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NAME OF AUTHOR / NOM DE L'AUTEUR CHRISTOPHER MARTIN COLES

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PERMANENT ADDRESS / RÉSIDENCE FIXE 11027 - 89 Ave.
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Alberta

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ON SEEING LOCATION

by

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A THESIS

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THE UNIVERSITY OF ALBERTA
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The undersigned certify that they have read,
and recommend to the Faculty of Graduate Studies and
Research, for acceptance, a thesis entitled ON SEEING
LOCATION
submitted by CHRISTOPHER MARTIN COLES
in partial fulfilment of the requirements for the
degree of Master of Arts.

..... *Allen Carlson*
Supervisor

..... *[Signature]*
..... *[Signature]*
..... *Allen Rea*

Date August 22nd 1975

ABSTRACT

There are two conflicting species of argument concerning the business of seeing. One, usually presented as the argument of common sense, of the plain men, claims that ordinary unexceptional seeing is a direct confrontation between perceiver and perceived - that is to say - a confrontation which does not involve inference.

On the other hand, arguments based on an investigation of the causal processes involved in seeing suggest that an inference is required if those processes are to be completed.

To provide a sharp focus for the study of these conflicting positions, this work concentrates on one specific aspect of seeing - seeing location.

It is first shown that Everyman - the representative of us all when we unreflectingly see things around us - sees, in unexceptional circumstances, where things are without recourse to inference.

It is next shown that arguments based on causal happenings within a perceiver's brain do not, without begging the question by presupposing the acceptability of a purely mechanistic account of those processes, justify the claim that seeing location involves inference.

It is then shown how a comparison between a blind man who uses a special instant relief camera to find out about the locations of objects and a normal sighted person does yield the conclusion that even straightforward seeing loc-

ation involves inference. This argument is termed the Argument from Externality

The remainder of this work consists of the elaboration of a theory of perception - Agnostic Idealism - which is able to reconcile the conflict between Everyman's belief that seeing location does not involve inference, and the conclusion of the Argument from Externality which shews there to be an inference. This theory is based on a model developed from consideration of the phenomenon of eidetic imagery.

Several forceful philosophical objections to this style of reconciliation are considered. Agnostic Idealism survives them all and thereby shews itself to provide a very credible epistemological model for understanding the business of seeing.

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I. INTRODUCTION

In this thesis, I shall concentrate on a part of the whole problem of perception. I begin by specifying what that part is, and mentioning some of the many puzzles about perception which I do not consider it my task to attend to in this work. I acknowledge that such deliberate omissions might possibly jeopardise the whole project, but to begin to consider every aspect of the problem of perception would clearly be a task far larger than could be here undertaken.

Subject Matter

The specific subject matter for consideration can be delimited by means of a series of progressively stricter restrictions.

First, consideration is only given to visual perception. The extent to which conclusions reached about vision might be applicable to the other senses is not considered.

Secondly, the objects of perception are restricted to ordinary everyday items such as tables, chairs, books and lamps. This restriction is included as a safeguard against Austin's criticism that philosophers have traditionally used 'physical object' as the umbrella term for all objects of perception, without regard for the enormous range and variety of things which we see. To avoid this difficulty, I restrict consideration to the visual perception of what Austin terms 'moderate-sized dry goods'. Whether or not a different

treatment is required for rainbows, vapours and the like, 'is not here considered. In what follows, it is to be understood that 'objects' is used in a restricted fashion to apply only to moderate-sized dry goods - tables, chairs, trees, stones, and the like. Excluded by this restriction is the perception of distant stars and with it the time-lag argument.

In the latter part of the thesis, I shall consider the phenomenon of eidetic imagery, but this will be introduced as a novel form of perception rather than as perception with a novel form of object.

Thirdly, primary consideration is given to the visual perception of the spatial location of objects.* By 'perception of spatial location' I simply mean seeing where things are. I see that the book I'm looking for is on the shelf up there, or, I see the cat under the table. Consideration is limited to simple straightforward situations where the perceiver has normal eyesight and the objects have standard illumination. The book is seen to be on the table, the dog is seen to be in the yard or the tree is seen to be 'over there'.

Perceiving the colour, shape or size of an object is not considered. Nor do I consider how it is we recognize objects. All of these problems would require consideration in a complete treatment of perception. Concentration on perception

*At the various places in this work where the discussion concerns 'seeing', rather than the more specific 'seeing location', it is to be understood that this broadening of scope is made only in those contexts where remarks that might have been limited to 'seeing location' are clearly also applicable to 'seeing'.

of spatial location excludes from present consideration the primary/secondary quality distinction. Also excluded are the traditional controversies about sense-data.

Fourthly, consideration is restricted to the question of whether perception involves an inference. Thus, the subject matter for this thesis is encompassed by the somewhat cumbersome question: Does the visual perception of the spatial location of moderate-sized dry goods involve an intermediary inference?

Structure

The structure of the response to the above question is best revealed by listing the major conclusions defended in this work.

Major Conclusions:

- A. That Everyman's seeing the location of an object right in front of his nose does not involve an inference.
- B. That visual perception of the location of an object, like the blind man's finding out by means of his instant relief camera, is via an inference.
- C. That this conflict is resolved only by the postulation of unaware inference.
- D. That the notion of unaware inference is only defended against all philosophical objections by its elaboration within a theory of perception - Agnostic Idealism.

Initial Assumption

It is assumed that the problems are best elucidated in terms of explicitly drawn comparisons and contrasts.

Outline

Chapter I. Introduction

Chapter II. Everyman's Beliefs

By contrasting seeing location with examples in which Everyman will admit that inference plays a part, it is shown that Everyman's seeing location does not involve an inference.

Chapter III. Causal Considerations

Consideration is given to the arguments that may be derived from the evidence of the causal chain from illuminated object to the brain of a perceiver. It is shown that this evidence invites but does not compel the adoption of the perception-proper hypothesis - the claim that the causal chain terminates in the essence of seeing.

Chapter IV. Argument from Externalities

The argument is developed from an explicit comparison between a perceiver and a blind man who is able to use light to find out about the locations of objects by means of an instant relief camera. This shows that visual perception of location involves inference. To resolve the conflict between

this conclusion and Everyman's beliefs, an 'unaware inference' is postulated.

Chapter V. Agnostic Idealism

A hypothetical perceptual mode called Eidetic Image Only Perception is developed by means of a speculative story about a person who becomes blind, yet retains the capacity to experience eidetic images. This story shows how credibility may be given to the notion of unaware inference. The theory of Agnostic Idealism, based on this hypothetical mode is then developed.

Chapter VI. Reply to Objections

Six major objections are considered, these being:

- 1. Everyman's Objection
- 2. Irrelevancy Objection
- 3. Infinite Regress Objection
- 4. Uncheckability Objection
- 5. Incredulity Objection

Agnostic Idealism survives them all.

Terminology

In this work I introduce terminology which is original and sometimes unorthodox. My intention is to facilitate, as much as possible, a fresh approach to the problems. I here offer, for the reader's ease of reference, an alphabetical listing of said terminology; each word or phrase being accom-

panied by a brief explanatory note, with references to the places in the text wherein each figures significantly.

Reference List of Original Terminology

AGNOSTIC IDEALISM

Introduced p.69

Summarized pp.69-71

Final Summary pp.91-93

Agnostic Idealism is the theory of visual perception developed from the model supplied by the E.I.C. perception story.

ARGUMENT FROM EXTERNALITY

Introduced p.41

Summarized pp.49-50

The Argument from Externality, based on consideration of how a blind man might emulate the sighted by means of his instant relief camera, yields the conclusion that visual perception, is via inference.

CAUSAL CHAINS

Introduced pp.31-32

The discussion of causal chains employs four terms: Origin, Resultant, Interruption and Synthesis.

EIDETIC-ONLY PERCEPTION

Introduced pp.85-86

An eidetic-only perceiver is born to live an all-eidetic perceptual life. Eidetic-only perception is the final develop-

ment of the hypothetical perceptual mode based on eidetic imagery.

E.I.C. PERCEPTION

Introduced p.59

Eidetic Image Only Perception -

E.I.C. perception - is the peculiar 'blindness' of a formerly normal perceiver who now experiences only eidetic imagery.

E.T.S.C. PERCEPTION

Introduced pp.84-85

In the second stage of the development of the eidetic story, a hypothetical subject loses his ordinary tactile facilities; but retains Eidetic Tactile Sensation Only Perception.

EVERYMAN

Introduced p.10

Primary Use pp.10-24

Everyman is the representative of us all when we unreflectingly see the locations of everyday objects around us.

PERCEPTION-PROPER

HYPOTHESIS

Introduced pp.27-28

Primary Use pp.27-38

The Perception-Propor Hypothesis

is the claim that the causal chain from object to brain terminates in the essence of seeing - perception-proper.

TECHNICIAN

Introduced p.25

Primary Use pp.25-38

The technician is the man who is able to explain and understand all things mechanical and wishes to apply that same approach to the business of seeing location.

UNAWARE INFERENCE

Introduced p.50

Everyman believes his seeing location to be without inference, the Argument from Externality suggests that there must be an inference. This conflict is resolved by the postulation of unaware inference.

UNCHECKABLE INFERENCE

Introduced p.86

The response to the Uncheckability Objection reveals that an eidetic-only perceiver indulges in epistemic moves which are best labelled with the paradoxical expression 'uncheckable inference'.

VISUAL PERCEPTION

After p.44 'visual perception' is used solely as a philosophically neutral technical expression to refer to what Everyman

terms 'seeing'; untainted by
the connotations of ordinary
language.

II EVERYMAN'S BELIEFS

The purpose of this chapter is to shew that Everyman's seeing location does not involve an inference. I begin by considering a number of examples - in particular seeing quantified distance - which involve inference. I then shew how these examples differ from seeing location; and thereby conclude that Everyman's seeing, in unexceptional circumstances, the location of moderate-sized dry goods does not involve inference.

Before beginning an investigation of Everyman's beliefs about his seeing location, it is important to clarify two points.

First, Everyman is the representative of us all when we unreflectingly see the location of everyday objects around us. As such, he represents not only the ordinary man, the man in the street whose untutored opinions might be questionable, but also the philosopher and the neurophysiologist when each is simply seeing the furniture of his environment. Anyone who argues that seeing is not as it seems must not forget that he himself sees as Everyman.

Secondly, Everyman's seeing location constitutes the problem. Any reasoning which says that seeing isn't as it seems to Everyman must explain why seeing seems to Everyman as it seems. To anticipate such an eventuality, we must make clear how seeing location seems to Everyman.

I assume that if Everyman's seeing location involves an inference it is not one of which he is aware at the time of his seeing; rather it is one which must, somehow, be brought to his attention. Thus our concern is whether Everyman can be persuaded to admit that when, for example, he sees that the hat is on the chair, his seeing involves an inference.

To discover what arguments might lead Everyman to make such an admission, I begin by considering some clear-cut, unquestionable examples wherein Everyman acknowledges an inference which he had taken for granted. Quinton provides two examples:

. . . there are many cases, unquestionably of knowledge by inference, where it is not in the least likely that any conscious process of reasoning has taken place. A girl, sitting in the drawing-room, hears the front door slam and says 'Father's home'. I hear a pattering on the roof and say 'it's raining'.

In each example, Everyman is unaware of the inference at the time he makes it. Upon hearing a pattering on the roof, he says, without pause for reflection, 'it's raining'. Yet we may readily point out to him the inference and thereby bring it to his attention. Three features common to these examples, may be extracted:

1. How do you know? In each case, it is appropriate to ask 'how do you know?'. For example, the girl might answer 'He always comes home at this time'.

2. Evidence-Conclusion. It can be pointed out what was the evidence for the conclusion - these being clearly distinct. For the conclusion that it is raining outside the house, the evidence is a pattering sound heard inside the

house. Evidence and conclusion are distinguishable.

3. Verification. The inferred conclusion may be verified non-inferentially. To verify that it's raining, one can go outside and check.

Everyman's seeing, for example, that the hat is on the chair is readily contrasted with Quinton's examples. If asked 'How do you know?' he has no reply that in any way resembles an explanation of the evidence on which he bases the conclusion that the hat is on the table. He may respond with 'I can just see that it is', 'I've got eyes', or something similar, but such a response is not an explanation. In contrast to the Quinton examples in which an inference is readily acknowledged, he insists that he simply sees the location of the hat. Furthermore, there is no obvious way for him to verify his assertion.

