\Delta\gamma$, and A and B, to assume an initially neutral position as to the completely physical nature, or otherwise, of beings, since this, in part, is in question in this essay.

I have adopted this symbolism in order to help clarify and keep track of recurring notions and relations in the three arguments I present. I do not develope a sophisticated or rigid symbolism, because I think that it is insincere and unhelpful to do so in a philosophical problem, as the 'other minds' and 'mind body' problem, where the notions and relations are themselves still unclear.

Argument I

5. The Analogical Inference for Other Minds

a. Nagel proposes that it is inpausible that first person can know what it is to be third person. At best, he can imagine what it is like to be another being. The argument that is typically invoked to answer the question of what it is like to be another being is the analogical inference for other minds. The argument is of the form:

A and B have or do p,q,r

A has or does s

B probably has or does s

Analogical Inference 1.

Typically, the argument is used to prove the existence of other human minds. The form has several interesting features. The effectiveness of the argument depends on the similarity of x to z, and on the relation between x and alpha. The more different B's physical structure and behavior is from A's, the smaller the set $x \cap z$. Hence, inasmuch as the analogical inference is an inductive argument, the less probable the concàusion in inference 2.

A and B have or do p,q,r,s

A is, has, or does e (where e is related to some element or set of elements in $x \cap z$)

B probably is, has, or does e

Analogical Inference 2.

An imlicit premise in this argument is the relation between x and alpha. If implicitly 'if x then alpha' then beta follows. If, implicitly, 'x if and only if alpha' then beta follows, since if 'x if and only if alpha' then 'if x then alpha.' However, if, implicitly, 'if alpha then x' then beta does not follow. It is not clear that x need be similar to alpha for an effective analogical inference. X and alpha may be related contingently or causally, and two contingent events may be quite dissimilar, and the cause may be quite different from the effect.

We are now in a position to appreciate the relevance of these logical distinctions to Nagel's assumption that bat's have conscious states such that there is something it is like to be a bat.

A = human being

B = a bat being

x = human physical (neural) facts

z = bat physical (neural) facts

alpha = human conscious states (I will here introduce the notation N-conscious to refer to Nagel's logical equivalence construal of conscious states)

beta = bat N-conscious states

Analogical Inference 3

$x \cap z$ are mammals, i.e., a sub-domain of $\Delta\phi$. Humans and bats share attributes of behavior and structure of which all mammals have. However, $[(x \cup z) \wedge \sim(x \cap z)]$ includes speech, elaborate social behavior, developed cortex, visual abilities, manuo-visual coordination, and hanging upside down in an attic all day, having

fur, and navigating aerial feats by echolocation. It is difficult to quantify and qualify how similar or different observalbe bat facts and observable human facts are. It is not clear that all of the physical attributes shared by humans and bats are significant in Nagel's argument. Certainly my depending on vision rather than echolocation has a greater effect on my conscious experience than my being glaborous or piliated. Hence, the elements of similar behavior and structure do not contricute equally to probability of an accurate recreation of the bat's experience, as the differences do not detract equally. In the analogical inference for the existence of other minds, the accuracy of the conclusion is difficulat to assess. A great number of irrelevant similarities and a few irrelevant differences will not yield a convinding analogical inference. What distinguishes relevant from irrelevant in this case?

b. To answer this, five questions about the relations of terms in the inferenoe must be answered.

1. Must x be similar to z. If so, how must x be similar to z?
2. If a relation stronger than similarity between x and alpha is needed, how strong need this relation be: contingent, causal, logical?
3. What are the implications of the relation 'if x then alpha' on the analogical inference?
4. The same as above for 'if alpha then x?'
5. The same as above for 'x if and only if alpha?'

1. Given the form of the analogical inference alone, it is easy to see why the conclusion probably does not follow without specifying an implicit premise proposing a specific relation between x and z. Suppose:

A = Yon

B = Natsky

p = a blue notebook

l = a 1977 Stingray (with chrome siding!)

Then, it is improbable that 'Natsky has a 1977 Stingray' because 'Yon has a 1977 Stingray,' and 'both Yon and Natsky have a blue notebook.' It is more probable that 'Natsky has a 1977 Stingray' where:

p = a current registration for a 1977 Stingray

The objection that 'Natsky probably has a 1977 Stingray because Natsky has a current registration for a 1977 Stingray is sufficient' is not sustainable, because there is an implicit appeal to the analogical inference that 'most people who have current registrations of a certain type of automobile also have that type of automobile.'

It is clear that not any x or A leads to as probable a conclusion. We then may ask what relation between x and A increases the probability of the conclusion?

What is immediately obvious is that p and l would have to be similar. The notion of similarity is rather vague. In the case of the analogical inference, what is meant by similarity is that there is coherence between l and every member in the set (p...s), assuming there is more than one element, as there isn't in this example. By 'coherence' is meant that two terms share most of their attributes, and, in some sense, their relevant attributes.

