

INTENTIONAL AND PHYSICAL RELATIONS

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Segundo Brentano, todos os fenômenos mentais – e só eles – possuem Intencionalidade. Isto é, eles são inerentemente dirigidos a objetos: em uma representação, algo é representando; em um juízo, algo é afirmado ou negado; etc. Isto porém não parece explicar a peculiaridade do mental, pois o mesmo se dá com muitos fenômenos físicos: ao golpear, algo é golpeado; ao comer, algo é comido; etc. Em que se distingue, então, o mental ao ser denominado 'Intencional'? Ataco esta questão concentrando-me no caráter relacional dos atos físicos e mentais. Na parte A procuro mostrar que as relações Intencionais são 'essenciais' em um sentido em que as relações físicas não o são: as primeiras são necessárias, enquanto que as últimas são contingentes. Na parte B, argumento que as 'relações' físicas não são relações reais, e que podem ser completamente descritas em linguagem não-relacional. Relações mentais, por outro lado, não podem ser completamente descritas em linguagem não-relacional. Portanto, a redução psico-física é impossível. Na parte C, mostro que também as 'relações' mentais não são relações reais. Ainda assim, sua Intencionalidade diferencia radicalmente os atos mentais dos atos físicos, e assim exclui a possibilidade da redução psico-física.

According to Brentano, all and only mental phenomena are characterized by their Intentionality. That is, they are directed upon objects: In presentation something is presented, in judgement something is affirmed or denied, etc. This suggestion does not seem to tell us much about the peculiarity of the mental, since the same holds true for many physical phenomena: In hitting something is hit, in eating something is eaten, etc. So, what is the peculiarity of the mental that justifies calling it 'Intentional'? I would attack this question by focusing on the relational character of mental and physical acts. I try to show in part A of this paper that Intentional relations are 'essential' in a way physical relations are not, since the former are necessary while the latter are contingent. In part B, I argue that physical 'relations' are not real relations, and that they can be fully described in a non-relational language. Mental relations, on the other hand, cannot be fully described in a non-relational language. If so, no psycho-physical reduction is possible. In part C it is shown that mental 'relations' too are not real relations, but that nevertheless their Intentionality distinguishes mental acts sharply from physical acts and excludes the possibility of psycho-physical reduction.

According to Brentano, all and only mental phenomena are characterized by their *Intentionality*. That is, mental phenomena are said to be directed upon objects: in presentation something is presented, in judgement something is affirmed or denied, in love loved, in hate hated, in desire something is desired, etc. (See Brentano 1874, pp. 88-89).

This suggestion, as it stands, does not seem to tell us much about the peculiarity of the mental, since the same holds true for many physical

phenomena as well: in hitting something is **hitted**, in eating something is eaten, etc. So, what is the peculiarity of the mental that justifies calling it 'Intentional'?

Many attempts have been made to clarify the notion of Intentionality. Searle, for example, takes Intentionality to be, in the first place, the property of mental states in virtue of which they *represent* their (Intentional) objects and states of affairs (Searle 1983, pp. 4-5, and also in many other places). I suppose we can give a more or less reasonable sense to the claim that mental states represent objects, and that no physical states or entities can be said to represent in that sense.

However, the question I would like to pursue here is this: is the relation between a mental state and its object peculiar *as a relation*? I think I am following a certain philosophical tradition in answering this question positively. I will try to show in part A of this paper, leaning on the work of Richardson, that Intentional relations are indeed 'essential' in a way physical relations are not. In part B I will elaborate this claim, and argue that it leads to the following conclusions: (i) Physical 'relations' are not real relations. (ii) Physical acts can, while mental acts cannot, be fully described in a non-relational way. Thus, I will argue, no psycho-physical reduction is possible. In part C I will try to show that mental *acts* are not *real* relations, but that nevertheless their Intentionality distinguishes them sharply from physical acts and makes psycho-physical reduction impossible.

A

Some philosophers treat the relation between an Intentional state and its object as peculiar and necessary in some sense. Knowles, for instance, claims that the *individuation* of thought abstracted from the specific episode in which it occurs necessarily involves the Intentional object. For such an individuation must include the content of the thought, and the content cannot be given without mentioning what the thought is about, i.e., its Intentional object (Knowles 1980, pp. 269-271).

