PERCEPTION: A METAPHYSICAL ANALYSIS

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ABSTRACT OF THESIS (Regulation 7.9)

The general aim of this study is to give an analysis of perception via a speculative re-structuring of familiar sensory material to produce alternative possible spatial schemes. A process of considering ways in which experience might have different and grounded different forms of space is used to elicit general philosophical principles which have application to actual experience.

The first step in this project is the identification of a phenomenology behind our perceptual beliefs - a content to experience, which is in some way separable from our system of ontological commitments. As a sequel to this, the traditional division of experience into the five senses is examined. Consideration is given to the number and nature of these sense-modalities and grounds are discovered for thinking that some strong category divisions prevail within our sense-experience.

Having achieved some notion of a basic phenomenology to experience and the character it bears, a re-ordering of that material to suggest alternative spatial schemes is undertaken. Initially, auditory experience is isolated and various types of sound world that could be generated out of it are outlined. This is followed by a consideration of visual experience: the possibility of a two-dimensional visual space is discussed before turning to a more familiar three-dimensional system. After this, issues relating to the combination of material from more than one sense are dealt with and the possibility of experiencing more than one distinct form of space at once is proposed. Discussion of tactual sense is prominent in this discussion.

Out of the above-mentioned speculation, general notions of space and the nature of objects and the relations between experience and what we take to have objective existence should have emerged. These are developed with particular reference to actual experience. Attention is given to the relationship between sensory experience and the growth of empirical knowledge and scientific belief.

It is important to say a few words on the topic of scepticism. I do not expect this thesis to represent a refution of sceptical arguments against our knowledge of an external world. In its pure form, scepticism is probably unobjectionable. In the barest sense of metaphysical possibility, it is arguable that in all cases where we take ourselves to be aware of something with objective existence we could be mistaken. This is scepticism as doubt rather than as certainty. For, a claim such as that the world does not exist (as in idealism) is, ultimately, as underdetermined by the evidence (individual sense-experience) as the claim that it does exist. That one can always entertain doubt does not mean that there may not be good arguments for a realist account or that it is less rational to adopt such an account rather than any competing interpretation. It is the purpose of this study to discover what these good arguments are and to find the criteria which support a rational application of a realist interpretation to experience.

I must now turn to a crucial assumption behind the speculative form of analysis being pursued in much of what is to follow, an assumption which will have emerged from my remarks so far. I have spoken of approaching actual experience from an ontologically uncommitted standpoint. This suggests that in perceptual experience there is something prior to or distinct from an awareness of items as ontologically classified and, that there is a something we are basically aware of and which is the subject matter of our ontological interpretations: a something which would be unchanged by a change in belief about what interpretations to place upon it. All of these suggestions I acknowledge and wish to endorse. I believe that there is, what one might term, a "phenonmenological content" or, simply, a "phenomenology" to perceptual experience. And I believe this essentially because it is an assumption which accords with the intuitive facts of our experience, and because the only two alterna-

tives to this assumption seem absurd, namely, that we are never aware of anything, or that we can only ever be aware of external objects. I shall attempt to expand upon these reasons a little further.

What is important for what is to follow, is that I will be able to refer to the content of our actual experience, without being tied down to the ontology with which, in our experience, that content is associated. I need to be able to refer to sensory items like colours and shapes and sounds and tastes, without these items being taken to be the colours and shapes and sounds of external objects. It is completely reasonable that I be able to do this because such items do figure in my actual experience even though I, in fact, take that experience to be an experience of externally existing objects. They figure because I am able to distinguish them from my commitments to objects. This is easily brought out by that fact that there are occasions when we change our minds about the ontological status of something we are experiencing. In the case of hallucinations, say, we might come to realise that we were not experiencing something with external existence, having initially taken ourselves to be doing so, but we do not deny that there was an underlying experience which remained the same, beneath the two opposed interpretations.

Similarly, in the situation where we view a coin at an angle to our line of sight, although, in one sense, we are seeing something round, there is also a more basic phenomenological sense in which we are seeing something elliptical.

What I do not want to suggest in any of this is that we are never directly aware of external objects or that what we are immediately aware of in perception are mental entities. Whether it is possible to be directly aware of external objects or whether all perceiving is mediated by mental enti-

ties are questions which it is the purpose of this study to answer by careful argument and analysis, rather than to make assumptions about from the very outset. It is part of being able to make these important philosophical decisions that we be able to identify a content to perceptual experience; a something the existence of which we cannot doubt. Again, I do not mean this to imply that we can never make mistakes about the content of our experience either in terms of the character it has, or whether it is there at all. On individual occasions, I think mistake is possible but, in general, when we consider our perception we cannot question the fact that it has a sensory content.

I ought, at this juncture, to say a little about the question of our awareness of the phenomenological content of our perceptual experience. It has been common, particularly in discussions of sense-datum analyses of perception, to point out that we are almost never aware of the kinds of items the theory claims that we are (1). Rather, it has been stressed, normal experience consists simply of a direct awareness of external objects, and external objects encrusted, at that, with all kinds of scientific or proto-scientific beliefs or dispositional beliefs. With the consequence that, if asked to report upon the experiences I had on my journey to work, I would be able to say a great deal about motor-cars, houses, office blocks, telephone engineers, and so forth, yet be able to report next to nothing about colour patches, clicks and buzzes, kinaesthetic sensations or any of the other typical candidates for sense-data. In the simple situation of the angled coin, experimental evidence shows that observers are very bad at attending to the pure visual content of the experience and have a strong inclination to "see " the image presented as much more circular than it actually is (phenomenologically)(2).

All of these claims seem to me largely unobjectionable: my perceptual exchange with the world does seem to be dominated by many, high-level beliefs about external objects, and I would be hard pressed to give an account of my experience which left out reference to such theorectically complex objects. But none of this combines to entail that we are not, in any sense of "aware", aware of phenomenological items which would still have been present to us, even if (as is conceivable) we had had a different set of ontological beliefs about what we were perceiving. I believe a place has to be made in the analysis of perception for some form of subconscious or semi-conscious awareness of purely phenomenological items. Crucially, there should be a recognition of the distinction between awareness on the one hand and belief or knowledge on the other. One can be aware of something without believing or knowing that one is aware of that thing. To have an experience is not necessarily to have a belief. It may seem peculiar to suggest that we can be ignorant of or confused about what we are experiencing via our senses, but a moment's reflection should confirm this to be a truism about our perception. At any moment, just within my visual field, I am presented with a rich and dizzying assortment of visual items; I cannot possibly give my judgemental attention to all of them. In a cognitive sense, I am "unaware" of many of them but this does not mean that they do not, at the same time, form a determinate part of my awareness. We should not confuse being aware of something in this basic sense with having explicit or incorrigible knowledge of that thing. An understanding of the phenomenology of our experience is something which requires conscious effort and attention it is not an indubitable "given". From this it should be clear that my interest in perceptual phenomenology does not form part of a project to establish a completely incorrigible foundation for perceptual claims and this departs quite strongly from certain sense-datum theories such as that of Russell (3).