Enumeration of elements common to both A and B usuallly makes the inference more convincing. The exception is when one or more of the elements is detractive, in some sense. For example, I may wonder whether my neighbor has an extra rake I can borrow. I remember that he has a tool shed. In fact, I've looked inside his tool shed, and noticed that it was full of boxes, bikes, cans, broken lawn mowers, and shovels. I have a shed jammed full of the same junk, and I have a rake. Therefore, my neighbor probably has an extra rake I can borrow. But, say I remember that my neighbor has no trees on his lawn, just as I don't (say, I want to lend both rakes to a friend). This additional element that we share in common, reduces the likelihood that my neighbor has a rake. Now, it's true that if I don't have any trees on my lawn, then it's not likely that I have a rake either. But, it's not necessary that I don't have a rake. Even if all things (p through s) including l are related in a set, as the set of all things pertaining to lawn maintenace; they

are only contingently related; that is, the presence of one element does not insure the presence of another element. So, it seems true that the greater the number of elements common to X and ~~B~~, it is not simply the case that the greater the likelihood that B has 1.

In addition to detractive elements, where elements are disparate but quite similar, 1 may be inferred. So, if my name is Jowser Rankel, and my neighbor's name is Jowsier Rankelle, and if we both drive 1972 volkswagens out of the driveway at 6:52 every weekday morning, and if we both have a great aunt who pays Bingo at the Church of the Nazarene every Thursday morning, it is likely that if Jowser has a poster of the Bahamas covering a crack above his kitchen door, that his neighbor, Jowsier, does also. Yet, there is little similarity between a crack behind a poster, and an aunt playing Bingo, other than their specificity. It may be, that I am so nonplussed by the peculiarity of the things my nextdoor neighbor and I share in common that I begin to wonder if he has a similar genetic makeup, or is playing practical tricks on me, or is a magician. I.e., I might begin to look for causal explanations.

Finally, domains of the set may be noteworthy. So, in judging that a friend probably has a copy of Ayer's Truth and Logic, because this friend has five books that I have on the Philosophy of Language, and I have Ayer's Truth and Logic, I am not justified in the judgement, if I remember that my friend has an aversion to Ayer. This fact is not an additional element, that is in some sense detractive, because it is not in the set of books. Rather, it is a delimiter on the domain of common elements: all non-Ayer books on the Philosophy of Language. There are cases,

however, where an inference can be made where p and 1 are in different domains. But, p and 1 must be similar in some respect, or if completely dissimilar, related contingently or causally. So, if p is a book 'All about Cats, for Cat Owners,' B and A may both possess this book, and A may infer that B has a cat, as he does, even though a foliated, bound thing is usually different from a furry meowing thing. Of course, A may be referring to his general experience that all of the people he knows, with such books, also have cats, or to his observation of the reference in the title. But, then, B may hate cats, possess none, and read such books to ferret them out of their favorite hiding-places to torture them. Now, A and B may have a switch by their garage door. A knows that hitting this switch activates his electric garage door, so B's probably does also. But, B's switch might activate his disposal, or electric train set, or if his wiring is really unusual, his electric razor. The fact that conscious states and physical states are in different domains makes the inference for other minds, from other bodies, improbable, unless there is a contingent or causal law relating both types of states.

So, minimal requirements for the similarity of p to 1, or in the case of other minds, X to alpha, include that $x \cap z$ contain at least one, and preferably many elements, that the additional element, 1 or alpha, be similar, in the sense of sharing attributes, to each and every member of $x \cap z$, that $x \cap z$ contain no 'detractive' elements, and that the possibility of X or alpha is not excluded by the domain, or if so, that 1 or

or alpha are related, in the latter case, by a relation between domains. The requirements are related such that increasing one in proportion to decreasing another will keep the likelihood of the inference approximately constant.

8. But, what if there is a determinate relation, of sorts, between p and 1, or, in the case of other minds, between x and alpha? Deeper, contingent, causal, even identical relations may underlie strong similarities. There are, typically, three relations stronger than similarity: contingent, causal, logical. Given two events, p and 1, if in every instance 1 is preceeded by p, with no counterinstances, provided that this is so a sufficient number of times, one may conclude 'when p then 1,' (contingent), or, 'p causes 1,' or 'p and 1 are really the same thing.' So, a schoolboy, who watches a train cross old Highway B, every day after classes for two years, and notices that the train always blows its horn one hundred yards from the crossing, may conclude, 'when the train is one hundred yards before the crossing, it will blow its horn.' It would seem wrong to conclude that the position of the train 'causes' the signal. But, if an old engineer, who knows that he'll probably be asleep when he arrives at the crossing, wishes not to crunch any bodies, he may install a sensing device, such that the horn will automatically blow, when the device is within one hundred yards of an elecitor planted at the crossing. But, in the world of Earthra, which is a distorted mirror image of our world, it may be that crossing a road and blowing a horn are necessarily the same, that a horn goes off every time a Earthraling crosses a road, and 'blowing a horn' is what Earthralings mean by 'crossing the road,' and conversely. So that, to an

Earthraling, a world like ours, where we speak of two events, and say that they are contingently related, isn't even possible.

But what if there is a determinate realtion between x and y, or in the case of other minds, between x and y(x)? If it is always the case that if someone has a blue notebook, they also have a 1977 stingray, and if no conterinstance can be found, then after a certain number of confirmations, a conditional implication would seem in order: if someone has a blue notebook, then they also have a 1977 Stingray. In this case, the analogical inference, argument 1, would become a deductive argument of the form:

P → Q
B has P
B has Q

It is entirely irrelevant whether Joe has either a blue notebook or a Stingray to determine that Nancy has a 1977 Stingray, once the implication is justifiably stipulated.

