KEVIN MULLIGAN

## PERCEPTION, PARTICULARS AND PREDICATES

What sort of an episode is perception? What are the objects of such episodes? What is the grammatical and logical form of perceptual reports, direct and indirect? Each of these questions has been the subject of recent discussion. In what follows I set out one answer to each of them and explore some of the ways these answers support and complement each other. The answers adopted are: to perceive - and I shall normally only have in mind visual perception - is not to judge or to conceptualize but a sui generis mental mode or activity involving non-conceptual content; perception is of particulars only; the complements of perceptual verbs are, with one exception, non-propositional and indirect perceptual reports are made true by direct perceptual relations between subjects and particulars of various sorts.

Perhaps the most basic and certainly the most familiar connection between the psychological, ontological and semantic aspects of perception is provided by the following two claims. First, that the syntactic difference between the complements in "Sam saw Mary" and "Sam saw that Mary was happy" is correlated with the ontological difference between the two types of referent of the two complements, an individual and a state of affairs (situation, singular proposition, fact) where the latter is understood to be an abstract entity "containing" a thing and another abstract entity, a property. Second, that seeing Mary, unlike seeing that, need involve no judgement or belief[1]. Thanks to Warnock and Dretske such distinctions are now familiar. Simple, direct seeing is attributed by perceptual reports containing non-propositional, transparent complements, epistemic seeing or perception based judgement, by propositional, opaque complements. Reports of simple seeing are veridical, reports of epistemic seeing are factives.

In what follows I explore these and a variety of more specific connections between the psychology, ontology and grammar of perception. In particular I distinguish (in §1) different things that *to see is not to believe* might mean; I set out (in §2) an account of what it might mean to say that *only particulars are seen*. I argue (in §3) that a familiar account of the semantics of some perceptual reports can be generalised and also modified and that the generalisation and modification are compatible with the views about the psychology of visual perception and its objects already set out. I then pursue further relations between the psychology, semantics and ontology of perception (in §§4-6).

1. PERCEPTUAL PRESENTATION vs. PERCEPTUAL REPORTS: TO SEE IS NOT TO BELIEVE

Perceptual reports provide conceptual representations of relations between subjects and scenes. Do the truth-conditions of such reports allude to the exercise of concepts ? Do all truth makers of such perceptual reports involve the exercise of concepts ? Does the subject presented with a perceptual scene also represent it conceptually ? Is seeing the scene believing ?

The development of negative answers to these questions is very much a twentieth century phenomenon[2]. But numerous philosophers have been persuaded by the view, that is Kantian if not Kant's, that to see is to judge and so to subsume under concepts. Amongst psychologists, the Helmholtzian view that perception involves "ratiomorphic" problem solving, or some sort of conceptual interpretation is widespread. Irvin Rock , for example, writes that many sensory properties are forms "undergoing description which is neither conscious nor based upon natural language" but which is propositional[3]. A number of distinctions and arguments have been employed in order to deny that to see is to believe. I first present these in a very general form and then distinguish some more precise claims.

First, faced with some perceptual scene or situation I can carve it up conceptually in lots of different ways. The variety of ways I can describe what I see seem to differ in quantity and quality from the variety of ways I can express what I think. I see much more at a moment than I could describe at that moment. Similarly, not only can I use very different concepts to describe what I see but a large number of syntactic types of perceptual reports are available. What I say about what I see is often underdetermined by what I see. One of the many aspects of this underdetermination is that changes in position and perspective do not always correlate with changes in the sense of my embedded and unembedded perceptual reports. In particular, a use of a demonstrative can retain a constant sense for both a speaker and his interlocutor even though the perception on which it is based varies.

Secondly, I can often suppose of something I see that it varies continuously: the colour of the bird I see could change gradually through a variety of different colours. Its movement can be imagined as changing gradually through a whole series of curves. These possibilities are, it is true, constrained in my actual perceptual experience by the existence of salient forms which mean that certain continuous transformations are seen as abrupt transitions. But no such *Gedankenexperiment* is possible in the case of the concepts occurring in my reports. For many concepts we cannot imagine gradual transformations of their constituent semantic features, at least on many accounts of concept-possession. The Dretskean distinction between the analog nature of visually conveyed information and the digital nature of

linguistically conveyed information[4] is one way of unpacking this distinction between conceptual and perceptual variation.

Thirdly, it is often held that illusions such as the Brentano-Müller-Lyer illusion show that what the subject judges is not what he (takes himself to see) sees and hence that his visual information does not come packaged as a judgement.

Finally, it has been suggested that perceiving, unlike belief-formation and inference, is stupid, quick, automatic and normally reliable. As Brunswik puts it, "the perceptual system is like a stupid animal in us" and is relatively independent of our thoughts and inferences[5].

But by no means all philosophers have seen the light. Slogans such as "all seeing is theory laden" or "all seeing is seeing as", where this is taken to be equivalent to the first or to "all seeing is concept-laden", are still very popular. Quine and Searle, to mention only these two unlikely bedfellows, persist in thinking that "see" is fundamentally propositional and that to see is to believe. Such a view has the following consequence: if Sam sees Mary and kisses her, what he kisses - Mary - is not what he sees, that Mary is there.

I do not want to do more than refer to these arguments and distinctions here. My aim is rather to distinguish some of the different claims involved in the thesis that to see is not to believe. The claim that seeing is not believing involves at least two distinct claims: to see is not to be the bearer of the attitude of belief and to see involves no propositional or other conceptual content. The connection between the two points is that if there is no belief without propositional content and hence without concepts, if seeing is non-conceptual then it is not doxastic. Of course, propositional content may be supposed or even simply entertained. But as far as I know, it has not been suggested that perception is a state or act of this type. It might also be held that perception involves propositional content (manipulations of mentalese) but no attitude of belief or judgement - perhaps because the attitudes of seeing and judging are insulated from one another or because perception is stupid and reliable whereas judgement and thought are intelligent but unreliable. Conversely, Brentano took perception to be a type of judgement but since his theory of judgement is not a propositional theory he took seeing to be non-propositional.

The claim that to see involves no propositional content is also ambiguous as between two familiar senses of "content". In one sense of the word, "content" is the *way* we think of or see something - it is used in this way in tripartite act-content-object accounts of the mind. In a second sense of the word it is *what* we think of or see - it is used in this way in act-object accounts. Frege is the patron saint of accounts of the first sort, Russell of accounts of the second sort. To claim that to see involves no content in the

former sense is entirely compatible with the view that what is seen is a singular proposition or state of affairs which in its turn is compatible with, if not entailed by the view that to see is to judge, to judge that the state of affairs in question obtains. It will therefore be convenient to distinguish between concepts and properties where the former are constituents of, for example, the way we judge and the latter, for example, part of what is judged, of singular propositions or states of affairs. Concepts, we may say, are part of propositional content[6]. Then to say that to see is not to believe is to assert that to see is not to be in the attitude of belief and is not to conceptualize.

In the light of these distinctions it is clear that each of the considerations and distinctions advanced above against the view that to see is to believe split into a number of further claims. Thus to say that visual information is analogic might mean that the way we see is analogic or that what is seen is analogic, or both.

Instead of saying that to see is not to believe we should really say: to see is not to judge. Belief, after all, is not an episode but a disposition which either predates or comes into being with judgings. Similarly, to say that perception involves no conceptual content is really to say, in Sellar's phrase, that seeing can take place without the occurrence of any conceptual episode. Perception is not conception. Failure to take seriously the distinction between episodes and dispositions to produce such episodes is crucial. For who would want to deny that many perceptual episodes, even if they involve no conceptual episodes, could not occur unless the subject enjoyed a mastery of certain concepts ?

The claim that seeing involves no conceptual episodes is primarily directed against one or both of two conceptions of concepts: against the typically Fregean view that a conceptual episode is a judging or grasping of an ideal thought; or against the view that a conceptual episode is a structured mental tokening; or against the combination of these two views according to which mental tokenings are tokenings of types of thought understood in some non-nominalist fashion. In what follows I shall have views of these three types in mind. Consideration of the view that seeing is not judging where the latter is taken to be a manipulation of a formula of mentalese or a strongly functional property would take us too far afield.

We can now see that some of the considerations adduced against the view that seeing is judging are directed against the claim that to see is to be the bearer of the attitude of judgement and others against the claim that it involves conceptual content. Thus, the appeal to phenomena such as the Brentano-Müller-Lyer illusion is directed against the view that the act or state of perception is or involves an act of judging. But the distinction between information conveyed in analogic form and information conveyed in digital form is used against the view that simple seeing involves conceptual episodes or the view that it is of certain sorts of singular propositions or states of affairs, or both.

The appeal to illusions such as the Brentano-Müller-Lyer illusion sometimes takes the following form: the subject perceptually takes two lines to have different lengths but knows or judges that they have the same length[7]. So the two attitudes are distinct. But of course it is open to the Kantian to say that what we have here are two judgements, one of which is perception based, the other memory-based (the subject watched as the two equidistant lines were drawn) or based on testimony (the subject believes the psychologist).

If the type of attitude involved in simple seeing is not judging then, even if we also want to say that it sustains a prima facie inclination to believe or judge, we ought to be able to characterise it positively in non-dispositional terms. But this is not easy. Broad makes the negative point: "It would be nearer the truth to say that at the purely perceptual level people do not have the special experience called "belief" or "judgement"[8]. But what is the occurrent visual attitude if this is correct ?

If Sam sees Mary, then we may say he takes her to exist or be there, an idiom that captures the element of trust and confidence that we place in the deliverances of the senses, as in those of testimony, without attributing to Sam the judgement that Mary exists. Sam takes Mary to be both present and actual but does not judge that this is the case. (Being present, like being actual, implies without being equivalent to, existence in the sense of the quantifier). An analogy may help to get a grip on the non-propositional attitude Sam has.

One of Strawson's objections to Russell's account of definite descriptions was that a speaker who asserts by using a sentence containing a monadic predicate and a definite description is not thereby asserting a conjunction of sentences or propositions. This is a negative point about what happens when someone asserts. Strawson's positive point was that such a speaker presupposes or believes that something is the case. But a presupposition or belief is not something that happens when a speaker makes an assertion. It may simply be a dispositional property of the speaker. One way of characterising positively the speaker's attitude towards the definite description he uses is to say that he takes the definite description to designate an object. This attitude is not a propositional attitude although the speaker's belief that there is such an object is.

Although this analogy throws some light on what it is for an attitude to be non-propositional it does not help us to understand what it is that makes of perception an attitude in which we normally take something to be present. As is occasionally noted, the internal relations between perception and action, in particular the fact that perception is a part of actual and possible behavioural patterns, are essential to our habit of taking things to be perceptually present. As Broad points out, "to believe so and so at this [perceptual] level really means to act as it would be reasonable to act if one believed so and so, and to be surprised if the action turns out to be a failure"[9]. "Reasonable" must be understood widely: the interaction between motor abilities and perception over time is essentially a pre-reflective matter, involving automatic and sub-intentional behaviour[10].

Can the view that perceptual content must be allowed for survive rejection of the view that to see is to judge ? At least three features of perceptual episodes make perceptual content, what Peacocke calls "manners of perception", plausible: the fact that what is seen is seen as organised in different ways, the perceptual constancies (on which see §3) and the fact that what is seen is seen under different modes of orientation (left-right, up-down, here-there...). But then the friend of non-conceptual content must face the objection that his view is merely a variant of representationalism and that his naive realism appears to crumble into critical realism[11]. He must also reply to the direct objection that the contents he allows for in veridical perception are actually all different features of what he sees rather than ways in which he sees what he sees[12]. This objection is perhaps least plausible for the modes of orientation. One option open to the direct realist is to allow for content only in the case of illusions and hallucinations. I shall bracket these questions in what follows. But in §3, in line with the project of this paper, I shall suggest that the view that seeing always involves non-conceptual content is supported by the relations between certain perceptual reports.

Clearly, any argument in favour of non-conceptual perceptual content will presuppose a theory of concepts since such an argument needs to show that perceptual content does not involve concepts as these are conceptualised by some theory of concepts. Let us briefly note some fairly obvious implications of a well-known family of views about concepts that derive from Frege and Wittgenstein. A creature that can employ general, material concepts such as *red*, *square*, *car*, *man* must employ them together with formal, logical concepts such as propositional form, negation and implication. If the latter are not employed in perception, then neither are the former. Creatures that cannot employ the latter cannot employ the former. So very young children and animals, creatures that clearly perceive, do not employ any sort of concepts. Mastery of of one elementary formal, logical concept presupposes mastery of the others. Finally, individual concepts cannot be employed except in connection with general concepts. So if perception does not involve the former it does not involve the latter[13]. The theory of concepts from which these consequences about perception flow will impress neither the philosopher who disallows conceptual content nor the philosopher who rejects its extreme holism about the relations between formal concepts and about the relations between these and material concepts. But it provides a challenge to the view that to perceive is to infer, to form conditional judgements, hypotheses etc.. For to infer is, surely, to use formal concepts. And it provides a constraint on accounts of content and perceptual reports: were the latter to attribute the employment of formal concepts then perception would involve two sorts of conceptual content.

## 2. PERCEPTION IS OF PARTICULARS ONLY

What are the objects of perceptual episodes ? One apparently plausible answer runs as follows. Suppose Sam sees Maria's sadness or the colour of the book. Then he sees that she is sad, that the book has this or that colour, that is to say states of affairs consisting of individuals and properties or sets. One motivation for such a view is the undeniable fact that the definite descriptions "Maria's sadness" and "the colour of the book" are derived from sentences. But if to see is not to judge we may resist the temptation to assume that this logico-grammatical point tells us what it is that Sam sees. Of course some positive account of what it is that Sam sees must then be provided.

The metaphysics of dependent particulars provides just such an account[14]. Dependent particulars, also called "tropes", for obscure Australo-American reasons, as well as "moments", "abstract particulars" and "characters" are the nominalist's most useful toy. For their defining characteristic is that they are as particular, that is rooted in time and the causal order and so not repeatable, as things or individuals. But as another series of names for these entities -"property instances", "individualised forms", "concrete properties" - indicates, they can also *enrich* the ontological commitment of a philosopher who already accepts abstract, repeatable properties.

As indicated in Figure 1, by independent particulars (individuals or things) I mean objects like Mary and Sam, this table, that umbrella. By dependent particulars I mean *events* such as winning a race or seeing, *processes* such as singing, running, hitting, listening, looking and parrying and *states* such as roundnesses, rednesses or sadnesses. The claim that is central to the metaphysics of tropes, and its most controversial aspect is that the redness of Maria's cheek, its shape, her sadness are numerically distinct from the redness and shape of Sam's cheek and from his sadness. Numerically distinct, but more or less similar. Similarity itself, like other formal entities, can either be regarded as a further trope or as a universal[15].

If we except long lasting states, which are anyway of little interest in perceptual contexts, we may say that dependent particulars are episodes. Since everything we see is an individual or an episode everything we see is particular - that, at any rate is the thesis.

