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Materialism and the Logical Structure of Intentionality

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This paper begins with a brief history of the thesis of intentionality and a review of some contemporary views. Following that, we present a problem for materialism that arises in connection with the possibility of a *general* materialist analysis (or reduction) of intentionality: if no such analysis (reduction) is possible, intentional phenomena would have at least one non-physical property, namely, their intentionality—this materialistically unanalysable general property. With this problem in mind, we will then suggest a general analysis of intentionality. We close by arguing that any satisfactory general analysis of intentionality must share a certain central feature with the proposed analysis and that this feature entails the existence of an *objective level of organization* that is non-physical. This is enough to show that the traditional materialist world view is mistaken. One way in which this argument against materialism is novel is that it would go through even if, *per impossibile*, every particular type of mental phenomenon (pain, belief, etc.) had a materialist analysis (reduction).¹

i. A Brief History

Contemporary philosophical discussions of intentionality may be traced to the following famous passage by Franz Brentano (1838–1917) in a chapter of *Psychologie vom empirischen Standpunkt* (1874) entitled ‘The Distinction Between Mental and Physical Phenomena’:

¹ Our intention is to use “materialism” in conformity with its traditional meaning. Some contemporary philosophers use the term in a diluted way. In consequence, some of the philosophers who now call themselves ‘materialists’ might accept the views defended in this paper.

Nonetheless, psychologists of an earlier period have already directed attention to a particular affinity and analogy which exists among all mental phenomena, while the physical do not share in it. Every mental phenomenon is characterized by what the scholastics of the Middle Ages called the intentional (and also mental) inexistence (*Inexistenz*) of an object (*Gegenstand*), and what we would call, although in not entirely unambiguous terms, the reference to a content, a direction upon an object (by which we are not to understand a reality in this case), or an immanent objectivity. Each one includes something as object within itself, although not always in the same way. In presentation something is presented, in judgement something is affirmed or denied, in love [something is] loved, in hate [something] hated, in desire [something] desired, etc.

This intentional inexistence is exclusively characteristic of mental phenomena. No physical phenomenon manifests anything similar. Consequently, we can define mental phenomena by saying that they are such phenomena as include an object intentionally within themselves.²

According to this passage, a mental phenomenon is one that includes an object that is not a 'reality' but exists merely 'immanently' or 'intentionally'. However, in a 1911 paper 'Genuine and Fictitious Objects',³ Brentano gave up the doctrine that the objects of mental acts have a special kind of existence or being—intentional inexistence: 'And so it holds true generally that nothing other than things (*Dinge*), which fall entirely within the same concept of real entity (*Reales*), can provide an object (*Gegenstand*) for mental reference. Nothing else can ever be, like a real entity, the thing to which we mentally refer as an object' (p. 74). In this, he agreed with his student Edmund Husserl (1857–1938), who introduced the term "intentionality": 'It is a serious error to draw a real (*reell*) distinction between "merely immanent" or "intentional" objects, on the one hand, and "transcendent", "actual" objects, which may correspond to them on the other . . . It need

² In a lengthy footnote, Brentano traces his doctrine of intentional inexistence to a view he attributed to Aristotle and Thomas Aquinas (i.e. the view that the item that is experienced is *in* the one experiencing, the item that is thought is *in* the one thinking, etc.). In a remark about Anselm, he makes it clear that intentional inexistence is supposed to differ from actual existence. Brentano's intentional inexistence is what Descartes called objective existence in his notorious argument for the existence of God in *Meditations*, III.

³ Reprinted in R. Chisholm, *Realism and the Background of Phenomenology* (New York, 1960).

only be said to be acknowledged *that the intentional object of a presentation is the same as its actual object, and on occasion as its external object, and that it is absurd to distinguish between them.*⁴

When purged of the doctrine of intentional inexistence, Brentano's thesis becomes:

1. (a) All mental phenomena make reference to or are directed upon an object.
- (b) Only mental phenomena make reference to or are directed upon an object.
2. No physical phenomenon makes reference to or is directed upon an object.

Alexius Meinong (1853–1920), another famous student of Brentano, accepted thesis 1(a)–(b) in a 1904 essay, 'The Theory of Objects': 'To put it briefly, no one fails to recognize that psychological events so very commonly have this distinctive "character of being directed to something" (*auf etwas Gerichtetsein*) as to suggest very strongly (at least) that we should take it to be a characteristic aspect of the psychological as opposed to the non-psychological' (p. 77).

The term "intentionality", which derives from the Latin *intendere*, meaning to point, was introduced by Husserl, not for this general property of being directed upon or making reference to, but for a property explicitly restricted to certain *conscious experiences*: 'The qualifying adjective "intentional" names the essence common to the class of experiences we wish to mark off, the peculiarity of *intending*, of referring to what is objective, in a presentative or other analogous fashion.'⁵ Thus, Husserl ruled out, by definition, non-mental intentional phenomena (according to some philosophers, linguistic phenomena, for example, are intentional but non-mental) and mental phenomena that are intentional but non-conscious (e.g. standing beliefs, long-term ambitions, habituated likes and dislikes, etc.). Moreover, Husserl did not accept the thesis—entailed by Brentano's thesis—that *all* mental phenomena

⁴ E. Husserl, *Logische Untersuchungen* (Halle, 1900–1), tr. J. N. Findlay (New York, 1970), 595.

⁵ Reprinted in Chisholm, *Realism*.

⁶ *Logische Untersuchungen*, tr. Findlay, 562.

are intentional: 'That not all experiences are intentional is proved by sensations and sensational complexes.'⁷

ii. Contemporary Views

Contemporary philosophers, especially those writing in English, would accept something like the following informal definition: a phenomenon (state, event) is intentional if and only if it is 'directed toward' or 'makes reference to' something. Quotation marks are added to emphasize that the indicated phrases are used metaphorically. Evidently these spatial and linguistic metaphors can be eliminated in favour of a literal use of the term "about", yielding the following informal definition:

A phenomenon (state, event) is intentional if and only if it is about something.

Thus, intentionality is the property of aboutness possessed by certain phenomena. In contemporary philosophy Brentano's original theses 1–2 have become the following:

- I. (a) All mental phenomena are intentional.
- (b) Only mental phenomena are intentional.
- II. No purely physical phenomenon is intentional.

Contemporary philosophers, somewhat inaccurately, call the conjunction of I and II Brentano's thesis of intentionality. I is often referred to as (Brentano's thesis of) intentionality-as-the-mark-of-the-mental. II is referred to as (Brentano's thesis of) the irreducibility-of-the-intentional.