Searle, who emphasizes the representative character of Intentional states, holds that the relation between a representation and its object (i.e., the object that is represented by it) is an *internal* one. By that he means, *inter alia*, that a representation would not be the representation that it is unless it had the same object (or state of affairs). Thus, regarding my belief that it is raining, the identity criterion of this belief is the state of affairs that it is raining. That is, without having *this* object (or state of affairs), the Intentional state in question would not be the same Intentional state that it is (See Searle 1976, pp. 182-185).

The claim that if an Intentional state had a different object it would be a different state might be seen as trivial, for it seems that this claim applies also in the case of physical states. If so, then the alleged characteristic cannot serve as a distinguishing mark of Intentional states, and thus

of the mental. To see that the claim is not trivial, and that this characteristic *can* serve as a distinguishing mark of Intentional states and of the mental, let us turn to the work of Richardson, and to his interpretation of Brentano.

Brentano is usually taken to hold that Intentional relations are characterized by the fact that one of their terms need not necessarily exist. The examples are well known: one can think about unicorns, gods, and so on. In such cases we have an Intentional state *with* an Intentional object, yet this object does not exist. This peculiarity of the Intentional relation (and of the Intentional object) led Brentano to view this relation as a "quasi-relation" (Brentano 1874, p. 272). Richardson denies that this is a correct interpretation of Brentano; he also thinks this thesis to be false in itself. For Richardson, *having an object* and bearing a *special connection* to it are what characterize an Intentional act¹. That, Richardson thinks, was also Brentano's meaning.

The special connection that holds between an Intentional act and its object according to Richardson is that "it is essential to my thinking of X that it be *of X*" (Richardson 1982, p. 202). This is not true of any physical relation: "It is not essential to my hitting the book that it is of that book rather than, e.g., a cat or, for that matter, of nothing at all" (*ibid.*).

What is this "*essential*" connection? In a less (I think) ambiguous vocabulary this is a *necessary* connection. A mental act *cannot* be the same act unless it has the same object. But such claims, let us recall, are suspected as trivial. Indeed, it *is* trivial that it is necessary that if I am thinking of a book then that thinking is of a book. The same is true of physical acts: it is necessary that if I hit a book then this hitting is of a book. But Richardson means something else. The scope of the modal operator in the two cases is different: my thinking of a book is necessarily, or essentially, a thinking of that book. *This does not* hold true of physical acts: my hitting a book is *not* necessarily, or essentially, hitting that (or any) book (*ibid.*). If this is true, the Intentional relation is really a peculiar one.

Some clarification is still needed. Why is my thinking of a book necessarily a thinking of that book? *Could not this be otherwise?* We will be in a better position to answer these questions after understanding what is the relation that holds between the act of hitting a book and the book.

Let us reflect on Richardson's example (p. 199). He claims that "given an event that is Harold's shooting of Man o'War, that event could have occurred even if Man o'War had not existed". I think the immediate question that arises in one's mind is: how could the event that is Harold's shooting of Man o'War be the event that it is (i.e., Harold's shooting of Man o'War), without Man o'War being shot? Richardson's reply is that "the

¹ Richardson speaks about mental *acts*, but we need not bother here with the distinctions between events and acts, or states.

act would not then be a shooting of Man o'War". The particular description used (that is, Harold's shooting of Man o'War) is irrelevant since the occurrence of "Harold's shooting of Man o'War" is *de re*. But if so, what does Richardson mean by saying that *that* event could have occurred even if Man o'War had not existed? What is the event the word 'that' refers to? Well, that event is *Harold's shooting*, Harold's *action*, what he himself does, without taking into account the *effects* of that action. "Harold might have done exactly what he did do – raising his arm and moving his hand just as he did . . . and yet Harold's act might not have resulted in Man o'War being shot". That is, the relation physical acts bear to 'their' objects is *causal*, and as such, is contingent, and not necessary or 'essential'².

Now what about mental acts? Is the relation they bear to their objects a non-contingent one, but necessary and 'essential', so that "thinking of a book is necessarily thinking of that book?" I think Richardson is right in answering this question positively, and in claiming that in virtue of this essential relation an act is deemed an Intentional act.