But this does not suffice to show conclusively that there is no inference, no evidence or means of verification; for the contrast is being drawn between Everyman's seeing location and two clear-cut paradigms of knowledge by inference. In the rain example, for instance, the distinction between the evidence - the sound heard inside the house - and the conclusion - that it's raining outside - is too easily drawn. The simplicity of this case may blind us to subtleties in the seeing location case. The contrast serves to show that Everyman's seeing location is not a clear-cut case of knowledge by inference. But from this alone it does not follow that seeing location does not involve some sort of

inference which Everyman might yet be persuaded to acknowledge. To investigate more thoroughly, we must search for examples which more closely resemble seeing location; and we must consider more subtle ways in which Everyman may be persuaded to acknowledge inferences. I propose to investigate the following cases: seeing anger, seeing quantified distance - concrete evidence, and seeing quantified distance - phenomenal evidence.

Everyman claims that he simply sees location. If we are to elicit from him the acknowledgement of an inference, we must persuade him to retreat from the claim that he sees the location of the hat, to the claim that he really sees evidence from which he concludes that the hat is on the chair. Schematically, this would be a retreat from the claim that

I see that x

to the claim that

I see evidence from which I conclude
that x

We may set up an example which fits this pattern as follows. For the purpose of developing the example, suppose a dualist concept of anger. Everyman claims that he simply sees anger. He insists that he just sees that someone is angry. Assuming that Everyman will accept that real anger is a private, subjective emotional experience the outward behavioural manifestations of which being all that are available to his observation; we may elicit a concession from him which fits the pattern.

Initially he claims:

I see that John is angry

He then retreats to the claim:

I see that John is behaving angrily and
conclude that he is angry

But even if the dualist characterisation of anger is accepted, this example does not serve to shew that seeing location involves an inference. If it is accepted that seeing anger involves an inference, that inference is from what the observer simply sees - behaviour characteristic of anger - to conclusions about the occurrence of a subjective experience of the anger. But, in the case of seeing location, there is no counterpart of the 'unobservable' anger. Everyman simply sees that the hat is on the chair, just as he simply sees that someone is behaving angrily. In other words, by insisting on a dualist notion of anger, we establish an example of the appropriate form. But this example serves only to eliminate a way in which we might have thought seeing location to involve inference.

Consider seeing quantified distance - by this I mean seeing that an object is at a certain stated distance from the observer. Examples would be: seeing that the house is fifty feet away, seeing that the mountain is ten miles away, that the table is about ten paces away and so on. Suppose Everyman sees a bus and announces: "It's about one hundred yards away." We ask him "How do you know?" He answers "I can simply see it is." The dialogue continues:

"What makes you so sure it's about 100 yards away?"

"I'm pretty good at judging distance."

"You admit then that you made a judgement of the distance?"

"Well . . . yes."

"On what did you base that judgement?"

"The bus is about half a block away, blocks are around 200 yards long - therefore the bus is about 100 yards away."

Initially, Everyman claims that he simply sees the distance of the bus. But he does have an explanatory answer to the question: "How do you know?" His estimation of the distance is based on his seeing that the bus is half-way down the block from him, conjoined with his knowledge that a block is about 200 yards long. Furthermore, there is a means of verifying his claim - we may bring out a tape-measure and check the distance. Thus the example exhibits the three features found in the clear-cut cases of inference:

1. There is an explanatory answer to the question "How do you know?"

2. That answer consists of giving the evidence upon which the conclusion was based.

3. There is a means of verification.

The example fits the pattern, being a retreat from:

I see that the bus is 100 yards away

to

I see that the bus is half a block away
and conclude that it is 100 yards away.

Many other examples of seeing distance involve what I

am terming 'concrete' evidence. By this I mean examples in which the seer is able to spell out precisely what is the evidence he used for estimating the distance. Someone estimates the distance of an aeroplane from the observation that he is just able to make out the registration letters. British infantry were trained to hold their fire until they could see the whites of the eyes of the enemy soldiers, this being the evidence that the enemy was within range of effective musket fire. One may judge the distance of a building by seeing how much of it is obscured by a thumb at arm's length. These are examples wherein the evidence is concrete. In contrast, there are situations where the distance of an object is judged simply from how it 'looks'. Old Joe tells us that a spruce tree is seven hundred yards away. We ask: How do you know? He replies: "It just looks about 700 yards away." Here we may legitimately say that the look of the tree - how it looks to the observer - is the evidence from which the estimate of its distance is made. Old Joe has learnt what a spruce tree looks like when seen from various distances. This tree, to his experienced eye, looks about 700 yards away. Here the evidence may be termed 'phenomenal'. The seer is unable to specify any concrete evidence - his estimate is based on the phenomenal look of the object, how the object looks to him. Distant mountains look distant, a distant house looks like a dot on the horizon, people on the ground seen from an aeroplane look like ants. In these examples, how an object

looks to the observer would be the basis for an estimate of how far away it is. Someone may conclude that the house is distant because it looks distant.

We can accept that 'how an object looks' may be the evidence for an inferential conclusion about its distance because it is always possible to verify the distance claim with tape measure or ruler. Estimating distance by eye is successful only when the estimate agrees with the distance as measured by ruler or tape measure. Thus there are cases where 'how an object looks to an observer' is the evidence from which the observer infers a conclusion about its distance from him: Old Joe, when he judges that the spruce is 700 yards away because it looks to him to be 700 yards away, provides a good example. We may note that the three features extracted from the clear-cut paradigms, are still evident.

1. In answer to the question: "How do you know?", Old Joe replies "because it looks about 700 yards away."
2. The evidence is how the tree looks to Old Joe.
3. The conclusion may be checked with a tape measure.

This example is clearly of importance. It fits the required pattern, being a retreat from:

I see that the spruce is 700 yards away

to

I see that the spruce looks about 700 yards away, and conclude that it is.

Furthermore, the example bears a close resemblance to the seeing location cases. Indeed the distance from obser-

ver to object would be a part of a precise specification of an object's location. It must be emphasized that our concern is with simple, straightforward cases - seeing that the car is in the driveway, the hat is on the chair, the dog is over there - not with examples involving a precise specification of location in terms of distance from the observer or from other reference points.

In some cases of seeing quantified distance, the evidence consists of how the object looks to the observer. Does the same sort of evidence - how things look to the observer - play a part in straightforward cases of seeing location? I shall try to shew that it does not.

Someone sees that the hat is on the chair. The circumstances are all normal. - the seer's eyesight is good, an ordinary hat is clearly visible on a regular kitchen chair and the lighting is normal. The seer sees that the hat is on the chair. Here there is no candidate for concrete evidence analogous to the first cases of seeing quantified distance. The seer does not see specific features or aspects of the hat and chair from which he concludes that the first is located on top of the second. He simply sees that the hat is on the chair. It might, however, be claimed that seeing location fits the phenomenal evidence modal. How might the seeing of such phenomenal evidence be expressed? A first attempt would be the following:

1. "It looks as though the hat is on the chair."

This fails because a distinction is implicitly drawn

between the seeing of the location of the hat and of the chair. That the chair is over there is seen plainly enough. What is questioned by the expression 'looks as though' is whether the hat is really on the chair, rather than, for example, seen in a mirror in such a way that it seems to be on the chair. As long as the location of something is simply seen, in this case, the location of the chair, we have an example of non-inferential seeing location.

The scope of 'looks as though' may be broadened in a second attempt:

2. "It looks as though there is a chair with a hat on it over there."

This suggests that there's something suspicious about both the chair and the hat. It looks as though they are over there, but there's reason to suspect that they are really somewhere else and that some illusion - mirrors or whatever - makes it look as though they are over there. But even if this attempt is taken seriously, even if some different interpretation of the 'looks as though' formulation is given, the attempt fails. Like the preceding attempt, it is insufficiently broad in scope; for in saying that it looks as though there's a hat on a chair over there, it is presupposed that the location of the part of the room where the hat and chair look to be is seen in a straightforward non-inferential fashion. As long as it is conceded that the location of something - in this case two walls and a floor which form the corner of a kitchen - is seen non-inf-

erentially, this is all that we require. To eliminate this, an even broader formulation would be required:

3. "It looks as though, over there, is a corner of a room where there is a chair with a hat on it."

The scope of 'it looks as though' is now broad enough to encompass everything seen when the observer turns his head in the direction of that corner of the room. Could someone make this rather peculiar claim? In a sufficiently unusual situation it might be appropriate. Someone who has been hallucinating and is by no means sure where he is and what's happening to him might make it. Two minutes ago he seemed to see a vista of mountains and lakes - now it looks to him as though there is a hat on a chair in the corner of a room. But is it appropriate in normal circumstances?

Everyman has been sitting in the kitchen drinking coffee and gossiping for twenty minutes. He is asked: "Does it look to you as though there is, over there, a corner of a room where there is a chair with a hat on it?" To answer "No, it doesn't" would be absurd because he can see that there is a hat on a chair in the corner of the kitchen.

If forced to answer he would have to admit "Yes, it does."

But from this concession it does not follow that how things look to him is the evidence from which he infers how things are. Everyman will admit that it looks as though there is a hat on a chair in the corner of the kitchen. But he can admit this because he already knows that it is so. He has been drinking coffee in the kitchen for twenty

minutes. He put the hat on the chair when he arrived. He simply knows that what he sees is. Austin makes the same point: ". . . I might say . . . 'That pillar looks bulgy' - on the ground that I've just built it, and I built it bulgy."³

Any assertion can be weakened by prefacing it with an expression such as 'it looks as though'. Although Everyman is able to say that 'it looks as though there's a hat on a chair in the corner of the kitchen', it would be absurd to suggest that this was his reason for believing that there is a hat on a chair in the corner. As Quinton puts it "To repeat oneself in a more cautious way is not to substantiate but merely to attenuate one's original assertion."⁴

Furthermore, there is no verification procedure which will take precedence over Everyman's seeing. He doesn't even need to move nearer for a closer look. He simply sees that the hat is on the chair in the corner of the room. In the quantified distance cases, judging distance by eye is an inferential short cut for estimating what would be found were one to measure the distance with a tape-measure. Measuring devices provide the standard to which estimates by eye approximate as closely as possible. But, in the kitchen case, seeing just is the standard for finding out that the hat is on the chair.

These arguments all shew that seeing the location of moderate-sized dry goods in normal circumstances does not involve an intermediary inference. Everyman does not judge.

estimate, infer or conclude that the hat is on the chair - he simply sees that it is. He has no explanatory answer to the question "How do you know?" There is no evidence and there is no verification procedure to which appeal can be made. He just sees and that's that. .

* * *

A further point remains to be made. In the next chapter, the claim that seeing takes place in the brain and/or mind of the perceiver will be discussed. In anticipation of this discussion, it is here appropriate to consider Everyman's response to the claim that his seeing occurs in his brain and/or in his mind. We may begin by asking him:

"Where does your seeing take place?"

"Pardon?"

We've asked the question for which we want an answer and received none. By a slight alteration, we can elicit three answers.

"Where did you see the bear?"

"It was over there by that tree stump."

This answer better fits the question: "Where was the bear when you saw it?"

"Where did you see the bear?"

"I was standing here on this grassy knoll."

And this answer better fits the question: "Where were you when you saw the bear?"

"Where did you see the bear?"

"In Big Foot Valley, just upstream from the lake."

An answer to the question: "Where did the incident in which you saw the bear take place?"

So we can locate - give the location of - the seer, the seer and the incident. Can we, on Everyman's behalf, isolate the seeing as something distinct from these and hence locate the seeing? I suggest not. For Everyman 'the seeing' is not something that can be distilled off. The bear was there, he was here and he saw it. Any attempt to isolate the seeing returns eventually to this simple statement.

An interesting parallel can here be drawn between seeing and shooting. The question: "Where did you shoot the bear?" elicits one further type of answer: "I shot it in the leg." But it also may elicit the other three: "The bear was there", "I was here", or "The incident occurred in Big Foot Valley." The parallel is of interest because in the shooting case, we feel no metaphysical urge to isolate and locate a nebulous extra entity called 'the shooting'. When we know the location of the shooter and the shot, and also the path of the bullet between the two, we know all. Perhaps we're also interested in the shooter's motives and intentions, but these could hardly constitute the scarequotes 'shooting'.

I would suggest that Everyman believes shooting and seeing to be parallel goings-on with respect to our present

concerns. Just as he is unable to isolate and locate 'the shooting' as something distinct from the location of the-shooter-and-the-shot, so he is unable to isolate and locate 'the seeing' as something distinct from the-seer-and-the-seen.

III. CAUSAL CONSIDERATIONS

In this chapter I show how consideration of the causal chain from object to brain invites but does not compel the adoption of the perception-proper hypothesis - this being the claim that the essence of seeing, real seeing occurs in the brain and/or mind of the perceiver.