On the contemporary formulation, an intentional phenomenon need not be about an *object* (i.e. an individual particular). For example, the phenomenon of judging that every man is mortal is not about any particular *object*; nevertheless, it would be counted as intentional because it is about something, namely, mankind and mortality. Brentano, by contrast, was inclined to restrict the range of the 'directed toward' relation to *objects*. (Accordingly, he would

⁷ *Logische Untersuchungen*, tr. Findlay, 556.

have treated a judgement that every man is mortal as a rejection of men that are non-mortal. This treatment becomes ever more awkward for more complex examples.) Furthermore, the term “mental phenomena” is now almost universally understood to apply to not only conscious (‘occurrent’) mental phenomena but also ‘standing’ mental phenomena (e.g. standing beliefs), which need not be conscious.

As indicated, Husserl⁸ used the term “intentional” in a more restricted way to pick out an explicitly psychological property, thereby rendering trivial the proposition expressed by the sentence, ‘Only mental phenomena are intentional.’ According to standard contemporary usage, by contrast, intentionality is not an explicitly psychological property; it is simply the general property of aboutness possessed by certain phenomena. Consequently, the above sentence expresses a highly non-trivial philosophical thesis—namely, thesis I(b).

By using the term “intentionality” for the general property of aboutness of certain phenomena (rather than for an explicitly psychological property), contemporary philosophers have been able to use the term to formulate a closely related substantive philosophical question: are intentional phenomena *fundamentally* linguistic or psychological? This was the main question under debate in the famous Sellars–Chisholm correspondence, ‘Intentionality and the Mental’,⁹ wherein Sellars adopted the linguistic thesis and Chisholm, the psychological thesis. With the advent of H. Paul Grice’s intention-based analysis of linguistic meaning,¹⁰ Sellars’s linguistic thesis has lost the support of most philosophers writing in English. In contemporary French critical theory, a number of philosophers still find it fashionable to reject the psychological thesis; however, these philosophers evidently have not come to terms with the power and elegance of the Gricean analysis. On that analysis, linguistic meaning is defined in psychological terms (intending, believing, etc.); accordingly, intentional linguistic phenomena turn out, upon analysis, to be complex phenomena

⁸ And Searle, *Intentionality* (Cambridge, 1983): ‘Intentionality is that property of many mental states and events by which they are directed at or about or of objects and states of affairs in the world’ (p. 1).

⁹ In H. Feigl *et al.*, eds., *Concepts, Theories and the Mind–Body Problem* (Minneapolis, 1958).

¹⁰ ‘Meaning’, *Philosophical Review*, 66 (1958), 377–88.

concerning co-ordinated psychological states of relevant groups of people.¹¹

iii. Assessment of the Theses

Thesis I(a). A number of contemporary epistemologists and philosophers of science are drawn to thesis I(a) in connection with the doctrine of the 'theory-ladenness' of perceptual experience, the doctrine that all perceptual experience is 'interpreted'. However, it is difficult to see how in perceptual experience there could fail to be a further element, namely, the element that is subjected to 'interpretation'—what Husserl calls the *hyle* (matter) of an experience, for example, mere tickles or mere sensations of colour. Arguments in recent philosophy of mind concerning the irreducibility of *qualia*—pure phenomenal qualities—lend support to this view. An attractive moderate position, therefore, is the following: all perceptual experience is intentional, although there is always a separately identifiable element in perceptual experience that has no intentionality.

Thesis I(b). Linguistic phenomena provide the most likely candidate counter-examples to thesis I(b). For example, the production of a linguistic token of "Out of Order" by a vending machine *means* that the machine is out of order and, hence, is *about* the machine even though this does not seem to be a *mental* phenomenon. However, as already indicated, H. Paul Grice's analysis of linguistic meaning has convinced most philosophers that all such linguistic phenomena depend, by definition, on certain co-ordinated psychological states of people in the relevant language group and, hence, must be counted as partly psychological. In the vending machine case, it is the communicative intentions of the manufacturer that give the machine its intentionality.

¹¹ It should be mentioned that a distant relative of the linguistic thesis survives in the form of the 'language-of-thought' hypothesis in philosophy of mind, namely, the thesis that the ranges of all fundamental psychological relations—belief, desire, etc.—are comprised of sentences belonging to a hypothetical non-public 'language', where 'tokens' of these sentences are somehow inscribed in or realized in the brain. See e.g. J. Fodor, *The Language of Thought* (New York, 1975), and id., *Psychosemantics* (Cambridge, Mass., 1987). However, because this sort of 'language' is not a genuine public language, this position is not a version of the linguistic thesis, which is that public linguistic phenomena are the primary intentional phenomena. See nn. 15 and 30.

Thesis II. Contemporary thought is deeply divided over thesis II, the irreducibility-of-the-intentional. It is ironic, therefore, that most philosophers participating in the contemporary debate have—either implicitly or explicitly—abandoned the prospect of giving a general analysis of intentionality. (For example, Searle declares without any argument: ‘In my view it is not possible to give a logical analysis of the Intentionality of the mental . . . There is no neutral standpoint from which we can survey the relations between Intentional states and the world and then describe them in non-Intentionalistic terms. Any explanation of Intentionality, therefore, takes place within the circle of Intentional concepts.’¹²) The importance of this issue for thesis II is seldom realized. Suppose that there does not exist a general analysis (physicalistic or otherwise) specifying what intentional phenomena have in common. Then, intentional phenomena would have a property—namely, their intentionality (this general unanalysable property)—that is not a purely physical property. Accordingly, intentional phenomena would not be purely physical. Therefore, thesis II would be vindicated. The possibility of a general analysis of intentionality is thus a pressing question.

Virtually no philosophers have attempted a general analysis of intentionality. One exception is Fred Dretske,¹³ who gives an analysis in probabilistic terms (using the ‘information theory’ of Hartley, Weaver, Shannon, Wiener, *et al.*). However, there are several counter-examples showing that his analysis provides neither necessary nor sufficient conditions. For example, the general analysis of intentionality (ch. 7) does not provide a necessary condition; for, according to the analysis, something has the intentional content that *t* is *F* only if *t* is *in fact F*. However, intentional contents need not in general be true, as the phenomenon of false belief illustrates. In connection with his solution to this problem, Dretske adopts an etiological account, according to which a being has an intentional content that *t* is *F* only if the being, or its ancestors, were causally acted on by *F*s in the right way. But this further restriction does not yield a necessary condition. For example, by a fantastically improbable but nevertheless causally possible coincidence, a being physically indistinguishable from me could arise spontaneously

¹² *Intentionality*, 26.