I can begin to demonstrate this by pointing out the shortcomings of what one might call the "theory-laden" approach (borrowing from one of its exponents - N.R. Hanson (4)). If we assume that most perception consists of being simply and directly aware of theoretical items then we are committed to one of two unacceptable consequences. The first is that it is not possible to change our theories and thus change our beliefs about what we are experiencing or have experienced. I know of no philosopher who has wanted to embrace such a claim, rather, those supporting this approach have been anxious to highlight the changing nature of our theoretical beliefs about the world we perceive around us. This view, however, leads to the second, equally unacceptable, consequence for perception, namely that the world changes with every change in theory, and that perceivers adhering to different theories live in different worlds. As a specific example of the latter, if an aboriginal primitive, say, undergoes the same journey ("same" from my point of view) as that taken by me on my way to work, because he knows nothing of our civilisation, its science, its social institutions, he can experience none of the things I experience on the same journey, in fact the whole notion of "the same journey" is brought into question. Surely this is an absurd situation to be led into simply as a result of wishing to do justice to the significant level of belief involved in perceptual experience? The absurdity is, however, easily avoidable; we can do justice to the fact that people with radically different sets of beliefs will have remarkably different experiences, whilst still holding that there is a sense in which they are all aware of the same things.

The theory-laden approach is subject to other dangers; because of its emphasis upon the belief aspect of perception - for the most part leaving us with no more than beliefs - it very easily slips into the kind of theory proposed by D.M.

Armstrong (5) and others of a materialistic persuasion, where perception is analysed entirely in terms of belief (usually as a suitable prelude to reducing perception to purely physical notions). This sort of full-blooded, belief-based account is simply inadequate. By draining all content out of experience, it affronts our intuitions about our sense experience, and leaves us with no means of explaining why we come to have the perceptual beliefs we do have, or how it is that on occasion we come to form mistaken beliefs. On this approach, beliefs are simply piled on top of, or ranged against, other beliefs. If I come to think that something I took myself to have perceived did not exist then all that has happened is that one belief I have formed I now come to believe to be false, presumably because I come to form some later belief about the existence of something- which belief is incompatible with the existence of the former item.

If this does not represent a sufficient travesty of perception for us to abandon this view, then there are two other criticisms which can be made. The first is that, without a sensory content to perceptions, we have no way of expressing what the nature of objects is,of saying what qualities they have, for, notions such as shape or colour are given to us in virtue of our having certain sensory items. It is only by actually experiencing coloured shapes prior to our belief that these coloured shapes are objects in the external world that we can have an understanding of the character we ascribe to external objects. After all, many of the beliefs someone like Armstrong has in mind are beliefs about external objects, yet, if there is nothing more basic than beliefs, we cannot say what it is for something to be one of the objects we believe in the existence of. It may be open to this kind of theorist to say that where I talk of being aware of a coloured shape as a preliminary to understanding the qualities objects have, he can simply talk about having a *belief* that there is a coloured patch. This would be to make an

awareness of coloured patches, and so forth, into the having of unanalysable beliefs. There would be no means of detaching the beliefs from the things they are about. There may be many other difficulties here; the only one I shall mention is one which applies to the belief account generally. This is the fact that, if we regard perceptual experience as simply a form of belief then we are unable to distinguish it from other non-perceptual forms of belief. Specifying the difference in terms of what the beliefs are about will be inadequate. For, if we try something like "physical objects" as the object of perceptual beliefs this will founder on the fact that we have many beliefs about physical objects which are not perceptions of those objects. If the belief-theorist asserts a primitive unanalysable difference then argument ceases and we must rely upon our underlying intuition that there is something we are genuinely aware of in perception, something more basic than objects.

That theoretical beliefs (in a broad sense of "theoretical") are almost seamlessly intermingled with an awareness of phenomenological items in perception I would not want to deny. But nor would I wish to deny that we are not always aware of the phenomenology. We may not give our attention to it in such a way as to be able to describe it or consciously remember it (there is a case for a kind of unconscious memory brought out by our ability to know that two experiences are different without being able to say how) but, at some level of consciousness, we are aware of that information and we use it as the basis of higher order beliefs. Our awareness can be demonstrated in many simple ways; if, for instance, I incline my head slightly I am aware of some change in what I experience, yet none of my beliefs about what is in front of me change.

Naturally, once we are in possession of a complete perceptual scheme, what belongs to us are high level entities, not

the basic phenomenological items they are grounded in. Consequently, the cognitive move from any given sensory experience to a theoretical interpretation of it is a rapid and largely unreflective one. This process whereby phenomenological detail becomes submerged under complex, external world beliefs can be demonstrated in terms of the following example. Imagine a person who is trained to interpret the images on a radar screen, to distinguish, on the basis of patterns of light, between things like aircraft and flocks of birds: initially he has to consciously attend to all the phenomenological details (in a loose sense of "phenomenological") of the images on the screen and then make the correct inferences. Later on he finds himself "simply being aware" of aircraft and flocks of birds, totally unable to say what particular patterns on the screen alerted him to their existence. Does his absence of mind prove that such patterns cease to enter into his experience once he attains fluent use of the apparatus? Surely not?

I hope this also indicates a positive answer to the question, "can our experiences have properties we are unaware of?" To glean the full richness of our purely sensory awareness we have to attend to it just as carefully as, in another sense, we would have to attend to external objects to fully understand them, for, fundamentally, experiencing the qualities of objects is only achieved by experiencing the qualities of our sensations. This, I think, provides a response to the so-called "speckled-hen" problem as directed against sense datum theories, namely that if sense data are subjective and incorrigible but are the counterparts of aspects of objective items then they should be as determinate as those objective aspects which, clearly, in the case of, for example, speckled hens they may not be. Although my approach favours an ontologically neutral phenomenology as part of an account of perception, it does not introduce it as an incorrigible immediately given. Awareness is essentially involved

rather than cognition. We must attend to what we are aware of phenomenologically, in the sense of "awareness" I am using here, before we can fully understand or know it. Different levels of consciousness are involved. Thus, I accept that the phenomenology that would be associated with a speckled hen would be rich and not easily comprehended and also a possible source of mistake, without denying the existence of a determinate phenomenology in such a case.

This thesis is an attempt to provide a thorough outline of, and justification for the approach to perception I favour; it cannot be an exhaustive exploration of all the issues involved. There are certain important features of our actual experience I shall devote little attention to. Most significant among these is the interpersonal element in perceptual belief. This study will be conducted entirely in terms of an individual subject of experience. It will be an account of the ways in which such a subject can come to form objective beliefs on the basis of his own individual experience, and not of the ways in which a belief in the existence of other perceptual subjects can influence an individual's objective commitments. The justification for neglecting this aspect of perception is that I assume an account in terms of individual experience to be conceptually prior to that drawing upon inter-personal information. The development of ontological commitments must commence within personal experience. It is only once a subject has a basic commitment to the existence of an external world that he can begin to form beliefs about the existence of other perceivers and to rely upon those perceivers as a secondary source of further objective beliefs. In any case, I assume it to be a matter of contingency that more than one perceiving subject exists for any particular space. We should be able to give an account of how an isolated subject could come to adhere to a spatial scheme purely on the basis of his own experience.