"Every intentional act is an act of a determinate sort, and the determinate sort in question is specified by specifying the object of that act. Hence if the object of the act were to differ, we would have a different act . . . In short, it is essential to my thinking of X that it be *of X* . . . in specifying the types of thought by specifying the object, the type constitutes a specification of the intrinsic rather than extrinsic properties of the act; on the other hand, the specification of the type to which a physical act belongs, as token, involves a specification of an extrinsic (causal) rather than an intrinsic property of the act" (ibid., p. 202).

In what sense, then, is a specification of the object a specification of an intrinsic rather than of an extrinsic property of the mental act? The answer, I think, is that regarding mental acts like Harold's thinking of a certain book, we cannot attach any meaningful sense to a phrase like "Harold might have done exactly what he did do without having been thinking of that book". We cannot identify in his thinking any 'stage' which does not amount to *thinking of that book*, or, in other words, which is separable from *that book*. There cannot occur any 'part' of that mental act that corresponds to Harold's shooting without Man o'War's being shot. Whereas it is possible for the act that led to Man o'War's being shot to be performed without actually leading to Man o'War's being shot while remaining the same act, there is no act that 'led' to the book's being thought of: the (intentional object) book is a *constitutive* element of its being thought of. A causal connection, which is a contingent one, can be 'severed', but a

²This example might seem problematic, since there is an Intentional element in Harold's shooting of Man o'War (Harold wants to hit Man o'War, aiming at him, etc.). My (and Richardson's) treatment ignores this element, and concentrates only on the physical movements of the shooting.

connection of content cannot. The Intentional connection is a connection of content, whereby the Intentional object (what an Intentional act is *about*) of an Intentional act is a constitutive element of the (content of the) act. The connection between an act and its *constitutive* element is, of course, necessary³.

B

I would like now to strengthen and sharpen the conclusions of the previous section. I shall try to show that the connection between a *physical* act and 'its' object is *not* essential in the sense that there does not hold a '*real*' relation between them. The case of Intentional acts is different. It seems that these acts *are* really relational. At least, those considerations that give rise to the idea of the non-relational character of physical acts tend to highlight the relational character of Intentional acts (in the next section I will argue that after all these are not real relations either).

Let us consider the case of Maradona kicking the ball. Suppose we wanted to describe this event fully. We should describe not only the movement of Maradona's leg, but also the contact between Maradona's leg and the ball, as well as the movement of the ball. I would like now to claim that all this can be described in a non-relational way. If we are to describe Maradona's kicking the ball we can avoid mentioning any relation between Maradona's leg and the ball, or any relation at all. We can describe the event in question without using any two-place predicate (or other many-place predicates).

We can no doubt describe the movement of the leg on its own, and the movement of the ball on its own. Such descriptions do not (or at least need not) involve any relation, any many-place predicate. What about the description of the contact between Maradona's leg and the ball? If we are to express not only that Maradona is kicking and the ball is being kicked, but also that Maradona is kicking the ball (or that the ball is being kicked *by* Maradona), isn't it the case that we must use a relation, a two-place predicate?

I think the answer to these questions is negative. We do not have to use here any many-place predicate, since after describing the movements of

³It is important to notice that we are dealing here with the intensional sense of 'about' and 'thinking of that book', so that (a) the 'external' book need not necessarily exist (the 'object' in question is a logical construct — see note 8 below), and (b) that book is the book *under a specific mode of representation*. Thus, arguments like those based on Putnam's Twin-Earth examples (see Putnam 1975), according to which two identical 'narrow' mental states can be directed towards *different objects*, are irrelevant: Harold's narrow content necessarily represents what it represents under one specific mode of representation, rather than another. If this mode of representation relates Harold to a certain 'external' book, so that he is 'thinking of it', then he is necessarily thinking of it.

Maradona's leg and of the ball, we do not have to describe the contact between them at all. We have already done so. That is, the information concerning the contact between the leg and the ball is embedded in the information concerning the movement of these two. For nothing more is needed in order to get the information that there is such a contact between the leg and the ball in addition to the information that they are in two contiguous places at the same time. Descriptions of the movements of the ball and the leg, as descriptions of their *movements*, must yield the information concerning their spatio-temporal locations, so if indeed there is a contact between the leg and the ball, and the descriptions of their movements are accurate, the description of their contact is already given in the description of their movements. Thus, since each of the two descriptions of the movements can avoid using relations, the description of Maradona's kicking the ball can avoid using relations as well⁴.