¹³ *Knowledge and the Flow of Information* (Oxford, 1981).

without any relevant causal interaction with the things in its environment. According to the etiological analysis, such a being would in that case have *no* intentional contents. But this is absurd. Although the being would not (let us assume) have familiar natural-kind intentional contents, the being could have at least *some* intentional contents. For example, the being could be aware that it is in pain, that its experiences are changing, that everything is self-identical, that it is logically possible for there to be other things besides itself and its experiences.¹⁴ The following counter-example shows that Dretske does not provide a sufficient condition: it is logically (or metaphysically) possible for there to be a world in which there is an etiological system that fits Dretske's analysis and in which *nothing* ever has been or ever will be (or ever has had or ever will have the capacity to be) *conscious* in any fashion—to have sense experiences, pleasures, pains, realizations, fears, wishes, and so forth. In such a situation, the envisaged etiological system would, intuitively, not have genuine intentional states.¹⁵

¹⁴ Although Twin-Earth style arguments might be used to show that the being would not have any familiar natural-kind intentional contents, such arguments provide no motivation whatsoever for the radical thesis that the being could not have intentional states that are about such things as pain, experience, change, identity, logical possibility, etc. On the contrary, there is strong prima-facie reason to think that the being would have some intentional contents. In addition to my having colour sensations, smell sensations, sound sensations, etc., I have various purely cognitive phenomenological episodes (e.g. the episode of spotting a new logical connection or the idea behind a new proof). When one of these episodes occurs, I undergo a marked phenomenological change, even though there need be no change in the phenomenal qualities I am experiencing. And, of course, there need be no relevant objects in my environment that are causing the episode; I might like thinking about logic in a sensory deprivation chamber. Given that the envisaged being is physically indistinguishable from me, it should also be phenomenologically indistinguishable from me: each time I undergo a phenomenological change, the being ought to undergo a phenomenological change as well. Consider one of my purely cognitive phenomenological episodes whose occurrence is accompanied by no change in the phenomenological qualities I am experiencing. Since the occurrence of this episode constitutes a phenomenological change in me, there should be a corresponding phenomenological change in the envisaged being. But that change would not consist of a change in the phenomenal qualities that the being is experiencing. Thus, there is nothing that the phenomenological change in the being could be except a cognitive change: the being must be thinking. So there must be an intentional content.

¹⁵ Besides these types of counter-examples to the analysis there are many technical difficulties. For example, the counter-example given in Bealer, 'Mind and Anti-Mind: Why Thinking has No Functional Definition', *Midwest Studies in Philosophy*, 9 (1984), 283–328; the problem mentioned in n. 30 below; and

Roderick Chisholm has shed light on the possibility of a general analysis of intentionality. In his early work on intentionality,¹⁶ Chisholm offered extremely insightful logical criteria for intentional language (i.e. sentences that report intentional phenomena).¹⁷ These criteria were found to be deficient in various ways,¹⁸ but they nevertheless constituted promising suggestions. In later years Chisholm abandoned his effort to give purely logical criteria for intentionality. Indeed, he implicitly adopted the 'circle-of-intentional-concepts' posture, pursuing a definitional strategy that tries to define certain basic logical notions (e.g. the notion of one property's involving another) in terms of certain intentional notions (e.g. the notion of a person's conceiving something). Within this scheme he then attempts general definitions of intentionality and of the psychological. While not formally circular, this way of proceeding is far less illuminating philosophically, for it uses intentional notions in the very definition of intentionality and of the psychological. Moreover, within this scheme the prospect of a satisfactory logical theory is very unlikely, given that some of the ultimate primitives in Chisholm's logical theory would be psychological notions which are resistant to the sort of rigorous theoretical treatment expected in a logic.

iv. An Analysis of Intentionality

On the face of it, the term "about" does not seem to be a psychological term; on the contrary, it seems topic neutral and, if

problems that arise in connection with the non-causal origins of our temporal concepts, spatial concepts, numerical concepts, modal concepts, etc. Jerry Fodor, *Psychosemantics*, offers a more complicated etiological theory of mental content. However, like other etiological theories, Fodor's theory falls prey to the two counter-examples given in the text. It also falls prey to pretty much the same sorts of technical difficulties.

All these problems aside, it is doubtful whether either Dretske or Fodor really is in a position to produce a *general* analysis of intentionality, one equipped to deal with *every* logically possible type of intentional phenomenon (see sect. v). Their proposals are aimed only at certain familiar types of intentional phenomena (primarily, perceptual experience and belief).

¹⁶ *Perceiving: A Philosophical Study* (Ithaca, NY, 1957) and 'Intentionality', in P. Edwards, ed., *The Encyclopedia of Philosophy* (New York, 1967), 201-4.

¹⁷ Daniel Dennett, for example, adopts Chisholm's criteria: *Content and Consciousness* (London, 1969), 22-32.

¹⁸ See e.g. G. Bealer, *Quality and Concept* (Oxford, 1982), 229-31.

anything, belongs to logic, broadly construed. In view of this, it would not be implausible that an analysis of the notion of an intentional phenomenon could be stated within an appropriate logical theory. Such an analysis was ventured by me in earlier work.¹⁹ A streamlined version is presented below.

By logic, we understand intensional logic, the sort of logic in which equivalent expressions cannot always be substituted for one another without changing the truth value of the sentences in which they occur. Intensionality in language results from reference to intensional entities, entities that can be equivalent without being identical. Properties, relations, and propositions are the paradigmatic intensional entities. Among all the various properties and relations, certain ones stand out as 'basic' or 'natural' (e.g. green and blue), whereas others are derivative (e.g. grue, bleen, being identical to green, being distinct from blue, etc.).²⁰ There are very strong intuitions supporting such a distinction. In addition, such a distinction proves useful, and perhaps essential, for dealing with a diverse family of important philosophical problems—for instance, clarifying the notions of objective similarity, supervenience, real (*v.* Cambridge) change, real (*v.* Cambridge) individuals and kinds, inductive inference, causation, causal law, scientific explanation, and so forth. The basic or natural properties and relations are called, respectively, qualities and connections. Derivative intentions can be obtained from these distinguished properties and relations (and perhaps subjects of singular predications) by means of fundamental logical operations (conjunction, negation, existential generalization, singular predication, etc.). The intensions that can be so obtained may in that sense be considered complex.

Notice that propositions (and other complex intensions) just on their own, independently of whether anyone believes (or otherwise employs) them, are said to be *about* things. For example, the

¹⁹ *Quality and Concept* and id., 'The Logical Status of Mind', *Midwest Studies in Philosophy*, 10 (1986), 231–74.