Similarly, if x(z) = a particular electronic configuration in the bat brain, and it is found that the subjective experience y(z) occurs in every instance in which x(z) is present, where there are no counterinstances, then, one could know determinately that a bat is having subjective experience y(z) only if x(z) were present, regardless of whether I have subjective experience y(x), only if I am in neurophysiological state x. This point is vital to the Physicalist position as it is necessary to be able to determine the subjective experience of another mind from neurophysiological facts independent of the facts or experiences of other minds for the determination to have an objective character.

The implication is, of course, not inherently logical, but stipulated as logical after a certain number of confirming instances, and no counterinstnaces. However, this is precisely the

method of stipulating that 'if there is H_2O there is water.' I.e., there is no disanalogy between the implication in the case of water and the case of consciousness.

There is, of course, the converse implication that 'if someone owns a 1977 Stingray, then they have a blue notebook.' But, this possibility is not particualrly enlightening, as it is whether Nancy has a 1977 Stingray that is unknown. Of course, [redacted] Nancy has a 1977 Stingray and I don't know whether she has a blue notebook, is isomorphic with the logical form of analogical inference; the assignment of meaning to the variables is merely exchanged, without solving the unknown. In other words, where solving for s:

$s \rightarrow r_1$

q has/does r_1

doesn't tell us anything as to whether q has/does s. Analogously, in the case where:

$y(x'_1)$ = the experience of eating wheaties

x'_1 = eating wheaties

B_1 = a hearty breakfast champion

knowing that my son, a hearty breakfast champion, is eating wheaties, and knowing that 'if one has the experience of eating wheaties, one is eating wheaties,' tells me nothing as to whether my son is having the experience of eating wheaties. It may also be the case that 'if one is imagining a power-shovel dredging a swamp and depositing the muck in a compressor, one is eating wheaties,' or an infinity of other possibilities.

There are, of course, three possible relations between x and y.

1. $x \rightarrow y$
2. $x \leftarrow y$
3. $x \leftrightarrow y$

An instance of 1, ~~is x for any x brain x s x a t e x x h e x e x i s x~~ is for any unique brain state (if such is possible) there is a relatively subjective experience. If there is a relatively unique brain state, from the set of brains states that produce subjective experiences, then there is a subjective experience. However, 1. does not insure the relative uniqueness of the subjective experience. The brain-state is necessary but not sufficient for the subjective experience, so that an infinity of subjective experiences may correspond to a single brain state.

2. For any relatively unique subjective experience there corresponds a brain state. The subjective experience is necessary, but not sufficient for the brain-state. It is possible for any number of brain-states to correspond to a particular subjective experience. This assumption of the relation between brains and subjective experiences is especially unenlightening, since assuming it to be true, and then observing the brain-state of another creature, the subjective experience cannot validly be derived (Fallacy of Affirming the Consequent.)

1. is not especially enlightening, since if you know a unique brain-state correpponds to a subjective state, and you observe the brain-state of another creature, although a subjective state

may validly be derived, a unique subjective experience could not be validly derived. Any number of subjective experiences could correspond to that brain state. But this will not help us determine, say, what it is like to be a bat. For, we need to know the unique experience of the bat, not a range of possibilities, even if we may delimit this range.

3. is the only possible relation between brain-states and subjective experiences that could shed some light on what it is like to be a bat. Given a relatively unique brain-state there corresponds a relatively unique subjective event, and the converse. So, given the brain-state of a bat, one could validly derive a unique subjective experience.

To test Nagel's contention against the Physicalis position, then, it is, minimally, necessary to assume a logical equivalence between x and y. There are, of course, stronger claims, such as identity; but, for the moment, we will just test Nagel's contention against this weaker construal.

3)

The more serious problem with concluding y(B), 'what it's like to be a bat,' from the analogical inference is that Nagel's argument does not follow the strict form of the analogical inference, and is beridden by difficulties, precisely inasmuch as it does not.

We have established that if $x(A) \cap x(B) \neq$ empty set then any element $x \mid x \subset x(A) \cap x(B)$, where A does/has y, and x [illegible] y, then y(B) is a valid probable inferernece. So if:

3a)

x = resisting earth gravity to stay above ground; which is a behavior which both bats and humans exhibit, and a principle about which they are both structured having
y = human experience of weight

Given that: x [illegible] y

and that: Humans have the experience of weight

---

prob.
y(B) bats have an experience of weight

The inference is valid and presents no especial problems.

But where $x \mid x$ [illegible] $x(A) \cap x(B)$ is quite small, in most cases y(B) probably cannot be [illegible]y inferred, and in the few cases where it can, the result tells us nearly nothing as to what it's like to be a bat.

Undoubtedly, the reason Nagel chooses a bat to be the subject of the question 'what is it like to be another creature,' is that the bat is significantly different from ourselves in both structure of perceptual apparatae, and in behavior, although it shares the class similarity of mammals. Imagining what it's like to be a bat, then is more intriguing than imagining what it's like to be a dog. Altough it is precisely a bat's peculiar structure and behavior which presents eppecial problems for the analogical inference.

3a.2)

Of course there may be behaviors, or narrowly construed, brain states, that both a bat and a human share, in detail. So, symbolized by $(x \cap z)$. If we take such a behavior to be the absence of particular inhibitions in our hypothalamic nuclei, the arguemtn might look like this:

Human subject and bat both have hypothalamic state $(x \cap z)$

Human has hypothalamic state $(x \cap z) \leftrightarrow$ feels such an anger that he wants to bite the nearest stick

---

Bat probably has such an anger that he wants to bite the neares stick.