I suppose one might protest that my account of 'Maradona's kicking the ball' is mistaken, since it neglects the causal element that is involved in the kicking, an element whose description cannot avoid using relations. But even if I missed something about the kicking story, I do not think it can affect the above argument. For whatever is the correct analysis of 'An event A causes an event B', the events that should take place according to it cannot be but A, B, or other events of their sort (if causality requires regularity). Since A and B in the kicking story can be described non-relationally, so can other events of their sort.

What is true of Maradona's kicking the ball is true, I think, of *all* physical acts. That is, all physical acts that 'have objects', all 'relational' physical acts, can be described in a non-relational language. For we can always describe non-relationally the movements that are involved in a physical event, and thus account for any contact that takes place between physical entities. Of course this argument needs a complement. We must add that there are no physical relations which are not 'spatio-temporal contacts'. But I take it to be true, because I take it to be true that there are no physical events which are not movements of matter in space⁵. Thus, all physical events can be described in a non-relational language.

So far I have claimed two things about physical acts: first, 'their' objects are not essential to them, in the sense that the same act can occur without its object (which is related to the act causally and therefore contingently). Second, they can be described in a non-relational language.

⁴One might say that this analysis presupposes a strict delimitation of physical objects. However, I do not think it is too strict, for I presuppose here nothing more than is necessary for claiming that there are physical movements (of some objects relatively to others).

⁵I think I can show that energetic events, some sub-atomic events, and other possible counter-examples to this claim, are theoretical constructions and not real events in the physical world. But I am not going to dwell on this here.

There is, I think, a close relation between these two characteristics of the physical. A non-relational description of physical acts is possible *because* the objects of such acts are not essential to them, or, strictly speaking *because* these acts are not really relational. That is, physical events are 'discrete' events, so that what seems to be a relational physical event, an event involving two objects, is nothing but a combination of *two* events, each of which involves one object. We can learn this from the example of Maradona's kicking the ball. That kicking is a combination of Maradona's kicking (i.e., the movement of his leg) and the movement of the ball. There is no *additional* event of the ball being kicked *by* Maradona, or of the contact between the ball and Maradona. I said earlier that if we describe the movement of the ball and of Maradona we thereby describe the contact between them. I would like to add now that this is so *due to the fact* that this contact, which is said to be the physical relation between Maradona and the ball, *is*, like any other physical contact, nothing but these two objects being in two contiguous places at the same time. Thus, we cannot find here, nor can we find elsewhere, any physical event which is really relational.

We saw that the objects of *Intentional* acts, unlike the objects of physical acts, are essential to 'their' acts. What about the *descriptions* of those acts? Do they *have* to employ many-place predicates? It seems to be implausible. For *every* many-place predicate can be expressed in a non-relational manner. When A loves B, for example, what considerations can prevent us from treating 'loves B' as a one-place predicate (and replace it by another term, if we like)? So Intentional predicates can always be expressed by one-place predicates. However, if we are to describe an Intentional act like John's thinking of his dog in a way that makes separate references to John and the dog (i.e., separate terms refer to each one of them), then we must use a relation that holds between these two, the relation 'thinking of'. No separate descriptions of John and his dog can yield the information that John is thinking of his dog. For what can be said of the dog in order to express the idea that he is thought of *by* John? Whatever happens to the dog, or whatever he does, has nothing to do with the fact that John is thinking of him⁶. In other words, Intentional acts have an aspect ('*the Intentional aspect*') whose description necessarily involves two-place predicates.

This point is not trivial at all, since it does not hold true of physical acts: as I showed earlier, we *can* describe Maradona's kicking the ball in a way that makes separate references to Maradona and the ball without using any relation that holds between them. Physical acts, that is, do not have an aspect whose description necessarily involves two-place predicates.

⁶See note 3 above.

So Intentional acts are peculiar in that they, and only they, have such an aspect, in virtue of which they can be said to be 'relational'.