²⁰ An increasing number of contemporary philosophers, especially philosophers of mind, accept a distinction between properties and relations that are basic or natural and mere grue-like "Cambridge" properties and relations. A survey of ways in which this distinction proves useful philosophically may be found in Bealer, *Quality and Concept*, ch. 8, 'Qualities and Concepts', and D. Lewis, 'New Work for a Theory of Universals', *Australasian Journal of Philosophy*, 61 (1983), 343–7. See also H. Putnam, 'On Properties', in his *Mathematics, Matter and Method* (Cambridge, 1970), 305 and Bealer, 'Theories of Properties, Relations and Propositions', *Journal of Philosophy*, 76 (1979). 634–48.

proposition that Socrates is wise is about Socrates and wisdom; and this would be so even if no one had ever considered the proposition. The aboutness of a proposition (or any other complex intension) has a realist (*v.* representationalist) analysis exclusively in terms of familiar logical relations holding between the proposition and its constituents.²¹

Our main thesis is this. The aboutness of all intentional phenomena derives from individuals' bearing relevant connections (namely, *intentional connections*) to complex intensions that, just on their own, are about things. We suggest the following definitions:

1. A connection is *hyperintentional* if and only if it can contingently connect some individual to some complex intension without connecting the individual to some necessarily equivalent complex intension and without the original intension's having veracity.²²

2. A connection is a *mediating intentional* connection if and only if it is—or is necessarily included in—a hyperintentional connection whose range is necessarily restricted to complex intensions.

3. A connection is a *mediated intentional* connection if and only if, necessarily, it connects an individual to an item only if some mediating intentional connection connects the individual to a complex intension that is about the item.

4. A connection is a *direct intentional* connection if and only if it is a hyperintentional connection that is neither mediating nor mediated.

Seeming, believing, knowing, and deciding are examples of mediating intentional connections; looking for and seeing objects are examples of mediated intentional connections; acquaintance is an example of a direct intentional connection. (These examples are heuristic only; settling which intentional relations are genuine connections and which intentional connections are mediating,

²¹ For a discussion of this sort of analysis and an examination of the differences between realism and representationalism and the advantages of the former, see Bealer, *Quality and Concept*, sect. 42, 'Realism and Representationalism' and pp. 225 ff.

²² A complex intension has veracity if it is a true proposition or a complex property or relation that applies to something actual. In symbols, the definition of hyperintentional connection is: c is hyperintentional iff $\diamond(\exists x)(\exists i)(\exists i')(x \text{ is an individual} \ \& \ i \text{ and } i' \text{ are necessarily equivalent complex intensions} \ \& \ \diamond(c \text{ holds between } x \text{ and } i \text{ and not between } x \text{ and } i') \ \& \ \diamond(c \text{ holds between } x \text{ and } i \text{ and } i \text{ has veracity}) \ \& \ \diamond(c \text{ holds between } x \text{ and } i \text{ and } i \text{ lacks veracity}) \ \& \ \diamond(c \text{ does not hold between } x \text{ and } i)$).

mediated, or direct is ultimately a matter of theory.) Intuitive motivation for these definitions and discussion of some of these examples will come in a moment.

With these definitions in place, we venture a purely logical analysis of the notion of an intentional phenomenon. Intentional phenomena are either basic or derived. A phenomenon e is a basic intentional phenomenon if and only if, for some individual x , some mediating, mediated, or direct intentional connection c , and some item y , e is the phenomenon of x 's bearing c to y . Derived intentional phenomena are phenomena whose analysis depends in some essential way on basic intentional phenomena.²³

If this analysis is correct, we can also say what it is for something to be an object of a basic intentional phenomenon: z is an object of a basic intentional phenomenon e if and only if, for some individual x , there is a mediated or direct intentional connection c such that e is the phenomenon of x 's bearing c to z , or there is a mediating intentional connection c and a complex intention i that is about z , such that e is the phenomenon of x 's bearing c to i .

Hyperintentional connections are the key to our analysis. Such connections have three distinguishing features: contingency, independent veracity, and hyper-fine-grained discrimination. Contingency reflects the fact that when an individual stands in one of these connections to something, there occurs a genuine *phenomenon*—a real *episode*—rather than, say, a logical or mathematical fact. Independent veracity reflects the fact that in thought we can do all sorts of things that are about (or at least purport to be about) items in the world, even though these things we do need not correspond to the actual conditions of these (purported) items in the world. Hyper-fine-grained discrimination reflects the fact that within the tide of naturalistic 'information', we intentional beings exercise a capacity to be connected to subtly distinct (i.e. hyperintentional) aspects of that brute flow, and, indeed, we pursue our lives in these terms. Whenever a basic intentional phenomenon occurs, an individual is related to something by a connection that is contingent, independent, and hyper-discriminating in these ways.

To get a better feel for the analysis, let us go through some

²³ The notions of psychological connection, basic psychological phenomenon, and derived psychological phenomenon can be analysed along somewhat analogous lines. See Bealer, *Quality and Concept* and id., 'The Logical Status of Mind'.

examples. The relation of believing is evidently a hyperintensional connection. First, believing seems to be a natural relation, not a grue-like Cambridge relation. Second, relative to some individual x (e.g. me), some complex intension i (e.g. the proposition that I have 2 shoes on), and some necessarily equivalent complex intension i' (e.g. the proposition that I have $\sqrt[7]{128}$ shoes on), believing has the three features: (a) contingency, (b) independent veracity, and (c) hyper-discrimination. (a) It is a contingent matter whether x stands in the belief relation to i (i.e. it is a contingent matter whether I believe that I have 2 shoes on). (b) x can stand in the belief relation to i independently of whether i has veracity (i.e. I can believe that I have 2 shoes on whether or not I do have 2 shoes on). (c) x can stand in the belief relation to i without standing in the belief relation to the necessarily equivalent complex intension i' (i.e. I can believe that I have 2 shoes on without believing that I have $\sqrt[7]{128}$ shoes on). These considerations show that believing is hyperintensional. Because the range of the belief relation is necessarily restricted to complex intensions—namely, propositions—believing is a mediating intentional connection.

Next, consider propositional knowing—the relation expressed by “know” in “that”-clause sentences such as “I know that I have 2 shoes on.” Knowing is necessarily included in believing—that is, necessarily, for all x and p , if x knows p , x believes p —and knowing is a natural, non-grue-like relation. Therefore, knowing is a mediating intensional connection.