The two fundamental distinctions within the class of dependent particulars are static vs dynamic and monadic vs relational.

```
                    particulars

                    + temporal

                    - repeatable

                      /      \

              independent    dependent

                    /             \

                 static          dynamic

                /  \             /   \

        monadic  relational  monadic relational



                    states        events processes



              -- endure       -- occur   -- go on



        - temporal    + temporal    - temporal  + temporal

          parts         parts        parts       parts

    + homogenous                      + heterogenous

        parts                             parts
```
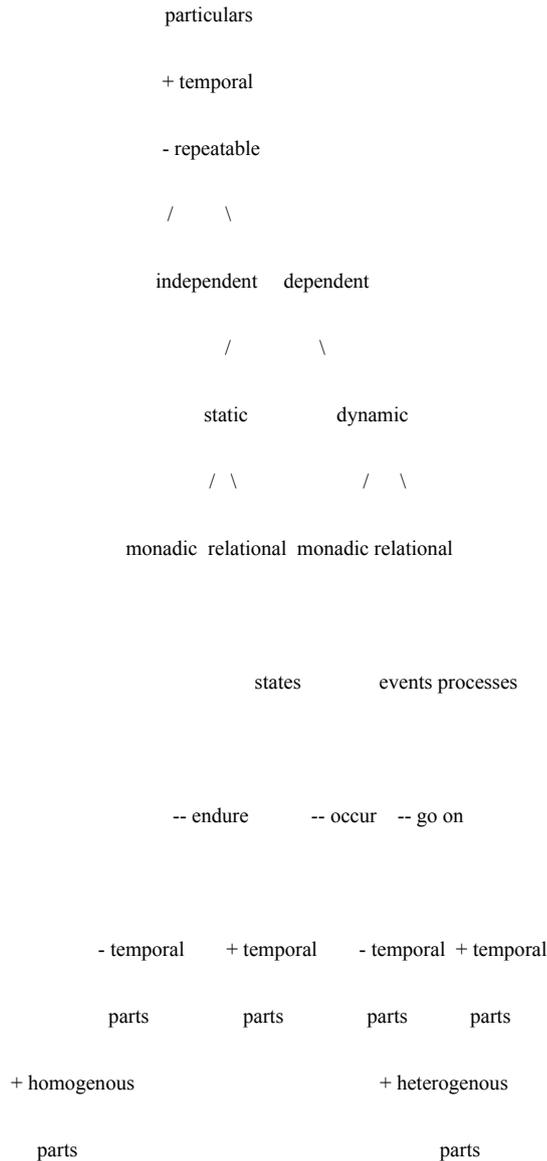
Figure 1

Some friends of tropes do without either independent particulars, conceived traditionally as being in time but as having no temporal parts, or the modal concept of dependence ("cannot exist without"). But since this is, by my book, bad metaphysics and in order to simplify the following account of the connection between the metaphysics of tropes and perception I shall assume that Maria's sadness depends on her in the sense that it could not have occurred without her, that Maria is independent of her sadness although not of all tropes[16]. The ways in which alternative metaphysics of tropes, which make things out to

be entities that have temporal parts or do without dependence, connect up with the analysis of perception are easily imagined.

Less controversial than the claim that substances have no temporal parts are the mereological characterisations of events as punctual entities, of processes as entities whose salient parts do not fall under the material concepts under which the processes themselves fall and of states as entities whose temporal parts are states of the same type as the entire state (provided partition is not pushed too far). This classification of entities matches in well-known ways features of verbal aspect and of the lexical structures of verbs and other parts of speech[17].

The quickest way to grasp the import of this taxonomy of particulars is to consider its most controversial implications. Let us look at these going from the less to the more controversial. That we see particular things is, with the proviso just mentioned about different accounts of thinghood, relatively uncontroversial. In the early defences of the distinction between simple seeing of particulars and epistemic seeing (seeing *that*) it was often mentioned *en passant* that there is simple seeing of events or processes. But perception of particular states, such as the shape of a book,and of all types of particular relations, such as a jump over a fence or proximity, were as little popular than as now. Warnock (1955, 212), indeed, asserted that all perception of relations involved seeing that, that is, belief. Dretske (1969, 41) gives one clear example of simple perception of a relational process, seeing a boy crash through the picture window on a motor-scooter. A second example, seeing a man waving to his wife (33f.) introduces a complication: "waving to" may be held to be non-extensional. Dretske also gives as examples of perceptible processes such happenings or occurrences as battles, games and ceremonies[18]. Like their static counterparts, groups, such as an alley of trees, these depend on lots of lower order relations although they are not themselves relations. A ceremony consists of a number of relational speech acts and other non-linguistic actions. So to see a dynamic particular such as a battle is often also to see relational dynamic tropes[19].

As a result of Higginbotham's elegant extension of ideas of Davidson, the view that we can see events and processes enjoys greater popularity than it did (but see §3)[20]. However, the claim that there are static tropes, monadic and relational, and that these are available for perception is much less easily swallowed. Is the determinate colour or shape trope of Sam's copy of Shakespeare really numerically distinct from the exactly similar tropes of Maria's copy ? (I follow the tradition of pretending that redness is monadic.) Although he takes no position on the ontological status of conditions and states, Warnock flatly asserts that to see the colour of a tie is to know what colour it is, to see the untidy state of a room is to see that it is untidy. Although Dretske restates the view that goes back to Aristotle, that we do simply see static accidents - his example is the tattered condition of a book - he is, as far as I can see, silent about the most

controversial claim on our list: that we simply see static relational accidents, Maria holding Sam in her arms, their proximity, the distance between Sam and Pierre, the book on the table.

It is worth noting that our quite general claim that we see only particulars has a distinguished past, however much it grates today. Traditionally those properties that have been taken to be visible or perceptible, and which have been called "qualities", have more often than not been taken to be non-repeatable items. The traditional terminology of "primary and secondary qualities" was often introduced with the gloss that primary qualities, unlike secondary qualities, are "in" their bearers. The preposition is Aristotelian: accidents are "in" their bearers but not as an ordinary part is in a substance. Primary qualities, so understood, are accidents, that is non-repeatable particulars. Similarly, the traditional claim that secondary qualities are not "in" substances is not a denial of the non-repeatability of such items, but rather the claim that they are relational particulars, or dispositional properties the manifestations of which are relational. (Traditionally, of course, there was much scepticism about whether accidents could be relational. But this may be the result of a failure to distinguish between being in and depending on). It is thus perhaps no accident that philosophers in this century who have defended dependent particulars (Stout against Moore) have been psychologists of perception.

Which view should we prefer ? That perception is of particulars of the different types just described ? Or that to perceive is to judge and so attributes abstract properties to things with or without the help of conceptual content ? Or that to perceive is not to judge but nevertheless relates us to abstract entities ? The following arguments may be adduced in favour of the first view.

First, particularism about the objects of perception inherits all the advantages of nominalism, in particular economy. If there are only particulars and if perception is veridical then perception must be of particulars. Secondly, a philosopher who accepts dynamic tropes, events or processes, ought to accept static tropes. Events and processes are often the beginnings and endings of states. Given this peculiarly intimate connection - bilateral dependence - between static and dynamic entities, is it plausible to say that what a particular such as an event or process brings into being is a relation of exemplification between an ideal attribute and an individual ? Consider the analogous point about the perception of episodes and states: we are asked to believe that a subject can directly perceive the dynamic trope which is an object's changing its colour but that the colour it has after the change belongs to a quite distinct ontological category.

Thirdly, if it is a necessary truth that we see but do not hear or touch colours, then, it might be suggested, there is an analogous necessary connection between perception and particulars: we cannot see universals. There have, of course been philosophers happy to talk of seeing - not merely naming or referring to - ideal entities. (But why do they not allow that these can be heard ?). Also, some views of

colours, for example that they are reflectancy properties, cast doubt on our venerable starting point. Worse, the analogy is weaker than it seems. The connections between the senses and the objects appropriate to them concern material concepts - *see*, *hear*, *colours*, *sounds*. But the distinction between particulars and universals is a much more abstract, perhaps even topic-neutral distinction.

Thus far the alternative to particularism has been the view that there are ideal, multiply-exemplifiable properties and that these are perceptible. The friend of the latter often takes them to be components of states of affairs. What should particularism say about properties as components of states of affairs ?

According to the theory of situations of Barwise and Perry, situations - not just the structures that model them - are conceived of in partly Platonic terms, as sets of n-tuples each of which contains objects, relations and locations. Now situations so conceived are at least defensible candidates for truth making. But Barwise and Perry also claim that the objects of perception are a sub-category of situations so conceived, scenes. The friends of ideal properties and relations can, however, go some way towards agreeing with the claim that perception is of particulars. Armstrong, for example, breaks with the assumption pervasive in early theories of states of affairs, that these are ideal entities. He suggests that when individuals and an ideal recurrent relation come together in a state of affairs the resultant entity is itself a particular. He calls this "the victory of particularity". And it has been argued that even sets are in some sense spatio-temporal entities. On such views, perception is of particulars; even the perception of things can then be described as perception of states of affairs, for things are particulars with a particularity-aspect and a universality-aspect[21]. Such a view that can readily be combined with the analysis of events and processes according to which these are triples of things, abstract properties and times but which is superfluous on the view adopted here of episodes as "bare particulars".

Armstrongian states of affairs, then, allow us to say that we perceive only particulars, unlike the situations of Barwise and Perry. But on neither account is it the case that what we see is *wholly* particular. Although an Armstrongian state of affairs is a particular it is not wholly particular, it is not a complex object. But if there is one point on which the majority of psychologists of perception are agreed it is the fact that the mode of articulation of what we see is mereological. There is disagreement about whether visual parsing is bottom-up or top-down but not about the fact that it involves either going from parts to wholes or from wholes to parts. The transition from nineteenth century perceptual psychology to Gestalt psychology took the form of an extended quarrel about what mereological principles were applicable to perception. And it is the Gestaltists' way of analysing the results that are to be found in psychology textbooks. Work on perception of both dynamic and static scenes invariably talks of part-whole relations between the different particulars we see: lines, edges and corners as parts of more complicated shapes; the

slight bouncing form of the movement of a person as containing the quasi-pendular forms of the movements of his parts etc. A convincing philosophical account of what it means to say that a visual scene contains dynamic and static parts is still a desideratum but the answer is not, I suggest, to impose on visual complexity the thing-property mode of articulation which is, at best, appropriate to theories of what truth-bearers represent and of their truth-makers.

A friend of states affairs may say that when a thing has a property then there is a whole of which the thing and the property are parts, that is, that states of affairs are wholes. But as Wittgenstein and Russell stressed, nothing speaks in favour of such a move. A whole contains entities of the same formal type. But things and properties are not of the same formal type.

The fact that visual items belong to complex wholes and that many of them stand in relations of dependence to others provides an alternative to states of affairs. Suppose a predicate corresponds to - has as a semantic value - a property and a singular term to an individual. Within the philosophy of judgement one classical view is that the property and the individual combine in the state of affairs they belong to. On such a view, the unity of the sentence reflects the unity of the state of affairs. Whatever plausibility this has as an account of judgement or assertion, no analogous move needs to be made in the case of perception. If Sam sees a jump then the jump he sees is the jump of whoever jumps: since tropes are dependent particulars no states of affairs are required in simple perception.

This last claim can be combined with the view that truth-bearers represent states of affairs the obtaining of which makes the truth-bearers true to provide the following condition on verification. A truth-bearer is verified only if a dependent particular that instantiates the property ascribed by its main predicate and depends on the named individual is seen. But there is also the thorough-going nominalist view that states of affairs and abstract properties are not even required to give an account of what sentences represent and what makes them true[22]. On such a view, a truth-bearer is made true by some dependent particular. This yields an even closer mesh between our account of what is seen and what is said.

A final consideration in favour of the particularist account of perception appeals to the phenomenon of perceptual constancy. I mentioned above the view that what is seen are wholes and parts. Wholes and parts are units. Work on the phenomena of thing constancy, colour constancy, size constancy and shape constancy suggests that what is seen is standardly seen as units. We come to see what we see as units over time as a result of the processing of cues within extended perceptual-behavioural episodes. If perception were not standardly dynamic the constancy effects would not occur. We see the colour or shape of one thing, for example, as one colour or as one shape, as one constant colour or shape throughout variations in

the cues[23]. For those direct realists who reject perceptual content, the perceptual constancies or invariants are not ways of seeing what we see as constant units but just what we see[24]. But direct realists who take the constancies seriously, whether or not they allow for perceptual content, should deny that we see properties. The constant units we see are units, that is to say, they are all of the same ontological type. Some, it is true, are things and others are tropes. But all of them are particulars. The friend of non-conceptual content will add that we see these particulars as units without grasping individual and general concepts. The two modes of articulation, *individual vs general concepts* and *thing vs property* may be appropriate to judgements (beliefs) and their semantic values but they are foreign to perception.

At this point the philosopher for whom all content is conceptual is likely to object that at least the distinction between seeing something as one thing and seeing something as one event must correspond to a distinction, within content, between application of the category of *thing* and application of the category of *event*. The friend of non-conceptual content can only escape this objection, I suggest, if he can show that the difference between contents presenting things and contents presenting processes is explicable in terms of the different actual and possible types of behaviour appropriate to things and to processes (we can grasp and move around things but can only orbit, not grasp, processes). Such an account remains, however, a desideratum[25].

Suppose, then, that to see is to see only particulars and this in virtue of non-conceptual content. What relation does such a claim have to the syntax and semantics of reports of visual perception?

## 3. THE VARIETY AND COMPLEXITY OF SIMPLE SEEING

Indirect perceptual reports take a variety of complements which can usefully be imagined as forming a family, the two best-known members of which are reports taking the simplest sort of nominal complement (1) and reports whose complement is propositional (3).

(1) a saw Proper name/Common Noun/Demonstrative/Indexical

(2) a saw Maria/that/a man

(3) a saw that p

Surprisingly enough, all the other complement in the family are to be found wherever philosophers talk about tropes (see §2). Thus, in addition to complements that refer us to independent particulars and contain proper names, demonstratives (2) or common nouns in indefinite descriptions or in Russellian definite descriptions, we also find non-Russellian definite descriptions such as the complements of "saw" in

(4) a saw the redness of the ball

(5) a saw Mary's sadness.

Clearly, the simplest analysis of these, for a friend of tropes, is the claim that what is seen in (4) and (5) is a static, monadic trope. An analogous claim about the complements in

(6) a saw the table's shape

(7) a saw Mary's jump

is that what is seen in the first case is a static, monadic trope and that what is seen in the second case is a dynamic, monadic trope. Some friends of tropes, it is true, incline to the view that descriptions of the form "the F-ness of b" have a better claim to refer to tropes than the nominalisations employed in (6) and (7).

Just as we should resist the temptation to say that because the complement in (7) is derived from the sentence "Mary jumps" what is seen is the state of affairs the sentence would describe and its components, a person and a property, so too we should resist this temptation in the case of relational complements such as

(8) a saw Maria's proximity to Sam

(9) a saw Maria's jump over the fence.

Like the definite description construction, the participle (or Acc-Ing) construction[26] reports our perceptions of monadic and relational processes and events, singular and plural:

(10) a saw Maria jumping

(Cf. the Irish construction "I saw a young woman, and she walking like a queen" and, on this, Chesterton 1919, 200.)

(11) a saw Maria killing Sam.

If the metaphysics of tropes set out in §2 is accepted, then (4)-(11) are plausibly construed as reporting perceptions of what we have called monadic and relational tropes. Different types of definite description make possible reference to both dynamic and static tropes. And there are two types of report whose function is to attribute perception of dynamic tropes - the participle construction[27] and the naked infinitive construction. The temptation to derive the participle complement from a sentence must here be resisted simply because the construction is derived neither from restrictive nor from non-restrictive relatives (cf. Guasti 1992). Although gerunds form genuine singular terms referring to both static and dynamic tropes their use as complements in reports of visual perception is doubtful[28]

(12) ? a saw Maria's jumping.

(Cf. a has heard Maria's singing)

The naked infinitive complement (13), like the participle complement, reports only processes and events, relational or monadic, and is not any sort of singular term:

(13) a saw John jump

(14) *John jump is F

(15) a saw John jump over the fence

(16) a saw John hit Sam

(17) *a saw the ball be red/John be sad.

Reports such as "a saw Maria on the bench" attribute perception of static relations but, as in the naked infinitive construction, the complement is not any sort of singular term. Their non-relational counterpart is illustrated by the Noun + Adj construction, "a saw Sam naked"[29].