The argument is valid and allows us to imagine, in detail, what it is like to be a bat.

But, this characterization of what it is like to be a bat is necessarily incomplete. What it is like to have those behaviors, brain structures, and sensory apparatae that are unique to a bat, symbolized by $z \wedge \sim(x \cap z)$, is not inferred by this argument.

The conclusion tells us $y(z \wedge \sim(x \cap z))$ since $(z \wedge \sim(x \cap z)) \subset (x \cup z)$, but we know $y(z \wedge \sim(x \cap z))$ in no more detail than we know $y(x \cup z)$. But, then, navigating through a physical environment with some sort of sensory apparatae is quite schematic.

Now, since we know $y(x \cap z)$ in detail, and since we only know $y(z \wedge \sim(x \cap z))$ schematically, it may properly be said that, what we know about y(z), i.e., what we know about the subjective character of the bat's experience from his sensory apparatae, brain states, and motor output or behavior, is:

$$y(x \cap z) \vee y(z \wedge \sim(x \cap z))$$

i.e., either (inclusive) a detailed account of that portion of the bat experience which resembles our sensory-brain-behavioral experience in detail, or a schematic account of that portion of the bat experience accompanying sensory-brain-behavior unique to a bat. And since $(x \cap z) \wedge y(z \wedge \sim(x \cap z)) \subset y(z)$, it may be said of y(z), i.e., of 'what it is like to be a bat' in general, that our knowledge is either detailed and incomplete, or complete and mostly schematic. So how might one know in detail what it is like, uniquely, ~~and so~~ to be a bat?

Any thourough account of what it's like to be a bat must account for what it's like to navigate by echolocation. But, it is never the case that a human navigates by echolocation as a bat does. Rather, a human typically navigates, foremost by vision, as a bat does not.

So the analogical inference with the conclusion 'what it's like to navigate foremost by echolocation' would have the following form:

3b)

A does x

B does z

A experiences y(x)

---

prob.
B experiences y(z)

Where: x = navigation primarily by vision

z = navigation primarily by echolocation

A = humans; B = bats; y = 'consciousness of'

*does not follow

I.e., 'that there is something it is like for a bat to navigate primarily by echolocation' does not follow.

Implicit in inference 3b) is that A doesn't z and B doesn't x. But if there is some respect in which $x \cup z$, then $y(x \cup z)$ follows. So, if we abstract that both bats and humans navigate in the physical world by some sensory apparatae, then the form of the analogical inference then, would be:

3c)

1) A, B does $(x \cup z)$

3) A experiences $y(x \cup z)$

---

4) B probably experiences $y(x \cup z)$

*does follow

I.e., there is something it is ~~like~~ to navigate in the physical world by sensory apparatae.

However, the conclusion does not tell us much, and certainly doesn't tell us, in as much detail as we would like to know, what it is like to be a bat; the conclusion is, at best an outline of the bat's experience, and at worst, incomplete. In Nagel's own words:

> If extrapoloation from our own case is involved in the idea of what iti is like to be a bat, the extrapolation must be incompleteable. We cannot form more than a schematic conception of what it is like. For example, we may ascribe general <u>types</u> of experience on the basis of the animal's structure and behavior.

Here, 'extrapolation' is taken to mean 'inference from the premises of the analogical argument.' However, Nagel is confused as to the nature of the inference, he calls it 'a schematic conception' on the one hand, and 'incompleteable' on the other; the two notions are distinct. A 'schema' is an outline, so a 'schematic conception' is complete but undetailed. AN 'incompleteable extrapolation' is necessarily incomplete, but may be ~~f~~ detailed inasmuch as it is complete.

4) of 3c) is an incomplete schema because $x \cap z$ only one element (incomplete) of the behavior of the bat, and because $x \cap z$ is an abstraction. (see) Where, at some level of analysis x is a behavior unique to A, and z is a behavior unique to B. But where x and z are unique, no valid inference can be made (3b), so to validly infer, by the analogical argument, it is necessary to posit $x \cap z$, but $x \cap z$ can only be posited by abstraction from x and from z, Since y(z) cannot validly be infered from x and z where each is unique, and since $y(x \cap z)$ can only be inferred by abstracting from x and from z, it necessarily follows that either y(z) is incorrect or $y(x \cap z)$ is schematic.

Now, in order to understand in what sense the 'extrapolation is incomplete to be' it is necessary to understand in what sense the extrapolation could be complete. Supposedly, to know completely what it is like to be a bat, we would need to know what it is like to be a bat as much as a bat knows what it is ~~like~~ to be a bat. Certainly, we couldn't ask for more detail than this. Yet, if one of the premises whereby we infer this, namely, premise 3) of 3) series arguments, 'Humans experience y(x)' is itself incomplete in detail, it is hard to see how the above inference could be made In what sense do I have a complete experience or am I completely conscious of my structure and behavior? The qualified argument may look like this:

Let x_n= the complete, detailed, and omniscient description of the structure and behavior of mammals of some future science

The qualified argument then may look like this:

A,B have/do $x(A \wedge B)$

A experiences $y^*(x(A \wedge B)$

B probably experiences $y^*(x(A \wedge B)$

Despite this ultimate state of science, $y^*(x_n(B_3))$ still cannot be validly inferred, and $x_n(A \wedge B_3)$ may, very well, be schematic. I.e., complete and detailed investigation may demonstrate that the structural and behavioral features which bats and humans share in common ~~xxexxxxxxxxxxxxxx~~ can only be described with general physical principles. Of course, $x(A \cap B)$ might be quite specific. It might be found, for example, that the brain structures underlying echolocation and visual navigation ~~were~~ are identical, except that the former has peripheral auditory nerves, and the latter has peripheral ocular nerves. In some respect, given that environments were identical (as in instrumental conditioning - approximately) $x_n(A \cap B)$ would be more specific. But, information processable by visual versus echolocatory nerves would be quite different. Still, if some neutral stimulus, as auditory blips, could be applied, it seems that $y^*(x_n(A \cap B_3)$ would be identical, except for background. Nonetheless $y^*(B_3 \cup \sim A)$ would still be missing altogether.