The causal chain arguments are presented as those of the technician - the man who understands all things mechanical and wishes to apply the sort of explanation that he has used for televisions, telephones and their like to the business of seeing. To him, the eye is a machine rather like a camera and he expects it to have a similar function.

The technician knows a great deal about the causal chain that starts with the illuminated object and leads via the eye and optic nerve to the visual cortex. For each stage, there is an ever-burgeoning wealth of facts. I use the word 'fact' advisedly. There may be dispute over detail; but for the general overall picture, the claims are universally accepted as scientific fact. For example, all accept that the cornea and lens serve to produce an image on the retina, that the retina generates patterns of impulses in the optic nerve, and that the optic nerve leads via the optic chiasma to the visual cortex. That these general facts are so, no one would dispute.

A more detailed look at one piece of recent research will show the wealth of evidence that the technician has at

his disposal. Gregory, in Eye and Brain, offers us the following:

Among the most exciting of recent discoveries is the finding of two American physiologists, Hubel and Wiesel, who recorded activity from single cells of the visual area of the cat's brain while presenting its eyes with simple visual shapes. These were generally bars of light, projected by a slide projector on a screen in front of the cat. Hubel and Wiesel found that some cells were only active when the bar of light was presented to the cat at a certain angle. At that particular angle the brain cell would fire, with long bursts of impulses, while at other angles it was 'silent'. Different cells would respond to different angles. Cells deeper in the brain responded to more generalized characteristics, and would respond to these characteristics no matter which part of the retina was stimulated by the light. Other cells responded only to movement, and movement in only a single direction. These findings are of the greatest importance, for they show that there are analyzing mechanisms in the brain selecting certain features of objects.

Rather impressive. What argument can the technician build up from this sort of evidence?

Seeing is a complex business. Light strikes an object, and is reflected in ways which characterize the molecular structure - giving light 'colour' - and in ways which characterize its gross shape. Of all the light reflected, a narrow cone strikes the cornea, is refracted, and focused by the lens to form an inverted, reversed image on the retina. This image generates an isomorphic pattern of electrical impulses transmitted along the one million or so parallel channels of the optic nerve to the visual cortex. Here, the patterns are 'analyzed', specific neural cells firing only when presented with patterns to which they are 'tuned'. An electrical encoded pattern in the brain time

'represents' the various features of the object being seen.

But wait - despite all this talk of evidence, there has been no mention of an argument for which this evidence serves as a premise, from which conclusions about seeing are to be derived. The technician is giving no more than a catalogue of facts concerning the causal chain from object to brain. His 'explanation' started out well with its account of light, images on retinae and million channel optic nerves. Unfortunately, as presented, it peters out at the crucial stage - the brain. We are left with no more than that a neural pattern 'represents' the various features of the object seen. This tells almost nothing about the role of those neural patterns in the business of seeing.

It is fairly easy to shew, I think, that various proponents of this style of 'explanation' have completed their story by presenting a complete philosophical 'theory' of perception. Furthermore, a vital feature of this 'theory' is an acceptance of what, for want of a better phrase, I dub the 'perception-proper hypothesis'.

The story tells of a one-way street from object to brain, so the terminus has to be in the brain. The perception-proper hypothesis is the unsubstantiated claim that this terminus - the final event in the chain from object to brain - has a very special status. Russell, in An Outline of Philosophy, puts the case as follows:

The physiologist who is observing a living brain sees what he is observing only after the light waves have reached his eye; therefore the perception-proper hypothesis states that seeing comes at the end of the chain.

events which travel from the observed brain into the brain of the physiologist. (my italics)⁶

The final event is not, as Everyman would expect, simply an integral part of the relationship of someone-seeing-something. Rather, according to Russell, it is the real seeing, the essence of seeing, "the event which constitutes seeing" - it is perception-proper. Thus:

The perception-proper hypothesis is the claim that the causal chain from object to brain terminates in the essence of seeing - to be termed perception-proper.

This claim relegates the physical object which originates the causal chain to a minor or peripheral role. The real seeing - the perception-proper - takes place in the brain and/or mind of the seer. An inference is required for there to be knowledge about the physical object which originated the causal chain.

The notion of perception-proper can be spelled out in various ways to suit different theories. Russell, in the passage quoted, speaks of "the event which constitutes seeing" and goes on to talk of ". . . the physiologist's percept. . ." which can only be "in the physiologist's head". Eccles describes the final stage of the causal chain: "Yet, as a consequence of this cerebral pattern of activity, we experience sensations . . . which are 'projected' to somewhere outside the cortex."⁷ For him perception-proper is the experiencing of 'projected' sensations, which occurs as a consequence of cerebral activity.

Both Russell and Eccles are accepting that because the causal chain terminates in the brain, it follows that the final event must have a unique status - perception-proper.

Turning to Locke we find an acceptance of the perception-proper hypothesis at the very core of his theory. At the beginning of Book II of his Essay, he tells us that the senses ". . . from external objects convey into the mind what produces there those perceptions".⁸ The clear implication of this is that real seeing occurs in the mind and consists of experiencing 'perceptions', the external objects merely serving to "convey into the mind" that which then "produces" perception-proper. Indeed, so wedded is he to the notion that perception-proper occurs in the mind, that he has to argue from this to what one would have expected to have been his starting point: the causal goings-on between object and brain. Having assumed that perception is, in his terminology, the having of ideas, he is led to wonder ". . . how bodies produce ideas in us; and that is manifestly by impulse, the only way which we can conceive bodies operate in . . . And since the extension, figure, number and motion of bodies of an observable bigness may be perceived at a distance by the sight, it is evident some singly imperceptible bodies must come from them to the eyes, and thereby convey to the brain some motion, which produces these ideas which we have of them in us."⁹

But, surely, he is patting the cart before the horse? Don't we want an argument which takes as its premises all

all this wealth of evidence about neural impulses and the like and yields, as its conclusion, a verification of the perception-proper hypothesis? Instead of this we are treated to a preremptory acceptance of the perception-proper hypothesis upon which is built a theory which conveniently has a place for the complex causal goings-on between eye and brain.

However neatly these theories explain the role of those million-channel optic nerves, they extort a heavy cost - the acceptance of the perception-proper hypothesis. If we pay this price we seem to be left with the unexpected and unasked for conclusion that we never really see things at all. Perception-proper occurs in the brain and/or mind and consists of having ideas, experiencing sensations, sensing sense-data of what you will. Perception of external objects is only dignified with the term 'perception' as a courtesy. Perception proper occurs in the brain and/or mind. Seeing the locations of tables and chairs, as we would ordinarily describe it, is an indirect, inferential step based on the occurrence of perception-proper.

To see the magnitude of the cost, we need only refer to Everyman's beliefs about his own seeing. The perception-proper hypothesis requires an inference from the evidence of percepts, sensations or whatever, to conclusions concerning the location of the physical objects which originated the causal chain. But such an inference is not a part of Everyman's seeing that the hat is on the chair. The

perception-proper hypothesis claims that real seeing occurs in Everyman's brain and/or mind. Everyman denies this, insisting that his seeing is the irreducible relationship of someone-seeing-something.

Faced with this conflict, we want to know what philosophical conclusions, if any, can be drawn from the fact that there is a causal chain from object to brain. It might seem that since we know already that the causal chain from object to brain plays a role in seeing then we must also know what that role is. I shall try to shew, however, that we are in the paradoxical position of knowing that the causal chain is in some way related to seeing, yet not knowing what that relationship is. Furthermore, any attempt to introduce the perception-proper hypothesis begs the question of the nature of this relationship.

The acceptability of these claims will most easily be appreciated by contrasting how it is we know what we know about the causal goings-on between object and brain with the way in which one would determine the role of causal chains in, for example, a television camera/picture set-up.

It will expedite the ensuing discussion to clarify some terminology at this point. Consider a paradigm of a simple causal chain, a row of dominoes which falls so that each domino knocks over the subsequent one.

Origin. The felling of the first domino which initiates the causal chain we may term the 'origin'.

Resultant. The last event, in this example the felling

of the final domino, we may term the 'resultant'.

Interruption. A causal chain may be interrupted at any intermediary stage so that, although the origin occurs, the resultant does not. In the domino example, immobilising one of the intermediary dominoes by gluing it down would constitute interruption.

Synthesis. A causal chain may be manipulated at any intermediary stage in such a way that the remainder of the chain, including the resultant, occurs; but the preceding part, including the origin, does not. Such manipulation synthesizes the resultant. In the domino case, the resultant - the falling of the final domino - would be synthesized by knocking over any one of the intermediary dominoes.

It is, I think, clear without further investigation that these exhibited features suffice to locate and chart a causal chain. If it is found that two events correlate, one may search for the intermediary causal chain by trying to interrupt or synthesize the resultant.* To contrast the way in which one would find and chart a causal chain from television camera to television

There are various complexities which this brief treatment glosses over - questions such as whether there are causal chains at the sub-atomic level, whether interruption guarantees that one has cut the chain between two directly linked events rather than severing a chain which splits and goes to each event from some third event, how it is that we pick out the origin and resultant with such accuracy when the origin itself has a cause and the resultant may be the cause of further events. But since these questions will not be pertinent to the ensuing discussion we may leave them here unanswered.

screen with the way in which it has been found that there is a causal chain from object to brain. Let us begin with the television example.

Suppose someone chances upon a television camera linked by a short cable to a television screen. He is ignorant about such devices, never having seen their like before, but immediately notices the correlation between the events in front of the camera and the picture on the screen.

His initial hypothesis is that there is a causal chain from illuminated scene to picture on screen, the scene being the origin and the picture being the resultant.* He then sets about verifying his hypothesis. He finds the cable linking camera to screen and readily discovers that cutting it at any point yields interruption - the picture disappears although the illuminated scene remains as before. Further probing gives him alternative ways of producing interruption. He may also produce synthesis if he is able to feed into the cable the appropriate electrical patterns. Thus he verifies the hypothesis.

It is clear, then, how someone would set about finding the causal chain from scene to screen. What is of greater importance to us is that, once it is ascertained that there is a causal chain, the role of that causal chain is not in

*"Can an illuminated scene and a picture on a screen be described as 'events' comparable with the falling and falling of dominoes?" I take it that they are lively on-going events at the molecular level.

any doubt. The problem is defined by the correlation of two distinct events, the scene in front of the camera and the picture on the screen. It is found that there is a causal chain from scene to screen. The investigator takes for granted that the role of this causal chain is to supply and maintain that correlation. He does not try to determine the role of the chain, rather he is concerned to find how it fulfils that role. Whether he finds that the cable conducts electrical patterns, sound patterns or even patterns of coloured balls is of no relevance to the role of the causal chain. Whatever he finds to be the mechanisms involved, the role of the causal chain is to provide the observed correlation between two distinct events - this scene in front of a camera and that picture on the screen. The role of the causal chain is simply not in doubt.

Is it the case that anyone who investigates the causal chain from object to brain is as clear about its role? Let us return to the passage quoted earlier concerning the work of Hubel and Wiesel. Such work shows that there is indeed a complex and sophisticated causal chain from eye to brain. More detailed work may well uncover the precise neural circuitry by which a bar of light on the retina gives rise to the firing of a specific brain cell. Here patterns of light on the retina are the origin, firing of certain brain cells the resultant. Looking at the neural circuitry and trying to find ways of producing interruption and synthesis will yield more precise details of the intermediary mechanisms.

And we may say of this causal chain, as we said of the causal chain in the television example, that it has a clear and simple role - to supply and maintain the correlation between origin and resultant.

But notice carefully what that resultant is: a brain state. Our original brief was to study the business of seeing, not brain states. We would all agree that if we select the retinal image and brain state as origin and resultant respectively, then the role of the intermediary causal chain is not in doubt. Its role is to supply and maintain the correlation, just as in the television example. This does not, however, tell us of the role of this causal chain in the business of seeing.

How is it, then, that we know that these causal goings-on have anything at all to do with seeing? We know there to be a relationship between causal goings-on and seeing because we find a 'correlation' between them. Suppose someone sees a rabbit. He is a few feet away from it, his head and eyes directed toward it; he gestures towards it and says "There's a rabbit". At the same time, the technician, who is investigating the observer's retina, optic nerve and visual cortex announces "Rabbit image on retina, impulse patterns characteristic of rabbit retinal image, optic nerve and visual cortex".

In other words, whenever someone sees something, the technician may investigate the neural happenings which coincide with the seer's seeing something. And if it is found that,

say, a certain neural state occurs whenever the seer sees a rabbit in front of him, yet does not occur naturally at any other time; one may conclude that this neural state has some role in the seeing of the rabbit.