One interesting implication of the naked infinitive construction (and perhaps of the participle construction also) is the how construction[30]. Thus (16) implies

(18) a saw how John hit Sam

which reports the result of visual tracking of the way a process or event occurs. Notice that the claim that a naked infinitive construction implies a how construction means only that when one sees Maria walk along the path there is some feature of the way she does this that is seen. One may well not see more than the way her head bobs along above a wall which hides the rest of the way she moves.

The five constructions we have found to be complements of "saw", (a) singular terms of different more or less exotic sorts and common nouns (b) participles, (c) the naked infinitive, (d) the Acc + Noun construction and its relational counterpart and (e) the how construction all exhibit the feature [non-propositional]. The last four are also always sub-propositional. Although predicates occur in these complements their function is not to attribute to the perceiver any predication nor therefore to attribute to him a propositional attitude or belief. In stark contrast, to assert that someone sees that John is jumping or hitting Sam is to attribute to that person both predication, a propositionally mediated access to the world, and belief. Naked infinitives and the participle construction are examples of what Chomsky (1981, 105ff.) calls "small clauses". They contain the elements needed for predication including predicates but not the structure of predication.

To see an F is for it to be the case that something is an F, but not to see that something is F. Perceptual contact with an independent particular, a, is perceptual contact with b just in case a = b. Similarly, perceptual contact with a dependent particular r is perceptual contact with s just in case r = s.[31]

Higginbotham's extension of Davidson's account of the semantics of events to naked infinitives is the best known source of the view that such perceptual reports quantify over events and processes. This view is distinct from the claim advanced here that we see dependent particulars but there are a number of different routes from the former to the latter.

First, Higginbotham's account of naked infinitives can be extended to deal with sentences of the same types as those exemplified by (4), (5), (6) and (8) by introducing quantification over states[32]. As noted in §2 resistance to quantification over states is greater than resistance to quantification over events and processes. This is in part because the syntactic and semantic motivations are less compelling in one case than in the other. But quantification over states does allow us to understand the structure of sentences such as

a is dark red.

It is a's redness, the individual state, which is dark.

The events, processes and states quantified over by Higginbotham and Parsons are *terms* of relations. Thus to see John jump is to see a process which is a jump and which is related to John by the relation of being an agent. The tropes introduced in §2 are dependent entities. Some depend one-sidedly, for example, on things - monadic tropes. Some depend on two or more things - relational tropes. Thus a second extension requires identifying states, events and processes with tropes and also accepting the view that these are not mere atomic tropes but dependent entities.

Truth conditions are not truth-makers. But a third step has it that the tropes quantified over by perceptual reports belong to the truth-makers of these reports. To see John jump is for there to be a process of jumping which is by John and depends on John and for it to be seen. The proposition

Sam saw John jump

is then understood as involving quantification over a visual event and over the the process of jumping. The proposition is made true by the visual event of seeing this process and John and the jump. A variant on this view allows, as before, for quantification over the process of jumping but disallows quantification over any visual event. Then the proposition is made true directly by Sam's perception and what it depends on, John's jump[33].

On the theory of concepts outlined in §1 attribution in perceptual reports of the use of formal concepts to a perceptual subject would have as a consequence that the perceiver is also employing material concepts. As Higginbotham points out, "if" and "not" are really absent from the complements of naked infinitives. Although conjunction and disjunction, like negation, appear in the surface form it is clear that to see Fred enter or Bill leave is just to see Fred enter or to see Bill leave[34]. But a friend of states of affairs, particularly if he has no place for content of any kind, is going to be tempted to allow perception of states of affairs containing negation. And Barwise and Perry seem to propose that this is what makes true reports such as

(22) a saw John not get drunk

But as Higginbotham points out, to see John not get drunk is just to see the process of refraining from getting drunk[35]. Omissions are particulars as positive as commissions, however mysterious are the types of cue and criteria involved in their perception. We can, for example, see how John fails to get drunk by observing repeated interruptions of the movements of his hands on the way to the bottle.

The perceptual reports we have looked at so far are indirect reports of direct perception. Another type of perceptual report, known to the Gestalt psychologists and Wittgenstein, but which has, apparently, escaped the attention of linguists and formal semanticists[36] is the "seeing as" construction,

(19) a saw b as an n

where "n" ranges over common nouns such as "rabbit", "duck" and "book". (The use of "see as" with adjectives seems to be less common). This is perhaps most frequently used in reports of perception of static entities (in particular, of independent particulars) but its range can be extended by the use of verb nominalisations,

(20) a saw b as a jump (*as jumping)

or by the use of a formal concept as in the writings of the Gestalt psychologists

(21) a saw b as a part of/fitting/an n (as going with c).

Thanks in part to a common interpretation of Wittgenstein's remarks on seeing as it is widely held that seeing as reports attribute conceptualisation[37]. To see a duck as a rabbit is, it is held, to see a duck and to subsume it under the concept of *rabbit*. Although we often do see things by subsuming them under concepts, perhaps even without thereby judging that they fall under concepts[38], the form of "seeing as" reports suggests that the common view that this is always the case is by no means the most economic interpretation of the data. The complement of "see as" is, like the small clauses in indirect reports of direct perception, sub-propositional. The friend of direct perception who allows for non-conceptual content should say of seeing as reports that they attribute direct perception of a particular via determinate types of non-conceptual content. On this view, to see a rabbit as a duck is to see a rabbit and to enjoy the visual appearance standardly associated with ducks, that is, for it to look like a duck. The concept *duck* employed in the report serves to classify the subject's visual state, the appearances he enjoys, the way he sees what he sees. The friend of direct perception who allows for no content of any type, on the other hand, will say that the report attributes perception of *duckhood*.

Austin, and perhaps Wittgenstein, held that "«seeing as` is for *special* cases"[39]. The suggestion might be that the following principle is false:

(A) To see something is always to see it in some way.

It is true that a certain oddity attaches to reports like

a saw the rabbit as a rabbit.

But all that (A) requires is that if Sam saw a rabbit then one possibility is that there is something that he saw which is a rabbit and that he saw it as a rabbit. As an observer of Sam might put it: "He saw that, that is a rabbit and he saw that as a rabbit".

If perceptual content is non-conceptual then it is important to distinguish terminologically between the errors and truths appropriate to perception-based beliefs, on the one hand, and the illusions and hallucinations to which visual experience is heir. We might say that perceptual content *fits* its object more or less.

Our rapid survey of perceptual reports has brought to light two connected features of such reports which are relevant to the evaluation of the theses canvassed in §§1-2: their plasticity and their variety. By the plasticity of the non-propositional and subpropositional perceptual complements I mean that they allow us to attribute perception of different components of complex scenes and their interrelations. Thus they provide us with three different syntactic ways of attributing perception of different types or aspects of dynamic particulars. Whereas the naked infinitive describes completed actions

(22) a saw John cross the road

the participle describes incomplete or ongoing actions

(23) a saw John crossing the street[40].

The "see how" construction, (18), makes possible description of that accident of an accident which is the way a process occurs or is performed. Non-Russellian descriptions, (4), (5), can function both attributively and referentially like their better known counterparts and can also report perception of tropes which does not involve perception of the trope's bearer. Finally, nominalisations of verbs, (7), can be employed in the plural to attribute perceptual contact with groups or manifolds of dynamic particulars. To see Mary's jumps is to see such a temporally extended group. Reports employing the naked infinitive or participle merely leave this possibility open.

The syntactic variety of the complements of perceptual verbs is unrivalled. Verbs of emotion are highly selective: I can admire Mary's intelligence without admiring Mary, and Christianity tells us to hate the sinner's deeds, his sins, but not the sinner. Yet they cannot select naked infinitives. "Refer to", speaker's reference, might be thought to enjoy the same privileges as "see" since, after all, an object is anything that can be referred to. But neither the naked infinitive nor the participle construction can be a complement of "refer to" or of non-natural "meaning".

This plasticity or selectivity and variety may well be thought to be explicable in functional and evolutionary terms. Is not the most economical explanation of the existence and function of this pervasive language game that it reports the variety of particulars with which we have perceptual contact ? The semantic space of perceptual verbs and their complements fulfills the function of enabling us to refer to the great variety of particulars directly given to us in perception. This sounds like and is an example of the venerable tradition of arguing from ontological structure to logical structure. And this tradition does not have a good track record. But what better explanation is there of the origin of the system of perceptual reports ?

If what is seen, strictly speaking, are particulars, what relations obtain between reports of perception of particulars and reports of perceptual judgements or perception-based beliefs (3)? As the discussions of the distinction between primary and epistemic seeing have demonstrated[40], to see that aRb need involve neither perception of a, nor perception of b, nor perception of the relational trope r that depends on these. All that is required is perception of some particulars that stands in a close relation to one of the three plus the background knowledge needed to generate the perceptual judgement. I can see that the tank is full by seeing the dashboard.

In §§4-5 I turn to two further connections between the psychology and logical grammar of perception.


## 4. SIMPLE SEEING OF COMPLEX OBJECTS

## VIA INTERNAL RELATIONS


To see simply is not ordinarily to see simples and for the friend of non-conceptual perceptual content to see simply is not a simple affair, in spite of the fact that it involves no propositional or conceptual complexity.

The identity of logical form in

a sees b

and

a is next to b

can easily lead one to think that what makes true such a simple extensional perceptual two place sentence as "a sees b" is as indifferent to the internal structure of b as is the relation of spatial contiguity.

But the individuals we see are in almost all cases complex, as are many of the dependent tropes we see, and this complexity is presented to the perceiving subject (analogue information). Thus we see the colour contrasts between the parts of things and their interrelations. Another analogy between simple perception and certain views of the relation between the use of a name and its bearer will help to make this clear. On one popular view of proper names I need be aware of no complexity at all in the object I successfully name. It is true that on this same view the baptism in which name and object come together involves some perceptual contact with the object's complexity but once the name has successfully been attached to its bearer and this link has been transmitted to other speakers they at least enter into direct contact with the object without any awareness of its complexity. On another view of proper names their use is mediated by descriptions. So here awareness either of some complexity in the designated object or of some of its properties is necessary. But the subject's awareness here is mediated only by conceptual or linguistic rather than perceptual complexity. This conceptual complexity is normally much poorer than the rich perceptual complexity with which the average perceived thing presents itself to its perceiver. To see a brown rectangular thing, which is my favourite book of poetry, is to see lots of relations between the salient parts of this form and to grasp the supervenient Gestalt property that is its rectangularity, though it need involve no thought about books or poetry.

The extensionality of reports of simple seeing misleads also for a second reason. Often, perhaps always, things are perceived together with a variety of relations in which they stand. Here again there is a contrast with linguistic behaviour. We often make monadic predications without entertaining any relational thoughts but in perception we cannot normally avoid seeing relations - for example the figure-ground relation. And even when we do produce assertions with a relational form we are normally only talking about the relation mentioned and not about other relations. But to see a brown rectangular thing is to see, attentively and inattentively, its relation to the background and a variety of relations of contrast and similarity between the different colours with which we are presented. Because of the analogue nature of perceptual information and because of the structure of the visual field we typically see via seeing relations. This relational complexity is presented to us. We regularly track visually not merely individuals and their qualities but also relational qualities and processes. Need we conclude from the pervasiveness of the figure-ground relation, of relations of chromatic discontinuity and the fact that salient things are normally internally complex that to track visually relations is to see that ? We have already seen that a variety of complements of perceptual reports allow us to attribute perceptions of relational tropes

without thereby attributing judgements or beliefs to the effect that certain relations hold. But the pervasive relations just mentioned belong to a different type of relation than do the relations mentioned by these complements. The concepts of *hitting* and *jumping* ((15-16)) are material concepts and they are used to refer to external relations. The figure-ground relation and the relation of chromatic discontinuity are internal, formal relations.

The Berlin Gestalt psychologists (Koffka, Köhler) inclined to the belief that all relations in the visual field are internal. But this was due to their critical realism (representationalism), that is, their denial that we directly see things and events. To see directly things and episodes is always also to see external relations, for example to see something occupy a place or move from one place to another. But what is the relation between perception of external relations and perception of internal relations in simple perception?

Consider again the thesis already mentioned: every denizen of the visual field is seen as a part of a whole, at the very least of the scene itself - the key thesis of the uncontroversial descriptive part of Gestalt psychology. Now "part" and "whole" are correlative concepts describing an internal relation. It is true that outside visual space we can often make the internal relation disappear merely by redescribing the terms. But within the visual field traits of each item seen stand in internal relations to the whole scene and to a variety of constituent wholes. Do we see such internal formal relations?

It will help to consider first the variety of visual differentiation. In all except a few possible exotic cases - the case of the uniformly blue sky filling my visual field when I am on my back perhaps indicates that not all perception is of units, sometimes it is of massy entities - perception involves visual differentiation. Dretske recognises this in the following principle for simple seeing

S sees (n) D = D is visually differentiated from its immediate environment by S.[42]

What does visual differentiation consist in? If we bear in mind that Dretske's principle is in fact a statement of the claim mentioned above to the effect that what is seen is normally units of different kinds (not to be confused with the claim that such units are seen as units) it becomes apparent that answers to this question are provided by all the writers in the *Aufbau* tradition and by the Gestalt psychologists as well as their predecessors. The philosophically most sophisticated taxonomy I have come across is given by Russell's French pupil Jean Nicod in *La Géométrie dans le monde sensible* (for whom all seen relations are external). Combining some of their suggestions we get the following account of what visual differentiation involves. First, chromatic and spatial sensory qualities such as redness tropes, shaped particulars and extents together with their shape tropes such as squareness, rest and movement and the phenomenal quality of familiarity. Secondly, Gestalt properties such as symmetry, parallelism,

convergence, straightness, curvilinearity, sameness on both sides, verticality, horizontality, obliqueness and pointedness[43]. Thirdly, relations such as the figure-ground relation, symmetry, the profile-particular relation, brighter than, chromatic discontinuities and distances, interiority, spatial and temporal inclusion, penetration, exteriority and continuity, different types of resemblance, distances, directions and relations amongst these, such as incompatibility. Finally, a variety of functional properties of parts of the visual field described by Goldmeier: the property of being an end-point, being a centre, being a corner, similarity and proximity. In the case of such functional properties it is important to distinguish these from their "carriers". In contrast to an ordinary relation, which links independent terms, a function, in this sense, is an n-place relation at least two of whose terms are correlatives, a whole and one or more of its parts. Structure comprehends both the relations between parts and functional properties.[44]

One difficulty faced by any systematic attempt to work out what is involved in top-down and bottom-up accounts of perception is that although the former (as in the case of the Gestaltists) privilege internal relations and the latter external relations, many of the relations mentioned can be interpreted as either external or internal[45]. Thus the more or less exact similarity between two coloured things (external) involves but is distinct from the (internal) relation of more or less exact similarity between the two colour tropes (or properties, for those who prefer them). A relation is internal if the existence of its terms imply the existence of the relation. Its terms are properties or tropes except perhaps in the case of numerical difference between things. A person's movement from one place to another depends essentially on time and distance traversed. A similar point can be made about the figure-ground relation among others. There is a figure ground relation amongst things, but there are also two, connected internal relations - the relation of chromatic discontinuity at the edge and the relation of bilateral dependence between the figure shape and its edge (the contour is not a contour of the ground in the same sense in which it is a contour of the figure).[46]

A second difficulty emerges if we consider the relation between visual differentiation and the two types of relation we have distinguished, material relational tropes and formal or internal relations. The former - hittings and jumps over fences - are visually differentiated. The latter - colour similarity or discontinuity - are not differentiated; they differentiate objects but are not differentiated. But this means that they are not objects of visual perception.