(1) See, for example, A. Quinton THE PROBLEM OF PERCEPTION Mind vol. 64 (1955) PP 28 -51.

(2) For an excellent discussion of this phenomenon and a justification of the phenomenological approach generally see C.W.K. Mundle's PERCEPTION: FACTS AND THEORIES O.U.P. 1971 Ch. 1

(3) As in eg. THE PROBLEMS OF PHILOSOPHY pp 1-12

(4) N.R. Hanson PATTERNS OF DISCOVERY CUP, London 1958.and see also W. Sellars EMPIRICISM AND PHILOSOPHY OF MIND in Minnesota Studies of Philosophy of Science. Vol.1

(5) D.M. Armstrong PERCEPTION AND THE PHYSICAL WORLD RKP,London. 1961.

CHAPTER ONE

THE SENSES

Having assumed and attempted to justify the claim that perception involves phenomenology as well as belief, and also that it does so essentially and not redundantly, it is important to be a little more precise about the nature of this phenomenological element as it will be used for the purposes of this study.

As I have already made clear, the function of phenomenology will be as a springboard to certain metaphysical theories. The programme involved is one of considering how different permutations of phenomenological materials would fall under distinctive objective or spatial orderings. The actual phenomenological material to be approached in this way will be that underlying our present perceptions or awareness of the world we assume to be around us. Other phenomenological material would be relevant, but this we do not have access to simply because it forms no part of our experience and we are unable to imagine it. I assume that there are no obstacles in principle to the possibility of other forms of phenomenological experience, of additional senses, that is.

The first step in the process of isolating the phenomenological content of our experience is to detach it from the full-blooded perceptions it standardly belongs to. That is to say, the sensory material we are interested in should be thought of by itself, separate from beliefs about the existence of items in the world which it normally generates. It is the visual experience we have when we see a chair, say, that is important, rather than the belief that one is seeing a chair or that a certain object in a three - dimensional space exists. Similarly, for hearing it would be the sound we hear when a bell is rung that is of interest, rather than the full

perceptual experience of "hearing a bell". Ideally, one is seeking that which one could still be said to experience if all belief in public, external objects were withheld.

This is a very "pure" account of the sensory experience required as the basis for this project; it is more than we can, realistically, hope for. In the Introduction, I have acknowledged the tenacity and pervasiveness of belief and the difficulty of trying to focus upon the bare sensations that our perception involves. Fortunately, for the purposes of what is to follow, only a fairly crude ability to differentiate phenomenology from interpretation is needed. It is not necessary that we be able to take individual acts of perception and isolate their phenomenological content. What is needed is a general awareness of the *kind* of phenomenology that underlies different senses, to have a feeling for what sights and sounds and touches and the rest are like as sensations, as well as awarenesses of things.

The difficulty of attending merely to the phenomenology of perceptual experience is at its greatest I believe where visual sense is concerned. It is not especially demanding upon the imagination to consider sounds simply as sound and not sounds *of* anything or tastes simply as taste and not tastes *of* things. It is harder to think of images and not images of things and this is probably for two reasons. Firstly, for the sighted, vision is the sense upon which we rely the most for our knowledge of the world around us; we tend to think of objects primarily in visual terms and, accordingly, all of the non-immediately given aspects of objects tend to infect our pure visual sensations of them most strongly. Additionally, the visual is the richest and potentially the most confusing of our sensory modes. Our visual images have a complexity and variation within them that is not paralleled in the sensory "images" we have via other senses. The problem is that, although we are subject to visual information all the time,

on any individual occasions we would be hard pressed to express to ourselves what we were aware of in purely visual terms - in terms of shapes and colours, say, (which I believe to be an acceptably neutral way of characterising them). We would, obviously, have no difficulty in expressing what we were aware of in terms of physical objects, but, for reasons already explored, this is not equivalent to the immediate phenomenology of experience.

One thing we are aware of is that, even when looking fixedly precisely in one direction, we are not presented with a firm, fully-defined image. Only a small portion of an image is actually in focus, moreover the area of what we, in some minimal sense, are aware of, that of what we are actually attending to, is correspondingly small. In order to identify elements of our images we have to explore them by shifting our attention around within them, as it were. Seeing is far from a passive and instantaneous process. This feature of our visual experience clearly complicates things from the point of view of locating simple visual images as the source material for the kinds of speculations I have hinted at. The situation is not hopeless, however, and we are able to obtain what we need for working purposes. Also, I shall return in Chapter 3 to these complexities of visual sense and cast a more searching light upon them. Here, I wish to appeal to a general notion of the phenomenology of the visual as essentially involving coloured expanses. I also wish to include shapes as a feature of the visual. Perhaps there can be a debate as to whether shape is an intrinsic feature of visual experience. Is the idea of an expanse without boundaries incoherent? Inevitably, the issue centres upon questions about infinity and, also, upon whether any sense can be given to the suggestions that a subject might be able to apprehend an infinite expanse. Within our experience, we can say that shape is imposed upon what we see (even a single-coloured expanse) by the limits of our visual field. This

claim requires some qualification (see my later comments in Chapter 3) but, broadly, we can accept it as given. At any rate, the issue of whether shape is a necessary feature of the visual is not one I wish to pursue. Our visual experience typically does include shape and, certainly, shape is a genuine visual feature and, consequently, I will include it in my considerations of visual phenomenology.

The phenomenology of hearing, taste and smell I take to be relatively accessible to inspection. Touch, on the other hand, presents many complications and is certainly the most intractable sense when it comes to a phenomenological analysis. I shall defer comment upon it until later in the chapter and shall, also have occasion to return to the topic in Chapter 4.

Inevitably, I have made reference to "the senses" in my remarks so far and this notion itself requires some examination. Traditionally, perceptual experience is divided into five areas of sight, hearing, taste, smell and touch; occasionally, others are proposed such as kinaesthetic sense. The actual number of senses is less important than the fact that there are such divisions at all. The fundamental idea is that experience breaks down into radically different areas, which are demarcated by the nature of their phenomenological content. Thus a sound and a taste are taken to be quite different in character (although both are sensory items); they belong to different categories and one could not possibly be mistaken for the other.

(i) A CAUSAL DEFINITION

I assume that, when people talk of sensory experiences or items belonging to different sense categories or sense "modalities", they mean that this is as a consequence of the basic content of the experience and not of some extrinsic

factor, such as causal origins. For, it might be possible to mean by "a sound" simply "an experience causally connected with the ear". Accordingly, the claim that there are a number of senses would be dependent upon the existence of certain sense organs. It seems to me that this is not what people mean when they assert that there are certain sense categories and, furthermore, they could not mean such a thing.