But this does not explain what that role is. The problem arises because the 'correlation' is between a neural event and seeing - that is to say - what Everyman ordinarily terms 'seeing'. We have shewn in Chapter II that, when we speak as Everyman, we have a clear grasp of the notion of 'seeing'. In ordinary, unexceptional circumstances we are not in any doubt about whether or not someone sees something. And it is this seeing, Everyman's seeing, which is found by the technician to occur simultaneously with the elaborate workings of a causal chain from object, via the eye, to the brain.

Simply to say that Everyman's seeing and the operation of a causal chain from object to brain occur simultaneously is not to explain the role of that causal chain in seeing. Everyman's seeing is the complex, irreducible someone-seeing-something. The proper functioning of the causal chain plays some part, since interruption of the chain also interrupts the seeing. In the television example, the role of the causal chain was found to be simply that of supplying the link between origin and resultant. But in the seeing situation there is no obvious candidate for the resultant-which-is-seeing; Everyman's seeing does not have an isolatable end-product. The perception-proper hypothesis serves to

supply such a resultant. Seeing, or rather real seeing, is introduced as the hypothetical last stage of the causal chain already charted from object to brain. By this device seeing is brought into the fold and the role of the causal chain rendered as simple as that in the television example. Illuminated object is the origin, perception-proper, which occurs in the brain and/or mind, is the resultant and the causal chain serves to maintain the link between them.

Having demonstrated the difference between our knowledge of the role of causal chains in the television example and in seeing, we may now shew clearly how the perception-proper hypothesis attempts to impose a mechanistic explanation upon the causal chain from object to brain. Consider again the television camera/screen situation. The picture on the screen is the resultant of the causal chain originated by the illuminated scene. This resultant does have a special status. Indeed, we could very plausibly make a television-proper claim concerning this resultant. We could claim that real television is the flickering picture on the screen. The camera, the cable, the circuitry within the television set all play a part - but each intermediary segment in the chain is designed to bring about the final event - the picture on the screen. Amongst the various segments, the resultant does have a special status. It is the event for which the rest of the system has been designed and built. For the viewer, the picture on the screen is the essence of television.

Russell - in the passage quoted earlier - is arguing that because the causal chain terminates in the brain, that final event must have a special status. But he is assuming that the role of the causal chain from object to brain is similar to that of the causal chain from camera to screen. For the latter, the resultant does have special status - it could be described as 'television-proper'. But from this, it does not follow that the final event in the eye-brain chain has special status, the reason being that we do not know the role of this causal chain in the business of someone-seeing-something. To assume that it has to resemble a television system is to beg the question by presupposing the acceptability of a mechanistic account.

We can now appreciate that the perception-proper hypothesis serves as a remarkably neat theoretical device to explain the role of the causal chain in seeing. Indeed, the nicety with which it does so may be adduced as a reason for its adoption. But we may also appreciate that it is a hypothesis we are not forced to accept by any of the technician's findings. We have realised that the technician's investigations have been of everyday seeing, of Everyman's seeing something. That the causal processes he discovers have something to do with the success or otherwise of Everyman's seeing is not in doubt; what that role is remains in question.

IV. ARGUMENT FROM EXTERNALITY

In this chapter I develop the Argument from Externality which shews that visual perception of location involves inference. The argument will be developed three times, the last being the complete presentation. This fragmented presentation is adopted to allow two points to be sandwiched in at appropriate places. The first point - that this style of argument does not conceal an implicit acceptance of the perception-proper hypothesis - is presented after the argument has been outlined. The second point - that on pragmatic grounds a terminological dichotomy is required - is given after a fuller presentation of the argument. Finally, the completed presentation of the Argument from Externality is given.

Consider someone who sees a cow in a field. He sees the location of the cow - he sees that the cow is in the field. What he sees is clearly external to his body. The spatial relationship of the cow and the field is some distance away from the seer. The argument to be developed concentrates on the externality of what is perceived and how the perception of something external to the perceiver's body might be achieved. Briefly, the argument is as follows. The cow and the field reflect light. Of all the light reflected, two cones are received by the seer - one to each eye. These cones are patterned by their reflective source - the cow in the field. The seer receives only these cones

of light. The spatial relationship of a cow in a field is at some distance from the seer. The seer receives only cones of light patterned in a way which characterises their source. If he is to reach conclusions concerning the nature - in particular, the location - of the reflective source, he can only do this by inferring from the evidence supplied by these patterned cones of light.

The argument concerns what the seer receives - only patterned cones of light - and how he reaches conclusions concerning what is not given to him immediately - the spatial relationship which is external to him. The conclusion to be reached is that an inference is required to bridge the gulf from what he receives to what is external to him. Does this approach involve an implicit acceptance of the perception-proper hypothesis?

There is a superficial similarity between the considerations which lead to the perception-proper hypothesis and the present argument. The former concerned the causal chain from object to brain, the present concerns the causal chain from object to eye. There is however, a crucial difference. By following the causal chain into the brain of the perceiver, one is inviting a mechanistic account of the role of that chain. As was noted in the previous chapter, the resultant of a causal chain such as a television camera/screen set-up has a special status. The temptation to which an advocate of the perception-proper hypothesis succumbs is the temptation to assume that the causal chain from object

to brain must have a similar role. From this assumption it follows that the final event in the perceiver's brain must have a special status - that it is or gives rise to perception-proper.

But this unwarranted assumption is avoided by considering only what reaches the seer, not what subsequently might occur within the seer. The seer is treated as a person; and the question of whether a person is, or in any respect functions like, a machine is simply not relevant. To show clearly how this approach deals with the seer as a person, without any implicit assumptions concerning 'mechanistic' interpretations of what goes on inside the seer's head, the argument is now presented in terms of an explicit comparison between the seer and another person - a blind man.

Argument from Externality

Seeing is an achievement. Someone who sees an object thereby learns certain things about it - in particular, its location. How might an unsighted person, a blind man, accomplish the same, despite his lack of sight? A sighted person looks at a bottle and sees that it is on the table. Can a blind man simulate sight, use light, to find out about the bottle and its location?

Suppose he does the following. He has a special tele-roid camera which, instead of producing black and white pictures, makes relief pictures - raised relief which shows

is light, lowered relief where there is not. He directs the camera towards the far end of the room and takes an instant relief picture. (Polaroid gives you instant relief!) He then runs his fingers over the surface, feels the impressions caused by the images of the bottle and the table top, and concludes that there is a bottle on the table in the direction he pointed his instant relief camera.

The blind man has found out inferentially about the location of the bottle on the table. The bottle is on the other side of the room. All that reaches him is a pattern of reflected light, which carries the 'imprint' of the bottle from which it was reflected. By means of his instant relief camera, he extracts from the pattern of light reaching him information about its source. What he is in immediate or direct contact with is the instant relief picture, which is the evidence from which he infers about the bottle and its location.

The argument continues: since the sighted person and the blind man are both limited to receiving patterns of reflected light, the seer, like the blind man, must 'process' that light pattern and infer from it information about its origin. Both must infer - the only advantage that the seer has is a pair of healthy eyes.

Before subjecting this comparison to greater scrutiny, an important point must be made: Everyone finally rejects the conclusion of this argument - that his seeing involves an inference. As has shown in Chapter II, Descartes's argument

that the hat is on the chair is not a matter of inference - he simply sees that it is. 'Seeing' is Everyman's word; it is the word with which he describes the effortless way in which he finds out about his immediate environment. Inference from evidence supplied by the reception of patterned cones of light plays no part in his notion of seeing. No sense can be made of expressions such as 'seeing via inference' when what is seen is the location of well-illuminated objects in the seer's immediate environment. Everyman might even use the comparison with the blind man to show how his own seeing does not involve inference. The blind man infers from the picture of the bottle to conclusions about its location. Everyman insists that his own seeing is radically different. For him, there is no evidence or inference - he just sees that the bottle is on the table. Seeing, for Everyman, is the direct way of finding out about location in contrast to the blind man's inferential method.

Yet, the Argument from Externality - although not, as yet, fully developed - already suggests that there must be some sort of inference. This presents a practical problem. As Austin points out, it is patently absurd to say things like "when the cheese is in front of our noses we see signs of cheese."¹⁰ Yet the Argument from Externality strongly suggests that some sort of inference from some sort of evidence has to be a part of even the most mundane seeing situation. How are we to express such conclusions without resorting to seeming absurdities such as 'some sort of inference'?

the location of an object he doesn't really see its location? We could use the device of specifying different 'senses' of the word 'see'. Moore, for example, talks of "senses of the word 'see'" for one of which it is supposedly meaningful, in mundane situations, to speak of 'seeing colour-patches'.¹¹ But, Austin, in Chapter IX of Sense and Sensibilia, presents a devastating attack against any such attempts to establish different 'senses' of the word 'see'.¹²

However scrupulous one might be in defining alternate senses for commonplace words like 'see', using familiar words in unfamiliar ways is liable to bring confusion rather than enlightenment. To minimise potential for confusion, I propose the adoption of a terminological dichotomy. 'See' is an ordinary everyday word. We may continue to use it in those contexts which are acceptable to Everyman. But, in the development of the Argument from Externality, I suggest that we use 'visual perception' as a technical expression to refer in a neutral way to the business of seeing. This device allows claims to be made concerning 'visual perception' which would sound absurd, were they made about 'seeing'. Of course, the adoption of this dichotomy does not in any way presuppose there being extraordinary philosophical conclusions to be reached. It is simply a device to allow for the clearest presentation of such conclusions, should there be strong arguments supporting them. We may now return to the Argument from Externality for its completed presentation.

The blind man believes that whatever is located on the other side of the room reflects towards him a highly complex array of light which is characteristic of a certain object in a certain location. His task is to find out from this array of light the location of its source. To do so he first derives from the optical array, by means of his instant relief camera, a relief picture. He then feels with his fingertips the pattern of raised and lowered relief of the picture and can now reach conclusions concerning the nature and location of the source.

We may say of the blind man that he is not given the location of the bottle, rather he is given an optical map of its location. It happens that his interpreting this map requires two stages: Taking the relief picture, and then 'reading' that picture with his finger tips. The blind man is presented with an optical array which he takes to be patterned in a way which is characteristic of its source. The pattern is clearly distinct from, but causally dependent upon, the spatial location of its source. His task is to 'process' that array of light, to find out about the location of its source. He begins that 'processing' by taking his instant relief picture. Having done so, he must infer from the patterns of raised and lowered relief he feels with his fingertips to the conclusion that there is a bottle on the table across the room. What he feels with his fingertips is the evidence on which he bases his judgment.

to the conclusion that there is a bottle on the table.*

The blind man is only given an array of light; he wishes to find out about its source. At some stage he must infer, if he is to make epistemological progress in the 'upstream' direction, from what he is given to the source of that. Thus inference is an essential part of the blind man's finding out about location.

It is the same that visual perception and the blind man's instant relief camera are comparable in that both are both means of finding out about location. For though the terminological dichotomy allows for possible differences between what may be said about 'visual perception' and 'seeing', to suggest that visual perception is not a means of finding out about location, when Everyman readily accepts that seeing is a means of finding out about location, would seem absurd. How visual perception might be other than a means of finding out about location, could not be denied.

The real question is whether the visual perceiver requires an inference as a part of his finding out about location. The comparison with the blind man is as follows:

Blind man receives only a patterned array of light.

*We could, alternatively, describe the original pattern of light as the evidence, and count the picture taking as part of his inferring. Which we opt for would not seem to be of importance here; what is very relevant is that we may conclude that the blind man's finding out about the location of the bottle requires at least one inference.

Visual perceiver receives only a patterned array of light.

Blind man requires inference to reach conclusions about the location of the reflective source.

The comparison suggests that visual perception also requires some sort of inference. But is this conclusion warranted? There is a counter argument: In describing the blind man's finding out, it has been implied that, although his conclusions about the locations of objects are inferred, his finding out about the relief of the picture is not via inference. His tactile facilities, which are in good working order, enable him to find out without inference about the surface of the relief picture. Is it not reasonable to suppose that the sighted person, in a similar fashion, finds out without inference about the location of objects?

My response to this consists of shewing that the onus of explanation rests with the objector. Suppose, to give the fairest treatment of the objection, that tactile perception is without inference. We must now concede that visual perception of location just might be without inference. But we demand some indication of how the visual perceiver makes epistemological headway from what he actually receives - cones of light characteristic of a bottle on a table - to what he finds out, by means of his healthy eyes - that there is a bottle on the table - without an inference.

It is agreed that the visual perceiver receives only patterned cones of light. It is agreed that these light

cones play some role in visual perception. Even after it is conceded that tactile perception is without inference, we may insist on being given some indication of how visual perception might occur without inference.