5. LOOK vs. SEE & (DIS)CONFIRMATION

For the friend of non-conceptual perceptual content perception involves some representation of the complexity of what is seen (cf. principle (A) above). If he accepts something like the account in §4 of such complexity he may want to distinguish in an analogous fashion between levels or types of perceptual content, without of course assuming that one of these enjoys any simple priority over the other. We might distinguish that aspect of content that represents the independent particulars we see together with their material qualities and the material relational tropes linking them from an interpretative component, adding that to interpret, to note internal relations, is not to conceptualise. There is a tendency to think of the former as sensory and the latter as non-sensory. But, as has often been pointed out, switches in the way we interpret what we see, the sort of switch that occurs when new internal relations are noted, have an almost sensory feel about them[47]. A two-tier account of perceptual content is perhaps alluded to by Wittgenstein when he distinguishes between the visual impressions which are something's looking red and rectangular - impressions which correspond to its being red and rectangular - and the way in which internal relations, in particular spatial organisation, are represented, in those presentations (*Vorstellungen*) which are interpretations (*Deutungen*)[48].

Such a content-object account of the psychology of perception can, as we have seen, point to the existence of perceptual reports such as (19) as the linguistic tool with the help of which we attribute perceptual content to others and to ourselves and, indeed, in the case of first person, present tense, exclamatory uses, express the way we see:

(19) a saw b as an n.

An assertion of this form, we said, attributes a perception of a particular and of a way in which this is seen. It is of course quite consistent with the truth of a report of this form that there is no n that a sees. Just as perception of an n may not be perception of an n as an n. The aspects of organisation under which we see are extraordinarily difficult to characterise[49]. A rabbit aspect is one of the ways rabbits should look in optimal perception of rabbits. The difficulty is to explain "optimal", "should" and "normal". One handle on the problem of specifying types of aspect or look is provided by the fact that there is a well-attested felt difference between appearances which reflects internal relations amongst them. Thus different appearances of an object can be ordered with some success as nearer to or further away from different optimal points, appearances that cannot be improved on. Similarly, objects of a type correspond more or less closely to a prototype.

Although friends of perceptual content agree on the need for a distinction between how and what we see they disagree about where the dividing line should be drawn. The space of perceptual appearances is likely to contain spaces for spatial appearances matching the spaces in which real spatial form varies[50]. But

for some philosophers the spaces of colours and of orientations do not match anything in the world of objects. Rather, being to the left of is a way in which a real spatial relation is perceived, colours are not monadic tropes of things etc.

We can imagine a world in which things of type T and episodes of type E are regularly seen but never under T-aspects or E-aspects. Presumably even in such a world to see a jump would at least involve seeing a process under a process aspect. But this is not our world. For us, perception of particulars and perception of these under the right aspects are connected in behaviour and in perceptual justification. Behaviour connects them in two ways which are constitutive of the dynamic link between perception and behaviour. First, the functional correlations between kinaesthetic information and movements, on the one hand, and perceptual appearances on the other hand explain our success in seeing what we manipulate. Secondly, just as propositional content has both a semantic and a cognitive role, so too perceptual content represents but also explains behaviour. One rabbit look will help explain the hunter's reaching for his gun; another one the action of the vegetarian pushing away his plate. And a particular jump look will contribute to explaining the applause of the spectators. In functional terms, the fact that perception of a certain type of particular is regularly correlated with a certain determinate range of fitting perceptual aspects simplifies life.

Perceptual justification ("motivation") and defeat occur at the most basic level within perception itself. Consider perception in the round. Sam may move round a ball and experience a sequence of meshing profiles of the green ball when all of a sudden he is surprised to discover a red indentation. Perhaps one of the reasons why the time schema of "see" is punctual is that the unified achievement it describes - like that of hearing a melody - involves integrations of this sort that are are in some respect not disappointed.

A second sort of justification occurs as a relation between a judgement that aRb, on the one hand, and perception of a, b, the relational trope r depending on these and the fact that each of these particulars is seen under an aspect which fits it, on the other hand. Thus this relation is distinct from the truth-maker relation and from the relation which obtains between judgement and perception when it is the case that a, b, and r are seen but under the wrong aspects. The claim that Erna hit Mary is made true by the hit that depends on them. If Sam sees Erna hit Mary then the claim is true. But Sam's perception will not justify or verify the claim if he sees Erna's hit as a salute. Verification involves perception which is veridical, which fits and which justifies.

The two sorts of justification just described are relations. But it would be obviously wrong to think that we must normally assert or think such relations. The thought that such and such a judgement and such and such a perception stand in the relation of justification must be distinguished from our performing the two

activities that are the potential terms of such a relation. The situation is analogous to that which obtains in understanding a demonstrative. When I hear your use of "that" and see the object you are pointing to it is not necessary for my comprehension of what you say that I *judge* that what your demonstrative refers to is what we see. Nevertheless, the two sorts of justification and disconfirmation are relations - internal relations. As Wittgenstein puts it, the fact that certain sense impressions are precisely a false appearance of rain "is based on a definition" (PI §354). Between successive perceptions of an object, between my perception and my perceptual judgement there necessarily exist relations of non-inductive, defeasible justification[51]. Needless to say, Kantians of all stripes, and many others, will find the claim that one or both terms of a justification relation may be non-propositional unacceptable.[52]

Justification comes in degrees. In the purely perceptual case Sam may be surprised by either the red back of the ball or by a peculiar indentation or for both reasons. In the case of perceptual justification of the belief that aRb we can distinguish two extremes and a variety of intermediate cases. At one extreme there is perception of a, b and the r that depends on them under the fitting aspects in each case. (Perhaps we should add: perception in the round under the right sequence of aspects of a, b and r.). At the other extreme there is the case already mentioned of fitting perception of some object that stands in some sufficiently close relation to a, b or r plus whatever propositional knowledge or belief grounds the belief.

The fact that justification involves relations like those just described and perhaps even the fact that it comes in degrees manifest themselves in the logico-grammatical structure of perceptual reports employing "see as", "look", "appears". We express or describe disappointed perceptual and doxastic expectations with sentences such as

(24) It doesn't look as though it's a wax doll

(Jackson's epistemic use)

(25) It looks like a man not a wax doll

(Jackson's comparative use)

(26) It doesn't look red. It looks green.

The main verbs here are Neg Raisers, like "believe" and "want", and unlike "judge" and "see"[53]. Sentences containing verbs that are Neg Raisers and negation systematically admit two different interpretations, wide negation and narrow negation. Thus (28) admits both (29) and (30):

(27) a believes that Fb

(28) a doesn't believe that Fb

(29) Not (28)

(30) a believes b isn't F.

Similarly, to say that something does not look red is either to say that it is not the case that it looks red or to say that it doesn't look red but, say, green.

Often, too, Neg raisers indicate a polar opposition. Thus to assert that Sam does not desire that p is either to assert that it is not the case he desires that p, or that his volitive attitude towards p is negative (either he shuns the state of affairs that p, or he positively wants that not-p). "Please" and "displease" exhibit the same polar opposition. Indeed where they have nominal complements they must be understood as expressing polarly opposed attitudes.

To what polar oppositions, if any, do sentences of the forms (24)-(26) refer us? There are the following non-exclusive possibilities: incompatibilities between looks or appearances; incompatibilities between actual appearances and the appearances appropriate to our beliefs or expectations; incompatibilities between perceptual expectations and perceptions or between our judgements (hypotheses, beliefs) and our perceptions. All such incompatibilities are internal relations.

Neg Raisers such as "believe" and "want" exhibit degrees. "Look" does not exhibit degrees. But the perceptual Neg Raisers employed in (24)-(26) do describe situations in which the degree to which an expectation or judgement is disconfirmed is augmented.

To see that p is to judge and so believe that p, we said. Why is "believe" unlike "judge" a Neg Raiser ? Frege was one of the first philosophers to stress that judging is not a genus of which positive judging and denying are polarly opposed species (cf. love and hate). We can see why logicians persisted in this error: judgement and belief are very intimately related. Judging depends on belief and often gives rise to it. (Another source of confusion is the existence of the pragmatic phenomenon or speech act of polemic denial.) Perhaps "believe" is a Neg Raiser because a person's core beliefs begin with perceptual justifications and their defeaters. Sam's becoming aware that, contrary to expectation, a does not look F marks the beginning of his negative belief that a is F. Of course the further removed a belief is from its perceptual origins the less important is the distinction between belief and disbelief. Sam will report his belief indifferently as "I believe that x is not F" and as "I don't believe that x is F". Nevertheless it seems possible that "believe" retains its status as a Neg raiser and is, for example, lexicalised as both "belief" and "disbelief" because it bears traces of its origin in something's looking F or not looking F.

If seeing is not believing or judging then the gap that opens up between perception and conception must be bridged. One way in which it is bridged is in perceptual justification, which we have looked at briefly. But the difficulty of specifying determinate types of perceptual Gestalt and appearances thereof (perceptual transposibility) is analogous to the difficulty of specifying what it is that different uses of a predicate have in common when they are followings of the same rules (linguistic and conceptual transposibility). A theory of perceptual justification has to face both of these problems. Two other bridges are the linguistic devices of demonstratives and proper names. The simple senses of such expressions on a given occasion of use depend on perception albeit in different ways[54]. Yet another bridge, logically prior to the others, is provided by the process of abstraction, the passage from perception to conceptualisation in the individual and in the species - and back. Finally, certain verificationist theories of meaning propose not so much a bridge between perception and conception as to construct the latter from the former. The representative, as opposed to the inferential functions of predicates, according to such theories, are to be explained in terms of the relations of justification and defeat between perception and uses of predicates[55].

If perception is propositionalised then the problem of connecting perception and conception disappears or must be posed in a very different way. For without structured perceptual contact with organized wholes translation is indeterminate and reference remains inscrutable. The neo-Kantian, of course, sees the problems that arise when we attempt to cross the aforementioned bridges as so many reasons for not distinguishing between perception and conception. But the grammar, ontology and psychology of perception indicate that the neo-Kantian is simply aspect blind.

6. DISJUNCTIVISM AND OBJECT-DEPENDENT

NON-CONCEPTUAL CONTENT

The single most striking feature of all the perceptual reports considered, except for attributions of seeing that, is their veridicality. This in its turn explains the factive nature of seeing that reports. For seeing that is based on simple seeing. To see that Mary is hitting Sam is to see Mary, Sam and the hit or at least some other particulars connected in a suitably close way with these. Seeing that is a belief or judgement based on simple seeing of particulars.

The veridicality of perception means one thing to the trope nominalist and something quite different to the friend of abstract properties. For the former a perceptual state is a relational trope. If I see a horse then my perceptual state depends on the horse and on me - although we are independent of the perceptual state. If I undergo a horse hallucination then my mental state is a monadic trope of me. There is no lowest type of trope to which my perception and my hallucination could belong. For many friends of abstract properties these have a variable adicity - one and the same property may be relational in one case and monadic in another. But for the friend of tropes it is natural to consider perceptual content to be object-dependent. Perhaps the simple senses of proper names are object dependent in a similar way since they inherit the object-dependence of perception. But not propositional content, to the extent that this is independent of perception and acquaintance, for propositional content is bipolar.

The claim that perceptual content is object-dependent, disjunctivism, stands opposed to conjunctivism, the view that veridical perception and hallucinations have a common ingredient or element, to which a suitable causal relation is conjoined in the perceptually optimal case. On the conjunctivist view perception is, in Taine's happy phrase, "a true hallucination" or rather, a veridical hallucination. There are versions of disjunctivism which dispense with content. But the following disjunctivist claim

(B) Sam seems to see a horse iff Sam sees a horse as a horse v Sam is the victim of a horse-hallucination

requires content and, as we have seen, the content need not be conceptual. Each of the two exclusive disjuncts in (B) entails the analysandum. Is this, then, not just the common element disjunctivism wanted to abandon ? No. Following W. Child (1994), we may say that the analysandum attributes an aspect common to each of the two contents attributed to Sam by the disjuncts, one of which is object-dependent and the other object-independent or monadic. Just what "aspect" means here may be illustrated by the analogy with

(C) a is coloured $\leftrightarrow$ a is red v a is blue

(in a two colour world).

Being coloured is not an independent ingredient of being blue or of being red, it is a distinct not a separable item. Does this not smuggle in a type of variable adicity by assuming that one and the same determinable can can have determinates of different ontological types ? Yes. But the variable adicity exists only at the level of determinables. And there are good reasons for thinking that this has to be allowed anyway. A pain and a perception both fall under the determinable *mental episode*. Yet a pain, unlike a perception, is a monadic trope.

For the trope nominalist, then, it is the ontological status of perceptual episodes and of their objects which explains why perceptual content is object-dependent. This in turn explains why perceptual reports with non-propositional complements are veridical which explains why perceptual reports with propositional complements are factives[56].

*Kevin Mulligan*

*University of Geneva*

NOTES

[1] Warnock 1955. Cf. Husserl, *Logical Investigations*, VI §§1-6, 40; Husserl's account of perception is analysed in Mulligan 1995. The present paper is in many ways a development of Husserl's account.

[2] Cf. Dretske's 1969 *Seeing and Knowing* and chapter 6 of his 1981 *Knowledge and the Flow of Information*; Jackson 1977, 37ff. & ch. 7; Evans' account of non-conceptual perceptual information (Evans 1982 §§5.2, 6.3, 7.4); Peacocke 1986, 1989; Ebert 1991.

[3] Rock 1983, 57. Rock is a renegade gestaltist. The minority, gestaltist view in psychology that to see is not to judge goes back to Benussi (cf. Stucchi 1993) and has been ably defended by Gaetano Kanizsa (eg 1985) in his analyses of what he calls perceptual integration.

[4] Dretske 1981, ch. 6. Cf. Peacocke 1989, especially p. 315 on Dretske, Lewis 1971, Turvey 1977.

[5] Brunswik 1934 128, cf. 119f. On this distinction and for a variety of arguments in favour of the view that perception is cognitively impenetrable, see Fodor 1983.

[6] Cf Evans' (1982, 123, 227) two distinctions (a) between perceptual information and information we obtain by listening to a story (and which is therefore conceptually articulated), and (b) between belief and informational content.

[7] Cf. Evans 1982, 123, Brunswik 1934 128f..

[8] Broad 1925, 153, cf. 208-9

[9] Broad 1925, 153, cf. 208-9.

[10] The internal, phenomenologically immediate connections between perception and action have been analysed as indirect transitions involving kinaesthetic information and body images (Husserl 1973, Evans 1982) and as direct transitions (Koffka 1925, V, §9). Cf. also Prinz 1987.

[11] Cf. Evans 1982, 157: "[t]o say that these things are perceived in a particular manner is not at all to imply that these things are not themselves perceived"; Peacocke 1989, 303.

[12] Cf. Dokic 1998.

[13] The view mentioned above that content is a tokening of mentalese can be combined with the view that there are tokenings of formal concepts other than those mentioned here - non-logical concepts.

[14] Cf. Mulligan, Smith and Simons 1984, Campbell 1990, Simons 1987, ch. 8. The present section develops a claim made at §4 of the first of these.

[15] The view that all universals are formal has much to recommend it.

[16] On the view I favour, an independent particular is composed of tropes that are specifically (or token-) dependent on one another (cf. Husserl's third Logical Investigation, Simons 1992). An independent particular, like all particulars, is in time. But its inner internal relations are outside time. This is the grain of truth in the claim that a thing has a history but no temporal parts (cf. Mulligan 1992).

[17] Cf. Mourelatos 1977.

[18] Dretske 1969, 14, 166; cf. Warnock 1955, 209.

[19] In his analysis of primary epistemic seeing, Dretske (1969, 141) talks not of simple perception of a relation but of simple seeing of the terms of a relation and the condition that these would not look the way they do unless the relation obtained.