There are at least two good arguments against a causal account of the senses. In the first instance, a causal view does not accord with the way in which we actually decide to which category an experience belongs. We are not in any way involved in checking, for any given experience, what its bodily basis is. Imagine the potential difficulties of performing such an operation. A further telling argument arises from the fact that, if the only reason for postulating different senses is that there are a variety of physical origins for sensory experiences, then we possess a large, possibly unlimited number of different senses. Virtually every part of the body's surface can be responsible for sensations, surely each such part should be a sense-organ? What criteria could be used for grouping such parts together into a less numerous set of sense organs? Equally, one might argue, on this basis that all sense experience is touch experience, the body being just one sense organ, with some of its surfaces being sensitive to disturbances in the air, others to photons; others to grosser physical impingements and so on.

If we reflect upon it, it is only because experience does break down into discrete areas on the basis of its phenomenology that we are able to establish the causal connections we do. If all sensory experiences arrived "unmarked", as it were, by any distinctive character it would only be in the case of more enduring experiences that a causal link could be determined. We would need enough time to "interfere" with the sense organ to establish its role in

producing the experience. At most, on the basis of such a theory, we would be able to infer that all future experiences of *exactly that type* were mediated by that particular bodily part or sense organ. Whereas, in actuality, because all instances of a given sense category are united by some common feature, we are able to attribute previously unexperienced instances to a particular sense organ, once a connection has been made between that organ and the sense category in a general way.

Proving that the sense-modality breakdown is one of phenomenology rather than contingency might seem rather unimportant and I would concede that its significance is limited in terms of the main thrust of this thesis, but it is by no means an irrelevant issue. The raw material of this study is phenomenology and phenomenology divorced from ontological commitment (and causality is a part of that interpretative overlay). Consequently, we need to give some consideration to the character of that phenomenology (our phenomenology as human perceivers). This is especially necessary as this phenomenology may possess formal qualities which affect the ontological possibilities which may be drawn from it. The sense category distinctions are crucial in this respect for, as we shall see in Chapter 4, if they genuinely exist then they pose certain difficulties in terms of accounting for how unitory objects in a single space can be apprehended via different sense modalities. In some ways, the task of giving an account of actual experience and the objects we take it to yield knowledge of would be much simpler without the assumption of sense category divisions.

Because the phenomenology of our sense experience has implications for ontological constructions out of it, some reasonably serious consideration has to be given to it. My remarks thus far have indicated that there is a prima facie case for the existence of sense categories. Causal analyses

of this distinction seem inadequate and we need to ask ourselves if there is not some other way of accounting for it which does not involve the postulation of radical discontinuities in the material of experience. The most obvious way of achieving this would be to claim that all sense experiences belong to the same qualitative domain but that they break down into groupings of closer similarity. So that, for instance, although sounds are not categorically different from coloured patches all sound experiences are much more like each other than they are like, coloured patches. Much as reds and blues are the same kind of thing, qualitatively but can, at the same time, be seen as constituting distinct groupings.

It is difficult to know how to evaluate such a claim. We must all feel that sounds and images are very different kinds of experiences from each other and much more so than reds are from blues or high notes are from low notes, yet how do we deal with the suggestion that this is really a matter of degree? One natural response to make is that it is at least curious that experience should fall into these restricted groupings and that there should not be the full range of possible experiences such that the difference between "types" of experience would be minimised. In other words, if the proposal under consideration is correct, one would expect there to be experiences which were not clearly of one particular sense category or another. If such circumstances prevailed, one could see how a claim for strong category divisions within the phenomenology of experience would be baseless. Such circumstances do not prevail, however, and, on the basis of what we experience within the putative sense divisions, it is impossible to imagine what such a state of affairs would be like.

We can emphasise the above observation by exploring in greater detail some of the features parts of our sense expe-

rience exhibit. Two senses in particular possess an underlying formal structure which is interesting from a conceptual point of view but which helps to add weight to the idea of those senses as truly independent categories. Colours and sounds are not just areas of experience possessing diversity whilst also being bound together by a similarity about which nothing more informative can be said than that all colours and all sounds are just "similar" in some inexplicable way. Rather, one is able to say that all colours or all sounds are ordered in respect of each other. For colours we have the colour circle and for sounds we have the tonal scale of pitches.

Thus, these senses do not consist simply of a cluster of possible instances, all somehow similar to each other yet in no specific way with none more closely linked than others. Instead, the similarity that holds admits of gradation. One sound may be closer or more similar to another, albeit distinct, sound than it is to some third instance and the same is true for colours. All possible sound or colour instances can be located upon a comprehensive scale expressing their relations with each other.

(ii) SOUND

For sound we have the linked scales of pitch and loudness. Any given sound, of its very nature, must be some degree of pitch and loudness. It is inconceivable that there be a sound which lacks any determinate pitch in the sense of its standing between other sound types in a "higher than" "lower than" relation. Equally, if a sound exists it must have some given loudness or volume; it must be "louder than" or "softer than" other possible sounds. Consequently, for any point on the pitch scale the full range of loudnesses is possible, and, equally, for any degree of loudness there can be any pitch instance.

Frequently, timbre is cited as a third intrinsic quality of sound, but this is open to some question. From a scientific point of view, timbre can be analysed in terms of pitch. The particular timbre a sound has is a direct function of the tonal properties of the sound. Any sound, as well as its primary pitch, also exhibits a collection of subsidiary pitches, a sequence of overtones. It is the particular intensities of these that give the sound its characteristic timbre. We are, however, approaching sound from a phenomenological orientation and the above reduction of timbre to pitch is not conclusive. Nonetheless, the overtone sequence is not purely a scientifically detachable phenomenon but one which we can experience. With a little attention, the pitch constituents, of a given timbre can be discerned.

If timbre were to be taken as a genuinely independent quality of sounds, then there would be difficulties from the point of view of proposing a formal structure like those of pitch or loudness to unite and interpret timbres. It is not at all clear that different timbre instances occupy a specific, undeniable ordering. Certainly there is no such structure ready to hand. Powerful attention to the phenomenon of timbre might reveal this structure, but, on the balance of the evidence, the sensible course is to deny the separate existence of timbre and to opt for its analysis in terms of pitch.

When I speak of a formal structure underlying a phenomenological area, as with pitch and loudness for sound, this is meant in a strong sense. These scales or orderings are in no manner accidental or contingent, they are intrinsic to the phenomenological items concerned. Pitch and loudness exhaust the nature of sound (as do hue, brightness, and saturation when we come to consider colour). The ordering that sounds are placed in is not an arbitrary one. Although people may be introduced to the pitch scale in a didactic way,

it is not of its essence a convention. In such a situation, one is not simply learning that, as a matter of convention or custom, certain types of sounds are placed in a certain arrangement; "this next to this, this next to this" and so on. Rather, one is learning that one sound *should* be so placed. The ordering expresses the inner nature of the sounds. The learning situation should produce a *recognition*. One clear indication that this is the case lies in the fact that a subject, once the system has been illustrated to him, can go on to apply it for himself to fresh examples. Different pitches from those taught to him may be related to existing ones in a way which does not involve guesswork and which, most significantly, conforms to the judgements of other subjects.