The blind man and the visual perceiver stand side by side facing the bottle on the table. The blind man can only find out about the location of the bottle by inferring from the evidence supplied by the patterned array of reflected light. The sighted man receives nothing more than the blind man - he only receives patterned cones of light. How does he find out about the location of the bottle? He has two healthy eyes. But how do his eyes enable him to do, without an inference, what the blind man can only achieve via an inference? An opponent of the Argument from Externality cannot abdicate the responsibility of answering this question. He cannot airily delegate responsibility to a specialist, without already knowing, in general terms, what he requires the specialist to investigate in specific terms. One can hand the specialist a black box telling him that candy bars come out of this slot when coins are put into that slot, and delegate the responsibility of finding out how coins release candy bars. Alternatively, one can hand the specialist a black box and ask him to find out both what it is and what it does - here one delegates all responsibility. But one cannot ask the specialist to find out the specific mechanisms whereby visual perception of location occurs without inference, until one already knows that vis-

ual perception is without inference. One cannot guess at a solution and then demand that the specialist verify the solution.

The comparison with the blind man's finding out seems to force upon us the conclusion that visual perception involves an intermediary inference. There is no coherent elucidation of the counter-claim that visual perception is inference-free. In the light of the compelling comparison with the blind man, just saying that it might be inference-free in the way that tactile perception has been assumed to be is not good enough. In the absence of any coherent counter argument, the only reasonable move is to accept the force of the comparison and conclude that visual perception of location involves an intermediary inference. It must be added here that a very credible account of how visual perception involves inference will be developed in the last two chapters of this work.

To recapitulate: Visual perception and the blind man's finding out resemble each other in that both involve the reception of patterned cones of light. The blind man's finding out about location involves inference based on the evidence supplied by the patterns of light. We cannot give a coherent account of how a visual perceiver might utilize those same light patterns in perceiving the location of objects without an analogous inferential stage. Therefore the visual perception of location is via inference, this

being the only reasonable conclusion.

* * *

Visual perception of location involves inference. Everyman's seeing location does not involve inference. Faced with this conflict there are three ways to proceed:

1. Reject Everyman's beliefs
2. Reject the Argument from Externality
3. Accept both and attempt a reconciliation

It is clear, I think, that the first two options have already been eliminated by our previous enquiries. Everyman's conviction that seeing reveals to him the location of objects without intermediary inference was not found to be a belief that he could nonchalantly change when confronted with new evidence. And we have no counter to the Argument from Externality. We must attempt a reconciliation.

The Argument from Externality shows that visual perception of location involves inference. Everyman is unaware of any intermediary inference. These two are reconciled by postulating an intermediary inference of which Everyman is unaware. Such an inference we may term an unaware inference - this being an inference of which Everyman is unaware and which he cannot be persuaded to acknowledge. This approach raises a host of philosophical objections which will be dealt with in the two remaining chapters.

In suggesting that visual perception is via inference,

we are claiming, to put it epigrammatically, that there is more to visual perception than meets the eye. There is a possible analogy to indicate how to proceed. We are concerned to shew the complexity of visual perception whilst explaining why seeing seems as it seems. Anyone who embarks upon a heliocentric story of planetary motions must account for the appearance to terrestrial observers of geocentricity. He must explain why 'sunrise' and 'sunset' are so seemingly aptly named. In other words, a heliocentric account, if it is to be satisfactory, must explain why it seems to us earthbound observers as though the world remains still whilst the sun rises in the east, moves in an arc through the sky and sets in the west. Although it cannot be more than an indication of how to proceed, the analogy suggests the possibility of explaining the complexity of visual perception whilst shewing why seeing is as it seems to Everyman.

V. AGNOSTIC IDEALISM

To suggest, however cautiously and tentatively, that visual perception involves an inference of which the perceiver is unaware, is to provoke a whole host of criticisms and objections.

If any credibility is to be given to the notion of 'unaware inference', something must be introduced as the evidence for that inference. To achieve this, I shall argue for the adoption of a version of the perception-proper hypothesis - experiencing of 'imagery'* being the perception-proper, 'imagery' serving as the evidence for unaware inference. In this chapter I develop a hypothetical perceptual mode based on the phenomenon of eidetic imagery. This will provide a way of giving meaning to the notions of 'unaware inference' and 'perception-proper'. A theory of perception - based on the model provided by this hypothetical perceptual mode - is then developed.

Although what is meant by perception-proper which consists of experiencing 'imagery' is yet to be explained, it is here convenient to set the scene for the remainder of this work by here listing the objections to the notions of 'unaware inference' and 'imagery'.

*'Imagery' and 'image' are introduced as technical terms, to be defined later.

Objections

Objection 1: Everyman's Objection that he is unaware of an inference, or of any sort of perception-proper.

Objection 2: Irrelevancy Objection that facts about reflection, optical paths and so on, fascinating as they are in their own right, are not relevant to the philosopher's task of elucidating the logic of the concept of 'seeing'.

Objection 3: Infinite Regress Objection that 'imagery', which is the intermediary between perceiver and object, would itself have to be perceived by another intermediary, and so on ad infinitum.

Objection 4: Self-Refutation Objection, that the Argument from Externality is self-refuting. Its premise is based on the seeing by experts of the equipment with which they find out about patterns of reflected light, lenses, etc. But its conclusion is the denial of the possibility of such seeing.

Objection 5: Uncheckability Objection. Any inference is, in theory, checkable. The proposed 'unaware inference' would be uncheckable, therefore there can be no such inference.

Objection 6: Incredulity Objection - "Yes, but how is it done?"

This very brief listing serves here to support the following claim: the very weight of these six objections would seem to spell doom for the fragile notions of 'unaware

inference', 'perception-proper' and 'imagery'. We simply do not have a sufficiently clear idea of an 'unaware inference' to defend it against, for example, the Uncheckability Objection. We have, at the moment, no notion of how to defend 'imagery', against the Infinite Regress Objection.

Two things are clear: first, that these objections jeopardize the whole of our painstaking enquiry into the role of the causal goings-on involved in perception, and hence are in need of response. Secondly, considerable credibility must be given to the notions of 'unaware inference', 'perception-proper' and 'imagery' if they are to survive these objections. To provide this credibility, I shall develop a hypothetical perceptual mode to be termed Eidetic Image Only Perception.

First, some remarks must be made to introduce eidetic imagery. Eidetic images are experienced by a very small number of adults, but by a larger proportion of children, recent research suggesting that as many as one in five hundred children experience them. They are bright, vivid images which the subject 'sees' as a part of whatever surface is in front of him. They are produced by the subject's staring at, but not fixating, a picture for about one minute. The image, which generally fades after a few minutes, is almost indistinguishable in colour and detail from the original picture. The subject is able to 'move' the image by moving his head. An eidetic image would seem to resemble a hallucination in its vividness, but would seem to resemble

an afterimage in being produced by looking at a physical object. Such experiences may constitute what is ordinarily referred to as 'photographic memory'. There are rare but recorded cases of people who can 'conjure up' an eidetic image of a page seen some while before and can 'read off' from it what is written.

This discussion of eidetic imagery will parallel the traditional Argument from Illusion. It must be noted here that consideration of eidetic imagery gives three advantages over the Argument from Illusion as traditionally developed. First, a little novelty and freshness is introduced which might dispel any tedium engendered by a surfeit of 'pink rats' and 'mirages'. Secondly, and more seriously, for those who experience eidetic images, these experiences may occur at any time; they are a part of a person's normal waking experiences. This forestalls the argument, applicable to hallucinations, that they are experienced only by people in states where their verbal utterances are unreliable because their judgement is seriously impaired by drugs or physical exhaustion. Eidetic images can be experienced by normal, sane, sober citizens in nice, clean, clinical laboratories. Thirdly, and even more importantly, due to the research of H.N.Haber, an objective test, not requiring reliance on verbal descriptions of what the subject 'sees', has been developed. For these reasons, eidetic imagery lends itself well to the ensuing arguments.

The objective test alluded to above is described by

Haber in "Eidetic Images" as follows:

The best solution we have found so far is to use a sequence of pictures that together form another picture. The first picture shown to the child is designed in such a way that, although it is cohesive in its own right, if it is superimposed on a second picture, a third picture (a face) is formed by the combination. Assuming that the combination picture is unpredictable from either picture alone, the only way the eidetic child could know what the combination is would be if he could superimpose one picture on the other, visually. If he viewed the pictures separately, this could be accomplished only by maintaining an image of the first picture long enough to superimpose it on the second.¹³

The purpose of this test is to show that the child genuinely maintains an image of the first picture; he does not simply have a very good memory. Haber goes on to describe one of the results of this test:

The reaction of one child was quite impressive to us. After developing a good image of the first picture, he superimposed his eidetic image of it on the second and at first persisted in reporting the various separate elements of each picture. Suddenly, with obvious surprise, he reported the composite face and exclaimed that the experimenter was pretty "tricky" to have fooled him in that way.¹⁴

Haber's findings would seem to show conclusively that that these eidetic children are able to hold an image of the first picture and superimpose it on the second. The image is portable, the experimenter can move around and superimpose it upon whatever he sees before him. It is somehow related to what the subject has been looking at previously. In these respects, an eidetic image would seem to resemble an afterimage. Yet its vividness and life-like qualities resemble that of a hallucination. The 'seeing' of eidetic images would seem a possible candidate for our alternative

to seeing.

One might think that the alternative for which we are searching can be developed without further ado from Eidetic Imagery as discussed so far. We have spoken of the eidetic person who scarequotes-sees the image of a picture. Might not this scarequotes-seeing serve as a suitable alternative? Perhaps, but we can considerably strengthen our hand with the following speculative development of the eidetic imagery story.

Suppose a person who regularly experiences eidetic images undergoes a peculiar form of blindness. He loses all his normal visual perceptual abilities, but he continues to experience eidetic images. If he closes his eyes for some minutes and then opens them, he sees nothing. But if he orientates his head in one fixed direction for a minute, an eidetic image forms of whatever objects are in front of him. It would be clear that this is an eidetic image, rather than delayed but otherwise normal visual perception, because, for as long as it lasted, the image would remain in front of him, however he moved his head. He is blind to all normal, visual perception, yet retains the ability to form and experience eidetic images. Despite his bizarre handicap, this person would still be able to perform a large number of activities involving locating objects around him. Each manoeuvre he made would require the formation of yet another eidetic image; and each new task would have to await the disappearance of the preceding image. But, he could

live a fairly full life. He could even read books by imagining each successive page and reading from the image. His 'perceptions' would be a minute late, things might have changed in that time, and we would rather that he refrained from driving a car; but the delay would be infinitesimal compared with the delay involved in our seeing distant stars. He can, at least, locate any static object.

Now let us add a further development. Suppose his ability to form eidetic images improves; also the time for each image to fade becomes shorter. He forms the images sooner, the delay is reduced from one minute to thirty seconds, from thirty seconds to ten seconds, from ten seconds to one second, from one second to a quarter of a second. He experiences eidetic images which are delayed by a mere quarter of a second and which fade in a correspondingly short time. He is now able to do almost everything, he was formerly able to do before the onset of his peculiar blindness. He experiences only eidetic images, yet his ability to find out about the locations of objects around him is very nearly as good as ours.

Here then is our candidate for a hypothetical alternative form of seeing upon which to build a theory of perception. Is this a conceivable story? One criticism might be that eidetic images could not occur without ordinary vision because they would then have nowhere to 'happen'. Eidetic images superimpose themselves upon whatever is in front of the nose of the subject; without something seen on which

to be superimposed they could not occur. But this is surely a trivial objection. We are all familiar with the fact that after-images appear to the open-eyed subject as coloured blurs on the surface of whatever is before him; but if he closes his eyes they don't cease to exist, rather they take on an indeterminate distance. We may claim that it is entirely plausible that eidetic images might likewise survive the absence of things seen by the subject. A more forceful criticism arises from this. If the eidetic images of an otherwise unsuspected person are to have the indeterminate apparent distance of a closed-eye after-image, how might someone thereby locate the objects of which he now experiences eidetic images? To this we may respond that vivid dreams and closed-eye hallucinations have sufficient vivacity and life-like quality that the imaged objects experienced therein have apparent locations. It is not unreasonable to suppose that eidetic images of objects might likewise have apparent location. Perhaps we need to postulate that for the person who experiences only eidetic images, these have sufficient vivacity to endow the imaged objects with apparent location.

We may conclude that our hypothetical story of an otherwise unsuspected person who experiences eidetic images is plausible and coherent. This person, then, has Eidetic Images Only Perception a phrase which we may abbreviate to E.I.O. Perception. How is this E.I.O. story to help us in clarifying the notions of 'unaware inference' and 'percep-

tion-proper'? Let us begin with 'perception-proper'. It will be recalled that 'perception-proper' figured in our earlier investigations as the hypothetical resultant of the causal chain from object to brain. For ordinary seeing there seemed to be no such isolatable resultant or end-product which is seeing, no second correlate for the illuminated object. But with E.I.C. perception we have an obvious candidate for perception-proper - the experiencing of eidetic imagery.