Analogous considerations show that propositional seeming—the relation expressed by “seems” in “that”-clause sentences such as “It seems to me that I have 2 shoes on”—is a hyperintensional connection. Because the range of the relation of propositional seeming is necessarily restricted to complex intensions (namely, propositions), propositional seeming is a mediating intentional connection. Now propositional seeing—the relation expressed by “see” in such sentences as “I see that I have 2 shoes on”—is necessarily included in the relation of propositional seeming. For example, it is necessary that, if I see that I have 2 shoes on, it seems to me that I have 2 shoes on. Thus, propositional seeing is a mediating intentional connection. Propositional seeing is to propositional seeming as propositional knowing is to believing.

If I bear any of these four relations to the proposition that I have 2 shoes on, the associated phenomenon is an intentional

phenomenon that is *about* me. For example, the phenomenon of its seeming to me that I have 2 shoes on is about me. This is so because, as a logical fact, the proposition that I have 2 shoes on is about me, regardless of whether I stand in any intentional relation to it. On the realist (*v.* representationalist) approach this proposition is about me because I am a constituent of the proposition. This notion of constituent can be made fully precise in a suitable intensional logic.

Let us now say a word about direct intentional connections. There is controversy over whether a person can be acquainted with an item (e.g. a colour, a taste, a proposition) without standing in *any* mediating intentional connection to *any* complex intension that is about the item. On Russell's view, such a thing is possible: for a certain narrow class of items, one can be *directly* acquainted with those items without the mediation of any complex intension. Let us suppose that Russell's view is right. Then, acquaintance would qualify as a direct intentional connection on our analysis; after all, countless complex intensions are possible objects of acquaintance on the Russell view. On the other hand, suppose that Russell's view is mistaken. Then, acquaintance would qualify as a mediated intentional connection on our analysis; for *ex hypothesi*, an individual could be acquainted with an item only if the individual stood in some mediating intentional connection to some complex intension that is about the item. Suppose that this generalizes; that is, suppose that every candidate direct intentional connection turns out, upon more careful examination, to be a mediated intentional connection. This is entirely consistent with our analysis. After all, the analysis makes no commitment to the existence of direct intentional connections; the analysis merely tells us what it would take for there to be one. The analysis is deliberately designed so that we can remain neutral on this issue.

One of the main challenges for a purely logical analysis of intentionality is to accommodate objectival perceptual phenomena. For example, the sort of phenomenon reported with formulas of the form "*x* sees *y*" and "*x* sees *y* *F*-ing". To be satisfactory, our analysis must be able to accommodate such phenomena. We have just noted that our analysis of intentionality is designed to be neutral on the question of whether acquaintance is a direct intentional connection. It is an advantage of the analysis that it does not ride on any one theory of this sort of issue. Our strategy is

much the same concerning the vexed question of objectival perceptual phenomena. That is, our general analysis of intentionality is designed to accommodate a wide range of competing analyses of objectival perceptual statements. It will then be a matter for subsequent theorizing to decide which of these competing analyses is best. At the heart of the controversy is the logical form of these statements. Let us illustrate the point by examining a few of the leading analyses.

Let us first consider formulas whose surface form is " x sees y ", where the values of y are physical objects or physical events. On one analysis, such formulas are treated as syntactic transformations from "that"-clause constructions. For example, " x sees y " might be treated as a transformation from "For some F , x sees that Fy ". In this case, objectival seeing would be definable in terms of propositional seeing and, hence, would present no special challenge to our general analysis of intentionality. Suppose, however, that this easy approach is mistaken and that the logical form of " x sees y " is just what it appears to be on the surface. That is, suppose that " x sees y " has the form " $x R^2 y$ ". We would then hold that the relation expressed by "sees" in this formula—namely, the relation of seeing an object—is a mediated intentional connection. By definition, a connection is a mediated intentional connection if and only if, necessarily, it holds between an individual x and an item y only if some mediating intentional connection connects x to a complex intension that is about y . Evidently, the relation of seeing an object satisfies this definition. If x sees y , then intuitively one (or more) of the following holds: *either* it seems to x that y is present, *or* it seems to x that y is there, *or* it seems to x that x sees y , *or* it seems to x that x is aware of y , *or* x sees y there, *or* x sees y in the vicinity, *or* something else of this sort. (The latter items— x sees y there and x sees y in the vicinity—belong on this list of mediating intentional phenomena as long as one of the treatments discussed in the next paragraph is correct.) Unlike the syntactic-transformation approach, the present approach merely imposes an indefinitely specified necessary condition: there must be *some* appropriate mediating intentional connection and *some* appropriate complex intension. Just which ones is not something written into syntax; it all depends on the facts of the specific psychological episode in question. This gives our analysis a great deal of leeway. If someone doubts that this necessary condition is

always met, let that person give us a concretely spelled-out candidate counter-example, and it shall then be our obligation to find some plausible candidate mediating intentional connection and complex intension that would play the indicated role in the example. It is our opinion that we are able to meet this obligation. Of course, there is no way to be certain in advance of actually trying.

We come next to formulas whose surface form is " x sees y F -ing". On one analysis, such formulas are treated as syntactic transformations of associated "that"-clause constructions. For example, " x sees y F -ing" is treated as a transformation from " x sees that y is F -ing". In this case, these objectival constructions would already have been dealt with in connection with our treatment of propositional seeing. But let us suppose that this easy approach is mistaken and that the logical form of " x sees y F -ing" is closer to what it appears to be on the surface. For example, let us suppose that " x sees y F -ing" has the form " $x R^2 y$ F -ing", where " y F -ing" is a complex singular term. In this case, what does the singular term " y F -ing" denote? A plausible answer is that it denotes a kind of complex intension— y F -ing—one of whose constituents is y and the other, the property F -ing. It is also plausible that in formulas of the form " x sees y F -ing" the verb "sees" expresses a relation R^2 whose range is necessarily restricted to complex intensions of the indicated sort. (There is considerable linguistic evidence for the view that "sees" in " x sees y F -ing" expresses a different relation from that which "sees" expresses in " x sees y ". For example, we can say " x sees Tom, Dick, and Harry" but not " x sees Tom running, Dick, and Harry".) Finally, suppose that this relation R^2 is necessarily included in a relation of appearing; that is, suppose that, necessarily, if x sees y F -ing, then y F -ing is something that appears to x . In this case, this relation R^2 would straightforwardly satisfy our definition of a mediating intentional connection. Accordingly, " x sees y F -ing" would fit neatly into our general analysis of intentionality. (Incidentally, the present treatment of " x sees y F -ing" can easily be extended to formulas like the following: " x sees y there", " x sees y here", " x sees y in the vicinity", and so forth. For example, " x sees y there" could be treated as having the form " $x R^2 y$ there", where " y there" would be a singular term denoting a relevant type of complex intension.)