It might be claimed that it does not seem likely that we could reduce consciousness, since we cannot know consciousness in general, i.e., we cannot know portions of conscious experience where the correlated brain-states differ radically from our own. But, such an argument would pose no serious disanalogy to the examples of successful psychophysical reduction. Since, of course, there are portions of the physical world, the existence of which we may posit, but the precise details of which we cannot know (examples are living in the fourth dimension.) We can analogically infer what it is like to live in the fourth dimension, by analyzing how the third dimension would appear from a person who lived in two dimensions. But our concept of the fourth dimension is bounded by our experience of the third. (This analogy is useful to contemporary astronomers in explaining red shifts, and eserects. The appearance of certain astronomical phenomena at regular time intervals, may be explicable, in some gross fashion, as an analogy to the appearence of spots to a two-dimensional creature as an irregularly-shaped three dimensional object moves at a constant velocity through a plane). Lack of detail is not just common to objects of scienciific explanation, it is necessarily the case. Reduction is a scientific endeavor, and science, by nature, omits details when it abstracts and simplifies experience.

We've assumed, up to this point, that behavior, and brain structure, and sensory apparatae indicate the nature of the subjective experience. So, that we have xxx we have reason to believe that our imagination (as previously defined) of another's subjective experience is accurate to the degree that that other being's behavior and brain structure and sensory apparatae is similar to ours. If this is true, then there is the porblem of accurately imagining what subjective experiences correspond to behavior, brain structure, and sensory apparatae that we don't have. At some level of generality, of course, these three are similar to our own, they are governed by the same physical laws. But, then our imagination as to the component of subjective experience corresponding to x other than ours, would only be general.

Even if we have a science which describes z on the same level of analysis as x, so we know exactly what a bat's brain structure and behavior is, even of those portions xxxp different from ours, our experience of z would still be imaginative.

The only way to get around this would be to somehow give ourselves the very physical structure. ...

The problem is not just that the analogical inference can't assess the accuracy of our imagination of another's subjective experience when their behavior, brain, and sensory apparatae differ significantly from our own, but that ~~our imag-~~ the concepts with which our imagination operates are derived from our own behavior, brain structure, and sensory experience.

If concepts about subjective experience were just formed from abtracting from sets of objective facts, as behavior and brain structure, then, we could expect as good an idea of 'what it is to be a bat,' as 'what it is to be me.' But, it is not the case that I have just a coneptual idaa, based on my behavior and brains structure, of what it is to be me. I have direct access to what it is like to be me. So, it is clear that concepts of what it is like to be, are not, in any way abstract organizations of objective facts, as say a concept of H_2O is an abstract organization of the facts of water, i.e., ~~all of those experiences and~~ an abstraction to the causes, properties, and effects of all those experiences of water had by all subjects who have had an experience with water. If an electronic stimulus is applied to a discrete locus of my motor cortex, and the change in neurophysiology is monitored on an observeable screen,(property) and as a result (effect) my arm flies up, from no possible organization of these facts could you ever abstract what it is like to be me having this mad neurosurgeon zap my brain and make my physiolo change and my arm go up.[11]

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11 Electrostimulating memory cortex poses the more serious contention that what it is to be someone is none other than the organization of their memories and thoughts. But, I will deal with this contention in section three.

Then belief in the existence of subjective facts, even if they cannot be abstracted from objective facts, along the lines of abstraction to concepts of the physical world, can be inferred by analogy from one's own case; although the facts themselves cannot.

> Given that my physical structure and behavior differs from a bat's in some respects.
>
> And given that we are both zapped with an electronic stimulus, and both undergo changes in neurophysiology, and both engage in some involuntary behavior, as a result. Say, I produce the linguistic string, "a mouse is eating the Philosopher," and the bat receives signals indicateing that there is a box in his environment.

The only reason for believing that there is somehhing it is like for this bat to receive echolocatory signals, is that, in my own case, the physical ~~expex~~ stimulus, change in neurophysiology, and resultant behavior, omits what it is to be me undergoing these experiences. Knowing this directly, and knowing that the bat is subjected to ~~exactlyxxhexsamexkax~~ quite similar laboratory conditions, I analogically infer that the bat, also, is experiencing something it is like to undergo the experimmnt, that cannot be abstracted from the objective facts.

So, this leads the analogical inference to its most potent form, positing the existence of facts, the exact nature of which cannot be inferred from it, while simulaaneously admitting its failure to the task of ascertaining what those subjective facts are.

Either, the subjective facts of creatures which differ radically from ourselves may never be knowable from any point of view, or there is some means, more potent in this respect than the analogical inference, by which we may know those facts.