For E.I.C. perception, we no longer need to speculate or hypothesize about the final end-product of the causal chain from object, via eye and million-channel optic nerve to brain. It would seem reasonable to claim that the experiencing of an eidetic image is the resultant-which-is-seeing of this chain. To suggest otherwise would be to suggest that the experiencing of an eidetic image is somehow or other outside the causal nexus of the world.

We notice immediately that the experiencing of an eidetic image is a most unusual resultant for the causal chain which is found to lead ever deeper into the brain. One would expect the resultant of a chain which leads into the brain to be within the brain. Yet the eidetic image is experienced as being external to the perceiver. Haber's subjects were able to superimpose an eidetic image on a picture in front of them thereby producing a composite picture. That which can be superimposed on a picture must, at least, seem to be external to him who stage-manages that superimpo-

sition. Where, one may well ask, is the eidetic image? It is experienced as if it were external to the perceiver, yet it stays with the experiencer.

At this point we may recall a remark quoted from Eccles in an earlier context: ". . . as a consequence of the cerebral pattern of activity, we experience sensations . . . which are 'projected' to somewhere outside the cortex." At that time we were by no means clear what these "'projected' sensations" were. We may now remark that this passage serves us well if we replace 'sensations' by 'eidetic images'. Paraphrasing slightly, we may say that as a consequence of certain neural activity, the subject experiences an eidetic image which is 'projected' to somewhere outside the cortex and seemingly external to him. This would seem to be the best that can be said about the experiencing of eidetic images. To suggest that eidetic images are causally independent of neural states, and yet coincidentally correlated with them is to advocate a pernicious dualism. In 'explaining' this coincidence one would need to invoke some species of deity to ensure the coinciding of eidetic images and the appropriate states of the causal chain from object to brain.

But claiming that the eidetic image is causally dependent on a neural state is almost as mysterious. To say anything meaningful about the relationship between experiencing an eidetic image and coincident neural states is, I would suggest, beyond us. I know of no suggestions to enlighten us concerning this relationship. We may say of a given neu-

ral state that it 'gives rise to' the 'projection' of an eidetic image which the subject experiences as seemingly having a spatial location external to him. But, in saying this, we do not know what we have said. We do not know whether to say that there is just one neural state which is coincident with and related to the subject's experiencing a 'projected' image, or whether the image and the subject are related to their own respective neural circuitry and the 'projection' is related to a third piece of neural circuitry which links the first two circuits.

The whole relationship between circuitry and imagery is mysterious; the reason being that the neural circuitry is deep within the brain whilst the coincident happening is a subject's experiencing an image which seems to him to be external to his body. How anything deep within the brain could 'give rise to' something which even seems to the perceiver to be external in the way that an eidetic image seems to be external, is essentially mysterious. 'Projection' serves as the word to label the relationship between brain and eidetic image, whatever that relationship might be. We have suggested that the relationship is one of causal dependence, but all that this serves is to exclude the possibility of 'divine intervention' as the basis of the correlation. We have not the faintest glimmer of a notion what sort of causal dependence might constitute the 'projection' by a neural state of an eidetic image. We are, if you will pardon the pun, completely in the dark. All that we know is

that eidetic images occur and are experienced as being external to the subject, yet are correlated with neural states.

Our ignorance concerning the relationship between eidetic image and brain does not preclude the furthering of our enquiries. We have already made considerable progress in bringing to life the notion of perception-proper. We now have an example: the experiencing of eidetic imagery.

What are we to say concerning 'unaware inference'? To provide some elucidation, we must concentrate on how the subject finds out by means of his E.I.O. perception about the locations of objects. Suppose we introduce the E.I.O. perceiver into the situation in which the blind man finds out that the bottle is on the table. We may thus determine to what extent the E.I.O. perceiver's finding out can be compared with the blind man's. Our E.I.O. perceiver is now in the same room beside the blind man. How does he find out that the bottle is on the table? He happens to direct his head and eyes in the direction of the far end of the room, keeping them thus orientated for a quarter of a second until an eidetic image forms. That image is of a table with a bottle on top; bottle and table 'seeming' to be located over there at the far end of the room. From this experience he concludes that there is a bottle on a table in front of him at the other end of the room.

There would seem to be a striking similarity between his procedure and that of the blind man. The latter uses his instant relief camera to provide a relief picture which

is the evidence from which he infers that the bottle is on the table. The E.I.C. perceiver, it would seem, does likewise. His eyes and brain 'process' the incoming optical array, and thereby 'project' an eidetic image. This image constitutes the evidence from which he infers that there is a bottle on the table.

There is, however, an important difference. No matter how proficient the blind man becomes at producing and 'reading' his relief pictures, his inference remains as one of which he is potentially aware. The pictures are in his hands, yet the conclusions he draws concern the locations of objects at the other end of the room. Perhaps he becomes so proficient that he makes his inferences 'automatically', perhaps he becomes as skilled in 'reading' his pictures as we are in inferring that the sound of rain on the roof signifies rain outside. Whatever his practical proficiency, he can always be reminded of it and thus acknowledge the inference from the evidence in his hands to conclusions about things some way away.

In contrast, the E.I.C. perceiver has only to infer from what he seems to see to be the case, to the conclusion that it is the case. His visual experiences are as if he were seeing that there is a bottle on the table. His eidetic image is 'projected' in such a way that what he seems to see seems to have location. All he need do is conclude that what seems to be, is. He might, after he has become accustomed to his peculiar 'blindness', refuse to admit that

he is inferring from what seems to be to what is. His images form a mere quarter of a second after he orientates his head in any given direction. He may well insist that he can actually see what is in front of him. And if this is his conviction, he will then share with Everyman his belief that seeing is without inference. The E.I.O. perceiver's images may become so vivid and life-like, form so quickly after he orientates his head in a given direction, and fade so quickly after he turns his head to a different direction, that he becomes convinced that he is able to see again. We now have a clear notion of what might be meant by an 'unaware inference' - were an E.I.O. perceiver to become convinced by the vividness of his imagery that he really was able to see the location of objects around him, his inferences from what seems to be to what is would be unaware inferences.

In our E.I.O. perception story we have been able to accommodate Everyman's beliefs, perception-proper and unaware inferences. Our aim is to elucidate a theory and thereby defend the fragile notions of 'unaware inference' and 'perception-proper' against the six listed objections. Might we not achieve our goal by showing that E.I.O. perception is indeed an alternative form of both seeing and visual perception? Were this to be accomplished, we could then conclude that visual perception resembles E.I.O. perception in involving an unaware inference from something akin to an eidetic image to conclusions about the locations of objects.

Visual perception would then turn out to be E.I.C. perception with zero* image forming time and zero* fading time. Expressing it in quasi-mathematical parlance, visual perception would be the limit as the two E.I.C. delay times tend to zero. It would provide a neat solution to shew conclusively that the above obtains. Unfortunately, we can offer no irrefutable demonstration.

It is readily shewn that E.I.C. perception is a form of seeing. The E.I.C. perceiver can, by means of his eyes, perform a large variety of tasks which one would think to be achievable only by the sighted. He can locate and describe objects, read books, match colour samples, appreciate visual art and so on. It is more than likely that he would insist that he is able to see. The decision whether E.I.C. perception is a form of seeing is Everyman's to make - 'seeing' is his word. The E.I.C. perceiver insists that he is able to see. Everyman would accept this testimony and agree that E.I.C. perception is a form of seeing.

But this does not entail that E.I.C. perception is a form of visual perception. Everyman accepts that E.I.C. perception is a form of seeing because of the superficial similarities. We wish to argue that these superficial similarities result from a genuine, close resemblance - a resemblance such that both visual perception and E.I.C. percep-

*To be precise: smaller than can be detected subjectively.

tion involve inference. But this argument is a version of the 'indistinguishability' argument which occurs in the traditional Argument from Illusion. Austin responds to the traditional argument as follows. Having conceded that in certain abnormal situations, such as 'seeing' a hallucination, 'delusive' perceptions might be indistinguishable from 'veridical' perceptions, he asks:

. . . does this admission require us to drag in, or even let in, sense-data? No. For even if we were to make the prior admission (which we have so far found no reason to make) that in the 'abnormal' cases we perceive sense-data, we should not be obliged to extend this admission to the 'normal' cases too. For why on earth should it not be the case that, in some few instances, perceiving one sort of thing is exactly like perceiving another?¹⁵

The gist of this criticism as applied to our present enquiries is: although E.I.O. perception resembles visual perception, "why on earth" should it not be the case that the former involves inference whilst the latter does not? Before answering this, it might be instructive to remark upon two of Austin's footnotes in which he specifically omits from consideration arguments dealing with 'causal dependence'.¹⁶ That he cheerfully performs this omission may lead us to wonder whether he has given sufficient thought to the problems which have led us to consider E.I.O. perception.

It just might be the case that 'visual perception' is of such a radically different nature from E.I.O. perception that it is without inference. Despite the great similarities, it is logically possible that the resemblances are mere

coincidence and that there is a difference whereby E.I.C. perception involves unaware inference from imagery but visual perception does not. Suppose, for the time being, that this is so. The unexpected consequence of this supposition is to increase our problems, rather than to diminish them. We have found two large problems with the E.I.C. story. First, how is it that a neural state 'gives rise to' the 'projection' of an eidetic image which is experienced by the subject as if what is imaged has a location in front of him? Secondly, how does the subject infer, from that image, conclusions concerning the locations of objects? We do not have any solutions to these questions as yet, but we do know that eidetic images occur. From this it follows that there is, within the perceiver, the capacity, whatever that capacity might be, for 'projecting' eidetic images and inferring from them. These problems already exist. But the supposition that visual perception is without either inference or 'imagery' raises two further problems. Why does the perceiver have this remarkable capacity for 'projecting' and 'inferring', solely for the benefit of his enjoying eidetic images? If visual perception does not resemble E.I.C. perception, how then are we to deal with the Argument from Externality?

If ordinary visual perception does not require either 'imagery' or 'unaware inference', then a person has the capacity for each; yet these potentials remain dormant, only to be realized on those rare occasions when he experiences

eidetic images, hallucinations and 'the like'. One might suppose this to be the case - my point here is that this supposition increases our problems. We have but a scant understanding of 'imagery' and 'unaware inferences' as a part of E.I.O. perception. But an alternative account of visual perception, which does not incorporate these, must be given. And this account must provide a satisfactory resolution of the conflict between Everyman's beliefs and the conclusion of the Argument from Externality.

In the light of the similarities between E.I.O. perception and visual perception, and in the absence of any account of how the latter could occur without unaware inference, our only reasonable option is to accept that visual perception does involve unaware inference. We must conclude that E.I.O. perception is, indeed, a form of visual perception. This yields the following theory of perception.

Agnostic Idealism

Everyman sees, for example, a book on a shelf. His visual perception is as follows:

1. Visual perception is E.I.O. perception with zero delay time for the formation and fading of 'images'.
2. There is a causal chain from object to brain, which terminates in a pattern of neural activity isomorphic with the optical array reflected from the book on the shelf and received by the eye.
3. This neural activity 'gives rise to' perception.

proper.

4. Perception-proper consists of the subject's experiencing a 'projected' 'image' of a book and a shelf having apparent location at some distance in front of him.

6. Subject is unaware of image and inference.

7. In his own words, he sees the book on the shelf.

The agnosticism of the title refers to our ignorance concerning:

1. How neural activity 'gives rise to' perception-proper.

2. How an 'image' might be 'projected' to have an apparent location.

3. How subject might make unaware inference from 'image' to location of objects.

All 'mysterious' relationships or entities are defined in terms of equivalent relationships and entities in E.I.C. perception:

1. 'image' is defined as the limit as delay times for formation and fading of eidetic image tend to zero.

2. 'GIVES RISE TO' is defined as the functional equivalent of relationship between neural activity and a subject's experiencing eidetic imagery.

3. 'projection' is defined as the functional equivalent of relationship between neural activity and eidetic image which has apparent location.

Here, then, is the theory. It succeeds in endowing the notions of 'unaware inference' and 'perception-proper' with life. In the final chapter it will be tested against the objections.

VI. REPLY TO OBJECTIONS

In this chapter I shew how Agnostic Idealism provides strong counters to the six objections listed at the beginning of the previous chapter.