The fact that I mention a learning context at all, given that a subject could work out the system for himself, is because this is, in fact, the most likely way someone would come to apprehend the pitch sequence. This further enforces the point already stressed that although phenomenology is basic and prior to ontology this does not entail that the subject has infallible or exhaustive knowledge of it. This applies to the basic awareness of the material experienced, to the immediate "feel" of it but, certainly, also, to the formal properties that it embodies. We cannot expect the complexity of the pitch scale to be instantly comprehended from the experience of a single sound or even a cluster of sounds.

Despite these comments, there might be some who are still sceptical about the "intrinsic", "a priori" or "logical" nature of the formal structures we are considering. Criticism can arise from two quarters; one empirical the other more philosophical.

On the empirical side, the existence of the phenomenon of tone deafness can be taken as a counter-example of the claim I am making. There appear to be some hearing subjects

who fail, even after tuition, to make the tonal distinctions which I have claimed are intrinsic to different sounds. This might be taken as evidence that the tonal structure is an arbitrary imposition upon the phenomenon of sound. (It is possible, of course, to short-circuit the whole problem by claiming that a tone deaf person simply hears exactly the same tone where the non-afflicted hear different tonal values. This solution is a little too cavalier and it is more interesting to assume that tone-deaf subjects hear qualitatively the same sounds as other subjects yet fail to discern a scaled ordering to them). There are two responses to this interpretation of the problem however. One is that an explanation is then required of how those who succeed in operating with this allegedly artificial system manage to do so and, especially, of how agreement between different subjects arises. The other, more hard-headed, response derives from consideration of the fact that there are lots of areas where we do not take the failure of a subject to recognise or acknowledge something as a refutation of the reality of that thing. In logic or mathematics, we do not regard the failure of a student to master a particular proof as a refutation of that formal truth. Nor, in the perceptual realm, do we regard the limitations exhibited by the fully deaf or blind as bringing (necessarily) the properties of sound or colour into question.

The more philosophical argument can be seen as a development out of these considerations. Firstly, it can be argued that the rejection of the phenomenon of tone-deafness as representing a challenge to the principle of tonality as a real feature of sound depends too heavily upon inter-subjective evidence. That is, a complete ontology including other observers is being presumed in the process of, supposedly, examining the character of basic experience as possessed by a single subject prior to any such ontological interpretation. In the present context, however, this objection is not

really valid. The features of tone or hue are not essential springboards for the generation of an ontology from a phenomenology and so circularity is not involved. It is true that the existence of such features may affect the exact nature or "shape" our ontological constructions may take, but they are not crucial to determining whether an experience is of objective existents or not (as we shall see in detail in the next chapter).

A second, more radical argument operates, even on the presumption of inter-subjective data. This is the claim that there is nothing to be preferred in the concerted recognitions of one part of the population against the corresponding denials of another part of the population: there being no reason why the scale of the agreement should inspire respect in itself. All that we have, it could be claimed, is the simple phenomenon of agreement (and even that is open to challenge) either between subjects or between different occasions for the same object, not a proof of an underlying, metaphysical backing for such judgements. In some ways this is traditional scepticism but we find, I think, a sophisticated modern version of it in Wittgenstein's writings, on rule following in general and with specific reference to number in REMARKS ON THE FOUNDATIONS OF MATHEMATICS (2) and to colour theory in REMARKS ON COLOUR (3). Clearly, this is not the place at which to confront all of these issues, but I should like to state that the claim that language is a "game" or convention does not proceed with the facility it is sometimes assumed to do. There are persistent difficulties attached to the idea that harmonious linguistic usage may have nothing to do with an underlying commonality of experience or understanding. A good illustration of this is provided by Bernard Harrison in his book FORM AND CONTENT (4) where he considers the largely unchallenged claim that significant differences in people's colour experience would not emerge in deviant language usage. This is the traditional proposi-

tion that I might see red where someone else sees yellow but that we would both use the same descriptive terms for these different experiences because of the public nature of language learning and the consistency of the divergence of experiences. Harrison points out that things cannot be this simple. Colours have an internal complexity and corresponding linguistic consequences, which mean that there is the possibility of establishing that different observers see different colours (in a phenomenological sense) even although they agree in the naming of their experiences. In the example just given, for example, there are general features of reds and yellows as properties which prevent them from being interchangeable without doing violence to other areas of language. Reds are generally darker than yellows with the consequence that queries about the shade that is seen should elicit a discrepancy of reply. Of course, it might be that the hue character of yellows and reds be consistently inverted also but this would throw up discrepancies elsewhere - as in comparisons with other hues.

In a similar way I would argue that our language of pitch and loudness is more deeply rooted in the nature of sound experience than talk of following a convention would suggest. There would be genuine problems about taking the notes associated with the current piano keyboard and re-casting them in a different ordering. For one thing the recursive element of pitch identification would be lost; it would be impossible to locate a previously unheard note in the "higher/lower" sequence . Linguistic conformity between language users would break down at this point. In general, we should be more impressed by the ability of one group of people to consistently make a whole range of distinctions than by the failure of another group to make any distinctions at all in the same circumstances. Of course, secondary reinforcement can be given to the capacity to order sounds at the phenomenological level by higher level empirical evidence. The pitch se-

quence, for instance, has a physical correlate. (It is worth noting however that this is not simply the case where hue perception is concerned. There is no constant one-one correlation between light wavelength and perceived colour (5))

All in all, we have every reason for saying that the formal orderings of pitch and loudness reflect the inherent character of sounds. These relationships express the very essence of sounds. A sound would not be the kind of thing it is, from a phenomenological point of view if these relations did not hold. It is part of the *character* of a sound that is a B flat that it is higher than an A and this notwithstanding the fact that certain individuals who clearly have auditory experience fail to recognise such orderings.

There are some general points we should note about the formal structures of pitch and loudness. Both represent linear scales. The sequence of pitches or loudnesses does not repeat such that, taking any point on the scale, one could pursue the sequence in either direction and eventually arrive back at that point. Both sides admit of unlimited graduation. There is not a finite number of pitches say. The scale we are familiar with from Western music with its semitonal intervals is arbitrary to the extent that it breaks up the tonal continuum, although non-arbitrary to the extent that it does recognise basic formal features of sound. That there is such a potential infinity of tonal distinctions does not, naturally, mean that we in fact do or could discern such a range. Similarly, there is a cut-off point in terms of the extent of the scale that we perceive: there are notes which are so high that we cannot hear them. On the loudness side of things, there may be a point after which we can no longer make any more distinctions of volume. This, however, may not lead us to conclude that the possibility of sounds higher than or louder than those we can discern does not exist, any more than our failure to break up the tonal range into more

than a finite number of steps imposes limits on the number of tones there can be.