I wish, here, to introduce the notion of some advanced science, which allows the transplantation of memories and thoughts from one subject to another. These operations might be performed artificially, by wisking the electronic basis of a memory or thought in a brain, away into a computer, storing it there for the desired amount of time, and then inputting the information into another subject's brain, in a form such that the logical equivalence between physical event and memory event or thought is preserved. I am assumeing that this logical equivalence is true, and I am assuming that different structures of brains pose no serious difficulty for electronic implantation. One possibility is that the memory or thought is essentially an information sequence, relatively independent of neuron structure, except in a gross fashion that could be shared by the brains of radically different species. Entering into type-type identities, and type-token identities is not necessary, since all that is assumed is a logical equivalence. My assumptions are all contingent claims. But, they are realistic in the respect that any Physicalist, who posits the logical equivalence between memory and cognitive events, and physical events, in the brain, would hold, practical obstructions aside, that such a transplantation is possible; they are useful inasmuch as they will place Nagel's contention of the non-adoptibility of other viewpoints in opposition to one of the strongest Physicalist contentions of non-Identity Theorists and Identity theorists alike. These assumptions will allow us to pose experiments which will test whether Nagel's contention is more than just a contingent claim, that one viewpoint

cannot adopt another due to the present obstructions of science. If we assume these obstructions are removed, and one viewpoint still cannot adopt another's viewpoint, then Nagel's claim is much stronger: that it is could not be possible for one viewpoint to adopt another; or that it is difficult to see how it could be possible.

There are exactly three types of operations that could be performed:

1. Add those structural and behavioral unique features of a bat to a human
2. Successively add bat unique features to a human while concomitantly detracting human unique features, to ultimately transform a human into a bat.
   a. there would be intermediate points at which there would be a part human, part bat
   b. there would be a terminal point in the operation where there would be a human-transformed bat.
3. Delete those features unigue to a human

It should be mentioned that if our understanding of neurophysiology and sensation were advanced enough, we should be able to perform the operations artificially, not necessarily naturally (the prospect being rather awkward and gory), by instrumentation, which would ~~perfectly~~ simulate to a degree of detail below the threshold of detection of a difference from the subject, the neurophysiological basis of another subject in the brain of the first subject.

It is easy to see that operation 3 could not recreate the complete bat's experience in the mind of a human. The operation has the logical form:

1. Given human subject with experience y(x)
2. Dèèete the unique human features $x \wedge \sim(x \cap z)$
3. Which yields a human subject with just those features which are common to both bats and humans: $x \cap z$, and the conscious experience $y(x \cap z)$

Obviously $y(x \cap z) \neq y(z)$, so the operation is unsuccessful.

A more viable possibility is operation 1. Here the recreation of the bat experience in the human mind is attempted by addin g all the features unique to a bat to the human mind. The operation has the logical form:

1. Given human subject with experience y(x)
2. Add the unique bat features $z \wedge \sim(x \cap z)$
3. Which yèelds a bat/human with features $x \cup z$, and conscious experience $y(x \cup z)$.

Obviously $y(x \cup z) \neq y(z)$, but $y(z) \subset y(x \cup z)$. So, in a certain respect the operation could be successful. It is not clear whether the bat/human would xxxx additionally have the features of a bat and a human, or whether the bat/human would be a product of both sets of features. Whcih would be the case depends contingently on how neurophysiological and sensational features combine. So, one can imagine being this bat/human and navigating through an environmen with objects at close-range entirely or almost entirely by vision, and then switching or focusing into echolocation when stepping outside into a field where objects must be perceived at long-range. Or, one could imagine pereeiving objects in a room or in a field in the same, xxxix variable or invariable manner, by seeing blips rapidly rebound from

objects in the environment, perhaps having fewer but more intense blips at far-range. In either case, one can imagine this bat/human switching, gradually or instaneously, voluntarily or automatically, into either bat mode or human mode. It is this possibility which would make the operation successful. Suppose that the bat/human has a default human mode. And suppose this bat/human does not switch to bat mode, until after several weeks of convalescence since switching requires great physical exertion. And further suppose that this bat/human only switches to bat mode for an instant, and then returns to default mode. Did the human, i.e., the bat/human in default mode, experience what it's like to be a bat?

A number of questions arise. Is an instant of what it's like to be a bat insufficient to know? Must the experience be stored in long-term memory? If so, must it be stored in the bat, human, or bat/human memory? What obstructions or abilities would the storage-types present? Is there a difference between recalling what it's like to be a bat, and experiencing what it's like to be a bat? To answer these questions it is necessary to examine whether a subject with one identity may experience a subject with another identity. Before proceeding, we'll consider the plausibility of operation 2.

Operation 2 has the logical form:

1. Given a human subject with experience y(x)
2. Add the unique bat feature $z \wedge \sim(x \cap z)$
3. Detract the unique human feature $x \wedge \sim(x \cap z)$
4. Repeat 2. and 3. n times, where n = the average number of unique bat and unique human features, and where the sum sub-operations 2. and 3., $x + z = 1$.