[20] One distant ancestor of the view is Bolzano's analysis of impersonal sentences such as "It 's snowing" as "There is a snow fall" (*Wissenschaftslehr*e §172).

[21] Armstrong 1978, I, Johansson 1989, ch. 3.

[22] Mulligan, Smith and Simons 1984.

[23] See, for example, Brunswik 1934, 1956, von Fieandt 1966.

[24] See Dokic 1998. For an objection to this view, see Mulligan 1996.

[25] Cf Hirsch's (1982, 106f., 244f.) discussion of the views of Quine and the Gestalt psychologists on this matter.

[26] On the related Romance construction, the pseudorelative, cf. Guasti 1992.

[27] The interesting limit case, "a saw John standing", is perhaps due to the fact that this state is nevertheless an act, something John does.

[28] Cf. Falkenberg 1989.

[29] Perhaps "Sam naked is a sight for sore eyes" is acceptable, perhaps because the main predicate refers to perception. Cf. Parsons 1990, 193.

[30] Cf. Falkenberg 1989.

[31] On perceptual identities see Dretske 1969, 60-61.

[32] Cf. Parsons 1990, ch. 10.

[33] For the view that the truth-maker relation between a truth-bearer and a trope need not involve a detour via quantification over the trope in the form of the truth-bearer, cf. Mulligan, Smith and Simons 1984, 308.

[34] Higginbotham 1983, 112f.

[35] Barwise & Perry 1986, 182; Higginbotham 1983, 111.

[36] On constructions with "as", cf Aarts 1992, 111f.

[37] Even Dretske is of this opinion, Dretske 1990, 133.

[38] This claim involves giving up the strong requirement mentioned in §1 according to which concepts are employed only in the context of propositions. For an alternative to the strong requirement, see Mulligan 1997, 1997a.

[39] Austin 1962, 101.

[40] On this aspectual difference see Guasti 1992, ch. 6.

[41] Dretske 1969, ch. IV; Jackson 1977, 159-167.

[42] Dretske 1969, 20. "For" might be better.

[43] Cf. Rock 1983, 51.

[44] Goldmeier 1972, 62.

[45] Wittgenstein notes that perceptual reports may describe perception of internal relations (LWPP §152, §155, §156).

[46] Elsewhere (Mulligan 1993, 1998 forthcoming) I have given some reasons for thinking that the relational material tropes introduced here as the objects of much perception, can be reduced to different types of internal relations and that things are structured wholes of monadic tropes.

[47] Cf. Mulligan 1988.

[48] PI II, ix. Wittgenstein, however, concentrates on awareness of internal relations in experiences of change of aspect rather than on perception tout court.

[49] Jackson 1977, ch. 2; Kelley 1986, 234ff.

[50] But see Millikan 1991.

[51] Cf. Mulligan 1998.

[52] Cf. McDowell 1994, 7; Bouveresse 1995, 10.

[53] Cf. Horn 1989, §5.2. Horn also notes (323) that factives, such as "see that", are not Neg raisers. De Sousa (1971) argues that one type of probability, Bayesian, attaches to belief, another, Bernouillian, to the leap of judgement. On this claim, see Dennett 1985.

[54] Cf. Mulligan 1997a, Mulligan & Smith 1986.

[55] Cf. Mulligan 1998.

# REFERENCES

Aarts, B. (1992). *Small Clauses in English. The Non-Verbal Types*. Berlin: Mouton de Gruyter.

Anscombe, E. (1965). "The intentionality of sensation: a grammatical feature." In R.J. Butler (ed.) *Analytical Philosophy, Second Series*. Oxford: Basil Blackwell.

Antony, L. (1991). "The causal relevance of the mental: more on the mattering of mind." *Mind and Language*, 6, 295-327.

Aristotle (1907). *de Anima*, translated, with introduction and notes by R. D. Hicks. Cambridge: Cambridge University Press.

Armstrong, D.M. (1978). *Universals and Scientific Realism, 2 Vols.* Cambridge: Cambridge University Press.

Armstrong, D.M. (1980a). *The Nature of Mind*. Ithaca: Cornell University Press.

Armstrong, D.M. (1980b). "What is consciousness." In *The Nature of the Mind*, Ithaca (NY): Cornell University Press.

Asher, N.M. & D. Bonevac (1985). "How extensional is extensional perception?" *Linguistics & Philosophy*, 3, 203-228.

Astington, J.W., P.L. Hanis & D.R. Olson (eds.) (1988). *Developing Theories of Mind*. Cambridge: Cambridge University Press.

Audi, Robert (1978). "The ontological status of mental images." *Inquiry*, 21, 348-61.

Austin, J.L. (1962). *Sense and Sensibilia*. Oxford: Oxford University Press.

Austin, J.L. (1962). *How to Do Things with Words*. Cambridge (MA): Harvard University Press.

Baars, B.J. (1988). A *Cognitive Theory of Consciousness*. Cambridge: Cambridge University Press.

Baker, L. (1987). *Saving Belief: A Critique of Physicalism*. Princeton: Princeton University Press.

Ballard, D.H. (1991). "Animate vision." *Artificial Intelligence* 48: 57-86.

Baron-Cohen, S., H. Tager-Flusberg & D.J. Cohen (eds.) (1993). *Understanding Other Minds*. Oxford: Oxford University Press.

Barrett, R.B. & R.F. Gibson (eds.). (1990). *Perspectives on Quine*. Oxford: Blackwell.

Barwise, J. & J. Perry. (1983). *Situations and Attitudes*. Cambridge (MA): MIT Press.

Berger, S. & S. Hadley (1975). "Some effects of a model's performance on an observer's electromyographic activity." *American Journal of Psychology*, 88, 263-276.

Berkeley, G. (1710). *A New Theory of Vision*, in *The Works of George Berkeley*, ed. A.A. Luce and T.E. Jessop, 9 volumes. Edinburgh: Thomas Nelson and Sons, 1948-57, vol. I (1948).

Berkeley, G. (1713). *Principles of Human Knowledge*, in *The Works of George Berkeley*, ed. A.A. Luce and T.E. Jessop, 9 volumes. Edinburgh: Thomas Nelson and Sons, 1948-57, vol. II (1949).

Bigelow, J. & R. Pargetter (1987). "Functions." *The Journal of Philosophy,* 84, 181-196.

Bisiach, E., A. Berti & G. Vallar (1985). "Analogical and logical disorders underlying unilateral neglect of space." In M.I. Posner & O.S.M. Mann (eds.) *Attention and Performance, XI, Mechanisms of attention.* Hillsdale (NJ): Lawrence Erlbaum Associates.

Block, N. (1986). "Advertisement for a Semantics for Psychology." In P. French, T. Uehling, & H. Wettstein (eds.) *Midwest Studies in Philosophy*, *Vol.10*. Minneapolis: University of Minnesota Press.

Block, N. (1990a). "Consciousness and accessibility." *Behavioral and Brain Sciences*, 13, 596-98.

Block, N. (1990b). "Inverted Earth." In J. Tomberlin. (ed.). *Philosophical Perspectives* 4. Astascadero (CA): Ridgeview.

Block, N. (1994). "Consciousness." In S. Guttenplan (ed.) *A Companion to the Philosophy of Mind*. Oxford: Blackwell.

Block, N. (1995). "On a confusion about a function of consciousness." *Behavioral and Brain Sciences,* 18, 227-287.

Boghossian, P.A. & J.D. Velleman (1991). "Physicalist Theories of Color." *The Philosophical Review*, 100, 67-106.

Bouveresse, J. (1995). *Langage, perception et réalité. Tome I: La perception et le jugement.* Paris: Éditions Jacqueline Chambon.

Bridgeman, B. (1983). "Isomorphism is where you find it." (Commentary on Grossberg [1983]) *Behavioral and Brain Sciences* 6: 658-59.

Broad, C.D. (1925). *The Mind and its Place in Nature*. London:

Brunswik, E. (1934). *Wahrnehmung und Gegenstandswelt. Grundlegung einer Psychologie vom Gegenstand her*. Leipzig & Vienna: Deuticke

Burge, T. (1973). "Reference and proper names." *The Journal of Philosophy*. 70, 425-439.

Burge, T. (1977). "Belief *de re*." *The Journal of Philosophy*, 74, 338-362.

Burge, T. (1978). "Self-reference and translation." In F. Guenthner & M. Guenthner-Reutter (eds.). *Meaning and Translation.* London: Duckworth.

Burge, T. (1979a). "Individualism and the mental." *Midwest Studies in Philosophy*, 4, 73-121.

Burge, T. (1979b). "Sinning against Frege." *Philosophical Review*, 88, 398-432.

Burge, T. (1982a). "Other bodies." In A. Woodfield (ed.) *Thought and Object*. London: Oxford University Press.

Burge, T. (1982b). "Two thought experiments reviewed." *Notre Dame Journal of Formal Logic*, 23, 284-93.

Burge, T. (1986). "Individualism and psychology." *Philosophical Review*, 95, 3-45.

Burge, T. (1988). "Individualism and self-knowledge." *The Journal of Philosophy*, 85, 649-663.

Burge, T. (1989). "Wherein is language social." In A. George (ed.) *Reflections on Chomsky*. London: Basil Blackwell.

Burge, T. (1993). "Concepts, definitions and meanings." *Metaphilosophy*, 244, 309-325.

Campbell, K. (1990). *Abstract Particulars*. Oxford: Blackwell.

Chesterton, G.K. (1919). *Irish Impressions*. London: Collins.

Child, W. (1994). *Causation and Interpretation*. Oxford: Oxford University Press.

Chisholm, R. (1957). *Perceiving. A Philosophical Study*. Ithaca (NY): Cornell University Press.

Chomsky, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, N. (1990). "Accessibility 'in principle'." *Brain and Behavioral Sciences*, 13, 600-601.

Chomsky, N. (1995). "Language and nature." *Mind*, 104, 1-61.

Churchland, P. (1979). *Scientific Realism and the Plasticity of Mind.* New York: Cambridge University Press.

Churchland, P.M. (1985). "Reduction, qualia and the direct introspection of brain states." *The Journal of Philosophy*, 82, 8-28.

Churchland, P.M. (1993). "Perceptual plasticity and theoretical neutrality: a reply to Jerry Fodor." *Philosophy of Science*, 55, 167-87.

Churchland, P.S. & Ramachandran, V.S. (1993). "Filling in: why Dennett is wrong." In B. Dahlbom (ed.). *Dennett and His Critics*. Oxford: Basil Blackwell.

Clark, A. (1993). *Sensory Qualities*. Oxford: Clarendon Press.

Cohen, L.J. (1991). "Stephen P. Stich, *The Fragmentation of Reason.*" *Philosophy and Phenomenological Research*, 51, 185-188.

Cosmides, L. & J. Tooby (1994). "Origins of domain specificity: The evolution of functional organization." In L.A. Hirschfeld & S.A. Gelman (eds.) *Mapping the mind.* Cambridge: Cambridge University Press.

Craig, E. (1976). "Sensory experiences and the foundations of knowledge." *Synthese*, 33, 1-24.

Crane, T. (1990). "An alleged analogy between numbers and propositions." *Analysis*, 50, 224-30.

Creutzfeldt, O. D. (1990). "Brain, perception, and mind." In L. Spillman & J.S. Werneer (eds.) *Visual Perception: The Neurophysiological Foundations*. San Diego: Academic Press.

Cummins, R. (1989). *Meaning and Mental Representation*. Cambridge (MA): MIT Press.

Currie, G. (1995a). "Imagination and simulation: Aesthetics meets cognitive science." In M. Davies and A. Stone (eds.). *Mental Simulation: Evaluations and Applications*. Oxford: Basil Blackwell.

Currie, G. (1995b). "The Moral Psychology of Fiction." *Australasian Journal of Philosophy*.

Davidson, D. (1963). "Action, reasons, and causes." In Davidson (1980a).

Davidson, D. (1967a). "Truth and meaning." In Davidson (1984a)..

Davidson, D. (1967b). "Causal relations." In Davidson (1980a).

Davidson, D. (1970). "Mental events." In Davidson (1980a).

Davidson, D. (1973a). "The material mind." In Davidson (1980a).

Davidson, D. (1973b). "Radical interpretation." In Davidson (1984a).

Davidson, D. (1974a). "Psychology as philosophy." In Davidson (1980a).

Davidson, D. (1974b). "Belief and the basis of meaning." In Davidson (1984a).

Davidson, D. (1974c). "On the very idea of a conceptual scheme." In Davidson (1984a).

Davidson, D. (1975). "Thought and talk." In Davidson (1984a).

Davidson, D. (1977). "The method of truth in metaphysics." In Davidson (1984a).

Davidson, D. (1980a). *Essays on Actions and Events.* Oxford: Oxford University Press.

Davidson, D. (1980b). "Toward a unified theory of meaning and action." *Grazer Philosophische Studien,* 2, 1-12.

Davidson, D. (1983). "A coherence theory of truth and knowledge." In E. Lepore (ed.) (1986).

Davidson, D. (1984a). *Inquiries into Truth and Interpretation.* Oxford: Oxford University Press.

Davidson, D. (1984b). "First-person authority." *Dialectica,* 38, 100-111.

Davidson, D. (1984c). "Expressing evaluations." The Lindley Lecture, University of Kansas.

Davidson, D. (1985a). "Replies to Essays I-IX." In B. Vermazen & M.B. Hintikka (eds.) (1985).

Davidson, D. (1985b). "Adverbs of Action." In B. Vermazen & M.B. Hintikka (eds.) (1985).

Davidson, D. (1985c). "Replies to Essays X-XII." In B. Vermazen & M.B. Hintikka (eds.) (1985).

Davidson, D. (1985d). "Reply to Quine on Events." In E. Lepore & B. McLaughlin (eds.) (1985a).

Davidson, D. (1985e). "A new basis for decision theory." *Theory and Decision,* 18, 87-98.

Davidson, D. (1985f). "Incoherence and irrationality." *Dialectica,* 39, 345-354

Davidson. D. (1987). "Knowing one's own mind." *Proceedings of the APA*, 60, 441-458.

Davidson, D. (1989). "What is present to the mind." In J. Brandl & W. Gombecz (eds.). *The Mind of Donald Davidson*. Amsterdam: Rodopi.

Davidson. D. (1988). "Reply to Burge." *The Journal of Philosophy*, 85, 664-665.

Davidson, D. (1990a). "The structure and content of truth." *The Journal of Philosophy,* 87, 279-328.

Davidson, D. (1990b). "Meaning, truth and evidence." In R.B. Barrett & R.F. Gibson (eds.) (1990). 68-79

Davidson, D. (1991a). "Epistemology externalized." *Dialectica,* 45, 191-202.

Davidson, D. (1991b). *Paradoxes de l'irrationalité*. Combas: Éditions de l'éclat (French translations of Davidson (1982a), (1982b) et (1986b)).

Davidson, D. (1991c). "Three varieties of knowledge." In Griffiths (ed.) (1991).

Davidson, D. (1993). "Thinking causes." In J. Heil & A. Mele (eds.).

Davies, D. (1992). "Le béhaviorisme méthodologique et le réalisme intentionnel chez Dennett." In D. Fisette (ed.) *Daniel C. Dennett et les strategies intentionnelles: Lekton II-1.* Sillery (Québec): Presses de l'Université du Québec.

Davies, D. (1995). "Dennett's stance on intentional realism." *Southern Journal of Philosophy*. 33, 299-312.

Davies, D. (1998). "On gauging attitudes." Forthcoming in *Philosophical Studies*.

Davies, M. & G. W. Humphrey (eds.) (1993). *Consciousness*. Oxford: Blackwell.

Dennett, D.C. (1969). *Content and Consciousness.* London: Routledge and Kegan Paul.