All of which may seem peculiar given our phenomenological foundations. Surely, sounds and the like are just and whatever are experienced and it is contradictory to find ourselves committed to a whole plethora of entities with no place in our experience? This, however, is not the case and there is an important point to be made here. For, although our starting point is raw experience, the particular instantiations of it may point to possibilities beyond that actual input. Thus, in discovering the formal structure of tonality for sound on the basis of sounds actually experienced one realises something about the possibility of what sounds there may be in the abstract. It is not that one becomes committed to the idea that it is possible to experience an infinitely graded or unlimited range of tones, rather that such a range is conceivable and no particular instance can be ruled out. If we take the experience of two separate tones however close in pitch, how can we know that there cannot be some intervening, intermediate tone? Our experience will consist of countless situations where two tones are subsequently divided by some third experienced tone. What could there be about certain intervals which precludes the possibility of an intervening note?

This reinforces the general point that the account of perception I favour, although phenomenological in orientation, does not postulate a passive process of accumulating single undigested sensations. To arrive, ultimately at an objective scheme, a subject must attend to the basic data, extract its formal qualities and recognise the relations which hold between different parts of it. A process of conceptualisation goes on and this from the earliest stages. Long before objective notions become relevant, at the stage of phenomenology qua phenomenology, general or abstract notions

are warranted, notions taking the subject beyond the bare particulars actually experienced.

Without labouring the point, we can see that the pitch and loudness orderings capture and exhaust the nature of sound experience as given, but also go beyond that actual experience and dictate possibilities or introduce concepts which may find no confirmation in actual experience.

One difference, perhaps, worth noting between the pitch and the loudness scales is that the loudness axis must have an origin, in silence, that is, whereas, the pitch line can have no logical starting point any more than pitch or loudness can have a natural end-point, although remarks, supra, about the realities of what is actually discerned apply here.

Before closing discussion of sound and its formal properties, we should, perhaps also note that our conventional scale system for pitch also makes explicit other intrinsic features of sound. Here, I have in mind the octave repetitions and the relationships between other intervals. Clearly, I wish to suggest that there is something substantial about these affinities and not merely stipulative.

(iii) VISION

Let us turn now to consider visual sense and its formal, underlying properties. These have already been mentioned as hue, brightness and saturation. In a general sense, I assume that many of the arguments relevant to sound experience have application also to the visual. Consequently, I shall not argue the case against scepticism in terms of the visual relations at issue. I assume the scales of hue, brightness and saturation to express real features of the visual. Together, they exhaust the colour aspect of the visual ("colour" to stand for the combination of a particular hue

with a particular degree of brightness and a particular level of saturation). Thus, it is not a contingent or arbitrary matter, for example, that orange is closer to red than it is to green. We could not operate such a re-ordered version of the colour circle.

As before, the fact that these relations have a strong or "logical" status does not entail that they are immediately obvious. There is a genuine sense in which the colour circle represents a discovery about colours or hue, albeit of a conceptual rather than factual nature. Similarly, one might be confused about the relationship widely separated hues had with each other in terms of other intervening hues. One can easily see how this could be resolved by the introduction of the colour circle. Its continuum of shades relates all actual and conceivable hues to each other with a logic that is undeniable.

Again, although depictions of the colour circle are determinate and finite in their nature, the colour circle is essentially a conceptual structure. We have to accord it infinite gradations. Even though we can experience or distinguish only a certain number of shades, we cannot theoretically delimit the range of distinctions. As with the pitch scale, we have to conceive of a stepless flow of shades.

One interesting difference between the hue scale and those we have already examined in respect of sounds is that, where the latter are linear or polar in structure, the hue scale is cyclical. Rational pursuit of the variations of shade in either direction will lead back to the original shade. Also we, should note that although the brightness or saturation axes extend in opposed directions, in the same way that the loudness scale does, they are bounded at both ends. These scales find a natural termination in blackness and whiteness and greyness and pure hue, respectively.

Because of the delimited character of the colour relations (in extent not gradation) it is possible to represent all three in a single model. This is a three dimensional figure consisting of two cones brought together in a diamond-like construction. The colour circle exploits the circular aspect of the structure; the opposed poles represent the black and white of the brightness scale, and the saturation range can be played out by movement from the surface to the centre of the figure. Apart from being a satisfying means of capturing the relations in question, this figure reinforces a truth that we must not lose sight of in our analysis, namely that hue, brightness and saturation exist as part of the unity that is colour. The separate relational scales link in individual instances of colour. A given brightness can unite with any point on the hue or saturation scales and this is correspondingly true for any hue or given saturation in respect of brightness or of each other.

As with sound, we have located a strong conceptual structure behind the phenomenon of colour but, in contrast with the position arrived at for sound, this structure does not exhaust the full character of the visual - for there remains the property of shape. One can argue about whether all visual experiences necessarily involve shape but, as a fact we do experience shape. Consequently, we have to give some consideration to the visual quality of shape and, specifically, to whether it admits of analysis in terms of a relational structure of the sort we are by now familiar with.

A moment's reflection will tell us that we do not have some ready-to-hand property such as hue or saturation which relates all possible shapes to each other in some scaled or ordered way. We cannot take this linguistic deficiency by itself as proving that such relationships do not exist between shapes. Indeed, we must all intuitively feel certain shapes

to be "closer" or more similar than others. And, similarity and degrees of it is central to the relations we have been considering up till now. Is an oval not more like a circle than a square? The problem is that although there will be many such cases where a confident judgement of similarity can be made there are many where it cannot and there exists the difficulty of generating a rigorous structure which relates all shapes to each other and which quantifies their degrees of similarity or proximity. Devising such a system would be no small undertaking and I do not propose to fully attempt it here, but I would like to indicate the form it might take.

Such a scheme would be based upon the notion of linking up shapes by sequences of intermediate shapes differing from each other only in the most minimal way. We would have to have the notion of one shape being transformed into another by a series of infinitessimal modifications of it. To articulate the system properly would involve mathematical concepts and would accordingly be an idealized account of the empirical source material, but this is no objection to it. If we think of a shape being a line of contiguous points which meets with itself so as to enclose an expanse of space or, strictly, colour (leaving out questions about the character of the space involved) and a point of as being dimensionless and if a line is conceived of as being composed of an infinite number of such points, then we can move to a consideration of how the location of the points of such a line can be changed so as to alter the shape that the line creates. We ought to be able to see ways in which there could be more and less radical changes of a given shape. A completely radical change would be one where every point forming the outline of a shape would be moved - movement being expressed by the points being plotted onto a background, a grid. A less fundamental change of shape would involve a relocation of only some of these points. Of course, where we are talking

of an infinity of such points it is difficult to talk of smaller numbers of points, because, even where only a part of the line is moved, an infinite number of points is involved. Perhaps it is simpler to speak of the line and parts of the line forming a shape rather than the theoretical essence of that line - its sequence of dimensionless points.