We can then say that Intentional relations are *irreducible* relations, in the sense that we must employ relations (in the logical sense, namely, many-place predicates) for describing them fully, that is, for describing them without leaving out an important feature of them. Using the same vocabulary, we can say that *physical* 'relations' are *reducible* relations, in the sense that we can fully describe them without employing any relations (in the logical sense). It follows from this, that Intentional acts cannot be fully described in a physicalist language. For irreducible relations, being irreducible, cannot be reduced to reducible relations. If it were so, the irreducible relations would be reducible ones⁷.

However, I argued that physical *acts* are non-relational in nature (and that is why their *descriptions need not* be relational). Can we then pursue this asymmetry between Intentional acts and physical acts and say that the former *are* relational in nature?

C

If indeed Intentional acts are relational in nature, then what are the two terms of these relations? Intentionality is said to relate persons, or subjects, or minds, to objects in the world, so it seems natural to think that there are relations between persons, or subjects, or minds, and objects in the world.

John Searle (1983, p. 19) says that there is a problem in the concept of a two-term relation one of whose terms does not exist. The terms of a *real* relation of the kind I look for, unlike those of the Intentional relation, must both exist as real constituents of our world. This is at least part of what I mean by the 'reality' of a relation.

I think the fact that some Intentional objects do not exist shows also in another way the inadequacy of such objects as terms of the relation in question. It shows, that is, that the relations that do hold between the subject and *existing* objects are contingent. Thus, even in these cases, these relations are not 'real' in the sense I use the term here. Recall my treatment of physical acts: the thoughts of such objects remain the same whether or not the objects exist, and the objects themselves remain the same whether or not the thoughts exist (their being thought-of adds nothing

⁷ One could claim that any description of the physical must employ (at least) two-place predicates, one spatial and the other temporal. But first, if this is true, then any full description of the mental must employ (at least) three-place predicates (one place for the subject, another for the object, and still another for temporal indication), and thus the irreducibility claim can still be defended. Second, nothing can prevent us from marking spatio-temporal points by one-place predicates.

real to them). Thus, there cannot be a *real* relation between a subject and its Intentional objects, whether they exist or not⁸.

We have to look, therefore, for another candidate for the role of the second term of 'the real Intentional relation', as distinct from 'the logical Intentional relation' that holds between the Intentional content and the Intentional object. Any ideal or abstract entity like propositions, contents, and so forth, cannot do the job (The case might be different with regard to the psychological realizations of abstract entities. I will deal with these immediately).

It seems to me that we cannot as well adopt the idea that when subjects have beliefs or desires (or any other propositional attitudes), they bear a real relation to *sentences*. For then either we refer to sentence-types, or to sentence-tokens. A sentence-type is an abstract entity, and as such it cannot serve as a term of a real relation, as I said above. On the other hand, what sentence-token can be said to be the term of the real Intentional relation? According to a popular idea, subjects bear relations to sentences in their *brains*. But unless we are to accept the implausible idea about there being real (written!) sentences in the brain, we must admit we are dealing here with sentences that are somehow *encoded* in the brain. If so, however, what matters for our concern are not the 'inscriptions' in the brain, but their interpretations, the interpreted sentences *as interpreted*. I do not know if this idea makes any sense. Anyway, it is closely related to the idea about phenomenal objects. That is, what seems to be really important about the relation people bear to sentences when they have propositional attitudes are the phenomenal characteristics of, for example, the believed sentences (which can be viewed as psychological sentence-tokens). I am now going to deal with phenomenal entities at large.

I hope it is now clear that the entities we look for cannot, on the one hand, be abstract entities, and on the other hand, cannot be external to the mental acts. Thus, it seems natural to think of what are known as 'internal objects', 'phenomenal objects' (or 'phenomenal states of affairs'), 'mental (as opposed to Platonic) ideas', 'entia rationis', etc. I shall henceforth refer to all these as 'phenomenal objects'. These are the phenomenal woman that is said to exist 'in' my mind when I am thinking of a woman, the mental image of a dog that I have when I see a dog, and so on.

⁸ I tend to agree with Searle that the Intentional object is always an ordinary object with no peculiar ontological status, and that "To call something an Intentional object is just to say that it is what some Intentional state is about" (Searle 1983, p. 19). Yet, the fact that something is called an Intentional object has to do only with the logical Intentional relation, not with the real one. That is, the Intentional object has *no* ontological status at all (not just that it has no *peculiar* ontological status, as Searle puts it), and we can say that it is a logical construct.