Dennett, D.C. (1978a). *Brainstorms: Philosophical Essays on Mind and Psychology*. Cambridge (MA): MIT Press.

Dennett, D.C. (1978b). "Toward a cognitive theory of consciousness." In Dennett (1978a).

Dennett, D.C. (1978c). "Two approaches to mental images." In Dennett (1978a).

Dennett, D.C. (1985). "How to change your mind." In Dennett (1978a).

Dennett, D.C. (1987a). *The Intentional Stance*. Cambridge (MA): MIT Press.

Dennett, D.C. (1987b). "Evolution, error and intentionality." In Dennett (1987a).

Dennett, D.C. (1988). "Quining qualia." In W. Lycan (ed.). *Mind and Cognition.* Oxford: Blackwell.

Dennett, D.C (1991a). *Consciousness Explained.* Boston: Little, Brown & Company.

Dennett, D.C. (1991b). "Real Patterns." *The Journal of Philosophy*, 88, 27-51.

Dennett, D.C. (1992a). "'Filling in' versus finding out: a ubiquitous confusion in cognitive science." In H.L. Pick, Jr., P. van den Broek, & D.C. Knill (eds.) *Cognition: Conceptual and Methodological Issues.* Washington: American Psychological Association.

Dennett, D.C. & M. Kinsbourne (1992b). "Time and the observer: the where and when of consciousness in the brain." *Behavioral and Brain Sciences,* 15, 183-247.

Dennett, D.C. (1993). Back from the drawing board. In B. Dahlbom (ed.) *Dennett and His Critics.* Oxford: Basil Blackwell.

Dennett, D.C. (1994). "Dennett, Daniel C." In S. Guttenplan (ed.) *A Companion to the Philosophy of Mind*. Oxford: Blackwell.

Descartes, R. (1641). *Meditations on First Philosophy*. In *Oeuvres*. C. Adam & P. Tannery (eds.), 11 volumes, Paris: J. Vrin, 1964-76, volume VII (1973), 1-90.

de Sousa, R. (1971). "How to give a piece of your mind: The logic of belief and assent." *Review of Metaphysics*, 25, 52-79.

DeYoe, E.A. & D.C. Van Essen (1988). "Concurrent processing streams in monkey visual cortex." *Trends in Neuroscience*, 11, 219-26.

Dickinson, A. & B. Balleine (1993). "Actions and responses: The dual psychology of behavior." In N. Eilan, R. McCarthy & B. Brewer (eds.). *Spatial Representation*. Oxford: Blackwell.

Dokic, J. (1998). *La Structure des actes mentaux*. Stanford.

Dretske, F. (1969). *Seeing and Knowing*. London: Routeledge & Kegan Paul.

Dretske, F. (1978). "The role of percept in visual cognition." In C.W. Savage (ed.) *Minnesota Studies in the Philosophy of Science, vol. IX: Perception and Cognition; Issues in the Foundations of Psychology*. Minneapolis: Minnesota University Press.

Dretske, F. (1979). "Simple seeing." In D.F. Gustafson & B.L. Tapscott (eds.) *Body, Mind. and Method*. Dordrecht: Reidel.

Dretske, F. (1981). *Knowledge and the Flow of Information*. Cambridge (MA): MIT Press.

Dretske, F. (1986). "Misrepresentation." In R. Bogdan. (ed.) *Belief: Form, Content, and Function*. Oxford: Oxford University Press.

Dretske F. (1988). *Explaining Behavior: Reasons in a World of Causes*. Cambridge (MA): MIT Press.

Dretske F. (1989). "Reasons and causes." In J.E. Tomberlin (ed.) *Philosophical Perspectives 3: Philosophy of Mind and Action Theory*. Astacadero (CA): Ridgeview Publishing Company.

Dretske F. (1990a). "Does Meaning Matter?" In E. Villanueva (ed.). *Information, Semantics and Epistemology*. Oxford: Blackwell.

Dretske F. ( 1990b). "Précis of *Explaining Behavior: Reasons in a World of Causes.*" *Philosophy and Phenomenological Research*, 1, 783-786.

Dretske, F. (1990c). "Seeing, believing and knowing." In D. Osherson, S. Kosslyn & J. Hollerbach (eds.). *An Invitation to Cognitive Science, Vol 2: Visual Cognition and Action*. Cambridge (MA): MIT Press.

Dretske F. (1991). "How beliefs explain: Reply to Baker." *Philosophical Studies,* 63, 113-117.

Dretske, F. (1993) "Conscious experience." *Mind*, 102, 263-83.

Dretske, F. (1994/95). "Introspection." *Proceedings of the Aristotelian Society*, 115, 263-278.

Drestke, F. (1995a). "Meaningful perception." In S. Kosslyn and D. Osherson (eds.). *An Invitation to Cognitive Science: Visual Cognition*. Cambridge (MA): MIT Press.

Dretske, F. (1995b). *Naturalizing the Mind*. Cambridge (MA): MIT Press.

Ebert, Th. (1991). "Sichtbare Sachverhalte." Manuscript.

Edelman, G. (1989). *The Remembered Present*. New York: Basic Books.

Egan, F. (1992). "Individualism, computation, and perceptual content." *Mind*, 101, 443-459.

Egan, F. (1995). "Computation and content." Forthcoming in *The Philosophical Review,* 104.

Eisenberg, N. & J. Strayer (1987a). *Empathy and its Development.* New York: Cambridge University Press.

Eisenberg, N. & J. Strayer (1987b). "Critical issues in the study of empathy." In N. Eisenberg & J. Strayer (eds.).

Engel, P. (1994a). *Davidson et la philosophie du langage*. Paris: Presses Universitaires de France.

Engel, P. (ed.) (1994b). *Lire Davidson*. Combas: L'éclat

Engel, A.K., König, P., Kreiter, A., Schillen, T.B. & Singer, W. (1992). "Temporal coding in the visual cortex: new vistas on integration in the nervous system." *Trends in Neuroscience,* 15, 218-226.

Evans, G. (1973). "The Causal Theory of Names." *Proceedings of the Aristotelian Society*, Suppl. vol. 47, 187-208.

Evans, G. (1982). *The Varieties of Reference.* Oxford: Oxford University Press.

Eysenck M. (1990). *Happiness: Facts and Myths*. Hillsdale (NJ): Lawrence Erlbaum Associates.

Falkenberg, G. (1989). "Einige Bemerkungen zu perzeptiven Verben." In G. Falkenberg (ed.) *Wissen, Wahrnehmen, Glauben*. Tuebingen: Niemeyer.

Fieandt, K. von (1966). *The World of Perception*. Illinois: Dorsey Press.

Field, H. (1980). "Mental Representation." In N. Block (ed.) *Readings in the Philosophy of Psychology, vol. 2*. Cambridge (MA): Harvard University Press.

Field, H. (1986). "The deflationary conception of truth." In G. Macdonald & C. Wright (eds.).

Fiorani, M., M.G.P. Rosa, R. Gattas & C.E. Rocha-Miranda (1992). "Dynamic surrounds of receptive fields in primate striate cortex: a physiological basis for perceptual completion." *Proceedings of the National Academy of Sciences* (USA) 89, 8547-51.

Flanagan, O. (1992). *Consciousness Reconsidered*. Cambridge (MA): MIT Press.

Fodor, J.A. (1975). *The Language of Thought*. New York: T.Y. Crowell.

Fodor, J.A. (1980). "Methodological solipsism considered as a research strategy in cognitive psychology." *Behavioral and Brain Sciences*, 3, 63-73.

Fodor, J.A. (1983). *The Modularity of Mind*. Cambridge (MA): MIT Press.

Fodor, J.A. (1987). *Psychosemantics*. Cambridge (MA): MIT Press.

Fodor, J.A. (1989). "Making mind matter more." *Philosophical Topics*, 17, 59-79.

Fodor, J.A. (1990). *A Theory of Content and Other Essays*. Cambridge (MA): MIT Press.

Foley, R. (1987). *The Theory of Epistemic Rationality*. Cambridge (MA): Harvard University Press.

Foley, R. (1991). "Rationality, belief and commitment.", *Synthese,* 89, 365-392.

Gallistel, R.C. (1980). *The Organization of Action :A New Synthesis.* Hillsdale (NJ): Lawrence Erlbaum Associates.

Gallistel R.C. (1990). *The Organization of Learning.* Cambridge (MA): MIT Press.

Garver, N. & P.H. Hare (eds.) (1986). *Naturalism and Rationality*. Buffalo (NY): Prometheus Books.

Gibbard, A. (1986). "Rationality and Human Evolution." In N. Garver & P.H. Hare (eds.) (1986).

Gibson, J.J. (1979). *The Ecological Approach to Visual Perception.* Boston: Houghten Mifflin.

Godfrey-Smith, P. (1991a). *Teleonomy and the Philosophy of Mind*. Doctoral Dissertation. University of California, San Diego.

Godfrey-Smith, P. (1991b). "Signal, decision, action." *The Journal of Philosophy,* 88, 709-722.

Godfrey-Smith, P. (1992). "Indication and adaptation." *Synthese,* 92, 283-312.

Godfrey-Smith, P. (1994). "A continuum of semantic optimism." In S. Stich & T.A. Warfield (eds.) (1994).

Godfrey-Smith, P. (1995). *Complexity and the Function of Mind in Nature*. Cambridge: Cambridge University Press.

Goldman, A.I. (1989). "Interpretation psychologized." *Mind and Language,* 4, 161-185.

Goldman, A.I. (1991). "Stephen P. Stich: *The Fragmentation of Reason.*" *Philosophy and Phenomenological Research,* 51, 189-193.

Goldman, A.I. (1992a). "Empathy, mind, and morals." *Proceedings and Addresses of the American Philosophical Association*, 66, 17-41.

Goldman, A.I. (1992b). "In defense of the simulation theory." *Mind and Language*, 7, 104-119.

Goldman, A.I. (1993). *Philosophical applications of cognitive science.* Boulder (CO): Westview Press.

Goldmeier, E. (1972). "Similarity in visually perceived forms." *Psychological Issues*, 8, 1.

Goodman, N. (1979). *Fact, Fiction, Forecast.* Hassocks: The Harvester Press.

Gordon, R. (1986). Folk Psychology as Simulation." *Mind and Language.*

Gordon, R. (1995). "Sympathy, simulation, and the impartial spectator." *Ethics*, 105, 727-42.

Griffiths, A.P. (ed.) (1991). *A.J. Ayer: Memorial Essays*. Cambridge: Cambridge University Press.

Guasti, M.T. (1992). *Perception and Causatives*. Doctoral Dissertation, University of Geneva.

Guttenplan, S. (1992). "Concepts et normes: Wittgenstein contre Chomsky?" In D. Andler *et al* (eds.) *Épistémologie et cognition*. Liège: Mardaga.

Hardin, C.L. (1988). *Color for Philosophers*. Indianapolis: Hackett Publishing Co.

Hardin, C.L. (1990). "Color and illusion." In Lycan, W. (ed.) *Mind and Cognition*. Oxford: Basil Blackwell.

Hardin, C.L. (1991). "Reply to Teller." *Philosophical Psychology*, 4, 61-64.

Harman, G. (1967). "Psychological aspects of the theory of syntax." *The Journal of Philosophy*, 64, 75-87.

Harman, G. (1973). *Thought*. Princeton: Princeton University Press.

Harman, G. (1989). "Some philosophical issues in cognitive science: Qualia, intentionality, and the mind-body problem." In M. Posner (ed.) *Foundations of Cognitive Science*. Cambridge (MA): MIT Press.

Harman, G. (1990). "The intrinsic quality of experience." In J.E. Tomberlin (ed.) *Philosophical Perspectives. 4: Action Theory and Philosophy of Mind*. Atascadero (CA): Ridgeview Publishing Company.

Harman, G. (1991). "Justification, truth, goals, and pragmatism: Comments on Stich's *Fragmentation of Reason*." *Philosophy and Phenomenological Research,* 51, 195-199.

Harris, P. (1992). "From simulation to folk psychology: The case for development." *Mind and Language*, 7, 120-144.

Hatfield, E., J. Cacioppo & R. Rapson (1994). *Emotional Contagion.* Cambridge: Cambridge University Press.

Haugeland, J. (1981). *Mind Design*. Cambridge (MA): MIT Press.

Hawking, S. (1993). *Black holes and baby universes and other essays*. London: Bantam Books.

Heal, J. (1986). "Replication and functionalism." In J. Butterfield (ed.) *Language, Mind and Logic.* Cambridge: Cambridge University Press.

Heil, J. (1983). "Believing what one ought." *Journal of Philosophy,* 80, 752-765.

Heil, J. (1984). "Doxastic incontinence." *Mind,* 93, 56-70.

Heil, J. (1985). "Rationality and psychological explanation." *Inquiry,* 28, 359-371.

Heil, J. (1986). "Does psychology presuppose rationality?" *Journal for the Theory of Social Behaviour,* 16, 77-87.

Heil, J. (1992). "Believing reasonably." *Noûs,* 26, 47-62.

Heil, J. & A. Mele (eds.) (1993). *Mental Causation*. Oxford: Oxford University Press.

Hering, E. (1964). *Outlines of a Theory of the Light Sense,* trans. L. Hurvich and D. Jameson. Cambridge (MA): Harvard University Press.

Hershberger, W.A. (1986). "An approach through the looking-glass." *Animal Learning and Behavior,* 14, 443-51.

Heyes, C. & A. Dickinson (1993). "The intentionality of animal action." In M. Davies & G.W. Humphreys (eds.) *Consciousness: Psychological and Philosophical Essays.* Oxford: Blackwell.

Higginbotham, J. (1983). "The logic of perceptual reports: An extensional alternative situation semantics." *Journal of Philosophy,* 80, 100-127.

Hirsch, E. (1982). *The Concept of Identity*. Oxford: Oxford University Press.

Hoffman, M. (1984). "Interaction of affect and cognition in empathy." In C. Izard, J. Kagan & R. Zajonc (eds.). *Emotions, Cognitions, and Behavior*. New York: Cambridge University Press.

Hoffman, M. (1987). "The contribution of empathy to justice and moral judgment." In N. Eisenberg & J. Strayer (eds.).

Holland, P.C. (1979). "Differential effects of omission contingencies on various components of Pavlovian appetitive conditioning." *Journal of Experimental Psychology: Animal Behavior Processes,* 5, 178-93.

Horgan, T. (1994a). "Naturalism and intentionality." *Philosophical Studies*, 76, 301-326.

Horgan, T. (1994b). "Computation and mental representation." In S. Stich & T.A. Warfield (eds.). *Mental Representation: A Reader*. Oxford: Basil Blackwell.

Horn, L.R. (1989). *A Natural History of Negation*. Chicago: The University of Chicago Press.

Hubel, D. & T. Wiesel (1962). "Receptive fields, binocular interaction and functional architecture in the cat's visual cortex." *Journal of Physiology,* 160, 106-54.

Hubel, D. & T. Wiesel (1968). "Receptive fields and functional architecture of monkey striate cortex." *Journal of Physiology,* 195, 215-43.

Hume, D. (1739). *Treatise of Human Nature*, edited by L. A. Selby-Bigge; second edition, with text revised by P. H. Nidditch. Oxford: Oxford University Press, 1978.

Husserl, E. (1907). *Ding und Raum*, *Vorlesungen 1907*, K.-H. Hahnengress & S. Rapic (eds.) Hamburg: Felix Meiner, 1991 & Husserliana XVI. The Hague: Martinus Nijhoff, 1973.

Husserl, E. (1913/1982). *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy. First Book*, trans. F. Kersten. The Hague: Martinus Nijhoff.

Husserl, E. (1970). *Logical Investigations*. London: Routeledge & Kegan Paul.