Suppose, however, that neither of these two treatments of “ x sees y F -ing” is correct. We can always deal with the associated kind of objectival perceptual phenomenon as follows. Notice that, necessarily, if x sees y F -ing, then x sees y . We have seen that our general analysis of intentionality accommodates the phenomenon of x 's seeing y . Therefore, to accommodate the phenomenon of x 's seeing y F -ing, we need only relax slightly our definition of the notion of a basic intentional phenomenon: a phenomenon e is a basic intentional phenomenon if and only if, for some individual x , some mediating, mediated, or direct intentional connection c , and some item y , the occurrence of e entails that x bears c to y .²⁴ Given this definition, the phenomenon of x 's seeing y F -ing would qualify as a basic intentional phenomenon. So even if the two original suggestions (discussed in the previous paragraph) do not work, statements of the form “ x sees y F -ing” can easily be made to fit into our general approach of intentionality.

We have certainly not exhausted all the candidate analyses of the logical form of objectival perceptual statements. Nevertheless, our brief survey provides provisional evidence that, whatever the correct analysis, it can be made to mesh with the proposed general analysis of intentionality or, at least, with some suitably adjusted variation on that analysis.

Finally, we should say something about the role played in the proposal analysis by *connections*—natural, non-grue-like relations. Suppose that throughout the analysis we replaced “connection” with the less restrictive term “relation”. The resulting analysis would be subject to a host of counter-examples. Consider, for example, a clearly non-intentional relation R that is defined as follows: $x R y$ iff_{def} x is a particular, and x is green if and only if $y =$ the proposition that x is green, and x is not green if and only if $y =$ the proposition that x is blue. It is easy to check that, according to the new, less restrictive analysis, R would qualify as a mediating intentional relation. So R is a clear-cut counter-example to the new analysis. Fortunately, R is plainly a grue-like

²⁴ Incidentally, suppose someone were to advocate treating “ x sees y F -ing” as a three-place relational formula “ $R^3(x, y, F\text{-ing})$ ” whose third argument is the gerund “ F -ing”. Even if this were right, the phenomenon of x 's seeing y F -ing would qualify as a basic intentional phenomenon on the definition just proposed; for, as we have noted, it is necessary that the occurrence of the phenomenon of x 's seeing y F -ing implies that x sees y .

relation. So R does not satisfy our official definition of a mediating intentional connection. Thus, the original analysis is in the clear.²⁵ Evidently, the only systematic way to avoid problems like this is to stick to our original strategy, namely, to define the narrower notion of an intentional connection (*v.* relation) and then to use this notion to define the notion of a basic intentional phenomenon and, in turn, the notion of a derived intentional phenomenon. This strategy certainly does not seem *ad hoc*; believing, knowing, seeming, perceiving, acquaintance, and so forth do not seem to be grue-like relations.

Several indirect intuitive considerations also support this assessment. For example, we mentioned that qualities and connections (i.e. natural properties and relations) play an essential role in analysing the difference between real change and mere Cambridge change. There is a real change in a situation over an interval if and only if the qualities and/or connections of some individual in the situation shift some time during the interval. As an illustration, consider what constitutes a real change in our conscious mental lives. One kind of real change is that involving a shift in the phenomenal qualities of which one is aware. Suppose, however, that the phenomenal qualities of which you are aware during a given interval remain the same. There are nevertheless other kinds of real change that can occur in your conscious mental life during that interval. For example, suppose that just before a given time t in the indicated interval you were contemplating, say, one of de Morgan's laws for the very first time. Suppose that this proposition struck you neither as true nor as false, that you had no response to it one way or the other. Suppose, however, that at t you realized that this proposition is true. Before t the relation of contemplating held between you and the proposition, but at t this relation was replaced by another relation, namely, the relation of realizing. Given that contemplating and realizing are genuine connections (natural relations), this shift constitutes a real change (*v.* a mere Cambridge change) in your conscious mental life. Of course, there are infinitely many shifts in your Cambridge relations, but these do not qualify as real changes.

²⁵ For a more thorough examination of this sort and other sorts of candidate counter-examples, see Bealer, *Quality and Concept* and 'The Logical Status of Mind'.

Considerations like these are essential to any adequate phenomenology of consciousness and, in turn, to any satisfactory theory of empirical knowledge. Indeed, our theoretical decisions about what hypothesized physical properties and relations to accept as genuine qualities and connections depend at least implicitly on our having first identified which of our mental properties and relations are genuine qualities and connections. Failing this, the indicated aspect of our physical theorizing would be at sea.

v. An Obstacle for Materialism

We saw that materialists who deny thesis II have a pressing need for a general analysis of intentionality. What is it that intentional phenomena have in common that makes them intentional? Suppose that (except within the 'circle of intentional concepts') there does not exist a way to say what intentionality is. Then, intentional phenomena would have a property—namely, their intentionality (this general unanalysable property)—that is not a purely physical property. Accordingly, intentional phenomena would not be purely physical. Therefore, thesis II would be vindicated.

To avoid this outcome, materialists might claim that there exist physicalist analyses of all the familiar types of mental phenomena—e.g. beliefs, desires, etc.—and that these piecemeal analyses can be assembled into a 'disjunctive analysis'. There are several problems with this approach. Here are four.²⁶ First, in order for a 'disjunctive analysis' to be storable, there must be *finitely* many *logically possible* types of intentional phenomena. However, there is evidently no argument that a materialist could give to show that this finiteness assumption is met.²⁷ It looks like a mere article of faith. Second, how could materialists ever tell whether they had succeeded in finding the 'last' disjunct for their 'analysis'? How could they tell that they had dealt with *every* logically possible type

²⁶ There are, I believe, decisive obstacles to these individual physicalist analyses. The purpose of the argument in the text is to show that materialism would face difficulties even if the familiar types of mental phenomena could be analysed individually.

²⁷ In English alone there are hundreds of names for distinct types of intentional phenomena—regretting, pinning, suspecting, mistrusting, . . . Is there an argument ruling out the logical possibility of there always being additional types of intentional phenomenon, if only in new logically possible types of creature?

of intentional phenomenon? Evidently, there is no way to tell. A declaration by materialists that they had found the 'last' disjunct would be akin to a declaration by a species of blind and deaf creatures that they were acquainted with every logically possible type of sensation. For this reason materialists would never be justified in asserting a 'disjunctive analysis'. Third, suppose that, besides the types of intentional phenomena that actually occur, there is at least one further logically possible type of intentional phenomenon. How could materialists discover, and justify, the correct physical analysis of a non-actual type of intentional phenomenon? The task seems hopeless. Fourth, if materialists could not discover, and justify, a physical analysis of a non-actual but logically possible type of intentional phenomenon, it is difficult to see how they could ever justify their claim that all logically possible types of intentional phenomena have physical analyses.