At ¼n, the subject would have features 3/4 human and 1/4 bat-like, at 3/4n the subject would supposedly experience $y(1/4x \cup 3/4z)$, and at the terminus, $y(\emptyset x \cup z) \cong y(z)$. Theoretically, the operation is reversible; given a bat subject y(z), it can proceed toward y(x) in like manner. At any intermediary point, where $0 < n < 1$, the subject is a part-bat/part-human, who, presumably, can experience itself as part-bat/part-human. We can imagine being in an intermedia avian stage, where, having received wings, but not a well-functioning sonar, we would flit about by vision. The question of mode would be applicable here, whether we could experience our human-part as distinct ffom our bat-part, and thereby have, say, 1/4 of a bat-experience (know 1/4 what it is to be a bat) as a 3/4 human (knowing 3/4 what it is to be a human). Interestingly, if such a quantificati of identity is possible, at the 1/2bat-1/2-human point, the linguisti convention r experiences p as r, would be arbitrary: A experiences $y(\sum z)$ as $y(\sum x) = B$ experiences y(1/2x) as y(1/2z). It should be obvious that the terminus would not be particularly interesting, as the experience of a human-completely-transformed bat would be identical to a bat experiencing itself.

To answer whether a default-mode bat/human experiencing bat mode for an instant, and later recalling the instant, is the same as a human experiencing what it is to be a bat, leads to the question of how recall of conscious experience is the same as conscious experience. The question of whether experiencing what it is to be another for an instant is, in any sense, what it is to be another, and the question of whether knowing a fraction of what it is to be a bat as knowing a fraction of what it is to be a human is possible, leads to questions on the temporal continuity of identity, and the divisibility of consciousness.

In principle, operation two could not allow y(x) to experience y(z). At ½x½z, assuming mode potentials, y(½x) would only experience y(½z) in part, and only as part a human. Of course proceeding further, in either direction, with the operation would not obviate this difficulty. At 9/10x, A would hardly experience y(z) at all. And at 9/10z, A would hardly be at all, much less, experience y(9/10z). The problem is stated from the perspective of y(x), because it is assumed the the bat human remains in default mode, most of the time. Since it is the complete, detailed experience of y(z) that the complete, detailed experience of y(x) needs to adopt, and since, by this operation, y(x) is inversely proportional to y(z), the operation cannot succeed.

Operation 1. is the only operation that could allow y(x) to experience what it is to be y(z) as y(x). But, for such to be the case, four conditions, minimally, would have to obtain.

1. Foremost, y(x) would have to experience y(z) as part of himself. This could be designated y(x(y(z))).

2. The experience of what it is to be x and what it is to be z would have to be simultaneous.

3. Continuity over time. Some duration of 1. and 2. would have to obtain.

4. Minimal identity network. For there to be something it is to be v for an instant, a minimal complex of mental phenomena would have to be present. There may be nothing it is like to be a single memory, but identity may correspond to the totality of memories of an indivdual, or some signficant fraction thereof.

The absence of any one of these conditions would make viewpoint adoption impossible. Of course, two minds, having the minimal identity network to know what it is like to be themselves, both doing so at the same time, for an extneded duration would never experience each other, since their identities are entirely separate (-1.). In the bat/human case, if there were no retention of the memory of having been a bat in human memory, then, there would be nothing more than a bat experiencing itself, and then a human experiencing itself in the same brain (-2.).

In the bat/human case, there would be two minds experiencing themselves, at the same time, over extended duration, and never knowing the other. Two minds in the same brain knowing no more of eachother than a stabili warrior knows of a Kremlin janitor.

This would be, rather, like a neighbor, who has lived next door for twenty some odd years, and who, due to keeping peculiar hours, one has never met, nor has the least idea what is like. Of course, if a form rushed past one's window, from the neighbor's door, the experience would be simultasous, but too instantaneous to ever surmise whether it was the neighbor seen. In like fashion, insufficient duration would make adoption of viewpoints impossible (-3.). Of course, the guy down at the meat shop could be my myseterious neighbor. But, if all I knew of this guy was that he cut meat, and I didn't know his name, or address, or type of car, I could never surmise that he was my next-door neighbor, i.e., less than minimal identity network.

The success of operation 1., depends on condition 1. What is meant that one subject can experience what it is like to be another person as himself? This odd notion demands elucidation. The concept of experiencing parts of oneself certainly is common. To think a certain thought, or recall a certain memory, is to experience a part of oneself. In fact the whole of our oonscious experience could be summarized as experiencing parts of ourselves at different times. Never do we experience all of ourself at one time. As the Freudians put it, 'consciousness is an eye in the sea of the subconscious.' The difference is that none of these things we experience are themselves experiencing. If by recalling a memory, the recaller became the subject from whose viewpoint the experience is a memory of, while simultaneously recognizing that he is not the memory, but just recalling the memory, one subject's viewpoint could simultaneously adopt another subject's viewpoint.

But, then, this account assumes that memories are not identical with viewpoints, i.e., there is nothing it is like to be a memory or even a memory complex. But, if this is the case, memory transfers cannot transfer viewpoints. But, then, if viewpoints are memories they can be transfered, but there never could be a simultaneity of viewpoints. The only possible exit from this dilemma is that viewpoints are not memories, but can be transferred. But, this moves us into a terra incognita.