Jackendoff, R. (1987). *Consciousness and the Computational Mind.* Cambridge (MA): MIT Press.

Jackson, F. (1977). *Perception: A Representative Theory*. Cambridge: Cambridge University Press.

Jackson, F. (1982). "Epiphenomenal qualia." *Philosophical Quarterly*, 32, 127-136.

Jackson, F. (1986). "What Mary didn't know." *The Journal of Philosophy*, 83, 291-295.

Jeannerod, M. (1994). "Object oriented action." In K.M.B. Bennett & U. Castiello (eds.) *Insights into the Reach to Grasp Movement*. Amsterdam: Elsevier.

Jeffrey, Richard (1983). *The Logic of Decision*, 2nd edition. Chicago: The University of Chicago Press.

Joanette, Y., M. Brouchon, L. Gauthier & M. Samson (1986). "Pointing with left vs. right hand in left visual field neglect." *Neuropsychologia*, 24, 391-96.

Johansson, I. (1989). *Ontological Investigations*. London: Routeledge & Kegan Paul.

Kahneman, D., J. Knetsch & R. Thaler (1990). "Experimental tests of the endowment effect and the coase theorem." *Journal of Political Economy*, 98, 1325-48.

Kanizsa, G. (1985). "Seeing and thinking." *Acta Psychologica*, 59, 23-33.

Karmiloff-Smith, A. (1992). *Beyond Modularity*. Cambridge (MA): MIT Press.

Kelley, D. (1986). *The Evidence of the Senses. A Realist Theory of Perception*. Baton Rouge: Louisiana State University Press.

Kingdom, F. & Moulden, B. (1989). "Border effects on brightness: a review of findings, models and issues." *Spatial Vision* 3, 225-62.

Kim, J. (1979). "Causality, identity, and supervenience in the mind-body problem." *Midwest Studies in Philosophy*, 65, 153-76.

Kim, J. (1984). "Concepts of supervenience." *Philosophy and Phenomenological Research*, 45, 153-76.

Kim, J. (1989). "The myth of nonreductive materialism." *Proceedings and Addresses of the American Philosophical Association*, 63, 31-47.

Kim, J. (1990). "Explanatory exclusion and the problem of mental causation." In E. Villanueva (ed.) *Information, Semantics, and Ontology*. Oxford: Blackwell.

Kim J. (1991). "Dretske on how reasons explain behavior." In B. McLaughlin (ed.). *Dretske and his Critics*. Oxford: Blackwell.

Kim, J. (1993). "Can supervenience and non-strict laws save anomalous monism?" In J. Heil & A. Mele (eds.).

Kitcher, P. (1985). "Narrow taxonomy and wide functionalism." *Philosophy of Science*, 52, 78-97.

Knowles, D. (ed.) (1990). *Explanation and Its Limits*. Cambridge. Cambridge University Press.

Koffka, K. (1925). *Die Grundlagen der psychischen Entwicklung*. Osterwiek: Zickfeldt.

Köhler, W. (1929). *Gestalt Psychology*. New York: Liveright Publishing Corporation.

Kornblith, H. (1986). "Naturalizing Rationality." In Garver and Hare (eds.).

Kornblith, H. (1992). "The laws of thought." *Philosophy and Phenomenological Research,* 52, 895-911.

Kornblith, H. (1993). "Epistemic normativity." *Synthese,* 94, 357-376.

Kornblith, H. (ed.) (1994). *Naturalizing Epistemology*, 2nd edition. Cambridge (MA): MIT Press.

Krauskopf, J. (1963). "Effect of retinal image stabilization on the appearance of heterochromatic targets." *Journal of the Optical Society of America,* 53, 741 44.

Kraut, R. (1982). "Sensory states and sensory objects." *Noûs,* 16, 277-293.

Kripke, S. (1971). "A puzzle about belief." In A. Margalit (ed.) *Meaning and Use.* Dordrecht: Reidel.

Kripke, S. (1977). "Speaker's Reference and Semantic Reference." In P.A. French, T.E. Uehling & H.K. Wettstein. (eds.) *Studies in the Philosophy of Language*. Morris: University of Minnesota Press.

Kripke, S. (1980). *Naming and Necessity*. Cambridge (MA): Harvard University Press.

Langer, E. (1975). "The illusion of control." *Journal of Personality and Social Psychology*, 32, 311-28.

Laurier, D. (1992a). "Rationality and intentionality: A defence of optimization in theories of interpretation." *Grazer Philosophische Studien,* 43, 125-141.

Laurier, D. (1992b). "Représentation et causalité." *Philosophie,* 33, 72-89.

Laurier, D. (1994a). "Pangloss, l'erreur et la divergence." *Journal of Philosophical Research,* 19, 345-372.

Laurier, D. (1994b). "Holismes." In P. Engel (ed.) (1994b).

LePore, E. (ed.) (1986). *Truth and Interpretation*. Oxford: Blackwell.

LePore, E. & B. Loewer (1987). "Mind Matters." *Journal of Philosophy*, 84, 630-42.

Leslie, A. & L. Thaiss (1992). "Domain specificity in conceptual development: Neuropsychological evidence from autism." *Cognition,* 43, 225-251.

Lewis, D. (1971). "Analog and digital", *Noûs*, 5, 321-327

Loar, B. (1983). "Social and psychological content." In D. Merrill & R. Grimm (eds.) *Contents of Thought.* Tucson: University of Arizona Press.

Loar, B. (1988). "Social content and psychological content." In R.H. Grimm & D.D. Merrill (eds.).

Locke, J. (1700). *An Essay Concerning Human Understanding*, edited from the fourth edition by Peter H. Nidditch. Oxford: Oxford University Press, 1975.

Loewenstein, G. and D. Adler (forthcoming). "A bias in the prediction of tastes."

Loewer, B. (1980). "The truth pays." *Synthese*, 43, 369-379.

Loewer, B. (1993). "The value of truth." *Philosophical Issues,* 4, 265-280.

Lorenz-Meyer, L. (1993). "The architecture and evidential base of the unified theory." In R. Stoecker (ed.) (1993).

Lycan, W. (1987). *Consciousness.* Cambridge (MA): MIT Press.

Lycan, W. (1991). "Why we should care whether our beliefs are true." *Philosophy and Phenomenological Research,* 51, 201-205.

Lyons, J. (1991). *Chomsky.* London: Fontana Press.

Macdonald, G. & C. Wright (eds.) (1986). *Fact, Science and Morality.* Oxford: Blackwell.

Mach, E. (1865). Über die Wirkung der räumlichen Vertheilung des Lichterizes auf die Netzhaut, I. *Sitzungsberichte der mathematischnaturwissenschaftlichen Classe der kaiserlichen Akademie der Wissenschaften* 52, 303-322. Reprinted in F. Ratliff, *Mach Bands: Quantitative Studies on Neural Networks in the Retina.* San Francisco: Holden-Day, 1965.

Maffie, J. (1990a). "Naturalism and the normativity of epistemology." *Philosophical Studies,* 59, 333-349.

Maffie, J. (1990b). "Recent work on naturalized epistemology." *American Philosophical Quarterly,* 27, 281-293.

Marcel, A.J. (1983a). "Conscious and unconscious perception: Experiments on visual masking and word recognition." *Cognitive Psychology*, 15, 197-237.

Marcel, A.J. (1983b). "Conscious and unconscious perception: An approach to the relations between phenomenal experience and perceptual processes." *Cognitive Psychology*, 15, 238-300.

Marcel, A.J. (1988). "Phenomenal experience and functionalism." In A.J. Marcel & E. Bisiach (eds.).

Marcel, A.J. (1993). "Slippage in the unity of consciousness." In *Ciba Foundation Symposium No. 174: Experimental and Theoretical Studies of Consciousness.* Chichester: John Wiley.

Marcel, A.J. (1994). "What is relevant to the unity of consciousness?" in C. Peacocke (ed.) *Proceedings of the British Academy: Objectivity, Simulation and the Unity of Consciousness.* Oxford: Oxford University Press.

Marcel, A.J. & E. Bisiach (eds.) (1988). *Consciousness in Contemporary Science.* Oxford: Clarendon Press.

Marr, D. (1982). *Vision.* New York: Freeman.

Marras, A. (1993). "Supervenience and reducibility: An odd couple." *Philosophical Quarterly*, 43, 215-22.

Marras, A. (1994). "Nonreductive materialism and mental causation." *Canadian Journal of Philosophy*, 24, 465-94.

Marras, A. (1997a). "The debate on mental causation: Davidson and his critics." *Dialogue*, 36, 177-95.

Marras, A. (1997b). "Metaphysical foundations of action explanation." In G.H-Hintikka & R. Tuomela (eds.) *Contemporary Action Theory*. Dordrecht: Kluwer.

Martin, K.A.C. (1988). "From enzymes to visual perception: A bridge too far?" *Trends in Neurosciences,* 9, 380-384.

Matthews, R. (1994). "The measure of mind." *Mind*, 104, 1-16.

McCarthy, R.A. & E.K. Warrington (1990). *Cognitive Neuropsychology*. New-York: Academic Press.

McClamrock, R. (1995). *Existential Cognition*. Chicago: University of Chicago Press.

McCloskey, M. (1983). Naive Theories of Motion. In D. Gentner & A. Stevens (eds.) *Mental Models*. Hillsdale (NJ): Lawrence Erlbaum Associates.

McDowell, J. (1994). *Mind and World*. Cambridge (MA): Harvard University Press.

McGilvray, J.A. (1994). "Constant colors in the head." *Synthese*, 100, 197-239

McGinn, C. (1983). *The Subjective View: Secondary Qualities and Indexical Thoughts*. Oxford: Clarendon Press.

McGinn, C. (1984). "Can we solve the mind-body problem?" *Mind*, 98, 349-366.

McGinn, C. (1989). *Mental Content.* Oxford: Basil Blackwell.

McGinn, C. (1991). *The Problem of Consciousness.* Oxford: Basil Blackwell.

McLaughlin, B. (1985). "Anomalous Monism and the Irreducibility of the Mental." In E. Lepore and B. McLaughlin (eds.) *Actions and Events: Perspectives on the Philosophy of Donald Davidson*. Oxford: Blackwell.

McLaughlin, B. (1989). "Type Epiphenomenalism, Type Dualism, and the Causal Priority of the Physical." *Philosophical Perspectives*, 3, 109-35.

McLaughlin, B. (1993). "On Davidson's response to the charge of epiphenomenalism." In J. Heil and A. Mele (eds.).

Meiland, J.W. (1980). "What ought we to believe? or The ethics of belief revisited." *American Philosophical Quarterly,* 17, 15-24.

Meltzoff, A. & A. Gopnik (1993). "The role of imitation in understanding persons and developing a theory of mind." In S. Baron-Cohen, H. Tager-Flusterg & D. Cohen (eds.) *Understanding Other Minds: Perspectives from Autism*. Oxford: Oxford University Press.

Meltzoff, A. & M. Moore (1983). "Newborn infants imitate adult facial gestures." *Child Development*, 54, 702-709.

Millikan, R. (1984). *Language, Thought and Other Biological Categories: New Foundations for Realism*. Cambridge (MA): MIT Press.

Millikan, R. (1990). "Seismograph readings for *Explaining Behavior.*" *Philosophy and Phenomenological Research,* 50, 807-812.

Millikan, R. (1991a). "Speaking up for Darwin." in. G. Rey & B. Loewer (eds.). *Meaning in Mind: Fodor and his Critics.* Oxford: Blackwell.

Millikan, R. (1991b). "Perceptual content and fregean myth." *Mind*, 100, 439-459.

Millikan, R. (1993). *White Queen Psychology and other essays for Alice.* Cambridge (MA): MIT Press.

Montminy, M. (1992). "Indétermination de la traduction et sous-détermination des théories scientifiques." *Dialogue,* 31, 623-642

Montminy, M. (1994). *La question des fondements empiriques de la signification.* Doctoral Dissertation, Université de Montréal.

Moore, G.E. (1942). "A reply to my critics." In P.A. Schilpp (ed.) *The Philosophy of G. E. Moore.* LaSalle (IL): Open Court.

Mourelatos, A. (1978). "Events, processes and states." *Linguistics and Philosophy*, 2, 415-434.

Mulligan, K. (1988). "Seeing as and assimilative perception." *Brentano Studien*, 1, 129-52.

Mulligan, K. (1990). "Criteria and indication." In R. Haller & J. Brandl (eds.) *Wittgenstein - Towards a Reevaluation*. Vienna: Verlag Hoelder-Pichler-Tempsky.

Mulligan, K. (1991). "Colours, corners & complexity: Meinong and Wittgenstein on some internal relations." In W. Spohn *et al.* (eds.) *Existence and Explanation. Essays Presented in Honor of Karel Lambert*. Dordrecht: Kluwer.

Mulligan, K. (1993). "Internal relations." In B. Garrett & P. Menzies (eds.) *Working Papers in Philosophy, 2. RSSS, Australian National University, Canberra, Proceedings of the 1992 Canberra metaphysics conference.*

Mulligan, K. (1995). "Perception, its description and object." In B. Smith & D.W. Smith (eds.) (forthcoming) *Husserl, Cambridge Companions to Philosophy*. Cambridge: Cambridge University Press.

Mulligan, K. (1997). "The essence of language: Wittgenstein's builders and Bühler's bricks." *Revue de Métaphysique et Morale*, 2, 193-216.

Mulligan, K. (1997a). "How perception fixes reference." In A. Burri (ed.). *Sprache und Denken / Language and Thought*, Berlin / New York: de Gruyter.

Mulligan, K. (1998). "From appropriate emotions to values." *The Monist,* 81, 162-190.

Mulligan, K. (1998a). "Relations through thick and thin." Forthcoming.

Mulligan, K. & B. Smith (1986). "A Husserlian Theory of Indexicality." *Grazer Philosophische Studien*, 28, 133-163.

Mulligan, K., B. Smith & P. Simons (1984). "Truth makers." *Philosophy and Phenomenological Research*, 44, 278-321.

Nagel, T. (1974). "What it is like to be a bat?" *The Philosophical Review,* 83, 435-450.

Nagel, T. (1979). *Mortal Questions*. Cambridge: Cambridge University Press.

Nakayama, K. & S. Shimojo (1990). "Toward a neural understanding of surface representation." *Cold Spring Harbor Symposia on Quantitative Biology,* 55, 911-24.

Nelkin, N. (1993). "The connection between intentionality and consciousness." In M. Davies & G.W. Humphreys (eds.). *Consciousness: Psychological and Philosophical Essays*. Oxford: Blackwell.

Nichols, S., S. Stich, A. Leslie & D. Klein (1995). "Varieties of off-line simulation" In P. Carruthers & P. Smith (eds.). *Theories of Theories of Mind.* Cambridge: Cambridge University Press.

Nisbett, R.E. & T.D. Wilson (1977). "Telling more than we can know; Verbal reports on mental processes." *Psychological Review,* 84, 231-259.

Olding, A. (1980). "Frank Jackson and the spatial distribution of sense-data." *Analysis,* 40, 158-162.

Pacherie, E. (1993). *Naturaliser l'intentionnalité*. Paris: Presses Universitaires de France.

Paillard, J. (1991). "Motor and representational framing of space." In J. Paillard (ed.). *Brain and Space*. Oxford: Oxford University Press.

Papineau, D. (1987). *Reality and Representation*. Oxford: Blackwell.

Papineau, D. (1990). "Truth and teleology." In D. Knowles (ed.) (1990).

Papineau. D. (1993). *Philosophical Naturalism*. Oxford: Basil Blackwell.

Paradiso, M.A. & K. Nakayama (1991). "Brightness perception and filling-in." *Vision Research,* 31, 1221-36.