As if these problems were not enough, the disjunctive approach is beset with still another sort of problem. Suppose we ask what it is about a person's believings, desirings, seemings, deciding, etc. that makes them intentional phenomena. Our own answer is that each of these phenomena consists of the person's standing in a certain kind of natural relation to a complex intension that all on its own is *about* things. Certainly, this answer is at least plausible. Suppose, however, that someone were to reject this answer and to propose the following instead: what it is about a person's believings, desirings, seemings, deciding, etc. that makes them intentional is that each of these phenomena is either a believing, a desiring, a seeming, a deciding, or . . . Plainly this would not even begin to answer the question. But given that this does not constitute an answer, the following certainly would not, either: what it is about a person's believings, desirings, seemings, deciding, etc. that makes them intentional is that each of these phenomena is either P_1 or P_2 or P_3 or P_4 or . . . (where ' P_1 ', ' P_2 ', ' P_3 ', ' P_4 ', . . . are complex physical predicates that allegedly define "believing", "desiring", "seeming", "deciding", . . . respectively). The conclusion is that there is a legitimate question about intentionality that *we* seem to be able to answer but that materialists cannot answer, at least by means of their disjunctive approach.

What about a functionalist approach? Suppose that ' P_1 ', ' P_2 ', ' P_3 ', and ' P_4 ' are correct functionalist analyses of "belief",

“desire”, “seeming”, and “decision”, respectively.²⁸ Then materialists might venture the following functionalist definition: R is a mediating intentional relation if and only if R can hold between individuals and complex intensions and there exists a system of causally necessary general propositions relating R to $P_1, P_2, P_3,$ and P_4 . The hope would be that this analysis, perhaps together with some auxiliary analyses, could be assembled into a general analysis of the notion of an intentional phenomenon.

The most glaring flaw in this approach occurs at the first step: R could be some grue-like Cambridge relation that is not intentional. For example, suppose we define a relation R as follows: $x R y$ iff_{def} x is an individual and y is a proposition. This relation R trivially satisfies the proposed functionalist analysis of the notion of a mediating intentional relation. However, R is plainly not an intentional relation. Hence, a counter-example. Now there are various ways to try to tighten up the functionalist analysis. However, with a bit of cleverness, we can always concoct some new grue-like non-intentional relation R that satisfies the tightened-up analysis. (The techniques for constructing these grue-like non-intentional relations are like those used in constructing counter-examples to Chisholm's early analysis of the notion of an intentional sentence.) Thus, there is evidently no way to rule out every grue-like non-intentional relation R except by stipulating explicitly that R is to be a natural relation (i.e. a connection). This is not surprising. Recall that, to rule out grue-like non-intentional relations, we were forced to organize our own analysis around the narrower notion of an intentional *connection* (*v.* relation). Evidently, advocates of the functionalist approach must, for the same reason, organize their analysis around this notion as well. Accordingly, they would be forced in the direction of something like the following: a connection R is a mediating intentional connection if and only if R can hold between individuals and complex intensions and there exists a system of causally necessary general propositions relating R to $P_1, P_2, P_3,$ and P_4 . Our functionalists would then try to use this analysis, perhaps together with some auxiliary analyses, to analyse the general notion of an intentional phenomenon.

²⁸ I find it doubtful that there could be correct functional analyses of these terms. See e.g. Bealer, 'Mind and Anti-Mind'. It is also doubtful that, even if there were correct functional analyses, they would be consistent with materialism.

Similar considerations can, I think, be adduced to convince advocates of the functionalist approach to accept our full analysis (including, in particular, the contingency, independence, and hyper-discrimination features). However, for the point I wish to make against materialism, the previous conclusion suffices: it suffices that a satisfactory general analysis of intentionality requires that a family of intentional connections—natural intentional relations—be posited.²⁹ What is important for our purposes is that these natural relations are not among the natural relations posited in logic, mathematics, or the natural sciences (e.g. predication, identity; equinumerosity, isomorphism; gravitation, being located at, being a part of, being a descendant of, being fitter than, etc.). Thus to obtain an adequate general analysis of intentionality, one must accept the existence of a new family of natural relations (namely, intentional connections) above and beyond those posited in logic, mathematics, and the natural sciences.³⁰

²⁹ We are supposing here that there exist at least some intentional phenomena. Even eliminative materialists (e.g. Sellars and the Churchlands) accept this, even though they reject the traditional theory of the propositional attitudes. For example, they accept that there is some knowledge, or at least some sentence, *about* physical objects.

³⁰ The indicated functionalist analysis of intentionality agrees with our own analysis on two points: first, it is committed to the existence of a genuinely new family of natural relations above and beyond those posited by logic, mathematics, and the natural sciences. Second, it recognizes that e.g. believing is a relation holding between individuals and relevant intensions, namely, propositions. There is an alternative functionalist approach that agrees with ours on the first point but not on the second. In particular, the notion of a 'token of a sentence in a language of thought' takes the place of the notion of a proposition. Our intensional logic approach is able to say what it is for a proposition to be about something in terms of intrinsic logical relations holding between the proposition and its constituents. The 'token in the language thought' approach throws away these realist tools and, therefore, must produce from scratch an analysis (usually it is an etiological analysis) of what it is for one of these 'tokens' to be about something. There are, I believe, insurmountable difficulties with this approach. For example, unlike the intensional logic approach, the 'token in the language of thought' approach provides a hopelessly disunified treatment of "that"-clauses as they occur in statements dealing with intentionality, logical necessity, causal necessity, probability, logical validity, definition, truth, and so forth. (See also the remarks on the etiological approach in sect. iii and in nn. 14 and 15.) But even if this approach were adequate, most of the points we are about to make in the text would still hold. For on the traditional materialist world view there is not an additional family of natural relations above and beyond those posited in logic, mathematics, and the natural sciences. Accordingly, this approach is committed to a new level of organization objectively distinct from the levels of organization recognized by the natural sciences.

(Recall, moreover, that we were able to give direct intuitive support for the thesis that the familiar intentional relations—believing, contemplating, realizing, and so forth—are in fact natural relations.)

The point I wish to make is that the existence of this additional family of natural relations goes beyond anything that traditional materialists would accept and, thus, is inconsistent with the traditional materialist world view.