There are reasons to believe that viewpoints, there being something it is like to be x, are, in part, independent of memories. If I recall 'sand getting into the brownies, because it's a windy morning on the beach,' what is it like to be 'sand getting into the brownies...?' Now, it may be objected that there is nothing it is like to be a single memory, but there is something it is like to be all of the memories of a person of his life to any point in time. Undoubtedly ,I am, in large part the totality of my memory complexes. But, in principle, if there is nothing it is like to be a single memory, then there is only much less something it is like to be any sum or product of those memories. Unless 'what it is like to be' is a mysteriously emergent property. The stronger case for the non-identity of viewpointedness and memory complexes are the implications of Penfield's exploratory neurosurgery. [3] While electro-stimulating specific loci of memory cortex, and thereby eliciting specific memory concatenations in the subject, the patient could report back to Penfield what he(she) was re-experiencing, <u>while</u> re-experiencing. The patient was simultaneously conscious of being at the site of the recollection and of being in the operating room,

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[3] Wilder Penfield, <u>Mystery of the Mind</u>, 1979

able to render such linguistic reports as, "(to Penfield) now I'm in a symphony hall I was in 10 years ago," or, "(to Penfield) I can here my youngest child calling me from the kitchen." Significantly, the person's sense of identity was in the operating room. It was not the case that the patient thought he(she) was actually in the symphony hall, and hallucinating about being in an operating room.

But, then, it may be false that there is something it is to be all of my memories and all of my thoghts. If I am it isn't the case that there is something it is lo be sand getting into brownies on the beach, or there isn't something it is to be a difficult solution to a math equation, then there is no reason to beieve any sum or product of such thoughts and memories.would

Nagel hints at the difficulty this difference between consciousness and other mental phhnomena may pose.

> Without consciousness, the mind-body problem would be much less interesting. With consciousness it seems hopeless.

Whatever attempts there are to unders and and reduce mental phenomena, these exclude consciousness. Brain arousal mechanisms come closest to explaining consciousness in terms of neurophysiology. Lesions, and chemical inhibition of the reticular activating system. i.e., the proposed brain arousal system, produce anesthesia; chemical mechanisms of sleep are explained as periodic inhibitions of activating loci in this system (see Jouvet - The Biochemical Cycle of Sleep - 1979); animals with the R.A.S. removed, but with otherwise intact brains, are veritable mechanisms, with autonomic nervous functions intact, but showing no spontaneous behavior. Although the results are far from well established, many neurophysiologists explain the uncertains may as the complex interaction of nuclei with in the system and its complex communication with other brain systems. But, bedause we can infer from behavior that an animal without a properly functioning R.A.S. is probably not having a conscious experience, and because we can infer that an animal with a properly intact R.A.S. is probably having a conscious experience, we do no

know, and we cannot even imagine, where ~~the~~ observable facts about the animal differ significantly from our own, what it is like to be that animal. If ~~even~~ by ~~some~~ artificial transplantation I were given all the mental attributes of a bat but his viewpoint, and another were given all the same, I would know no more what it is like to be you thinking how I might navigate through those stalactites, while I, myself, were thinking how I might navigate through those stalactites, than I would know how an object on a table looked from where you were sitting, were I shacked forever, in a different position.

One can imagine this penultimate experiment (the ultimate would be to penetrate another's viepoint) where subjects one through nine are transmitted subject ten's mental states all of their lives. Then, one day, subject seven meets subject eight. Under this interpretation there would not just be two bodies meeting itself. There would be two perspectives In the former interpretation there were just ten bodies corresponding to the mind of subject ten. That is was like to be subject seven was identical to what it was like to be subject eight. But, in this interpretation, there would be ten perspectives on ~~the~~ identical mental experience. If the subject's thoughts and motor abilities were no under transmitter control, it might be apparent that what it was for subjective seven to have mental network x for time t, was not what it was for subject eight to have mental network x at time t. If we knew everyihing about mental phenomena other than consciousness, and we knew, from our ~~exp~~ subjective experience that our consciousness

is always about things, including mental phenomena, excluding consciousness, it would not follow that we knew what consciousness is. Although, it appears that consciousness, in some semse, can be about consciousness. We can talk about consciousness, about intentionality, and even about there being something it is to be us (when I declare that there is something it is lo be me, that is different from declaring that there is an apple which I see, in this case there is something it is lo be me seeing that apple, and I am conscious of the apple, bu not conscious of being conscious of the apple.)

It's a bit strange that the foremost contemporary theory of consciousness is really a theory about the relation between consciousness and other things, and not consciousness itself. Yet, there may be an epistemolfical obstruction from know what consciousness is, just as there is a physical obstruction in identifying what it is that allows us to see objects when they ~~xxxxiii~~ the surrounding medioum is light, as opposed to not being able to see them when the surrounding medium is pitch black, in a world where no source of light can be located. We might, in such a world, talk of thes unidentified source of light strictly in terms what it does to the surrounding medium, and how it makes objects appear differently.

So, consciousness, narrowly construed as that which it is to be a subject undergoing mental processes, as recalling, poses serious difficulties for reduction. Even if we assume that mental phenomena, in the only form in which they are naturally preserved, memories, are transferable by some advanced science from one subject to another, so that their exchange is as public as currency, it remains difficult to see how viewpoints on those memories could also be exchanged. It may be that viewpoints, by their nature, are non-transferable. In any act where one subject adopted another's viewpoint, the original subject would just become a creature anew, experiencing itself. Viewpoints, like identities, could be as hopelessly unitary as products of multiplying unities. No number of operations or combination of unities could, by definition, ever yield a product greater than one.

Not just reduction, but any objective characterization of a viewpoint seems impossible. Theoretic reductions depend on theories. Theories are abstractions based on observations of many subjects, from as many viewpoints as possible. A more objective characterization can be given of an object on a table view from one subject on each side, than can be abstracted from one subject who cannot see two side-views, and the back of the object. If a viewpoint is knowable only from its own viewpoint, it can never be objectively characterized, much less reduced.

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