No doubt such entities, if they exist, are not external to the mental acts. They also satisfy the second condition I have just mentioned, for they are not abstract: such entities are not the contents of our mental acts, but rather they are the (psychological) realizations of these contents. It seems also that we actually have here an essential and necessary connection between the subject (or its mental acts) and its phenomenal objects: according to the champions of the phenomenal-objects-theory, the existence of such objects is a necessary condition for the existence of the appropriate mental acts. For example, while it is possible for my visualizing a woman to occur even though this woman does not exist, it is not possible that such a visualization occur without the existence of the appropriate 'mental woman'.

There is a lengthy controversy about the very existence of phenomenal objects. I will dwell on this controversy here only to the extent that it is related to the question concerning the existence of mental relations. And it is so related, since if the Intentional act is really relational in nature, then there must exist phenomenal objects. That is, the mental relation cannot hold but between the subject and its phenomenal objects, i.e. with the internal and non-abstract entities which are necessarily related to it. So the question whether or not the mental is relational seems to depend on the existence of phenomenal objects. However, this alleged relation is problematic, and I would like to focus on it now.

Intentional states are *representations* in that they are *about* objects or states of affairs in the world. But there is a problem about mental representations, and I think this problem is intimately connected to the questions of mental relations and phenomenal objects. I am talking about what Dennett calls 'Hume's problem' (See Dennett 1978, pp. 122-125). This problem concerns the fact that a representation is the representation that it is (and further, that it is a representation in the first place) only for a certain agent, who uses it as that representation (i.e., who takes it to be about a certain object). For example, the sentence 'the book is interesting' is about the book just because we understand it to be about the book. Nothing in the intrinsic nature of this sentence makes it to be about a book, and there is no logical obstacle for taking it to be about women, cars or whatever. Now 'Hume's problem' arises when one tries to apply this to mental representations: an Intentional state, such as a belief, must, as a representation, be used by some agent. But how does the agent use a belief? In Thompson's words (Thompson 1986, p. 88), ". . . we would be at a loss to know what to do if asked to use some of our psychological states to intend something different", and "A belief that the moon is red cannot be used to mean the cat is black, even though the sentence 'the moon is red' could, if we choose to use it that way" (ibid., p. 86). And further, how can an agent use his own belief? There must be in his head another representation of it, and, if there is another representation, there must as well be another agent ('homunculus') who uses that representation as the representation that it is. And how can this last agent use this last representation?

There must be in his head still another representation, and so forth. That is, we are led into an infinite regress of representations and homunculi.

The way to stop (or to avoid) this regress is to claim that *mental* representations, Intentional states, represent without any use; that they are *intrinsic* representations. The mental representation is thus a *direct* representation. Searle's solution to 'Hume's problem' is in this spirit. He (to use again Thompson's words) stops the regress at its first Intentional state (i.e., without appealing to other representations, other Intentionalities). Searle rejects the premise of the regress argument, according to which there is no representation without a user. On his account, the content of an Intentional state is internal to it. It determines the conditions of satisfaction of the Intentional state logically and intrinsically. A belief does not require some further Intentionality in order to become a representation, because if it is a belief it is already intrinsically a representation (Searle 1983, pp. 21-22).

I am not going to examine here Searle's treatment of the problem. However, 'Hume's problem' and the idea of intrinsic representation have to do with phenomenal objects and, more specifically, with the relations that subjects are said to bear to them. For if there are phenomenal objects, and if we are to avoid 'Hume's problem', we must admit that these objects are 'represented' (or, should we better say, presented) *directly*, without any use. They are presented, that is, exactly as they are.

But what happens then between the subject and the phenomenal object? What can be said about the relation between them if the object is accessible to the subject as it is? Saying that the subject *simply sees* the object will not do. 'Sees' here is used metaphorically (Would we say, when an auditory sensation is concerned, that the subject *hears* the phenomenal object?). But the metaphor is of no help. For veridical seeing consists of two stages, a physical one (involving light rays, retinal processes, etc.) and a mental one. The physical stage is surely irrelevant for the relation in question. The mental stage, on the other hand, is an *instance* of what we seek to explain, so that introducing it is nothing but introducing the problem, rather than solving it.