Parsons, T. (1988). "Underlying states in the semantical analysis of english." *Proceedings of the Aristotelian Society*, 13-30

Parsons, T. (1990). *Events in the Semantics of English: A Study in Subatomic Semantics*. Cambridge (MA): MIT Press.

Peacocke, C. (1983). *Sense and Content: Experience, Thought. and their Relations*. Oxford: Clarendon Press.

Peacocke, C. (1984). "Colour concepts and colour experiences." *Synthese,* 58, 365-381.

Peacocke, C. (1986). "Analogue content." *Aristotelian Society*, Supplementary Volume 60, 1-18.

Peacocke, C. (1989). "Perceptual content." In J. Almog *et al*. (eds.) *Themes from Kaplan*. Oxford: Oxford University Press.

Perner, J. (1991). *Understanding the Representational Mind*. Cambridge (MA): MIT Press.

Pessoa, L. & E. Thompson (forthcoming). "Finding out about filling in: a guide to perceptual completion in visual science and the philosophy of perception." Submitted to *Behavioral and Brain Sciences*.

Peterhans, E. & R. von der Heydt (1989). "Mechanisms of contour perception in monkey visual cortex. II. Contours bridging gaps." *Journal of Neuroscience*, 9, 1749-63.

Pitcher, G. (1969). "Minds and ideas in Berkeley," *American Philosophical Quarterly*, 6, 198-207.

Pitcher, G. (1971). *A Theory of Perception*. Princeton: Princeton University Press.

Prinz, W. (1987). "Ideo-motor action." In H. Heuer & A.F. Sanders (eds.). *Perspectives on Perception and Action*. Hillsdale (NJ): Lawrence Erlbaum Associates.

Proust, J. (1995). "Fonction et causalité." *Intellectica,* 51, 81-113.

Putnam, H. (1975). "The meaning of 'meaning'." In H. Putnam. *Mind, Language and Reality, philosophical papers vol 2*. New York: Cambridge University Press.

Putnam, H. (1988). *Representation and Reality*. Cambridge (MA): MIT Press.

Pylyshyn. Z.W. (1984). *Computation and Cognition*. Cambridge (MA): MIT Press.

Quine, W.V. (1970). "On the reasons for the indeterminacy of translation." *The Journal of Philosophy*, 67, 178-83.

Quine, W.V. (1990). *Pursuit of Truth*. Cambridge (MA): Harvard University Press.

Ramachandran, V.S. (1992a). "Blind spots." *Scientific American,* 266, 86-91.

Ramachandran, V.S. (1992b). "Filling in gaps in perception: part 1." *Current Directions in Psychological Science*, 1, 199-205.

Ramachandran, V.S. & R. Gregory (1991). "Perceptual filling in of artificially induced scotomas in human vision." *Nature*, 350, 699-702.

Ratliff, F. & L. Sirovich (1978). "Equivalence classes of visual stimuli." *Vision Research,* 18, 845-51.

Reid, T. (1785). *Essays on the Intellectual Powers of Man*, edited by Baruch A. Brody. Cambridge (MA): MIT Press, 1969.

Reingold, E. & P. Merikle (1990). "On the inter-relatedness of theory and measurement in the study of unconscious processes." *Mind and Language,* 5, 9-28.

Rescher, N. (1977). *Methodological Pragmatism*. New York: New York University Press.

Rey, G. (1992). "Sensational sentences." In M. Davies & G.W. Humphreys (eds.). *Consciousness: Psychological and Philosophical Essays*. Oxford: Blackwell.

Rey, G. (1995). "Towards a projectivist account of conscious experience." Paper read at the "Consciousness" Conference, École Polytechnique, Paris, 1995.

Rock, I. (1983). *The Logic of Perception*. Cambridge (MA): MIT Press.

Rosenthal, D.M. (1984). "Armstrong's causal theory of mind." In R.J. Bogdan (ed.) *Profiles: David Armstrong*. Dordrecht: D. Reidel Publishing Co.

Rosenthal, D.M. (1985). "Review of Frank Jackson's *Perception*." *The Journal of Philosophy* 82, 28-41.

Rosenthal, D.M. (1986). "Two concepts of consciousness." *Philosophical Studies* 49, 329-359.

Rosenthal, D.M. (1990). "A Theory of Consciousness." ZIF Report n⁰ 40/1990.

Rosenthal, D.M. (1993a). "Thinking that One Thinks." In M. Davies & G.W. Humphrey (eds.) *Consciousness*. Oxford: Blackwell.

Rosenthal, D.M. (1993b). "State consciousness and transitive consciousness." *Consciousness and Cognition*, 2, 355-63.

Rosenthal, D.M. (1993c). "Multiple drafts and higher order thoughts." *Philosophy and Phenomenological Research,* 53, 911-918

Rosenthal, D.M. (1994) "What makes mental states conscious." Mimeo.

Rosenthal, D.M. (1996). "A theory of consciousness." In N. Block, O. Flanagan & G. Güzeldere (eds.) *The Nature of Consciousness: Philosophical Debates*. Cambridge (MA): MIT Press.

Rosenthal, D.M. (forthcoming). "Are sensations always conscious?"

Rossetti, Y., G. Rode & D. Boisson (1995). "Implicit processing of somaesthetic information: a dissociation between where and how?" *NeuroReport*, 6, 506-510.

Scheerer, E. (1994). "Psychoneural isomorphism: historical background and current relevance." *Philosophical Psychology*, 7, 183-210.

Schiller, P. (1995). "Effects of lesions in visual cortical area V4 on the recognition of transformed objects." *Nature*, 376, 342-344.

Schiller, P. & N.K. Logothetis (1990). "The color-opponent and broad-band channels of the visual system." *Trends in Neurosciences*, 13, 392-398.

Searle, J.R. (1980). "Minds, Brains, and Programs." *Behavioral and Brain Sciences,* 3, 417-424.

Searle, J.R. (1983). *Intentionality: An Essay in the Philosophy of Mind*. Cambridge: Cambridge University Press.

Searle, J.R. (1990). "Consciousness, explanatory inversion, and cognitive science." *Brain and Behavioral Sciences*, 13, 585-95.

Searle, J.R. (1992). *The Rediscovery of the Mind*. Cambridge (MA): MIT Press.

Sedivy, S. (in press). "*Consciousness Explained:* ignoring Ryle & Co." *Canadian Journal of Philosophy*.

Sellars, W. (1960). "Being and being known." *Proceedings of The American Catholic Philosophical Association*, 34, 28-49.

Sellars, W. (1963). "Phenomenalism." In W. Sellars. *Science Perception and Reality*. London: Routledge & Kegan Paul.

Seymour, M. (1992). "A sentential theory of propositional attitudes." *The Journal of Philosophy*, 89, 181-201.

Seymour, M. (1994a). "Pretending to refer." In H. Parret (ed.). *Pretending to Communicate*. Berlin: Walter de Gruyter.

Seymour, M. (1994b). "Indirect discourse and quotation." *Philosophical Studies*, 74, 1-38.

Shoemaker, S. (1991). "Qualia and consciousness." *Mind*, 100, 507-524.

Shoemaker, S. (1994). "Self knowledge and inner sense." *Philosophy and Phenomenological Research,* 54, 249-311.

Simner, M. (1971). "Newborn's response to the cry of another infant." *Developmental Psychology*, 5, 136-150.

Simons, P. (1987). *Parts. A Study in Ontology*. Oxford: Oxford University Press.

Simons, P. (1992). "Particulars in particular clothing: Three trope theories of substance." Manuscript.

Spelke, E. (1990). "Origins of visual knowledge." In D.N. Osherson *et al.* (eds.) *Visual Cognition and Action: An Invitation to Cognitive Science,Vol.2*. Cambridge (MA): MIT Press.

Smart, J.J.C. (1963). *Philosophy and Scientific Realism*. London and New York: Routledge & Kegan Paul.

Sorensen, R. (forthcoming). "Self-strengthening empathy: How evolution funnels us into a solution to the other minds problem."

Sosa, E. (1984). "Body-mind interaction and supervenient causation." *Midwest Studies in Philosophy*, 84, 630-42.

Sosa, E. (1993). "Davidson's thinking causes." In J. Heil & A. Mele (eds.).

Stabler, E.P. (1984). "Rationality in naturalized epistemology." *Philosophy of Science,* 51, 64-78.

Stalnaker, R. (1984). *Inquiry*. Cambridge (MA): MIT Press.

Stampe, D. (1977). "Towards a causal theory of linguistic representation." *In* P. French, T. Uehling, & H. Wettstein (eds.) *Midwest Studies in Philosophy Vol.2*. Minneapolis: University of Minnesota Press.

Stich, S. (1978). "Autonomous psychology and the belief-desire thesis." *The Monist*, 61, 573-91.

Stich. S. (1983). *From Folk Psychology to Cognitive Science*. Cambridge (MA): MIT Press.

Stich, S. (1990a). *The Fragmentation of Reason*. Cambridge (MA): MIT Press

Stich, S. (1990b). "Building belief: Some queries about representation, indication and function." *Philosophy and Phenomenological Research,* 50, 801-806.

Stich, S. (1991a). *"The Fragmentation of Reason*: Précis of two chapters." *Philosophy and Phenomenological Research,* 51, 179-183.

Stich, S. (1991b). "Evaluating cognitive strategies: Reply to Cohen, Goldman, Harman, and Lycan." *Philosophy and Phenomenological Research,* 51, 207-213.

Stich, S. (1996). *Deconstructing the Mind.* New York: Oxford University Press.

Stich, S. & S. Nichols (1992). "Folk psychology: Simulation or tacit theory?" *Mind and Language*, 7, 35-71.

Stich, S. & S. Nichols (1995). "Second thoughts on simulation." In M. Davies & T. Stone (eds.). *Mental Simulation: Evaluations and Applications.* Oxford: Blackwell.

Stich, S. & S. Nichols (1996). "How Do Minds Understand Minds? Mental Simulation vs. Tacit Theory?" In S. Stich. *Deconstructing the Mind.* New York: Oxford University Press.

Stich, S. & T.A. Warfield (eds.) (1994). *Mental Representation*. Oxford: Blackwell.

Stoecker, R. (ed.) (1993). *Reflecting Davidson*. Berlin/New York: W. De Gruyter.

Stotland, E. (1969). "Exploratory investigations of empathy." In L. Berkowitz. (ed.). *Advances in experimental social psychology, 4.* New York: Academic Press.

Stoutland, F. (1985). "Davidson on intentional behavior." In E. LePore & B. McLaughlin (eds.).

Stucchi, N. (1993). "Seeing and thinking: Vittorio Benussi and the Graz School." In P. Simons (ed.) *Essays on Meinong.* (forthcoming) Munich: Philosophia.

Suppes, P. and J. Zinnes (1967). "Basic measurement theory." In R.D. Luce (ed.) *Handbook of Mathematical Psychology.* New York: Wiley & Sons.

Teller, D.Y. (1980). "Locus questions in visual science." In C. Harris. (ed.) *Visual Coding and Adaptability*. Hillsdale (NJ): Lawrence Erlbaum Associates.

Teller, D.Y. (1984). "Linking propositions." *Vision Research*, 24, 1233-46.

Teller, D.Y. (1990). "The domain of visual science." In L. Spillman & J.S. Werneer. (eds.) *Visual Perception: The Neurophysiological Foundations.* San Diego: Academic Press.

Teller, D.Y. (1991). "Simpler arguments might work better." *Philosophical Psychology*, 4, 51-60.

Teller, D.Y. & Pugh, E.N. (1983). "Linking propositions in color vision." In J.D. Mollon and L.T. Sharpe. (eds.) *Colour Vision: Physiology and Psychophysics*. London: Academic Press.

Thompson, E. (1995). *Colour Vision: A Study in Cognitive Science and the Philosophy of Perception.* London: Routledge Press.

Thompson, E., A. Palacios & F.J. Varela (1992). "Ways of coloring: comparative color vision as a case study for cognitive science." *Behavioral and Brain Sciences*, 15, 1-74.

Todorovic, D. (1987). "The Craik-O'Brien-Cornsweet effect: new varieties and theoretical implications." *Perception & Psychophysics*, 42, 545-600.

Tulving, E. (1985). "Memory and consciousness." *Canadian Psychology*, 26, 1-12.

Turvey, M. (1977). "Perspectives in vision: Perception or conception?" In D. Duane & M. Rawson. (eds.) *Reading, Perception and Language*. Baltimore:

Tye, M. (1989). *The Metaphysics of Mind*. Cambridge: Cambridge University Press.

Tye, M. (1992). "Naturalism and the mental." *Mind,* 101, 421-441.

Tye, M. (1994). "Qualia, content, and the inverted spectrum." *Noûs,* 28, 159-183.

Ungerleider, L.G. & M. Mishkin. (1982). "Two cortical visual systems." in D.J. Ingle, M.A. Goodale & R.J.W. Mansfield (eds.). *Analysis of Visual Behaviour*. Cambridge (MA): MIT Press.

Vaadia, E., I. Haalman, M. Abeles, H. Bergman, Y. Prut, H. Slovin & A. Aertsen (1995). "Dynamics of neuronal interactions in monkey cortex in relation to behavioural events." *Nature*, 373, 515-518.

van Gulick, R. (1993). "What difference does consciousness make?" *Philosophical Topics*, 17, 211-230.

Varela, F.J., E. Thompson, & E. Rosch (1991). *The Embodied Mind: Cognitive Science and Human Experience.* Cambridge (MA): MIT Press.

Vendler, Z. (1968). *Linguistics in Philosophy*. Ithaca (NY): Cornell University Press.

Vermazen, B. & M.B. Hintikka (eds.) (1985). *Essays on Davidson: Actions and Events*. Oxford: Oxford University Press.

von der Heydt, R. & E. Peterhans (1989). "Mechanisms of contour perception in monkey visual cortex. I. Lines of pattern discontinuity." *Journal of Neuroscience*, 9, 1731-48.

von der Heydt, R., E. Peterhans & G. Baumgartner (1984). "Illusory contours and cortical neuron responses." *Science*, 224, 1260-62.

Warnock, G. (1955). "Seeing." *Proceedings of the Aristotelian Society*, 201-218.

Weizkrantz, L. (1986). *Blindsight: a case study and implications*. Oxford: Oxford University press.

Weizkrantz, L. (1988). "Some contributions of neuropsychology of vision and memory to consciousness." In A.J. Marcel & E. Bisiach (eds.).

Wimsatt, W. (1984). "Reductionistic research strategies and their biases in the units of selection controversy." In E. Sober. (ed.). *Conceptual Issues in Evolutionary Biology*. Cambridge (MA): MIT Press.

Wimsatt, W. (1986). "Heuristics and the study of human behavior." In D. Fiske & R. Schweder. (eds.) *Metatheory in Social Science: Pluralisms and Subjectivities*. Chicago: University of Chicago Press.

Wittgenstein, L. (1968). *Philosophical Investigations*, 3rd edition. New York: Macmillan.

Wittgenstein, L. (1977). *Remarks on Colour*. Oxford: Blackwell.

Wittgenstein, L. (1982). *Last Writings on the Philosophy of Psychology, Vol. I*. Oxford: Blackwell.

Whiten, A. (ed.) (1991). *Natural Theories of Mind*. Oxford: Blackwell.

Whyte, J.T. (1990). "Success semantics." *Analysis,* 50, 149-157.

Whyte, J.T. (1991), "The normal rewards of success." *Analysis,* 51, 65-73.

Young, A.W. & E.H.F. De Haan (1993). "Impairments of visual awareness." In M. Davies & G. W. Humphreys (eds.). *Consciousness*. Oxford: Basil Blackwell..

Zeki, S. & S. Shipp (1988). "The functional logic of cortical connections." *Nature*, 335, 311-317.