According to the traditional materialist world view, the natural relations (besides those that are logical or mathematical) are those required for (a correct formulation of) the natural sciences. These natural relations are all *physical* in the following sense: they hold between physical particulars and physical particulars or between physical particulars and physical quantities or between physical particulars and locations or between physical particulars and times or between physical particulars and space-times. There is no room in the traditional materialist world view for the existence of an entirely new family of natural relations that hold between particulars and complex intensions (e.g. propositions). (There certainly is no room for natural relations with contingency, independent veracity, and hyper-discrimination.) We will show that such a family of natural relations entails the existence of a new objective level of organization above and beyond those levels of organization recognized by traditional materialists. To do this, we will discuss two pertinent issues: objective similarity groupings and levels of scientific explanation. It is important to realize that the question under discussion is independent of whether or not individual types of intentional phenomena have physical analyses; indeed, for the sake of argument, we will continue to assume that they do.

First, the issue of objective similarities. Possible situations are objectively similar to the extent that they—or their corresponding constituents—share natural properties and/or natural relations.³¹ Let s_1 be a possible situation in which there exists a single agent x_1 who has intentional states; besides x_1 nothing else exists in s_1 except those things required logically or causally in order for x_1 to exist and to have the mental life that it has. Let s_2 be another possible situation in which there exists a single agent x_2 ($\neq x_1$) who has intentional states; besides x_2 nothing else exists in s_2 except those

³¹ See n. 20.

things required logically or causally in order for x_2 to exist and to have the mental life that it has. Suppose that s_1 and s_2 —and the particular objects in s_1 and s_2 —have very little in common by way of natural physical properties and natural physical relations. (For example, suppose that x_1 's body and its various parts share relatively few natural physical properties and natural physical relations with x_2 's body and its various parts.) Nevertheless, s_1 and s_2 could be such that x_1 and x_2 stand in exactly the same mediating intentional connections to all the same logical and mathematical propositions. (For example, x_1 and x_2 could be mathematical logicians who, throughout their lives, have exactly the same thoughts about logic and mathematics.) In this case, despite their relative physical dissimilarity, x_1 and x_2 —and, in turn, s_1 and s_2 —would nevertheless qualify as having a significant objective similarity to one another. However, according to traditional materialism, s_1 and s_2 would not have a significant similarity to one another; on the contrary, they would be rather dissimilar. For if materialism were correct, all natural properties and relations (besides those that are logical or mathematical) would be physical; therefore, s_1 and s_2 —and the particular objects in s_1 and s_2 —would have in common little by way of natural properties and relations. Consequently, s_1 and s_2 would be rather dissimilar. To the materialist, the fact that x_1 and x_2 bear exactly the same mediating intentional relations to all the same logical and mathematical propositions does not make s_1 and s_2 objectively similar situations. To the traditional materialist, these relations are just arbitrary Cambridge relations; they are no more distinctive than any number of other Cambridge relations that hold in objectively dissimilar situations. The presence or absence of such relations does not signal the presence or absence of objective similarities.

Given that this family of natural intentional relations exists above and beyond natural physical relations, and given that people often bear these relations to the same things, there exists a realm of phenomena that have objective similarities that would not exist if the traditional materialist world view were correct. The existence of this additional realm of objective similarities signals the existence of a non-physical level of organization.

An analogous point regarding scientific explanation can also be made. This point is more controversial; our conclusion does not depend on it. We assume that scientific explanations invoke *laws*.

Laws are causally necessary general propositions.³² If F is a natural family of natural properties and natural relations, and every non-logical constituent of a given law L belongs to F , then L is said to be an F law. For example, a physical law, a psychological law, an economic law, and so forth. Traditional materialism recognizes only one kind of law, namely, physical laws. However, given that there are natural psychological properties and relations above and beyond natural physical properties and relations, and given that they form a natural family of natural properties and relations, laws involving only these natural properties and relations are psychological, not physical, laws. The following is an example of a psychological law: if a being is consciously and explicitly thinking that if A then B and if the being is consciously and explicitly thinking that A and if the being is carefully and attentively considering the question of whether B and if the being recognizes that he has no reason for thinking that not B , then it is probable that the being will think that B . There are some phenomena that can be explained without invoking physical laws but instead by invoking only psychological laws. For example, the phenomenon that I will probably think that B is explained by the above psychological law together with the fact that I presently satisfy the conditions specified in the antecedent of that law. (This is not to say that such a phenomenon does not also have a physical explanation. Given the assumption that every particular type of intentional phenomenon has a purely physical analysis, presumably intentional phenomena have both physical and psychological explanations.) In so far as scientific explanations impart understanding and in so far as there are scientific explanations that are non-physical, there is something more to understand even after all physical explanations have been given. Indeed, the totality of all physical explanations yields an incomplete understanding of reality.

As we have indicated, natural physical relations are categorically distinctive. They hold between physical particulars and physical particulars or between physical particulars and physical quantities or between physical particulars and locations or between physical particulars and times or between physical particulars and space-times or between locations and locations or between times

³² We assume here that, not only are non-probabilistic laws causally necessary, but so too are probabilistic laws.

and times or between space-times and space-times. Natural physical relations—the sort of natural relations with which physics and the other physical sciences are concerned—do not hold between particulars and complex intensions (and they certainly do not exhibit hyperintensionality). To call the latter sort of relations *natural physical relations* would be to violate established usage. In the materialist tradition, however, there has been an unfortunate hidden assumption at work, namely, an assumption to the effect that, if a natural relation can be analysed in terms of natural physical properties and natural physical relations, then *ipso facto* it too is a natural physical relation. But this is an uncritical dogma plainly at odds with the way in which we talk: we simply would not call a relation that holds hyperintensionally between individuals and complex intensions a natural physical relation regardless of whether and how it might be defined. The possibility of physicalistic analyses is an independent issue. The obsession with this issue of physicalistic analysis, however, has caused many traditional materialists to overlook the standard intuitive criteria for how to classify natural physical relations, natural psychological relations, natural social relations, and so forth. As a result, these traditional materialists have been led to misconceive the question of objective levels of organization and the principles upon which the answer to that question depends.

Let us sum up. We saw that intentionality poses a challenge to materialism. If there does not exist a general analysis of intentionality, then intentional phenomena would have a property that is not physical—namely, their intentionality (the general unanalysable property itself). We then argued that, even if the familiar types of intentional phenomena, taken individually, have materialist analyses, we cannot have a satisfactory general analysis unless a family of natural intentional relations is posited. We argued, finally, that the existence of such a family of natural relations is incompatible with the traditional materialist world view: if there is such a family of natural relations, there is an objective realm of non-physical similarities, laws, and explanations. Hence, an objective level of organization above and beyond the physical. It is as though the world is a Seurat painting, and materialists wish us to be blind to everything but the individual points of colour.