Furthermore, it seems that *no* account can be given of the alleged relation between the subject and the Intentional object, since the correct answer to the question 'What does the subject do to its phenomenal object?' is: '*Nothing*'. This expresses the intrinsic character of the mental representation, a direct presentation of an 'object' which is said to be presented *exactly as it is*.

I do not know whether or not this result makes sense. But anyhow, it refutes the phenomenal-object-theory, and thus calls into question the existence of real mental relations. For if indeed a mental representation is a direct presentation, so that the subject does *nothing* to its phenomenal objects, then this subject must have all the phenomenal properties of that object, since the former just reflects the latter as it is. This fact means that

the subject and the object merge with each other, and the object becomes superfluous: a subject with phenomenal properties does not need any phenomenal object. Thus, there cannot be here a relation, since we cannot identify two separate terms.

This result seems to me to be close to Hume's solution of the problem that is named after him. He, as Dennett (1978, p. 122) says, shunned the notion of an inner *self*, but this left him with the necessity of getting the ideas and impressions to 'think for themselves'. I prefer to talk of the self or subject rather than of ideas. This merging of the phenomenal object with the subject, however, need not surprise us. It is typical for such an object, that is said to be a separate entity on the one hand (and that's why it is an *object*), and on the other hand is said to be such that its existence depends on the existence of the mental act. It seems that such a queer entity (queer, for no other entity depends *logically* on something else for its existence) must merge with what it depends on. I think this queerness reflects the queerness of what I referred to as an 'irreducible relation'. Such a relation is said to be incapable of being dismantled. This means that the two terms of a relation do not exist here, so that in effect there is no relation.

It is important to notice that what seemed at first to be a physical relation turns out to be, after all, non-relational in virtue of its being a *reducible* 'relation', and what seemed at first to be a mental relation turns out to be, after all, non-relational in virtue of its being an *irreducible* 'relation'. However, one does not have to draw the conclusion that there are no relations, for all that was said here concerns '*real*' relations, either mental or physical. The mental *act* cannot be relational, but there still seems to exist the Intentional relation of aboutness, 'the logical Intentional relation'. Its having such an aspect distinguishes the mental from the physical and excludes the possibility of fully describing it in a physicalist language.

REFERENCES

- Brentano, F. (1874), *Psychology from an Empirical Standpoint*. Transl. by D.B. Terrel, A.C. Rancurelo, L.L. McAlister. New York: Humanities, 1973.
- Dennett, D.C. (1978), *Brainstorms*. Cambridge, Mass.: MIT Press.
- Knowles, M. (1980), "Some Remarks on the Intentionality of Thought", *Philosophy and Phenomenological Research* 41: 267-279.
- Putnam, H. (1975), "The meaning of 'meaning' ", in his *Mind, Language and Reality*. Cambridge: Cambridge University Press, 215-271.
- Richardson, R.C. (1982), "Internal Representation: Prologue to a Theory of Intentionality", in J.I. Biro and R.W. Shahan (eds.), *Mind, Brain,*

and Function. Norman: University of Oklahoma Press. 171-211.

Searle, J.R. (1976), "Intentionality and the Use of Language", in A. Margalit (ed.), *Meaning and Use*. Dordrecht: Reidel, 181-197.

Thompson, D.L. (1986), "Intentionality and Causality in John Searle", *Canadian Journal of Philosophy* 16: 83-97.



EINSTEIN'S REVOLUTION: A STUDY IN HEURISTIC

Elie Zahar

Einstein's Revolution

Einstein's Revolution is a textbook on relativity written from a historical-methodological point of view. It can be used as an account of Einstein's physical theory even if the reader has no sympathy with the author's philosophical standpoint, or it can be read for the author's philosophical argument, without the reader's having to follow all the details of the physics.

This work challenges a distinction made by the Vienna Circle and still influential today: the distinction between 'the context of discovery' and 'the context of justification.' According to the traditional view, the context of discovery calls for no rational reconstruction, and belongs, in effect, to psychology, while only the latter is subject to a proper logic of appraisal.

Against these theses, *Einstein's Revolution* shows that there *is* a logic of discovery and that it plays an important methodological role in the appraisal of theories. Some research programs have powerful heuristics, consisting (in the case of relativity) of the Meyerson identity principle coupled with certain mathematical techniques.