An even more useful simplification, might be that of conceiving of the line involved on an analogy with a totally flexible loop of string or wire. With a notion such as this in mind, we can see how there could be alterations to the shape the loop constitutes at any time. If we use such an analogy, we reinforce the finite properties of the outline of the shape (even if it is capable of infinite division), and can recognise the effects of alterations to parts of the line upon the rest of the shape. At the same time, from the point of view of the theoretical analysis, we could assume the outline of a shape to be elastic and imagine changes which produce no realignments elsewhere. It is only space, simpliciter, that we are concerned with, not size or other quantitative notions. However, while bearing the above options in mind, it is perhaps easier to conceive of modifications being made along the lines of those to a loop of fixed size. We can see how some modifications would be more radical than others. Certainly, we can think of how there exists, for any given re-shaping of the loop, a more minimal modification of it in a shape intermediate between the original shape and the subsequent reshaping. As with previously discussed qualities, we can see how there is a potential infinity of shapes, because, for any two distinct shapes there is a possible intermediary - from which insight an infinity of shapes can be generated. What is actually experienced is, as ever, a different matter. From the idea of the loop being altered via such minimal alterations (ideally infinitessimal variations producing a "flow") we can see how one shape could be transformed into any other, in an ordered, logical fashion.

We can see how there is a sense in which all shape instances can be linked together in terms of a scale of such instances, an underlying structure, much as for the other properties of visual items.

Is this adequate to establish the structure we are looking for? One obvious area of doubt derives from whether we imagine changes of shape to occur along the essentially physically determined lines of a rigid loop, or whether we imagine shapes being related to other shapes via a series of intermediate shapes which involve alterations to the dimensions of the original shape - an "elastic" loop - in other words. As a demonstration of this difference in approach, we can take the example of a square being transformed into a circle. Where the line involved is taken to be of fixed length, any operation to curve any one of the sides would necessitate a convergence of two of the connecting sides. Where, however, the outline of the square is taken to be elastic in nature it would be possible to curve one of the sides without any alteration to the alignment of the existing sides. The possibility of these distinct modes of transformation presents us with competing "routes" from one shape to another, and this, clearly, is a challenge to the unitary nature of the ordering that shapes are claimed to conform to.

It does not seem legitimate to rule out the latter alternative on the grounds that a shape has to retain its original dimensions through change, because, as we have said, shape seems to be a clearly distinct property from that of size (which I would assert is a purely relative notion). Rather, we should acknowledge this possibility and consider any other ways in which there can be alternative transformations and consider what consequences this has for the relational nature of shape. One obvious way in which there can be another form of divergence to plotting the range of shapes that exist between one shape and another can be most clearly

demonstrated by taking the case of an asymmetrical shape in relation to any other shape. Where a symmetrical shape such as the square of the previous example is concerned, one can argue that it is an issue which side is modified first as part of the shape's transformation into another shape, such as for example a circle. One might say that there were four separate "routes" from a square to a circle, depending upon which of the sides was altered first. A counter to this, however, would be the claim that the four variants were only trivial departures from a single route. There could be said to be four routes, only on the basis of the square being viewed relative to a fixed background against which it is possible to identify distinct sides of the square. Viewed purely by itself, as a shape, which particular side is varied first ceases to be an issue (the notion of particular being rendered questionable). The series of shapes between a square and a circle is unique (setting aside the rigid/elastic bifurcation just discussed). With an asymmetrical shape, however, this is not the case. Viewed from an intrinsic, shape perspective there *is* a genuine difference between a range of "transformations" commencing from one side of the shape and those commencing from another. If this is accepted, then we have to acknowledge the existence of any number, literally, of "shape routes" between an asymmetrical shape and any other given shape. The question must, then, be whether this completely invalidates any claim that shapes are related to each other in quite specific ways.

A little reflection should show us that the scaled nature of shapes does not have to be rendered questionable by the above discovery. For, although there may an infinite range of routes between one shape and another this does not mean that such a range includes *any* conceivable route, or routes involving every possible shape. Although infinite in number, the routes involved are of a fully determinate nature; they will have a quite specific quality determined by the princi-

ple of minimal modification already mentioned. This still means that shapes are linked to other shapes in a rational rather than arbitrary way but that the links are no longer the unitary axes they have been for qualities considered hitherto. Rather, shapes will be linked upon a huge, unimaginable network of linear connections - strings of shape variants - involving divergent routes to identical conclusions as well as unique pathways from some shapes to some others. We can expect the network to be cyclical rather than polar. We would be able to trace routes from any shape through other shapes and eventually back to the original shape, without purely reversing the route followed.

This cannot be considered more than a sketch of what a system of relations for shapes might be, but, it goes some way towards giving formal support to the intuition that there are degrees of similarity/dissimilarity between different shapes. In the final event, it has to be said that whether shape is susceptible to the kind of analysis that applies to colour is not crucial to the purpose in hand. As aspects of visual experience, colour and shape are inseparable. There may be a question as to whether colour implies shape, but certainly shape implies colour. The above proposed scheme for shape may break down, but for any shape to be seen it must have some properties of colour and, thus, become bound into the system of hue, brightness and saturation relations we have discussed. Consequently, the comprehensive nature of these relations in respect of visual experience is not challenged and they remain a contentful and potent way of defining the sense in question.

The more thorny issue that now faces us is that of what can be said of the remaining sense categories. For sight and hearing, we have been able to break into the brute fact of an item being visual or auditory, and reveal certain more specific defining properties with a relational structure be-

hind them. This has largely been achieved by taking a closer look at qualities we ordinarily acknowledge in our talk about these senses. When we consider the remaining senses, however, the available qualities in normal discourse do not seem to contain the same potential. The problem stems from the restrictedness of general properties for the senses in question.

(iv) TASTE AND SMELL

If we consider taste, for instance, although there are general descriptions we use of tastes, descriptions which apply to a range of clearly distinct tastes, they do not seem to be fully generalised, in the sense that all tastes, necessarily, fall under them. Sweetness would be such a property. A whole range of different tastes - oranges, mints, chocolate, coffee - can possess degrees of sweetness, but equally well they might lack any degree at all. That sweetness is a property which admits of degrees is interesting, however, if we consider the foregoing discussion.

Perhaps, the shortcomings of sweetness as a defining property can be remedied by taking it in conjunction with its traditional opposite, bitterness, which is also a graded property. Linking the two properties into a single scale has the advantage of being much more comprehensive than either taken singly and produces a property range which becomes a plausible candidate for a defining property of taste. Despite this, it is not fully inclusive for there are tastes which cannot properly be said to be any degree of sweetness or bitterness - what would one say of potatoes or cheese for instance? The obvious response to this difficulty is to exploit the fact that if bitterness and sweetness are to be united in a single scale of instances there must be a transitional point between the two extremes. It does not however

seem to be necessary that there be a neutral point on the scale: we might simply have a straight "flip" between one quality (bitterness or sweetness) and the other but, certainly, there is room for the inclusion of an intermediate step. Unfortunately, such a move might seem like a spurious way of conferring universality upon the, putatively, related qualities of bitterness and sweetness. This is because such a claim can be interpreted as stating no more than that all tastes are either, bitter, sweet or neither which, of course, in no way establishes the universality of a bitter/sweet property range.