Objection 1. Everyman's Objection

Everyman's Objection is readily dealt with. We have shewn how an E.I.O. perceiver is unaware of the occurrence of the 'projection' of his images. We have also shewn how he may, after sufficient time has accustomed him to E.I.O. perception, come to deny that he infers from image to object. Thus the theory, which postulates delay-less images which the subject fails to recognise as such, gives an adequate account of why Everyman believes what he does about seeing.

Objection 2. Irrelevancy Objection

The Irrelevancy Objection in its strongest form, can be speedily dispensed with. Austin implies, by his aforementioned omission from Sense and Sensibilia of consideration of 'causal dependence', that causal goings-on are simply not in need of investigation. Quinton, in "The Problems of Perception", cheerfully remarks: "it is an unarguing truth of physiology that sensations, physical stimulations of the sense organs are causally necessary conditions of our knowledge of matters of fact."¹⁷ (my italics). The

force of Quinton's remarks would seem to be that philosophy is only, and should only, be concerned with analyzing the concept of 'seeing'. Men and women were seeing, talking about seeing, employing the concept of 'seeing' long before the discovery of light, retinae, optic nerves and the like. Causal goings-on are scarcely, if at all, relevant to the concept of 'seeing', and it is the philosopher's task to elucidate, analyse and chart the logical geography of that concept.

But, having made the distinction between 'seeing' and 'visual perception', and having seen the philosophical conundrums involved in our attempts to come to terms with the latter, we are now in a position to appreciate the poverty of the above outlined approach. For such an approach is solely an investigation of Everyman's concept of 'seeing', neglecting the Argument from Externality and its seemingly inescapable conclusions concerning visual perception. It is as if, to return to the 'sun' analogy, someone were to devote himself to a study of the concepts of 'sunrise', 'movement of sun through the skies' and 'sunset', and refuse to give notice to the arguments which lead to a heliocentric theory.

We may thus reject the suggestion that philosophers investigating perception need never turn their attention to causal goings-on. There remains a possible objection that although causal goings-on must be accounted for in an adequate philosophical treatment of visual perception, Agn-

ostic Idealism as we have presented it is merely an empirical, psychological theory and, as such, fails to have any impact upon the philosophical problems. In response to this, I begin with a reminder that the theory was developed as an attempt to reconcile the conflict between Everyman's belief that seeing the location of an object right in front of his nose does not involve an inference, and the conclusion of the Argument from Externality which shews that there has to be an inference. To resolve this conflict, 'unaware inference' was postulated. As was found at the beginning of the preceding chapter, mention of unaware inference provokes a superabundance of philosophical interest - little of it favourable.

The theory of Agnostic Idealism was then developed in order to provide answers to the philosophical objections to the postulation of unaware inferences. It was developed by comparing visual perception with a hypothetical mode of perceiving the locations of objects - E.I.C. perception. The theory provides strong counters to the philosophical objections. This strongly suggests that the theory is indeed a philosophical theory. There remains the possible objection that it is merely an empirical theory which happens, conveniently, to have a place for unaware inferences.

Suppose, for the moment, that the objection is justified - that Agnostic Idealism is merely an empirical theory. We would now expect it, like any empirical theory, to yield testable empirical predictions and hence validation or ref-

utation. Does it do so? One might argue the Agnostic Idealism predicts the possible occurrence of eidetic images and hallucinations; for if ordinary perception involves the experiencing of imagery, then it is possible for the imagery to break free from the normal causal nexus - to be synthesized - and burst forth as, for example, a hallucination. But this is hardly what one would term an empirical prediction since the occurrence of eidetic imagery was incorporated into the development of the theory. Rather, this reminds us of the ease with which the theory incorporates and explains such perceptual occurrences.

It might be thought that the theory is empirically testable by the investigation of neural states. The theory claims there to be a functional equivalence between the neural states of an E.I.C. perceiver and a visual perceiver when each perceives a cat on the mat. Functional equivalence sounds as though it should be empirically testable. To shew how Agnostic Idealism does not involve an empirically testable functional equivalence, I shall shew that even the strongest formulation of that equivalence is not testable. The strongest claim would be that the functional equivalence arises because visual perception and E.I.C. perception employ not two equivalent neural circuits but share the same circuitry. It might be thought that such a claim could readily be tested by the appropriate specialist. Let us see how he would attempt to refute this claim. Before him are two subjects whose brains have been probed and net-

ered in such a way that he can monitor all neural states, chemical changes and so on. Subject Brown sees a cat which is on the mat in front of him; whilst subject Green experiences an eidetic image as of a cat on the mat in front of him.

The expert's task is to find a difference between the neural states such that this discovery refutes the claim. Clearly, his finding just any old difference between the neural states of the two brains won't do. One of the subjects might be suffering a severe headache and it is this which gives rise to the found difference. So the expert concentrates his attention on what he takes to be the visual perception neural states, the states of the visual cortex, say. But again, just finding differences will not suffice to refute the theory; for we would expect there to be some differences simply in virtue of the fact that one subject is experiencing an eidetic image whilst the other is looking at a cat. In other words, to refute the theory, the expert must not merely find differences but he must find differences which make a difference.

How does he know what would be the relevant differences? He wishes to shew that whilst Subject Green is experiencing an image, Subject Brown is not. To shew this he must be able to identify the neural circuitry which is the 'experiencing of 'projected' imagery neural network' and shew that Subject Green's is in the 'cat-image' state whilst Subject Brown's is in the 'no image' state. But he cannot

be sure of his identification of the 'experiencing of 'projected' imagery neural network' unless he already has a full understanding of the relationship between neural states and a subject's experiencing an image. He must have an understanding of the mysterious relationship which I term 'projection'. For, without this understanding he cannot be sure that he has found the 'projection' circuitry, rather than some peripheral circuitry which is in one state for the 'projection' of eidetic images and another for the 'projection' of images in the seeing case. In short, he must already have a solution to the mind/body problem, at least for eidetic images.

Thus the strongest and most readily tested version of the equivalence is refutable only after the relationship between eidetic imagery and neural states has been fully elucidated. But it is claimed as a part of Agnostic Idealism that this relationship is not known, it is at present mysterious. Nevertheless, whatever might be the nature of that relationship, we may postulate its functional equivalent as the basis for our account of visual perception.

What has not been considered, as yet, is whether our ignorance concerning 'projection' is merely contingent, to be dispelled by appropriate scientific advances; or whether the Agnosticism is more fundamental - an ignorance which cannot be transcended.

It can now be seen that Agnostic Idealism could be developed into an empirically testable theory by specifying

that our ignorance is merely contingent. With this assumption, as soon as the relationship between neural states and images is understood in the way that we now understand, for example, the relationship between electrical impulses in a telephone cable and sound in the receiver, ordinary seeing might be tested to determine whether a functionally equivalent image projecting relationship occurs.

But this assumption is unjustified, for it presupposes the possibility of a scientific resolution of the mind/body problem. One of the questions we as philosophers would wish to answer is whether or not the mind/body problem is susceptible to such a scientific resolution.

What I have attempted to shew in the development of Agnostic Idealism is now we may resolve the conflict between Everyman's beliefs and the conclusion of the Argument from Externality, despite our ignorance concerning the mysterious 'projection'. Whether or not the relationship between neural states and the eidetic image a subject experiences as a part of his external world is susceptible to scientific explanation, a functionally equivalent relationship is claimed, in Agnostic Idealism, to be the essence of visual perception. In Agnostic Idealism, the notions of 'perception-proper' and 'imagery' are based on functional equivalences with an essentially mysterious relationship - the relationship between a subject's experiencing eidetic imagery and neural states. To claim that Agnostic Idealism is empirically testable would be to presuppose that the functionally

equivalent relationships on which it is based are amenable to scientific explanation. This presupposition is not made. Thus it may be seen that Agnostic Idealism, since it is not empirically testable, is indeed a philosophical resolution of the conflict between Everyman's beliefs and the Argument from Externality.

Objection 3. Infinite Regress Objection

Ryle, in Concept of Mind, gives a criticism of the sense-datum theory, which translates into a criticism of Agnostic Idealism.¹⁸ Perception-proper is, as it has been outlined so far, the experiencing of an image. This image would itself have to be perceived by the perceiver. Either it would be perceived in a way similar to the perception of the original object, which would involve yet another perception-proper; which, itself, would involve another image which could only be perceived via perception-proper and so on ad infinitum. Or, the perception of imagery would be by some radically different and as yet inexplicable means.

To this we may reply that whatever may be the explanation, eidetic images do occur. Our story of E.I.O. perception, based on the notion of eidetic imagery, we found to be coherent. One of our claims in Agnostic Idealism, is that we have no insight into how eidetic images might be experienced; yet this ignorance does not impede our developing a theory based on E.I.O. perception. Whatever might be the relationship of 'projection' which obtains between

neural states and the experiencing, by the subject, of eidetic images, a functionally equivalent relationship is said to obtain between neural states and imagery in visual perception. Hyle's objection would suggest that any experiencing of imagery is impossible. Clearly, the regress wherein each image requires yet another image for its perception is impossible. But we have developed a coherent and somewhat compelling story of a person whose E.I.O. perception enables him to see the locations of objects. His perception involves unaware inference from imagery which is 'projected' in such a way that it is experienced as though located before his very eyes. We do not know what more to say about this relationship of 'projection'. As was stated in response to the Irrelevancy Objection, we do not even know whether this relationship is amenable to scientific enquiry. But the coherence of the E.I.O. story is sufficient to counter the Infinite Regress Objection. There is no regress. Experiencing of visual 'imagery' is indeed mysterious and inexplicable business. But it is no more mysterious than the experiencing of eidetic imagery. Such eidetic images do occur and thus are logically possible. Whatever might be the relationship between neural states and eidetic imagery, we may claim a functionally equivalent relationship - 'projection' - to obtain in ordinary perception. Despite our ignorance concerning 'projection', we may develop the theory of Agnostic Idealism based on our E.I.O. perception.

Objection 4. Self-Refutation ObjectionObjection 5. Uncheckability Objection

Having thus dispensed with three objections, we must now turn our attention to the more difficult Self-Refutation Objection and Uncheckability Objection. These may be dealt with together, since they both concern themselves with how one might perceive the world from behind an impenetrable barrier of 'imagery'. Objection 4, the Self-Refutation Objection, is that the premises of the Argument from Externality require for their discovery that we should be able to see the equipment without which they cannot be made; yet the conclusions drawn suggest that such seeing is not possible. Hence, the argument refutes itself.* Well, were we to have reached the conclusion that seeing is impossible, then we would, indeed, have refuted the arguments which yielded those conclusions. The question we have to consider is whether Agnostic Idealism allows the seeing required for the determination that there are such things as objects, eyes, light rays and the like. Objection 5, the Uncheckability Objection, also leads us to question the possibility of seeing things, within the terms of our theory. This objection is that inferences may be checked, yet the postulated inferences from perception-proper would be uncheckable.

*Hirst makes this point. Having outlined the Representational Theory, he says of "the theory seems to imply itself for if it were true we could not discover the truth as to what it is like." (The Philosophy of Language, p. 11)

Hence there can be no such inferences.

To answer these objections, we must return to the E.I.O. perception story. We have accepted that an E.I.O. perceiver is able to function almost as well as before the loss of his ordinary visual perception, and he does so by means of his eyes. Is he debarred from finding out by means of his E.I.O. perception, facts about the world? We have concluded that he is not. He is able to form his eidetic images and infer from what seems to him to be, to what is. That he is, occasionally, in error, would not seem to be relevant. He will be 'taken in' by an optical mirage just as we are. But he can ascertain the locations of stationary, easily visible objects with as much certainty and confidence as us. After he has maintained a steady, unwavering image of an aircraft parked on a runway, seemingly located just over there, he is as certain as we who can conventionally see the plane, that there is a plane. Are his inferences from image to object checkable? Yes, should he wish to check up on an inference, he need only walk in the direction he supposes the object to lie in, and feel with his hands whether or not the situation he supposed obtains. That is to say, he can always, in principle, check up on his inferences from his images, by means of his tactile perception.

We can remove our theory from the charge of uncheckability by claiming that the inferences of a visual perceiver from image to object, like the inferences of an E.I.O. perceiver, can be checked by means of tactile perception.

The visual perceiver checks up on what he sees with his hands. But this is to elevate tactile perception to epistemic superiority over visual perception; for tactile perception now becomes the fundamental perceptual standard upon which all visual perception is ultimately dependent for its verification. Are we to accept this radical epistemological difference? The limitations of our undertaking preclude a full investigation of tactile perception and hence preclude a complete answer.

Perhaps the following will suffice. We may claim that tactile perception either does or does not resemble visual perception, with respect to inference. That is to say, tactile perception is or is not subsumable under an extended Agnostic Idealism theory. Suppose the second alternative, tactile perception is not via inference. This asymmetric option would seem to be the less plausible, but its supposition speedily dispenses with the problem. Inferences from 'imagery' may be checked by touch. This implausible supposition answers the two objections.