Zahar applies the Methodology of Scientific Research Programs (MSRP) to the origins of relativity, showing how Lorentz, Einstein, Poincaré, Planck, Weyl, Eddington, and Schrödinger were driven by their largely mathematical heuristics to make their various contributions to Einstein's program. Although the lion's share of the credit goes to Einstein, figures like Lorentz and Poincaré are rehabilitated, and their contributions presented in some detail.

The final chapter shows that mathematical speculation played an even greater part in leading Einstein to his generally covariant field equations.

Open Court Publ. Co., 1989; 373 pages.

PRÉMIO PROFESSOR VIEIRA DE ALMEIDA

Para comemorar o centenário do nascimento do Professor Doutor Francisco Vieira de Almeida, que ocorreu em 9 de Agosto de 1988, a sua Família instituiu um prémio bienal nos termos do nº. 7 deste Regulamento, intitulado *Prémio Professor Vieira de Almeida* no valor-base de 300.000\$00, cuja atribuição será realizada por intermédio da Fundação Calouste Gulbenkian. A obra a premiar deverá versar tema que, pela qualidade do seu tratamento, possa ser considerada efectiva homenagem ao espírito da filosofia do Prof. Vieira de Almeida.

REGULAMENTO

1. As obras concorrentes versarão sobre temas de especial relevância na obra do Prof. Vieira de Almeida. Do tema de cada concurso será dado conhecimento público até ao dia 9 de Agosto do segundo ano imediatamente anterior ao da atribuição, excepto no que se refere à atribuição do primeiro dos prémios em que essa indicação será feita até 30 de Dezembro de 1989.

2. O concurso terá carácter internacional, e poderão concorrer obras inéditas redigidas em português, francês, inglês, espanhol ou italiano.

3. O primeiro prémio será atribuído em Outubro de 1991, devendo os candidatos entregar na sede da Fundação Calouste Gulbenkian, Serviço de Presidência, até 31 de Abril de 1991, oito exemplares da obra, acompanhados da indicação de que a mesma destina ao prémio *Professor Vieira de Almeida*.

As obras não terão qualquer indicação do autor devendo ser acompanhadas por um envelope lacrado com a identificação e morada do candidato. A abertura dos envelopes será feita em reunião do júri mencionado no parágrafo seguinte, após a classificação dos trabalhos apresentados.

4. A apreciação das obras concorrentes e a determinação da que deve ser premiada competirá a um júri constituído pelas seguintes entidades:

- a) Um professor de filosofia da Faculdade de Letras da Universidade de Lisboa;
- b) Um representante da Fundação Calouste Gulbenkian;
- c) Um representante da Sociedade Portuguesa de Filosofia;
- d) Um representante dos Instituidores

§ 1º O representante dos Instituidores tem voto de qualidade;

§ 2º Na hipótese de qualquer das entidades acima indicadas não designar representantes, os restantes membros do júri escolherão substituto ou substitutos.

§ 3º A composição do júri será conhecida um mês após a data de encerramento de cada concurso, isto é, até 30 de Maio do ano de atribuição.

§ 4º O júri elaborará o regulamento do seu próprio funcionamento e emitirá o seu veredictum até 9 de Agosto do ano de atribuição.

5. A entrega do prémio será realizada pela Fundação Calouste Gulbenkian em sessão pública que decorrerá na sua sede, dentro de 90 dias a partir da data de libertação do júri,

6. No lugar próprio da obra premiada, inserir-se-á a seguinte inscrição:

Prémio Professor Vieira de Almeida, Instituído por sua família, e atribuído com a colaboração da Fundação Calouste Gulbenkian, em Lisboa, durante o mês de Outubro de 1991.

7. Os instituidores garantem a atribuição do prémio em três biénios através do depósito bancário de 900.000\$000, à ordem da Fundação Calouste Gulbenkian. A eventual continuidade do prémio após esse período dependerá exclusivamente da decisão dos Instituidores.

Os juros resultantes desse depósito acrescerão ao capital do mesmo.

8. A instituição de cada um dos prémios caducará se o júri decidir, dentro do prazo previsto no parágrafo 4º do número 4, que nenhuma das obras o merece.