But what of the more plausible alternative, that tactile perception resembles visual perception epistemologically, each being via inference from perception proper? This supposition brings tactile perception into the fold of Agnostic Idealism where it also is liable to the Self-Verification and Uncheckability Objections. Presumably, we may still attempt to claim that perception proper is not subject to the fold. The answer is

if two modes, visual and tactile, are subsumable under Agnostic Idealism, so also are the remainder.

To answer the objections now, we must extend further the E.I.O. perception story. Suppose the E.I.O. perceiver begins to develop occasional 'eidetic tactile sensation' - these being the tactile analogue of eidetic images. He touches something, and continues to experience a sensation as if he were still touching it after he removes his hand. Can we develop a story, along the lines of the E.I.O. story wherein the subject loses his ordinary tactile perception, being left only with eidetic tactile sensations? It is by no means as easy and convincing as the E.I.O. story. The problem is that tactile perception of the locations of objects would seem to involve not only the sensations at one's finger tips but also the proprioception of the positions and movements of the fingers, hand and arm, perhaps even one's whole body. And it is not easy to conceive how one might experience an eidetic 'replay' of the complex cluster of sensations and proprioceptions experienced when one gropes for, and finally locates, the light switch in the dark. Some credibility is offered by the 'phantom limb' cases. That amputees may experience 'pains' and 'itches' in 'phantom limbs', suggests that someone might experience the tactile sensations as if he were running his hand over the surface of a table and feeling a typewriter get his hand he would lose by his sides. The most profound of these cases is without a full treatment of tactile perception.

ception. We must assume that the story is plausible and coherent.

The subject now experiences E.I.C. visual perception and Eidetic Tactile Sensation Only - E.T.S.O. tactile perception. How does he now fare at checking up on his inferences? He can no longer check any specific inference, but he has good grounds for continuing to make inferences from what seems to be, to what is. He remembers what it is like to see and to feel. He remembers also that he used to undergo the occasional eidetic image and eidetic tactile sensation even before the loss of his visual and tactile perception. This would seem to licence his inferences from what seems to be to what is. If he seems to see a chair, and if, after he seems to walk towards it, he seems to feel the chair, he may conclude that there is a chair.

But visual perceivers, with the Agnostic Idealist Theory, would have no such memories by which to justify their inferences. We must now add one final development to the E.I.C./E.T.S.O. story. Suppose a person who does not develop these strange modes of perception after a lifetime of ordinary perception; rather he is born with E.I.C. visual perception and E.T.S.O. tactile perception. Is this conceivable? I see no reason why not. If it is accepted that someone might develop such history modes of perception, it would seem conceivable that a person be born already endowed with these unusual powers.

perceiver - his 'inferences' are indeed uncheckable. All his perceptions are eidetic - there is nowhere for him to break through the barrier of images and sensations to check any of his inferences from what seems to be to what is. And yet we must concede that such a person is able, despite his being limited to an all eidetic perceptual diet, to locate objects almost as well as us. This leads us to question whether 'inference' is the word we should be using. The subject is, indeed, unable to check up on any of his perceptual claims, for he can never get behind the eidetic barrier. Yet his move from what seems to be to what is looks like an inferential move. Perhaps we can label this mysterious epistemic happening with the seemingly contradictory phrase 'uncheckable inference'.* The story as we have told it shows how the subject may locate by means of his eyes and the images they yield, objects around him. He does so by means of 'uncheckable inferences' from what seems to be, to what is.

The objections we are considering claim that inference from perception-proper is logically impossible. We have shown that a person born only with eidetic-ally perception

*This expression may seem paradoxical, but I would defend its use since it is to be applied to the eidetic-ally subject's mode of finding out about the furniture of his environment. His practice is paradoxical. He is limited within his own private world to images and sensations and functions perceptually as if he were not. He is limited to what he can see, but he can see what he cannot see.

could find out about the locations of objects. Yet the criticisms, were they applicable to visual perception, would likewise be applicable to this person's eidetic-only perception. Hence we may conclude that Agnostic Idealism does not preclude seeing. But, we now appreciate that the epistemic gulf from perception-proper to object is bridged with 'uncheckable inference'.

We may gain a little more understanding of what an 'uncheckable inference' might be, if we investigate the eidetic-only subject as he reaches a conclusion based on what he seems to see. Suppose he is in doubt about whether there is an oasis at the place where he seems to see one. He decides to walk towards it and seems to feel himself doing so. He seems to reach the first palm tree and stretches out his arm, seeming to feel the movement of his arm and the sensation in his fingers and hand as if he were touching a tree. He seems to see a pool of water, walks towards it seeming to experience walking, he bends down and puts his finger into what visually seems to be water, and experiences feelings in his finger as if it were immersed in water. From these images and sensations he concludes that he has come upon an oasis. His 'uncheckable inference' is based on the coherence and consistency of his images and sensations each of which is telling him that there is an oasis.

Using this fully developed our story of eidetic-only perception, to say, I think, what we have just done.

ive. We may use this completed story to provide strong counters to both objections. The Uncheckability Objection reminds us that all ordinary inferences are checkable. As Quinton puts it in "The Problem of Perception", "... a causal inference is only legitimate if it is at least possible to obtain evidence for the existence of the cause which is independent of the events it is held to explain."¹⁹ But this observation does not undermine our theory. We must concede that using the term 'inference' unadorned is inappropriate. But the story of eidetic-only perception gives us a clear understanding of the expression 'uncheckable unaware inferences'.

We have given a coherent account of how someone might perceive our world from behind an impenetrable barrier of images and sensations; we may further claim that all perceivers are, unknowingly, trapped behind an 'ideal' barrier; without transgressing any laws of logic pointed out to us by the Uncheckability Objection.


Our story also answers the Self-Refutation Objection. To be in a position to develop the Argument from Externalism, we must be able to observe, for example, that there is a bottle on the table and we must investigate how a blind man might find the location of that bottle using his instant relief opera. Do our conclusions preclude the possibility of such observations? Does Agnostic Idealism license these observations from which it was, in part, developed? The answers to these questions, respectively, may be derived as follows:

ows. Consider an eidetic-only perceiver. We have agreed that, despite his being imprisoned within his own ideal world, he is able to locate objects by means of his eyes. He seems to see that there is a bottle on the table and, also, he seems to see that there is a blindman who finds out about the location of that bottle using an instant relief camera. He is unaware, however, that his perceptions are all eidetic. As far as he is concerned, he simply sees that the bottle is on the table. He is unaware of the eidetic barrier behind which he is forever trapped. Ex hypothesi, he perceives the bottle, the blindman and the camera by means of uncheckable unaware inference; yet he is able to develop the Argument from Externality, just as we have. Although he only seems to see what he thinks he really sees, from these apparent observations he may develop the comparison between his own 'seeing' and the blind man's finding out. And this comparison will lead him, as it has led us, to develop the theory of Agnostic Idealism. Thus we give a strong counter to the Self-Refutation Objection. Supposing Agnostic Idealism to be an acceptable account of visual perception puts us all in the same private world predicament as the hypothetical eidetic-only perceiver. If he can develop the Argument from Externality, so also may we.

Objection 6. Incredulity Objection

One might grant that all this talk of 'uncheckable unaware inferences' and 'perception proper' is conceivable.

and yet respond to the suggestion that this is the true nature of visual perception with utter disbelief. "It's absurd. I don't experience 'imagery', I see things." We may, of course, point out that our theory anticipates such disbelief, Everyman sees, but is unaware that in so doing he experiences 'imagery' and makes an uncheckable unaware inference from it. But this hardly serves to dispel the disbelief. "Surely we are not, each of us, locked inside our own world of imagery?" "How could the world in which a person lives and breathes be composed of nothing but imagery?"

It is, I grant, hard to believe. But we have shown, at each stage of this enquiry, that deviation from the route which has led to this unexpected theory has even less acceptable consequences. We have shown how the theory survives all the objections. And still it seems incredible. To dispell some of this incredulity it must be emphasized that Agnostic Idealism does not claim or predict any alterations to Everyman's seeing, or to his concept of 'seeing'. In dealing with the Irrelevancy Objection we have shown that Agnostic Idealism is not subject to empirical testing; here it must be stressed that the theory is not to be tested by measuring Everyman's immediate and unconsidered reaction to it. 'Seeing' is Everyman's word and that to which he applies it remains unaltered. He opens his eyes and sees cows in a field, cars and people, flowers, trees and so on just as before. We do not deny that his seeing is, immedi-
ate, and direct. Simply seeing that the  on the mat is

what the ordinary everyday business of seeing is all about. What we do claim is that visual perception is more complex than Everyman might expect. There's more to visual perception than meets the eye. But no prediction is derivable from this claimed complexity which Everyman might test for himself. Seeing is still effortless and easy - open your eyes and see for yourself.

* * *

I conclude this work with an updated summary of Agnostic Idealism - based on eidetic-only perception rather than E.I.C. perception and including the points of clarification that have emerged in responding to the objections.

Agnostic Idealism -- Final Summary

Everyman sees, for example, a book on a shelf. His visual perception is as follows:

1. Eidetic-only perception is the hypothetical perceptual mode of a person born to live an all-eidetic perceptual life.

2. Visual perception is the equivalent of eidetic-only perception with zero delay time for the formation and fading of 'images'.

3. There is a causal chain from object to brain, which terminates in a pattern of neural activity isomorphic with the optical array reflected from the book on the shelf and

received by the eye.

4. This neural activity 'gives rise to' perception-proper.

5. Perception-proper consists of the subject's experiencing a 'projected' 'image' of a book and a shelf having apparent location at some distance in front of him.

6. This 'image' is the evidence from which the subject makes an 'uncheckable unaware inference' to the conclusion that there is a book on the shelf.

7. Subject is unaware of 'image' and 'inference'.

8. For him, the 'image' is the book itself.

9. In his own words, he sees the book on the shelf.

The agnosticism of the title refers to our ignorance concerning:

1. How neural activity 'gives rise to' perception-proper.

2. How an 'image' might be 'projected' to have an apparent location.

3. How a subject might make an 'uncheckable unaware inference' from 'image' to location of objects.

4. Whether equivalent relationships in eidetic-only perception are amenable to scientific explanation.

All 'mysterious' relationships or entities are defined in terms of equivalent relationships in eidetic-only perception:

1. 'image' is defined as the limit as delay times for formation and fading of eidetic image tend to zero.
2. 'gives rise to' is defined as the functional equivalent of relationship between neural activity and a subject's experiencing eidetic imagery.
3. 'projection' is defined as the functional equivalent of relationship between neural activity and eidetic image which has apparent location.
4. 'uncheckable unaware inference' is defined as equivalent of epistemic move by which eidetic-only perceiver finds out about location of objects.

This theory provides a credible and persuasive resolution of the conflict between Everyman's beliefs and the conclusion of the Argument from Externality.

FOOTNOTES

- 1 J.I. Austin, Sense and Sensibilia (London, Oxford, New York: Oxford University Press, 1962) p.8.
- 2 A.N. Quinton, "The Problem of Perception", Readings in the Theory of Knowledge, ed. John V. Canfield and Franklin H. Donnell, Jr. (New York: Meredith, Appleton-Century-Crofts, 1964) p.514.
- 3 Austin, p.117.
- 4 Quinton, p.515.
- 5 R.I. Gregory, Eye and Brain (London: World University Library, 1966) pp.68-69.
- 6 Bertrand Russell, An Outline of Philosophy (London: Unwin, 1927, 1970) p.146.
- 7 J.O. Eccles, The Neurophysiological Basis of Mind (Oxford: Clarendon Press) p.268.
- 8 John Locke, An Essay Concerning Human Understanding, ed. John W. Yolton (Everyman's Library, London: Dent, New York: Dutton, 1961) II.1.3.
- 9 Locke, II.viii.11-12.
- 10 Austin, footnote 1, p.15.
- 11 George E. Moore, "The Nature and Reality of Objects of Perception", pp.68-69 and "The Status of Sense-Data", p.187, both in Philosophical Studies (London: Routledge and Kegan Paul, 1958)
- 12 Austin, pp.87-102.

- 13 Ralph N. Haber, "Eidetic Images", Contemporary Psychology (San Francisco: W.H. Freeman, 1971) p.166.
- 14 Ibid., p.166.
- 15 Austin, p.52.
- 16 Ibid., pp.46 and 56.
- 17 Quinton, p.500.
- 18 Gilbert Ryle, The Concept of Mind. (Harmondsworth: Penguin, 1949) p.203.
- 19 Quinton, p.499.

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