It may be that there is a way around this problem and that a non-trivial property scale can be discerned which unites all of those experiences which we classify as tastes. I do not propose to pursue such a quest, however, and perhaps the only fair thing to conclude at this juncture is that we have no particular reason to believe in a unifying property for taste, although we cannot rule out the possibility of it.

If we switch our consideration from taste to the closely related sense of smell, we will encounter many of the same difficulties. There do not seem to be any commonly accepted properties which have the all-embracing nature we have shown to be necessary as far as defining or constitutive properties of sense categories go. Again, although a source of difficulty, this deficiency is not in itself conclusive proof that there are no such properties to be found for smell. One point worth mentioning here which has some tangential interest is the relatedness of taste and smell. The most obvious connection to mention is the familiar one of causality. As a heavy cold will confirm, the range of gustatory sensations available solely via the tongue, which is normally held to be the sense organ for taste, is very limited. The richness we normally associate with taste experi-

ence is supplied by the olfactory dimension of what is placed upon the tongue. In other words, it is the stimulation of the taste buds in combination with the nose which produces the usual range of tastes so-called.

As has been stressed sufficiently already, such causal information is logically posterior to the phenomenological material we are concerned with and, consequently, irrelevant to present considerations of sense divisions. For, even if taste and smell have a sense organ in common (as is the case for certain taste experiences) this does not entail that the *content* of taste and smell is the same. It might well be that taste and smell do constitute distinct spheres of experience and, certainly, this is conventionally assumed to be so. I feel, however, there is a case for saying that certain experiences are difficult to classify as being under either the category of taste or under that of smell. Certain very pungent or acrid smells are like this, I would suggest. The fact that we speak of "smells" in these cases is more to do with the absence of anything, perceptibly, in the mouth, than the intuitively olfactory quality of what is experienced. One feature of conventional usage which ought to lend weight to the view that there is not a radical formal divide between taste and smell, is the feature of shared descriptions. There are adjectives which we use to characterise both tastes and smells and it would be difficult to argue that all of these are being used in two distinct senses - though there are some cases where this may be true. Without arguing this point through in the detail that is required for proof, I would suggest that there are strong reasons for saying that the differences between tastes and smells have more to do with the physical origins of the experiences involved, than their intrinsic phenomenological features. That is, an experience is called a taste if there is clearly (for tactual reasons, usually) something in contact with the tongue, and called a smell if there is not.

Is seems to me that, if we are serious about evaluating perception and the claims that surround it from a rigorously phenomenological standpoint - and I have insisted that we should be - then we should not be afraid to abandon certain traditional or common-sensical claims if they conflict with such an approach.

It almost goes without saying that there is no immediately suitable property of smells for the development of the kind of comprehensive system of properties which has proved so interesting in the case of vision and hearing. The fact that there are so many shared properties where taste and smell are concerned ought to indicate that the introduction of smell does not extend the range of available properties significantly. I propose to leave these two senses (if, indeed they are "two") at this incomplete stage, for the reasons mentioned at the beginning of the chapter and which I shall return to a little later.

(v) TOUCH

It falls to us to conclude our review of the sense modalities as traditionally conceived with a consideration of the remaining sense, that of touch. In many ways this poses more problems from the point of view of analysis than the hitherto considered senses. This is primarily because touch does not receive the same kind of acknowledgement in conventional thinking that the other senses do. One way in which this can be expressed is in the lack of a direct object of awareness for touch. There are not "touches" in the way that there are images or sounds or smells or tastes. There are things which one is said to feel via the sense of touch, but these are physical, external objects, and not things which one could easily think of as existing even if belief in an external re-

ality were withdrawn. Although images, sounds and the rest are often taken to refer to items which have objective reality - an extension of the basic sensory object - I would suggest that it makes sense to speak of experiencing a sound without that sound being the sound *of* anything, in a sense implying existence, or that the sound itself is an external item (whatever that might be). Because we do not have an accepted term covering all touch experiences, we invariably talk in terms of particular external objects as the objects of a touch experience. We are left without a term to serve as an intermediary between a subject or a tactual experience and objective reality. Accordingly, our statements about touch have an inbuilt ontological commitment. We always seem to be experiencing (feeling) books, cups, cloth, water and never just "touches".

One response to this feature of talk about touch would be to say that touch does give us direct, unmediated contact with physical objects and that there is no phenomenological dimension to touch. This would have the consequence of making touch a completely veridical mode of perception and this is something which is, surely, unacceptable. Tactual mistake is perfectly conceivable, and frequently happens. Dreams can include tactual sensations and no-one would want to suggest that, in virtue of being tactual sensations, these guarantee the existence of the objects they seem to be sensations of.

There are also well-chronicled examples of hallucinatory or illusory tactual experiences - the so-called "phantom-limb" experiences where subjects feel themselves to be in possession of parts of the body which they have actually lost. (Although this might be "touch" in its broad sense as including kinaesthetic and other bodily sensations). Another difficulty with a view of touch as pure awareness of an external world is that it deprives us of anything that characterises the kind of experiences involved as a distinct

sense-category. For, where other senses are concerned, even if they are, ultimately, united by shared external objects, there is an individual phenomenology which creates the distinct categoreality of each sense.

If for no other reason than that tactual error is possible and that a plausible account of such errors requires that something have been experienced in a phenomenological sense, I shall assume that touch is not an incorrigible form of awareness of the external world. I shall assume, that is, that there is a genuine sensational dimension of touch which would remain in the absence of ontological commitments and, in any case, does persist in situations of error or illusion. Tactual experience is not "colourless": there is something about an experience which tells us, even if the experience is identified with an aspect of a real object, that it is a distinctively tactual experience. Having said this, however,it is still true, as I have already acknowledged, that we are less consciously aware of the phenomenology of touch. We find it harder to focus upon many of the sensations of touch as distinct from the items we normally take them to be awarenesses of. I cannot completely explain why touch should be more intractable in this respect than other senses, but there are certain suggestions we can make. One feature of touch worth commenting upon is the absence of an easily identifiable sense-organ by which it is mediated. The only response to a demand for an organ of sense for touch would be to nominate the entire body; including not only its external surface but also parts of its internal surfaces and, also, what lies behind such surfaces within the flesh. Not the entire body is a source, or even potential source, of tactual sensations, the brain, for instance, is insensate in tactual terms. Consequently, it is difficult to state, definitively, what is to count as the tactual sense-organ(s). The problem this poses is not, essentially, to do with locating a sense-organ - this does not have a great deal of theoretical

importance, anyway - but rather the tendency to widen the range of tactual experiences qualitatively and, also, to complicate our interpretative picture of things in such a way as to obscure the phenomenology of touch. For, where the other sense modalities are concerned, the sense-organ - the part of the body mediating the experience - is relatively unimportant and, usually, an ignored part of the perceptual experience. What is important tends to be the external items one is aware of. Where touch is involved, however, the mediating area of the body is often taken to be significant in itself for, one of the features of touch is that, in a way that other senses do not, touch provides us with information about the state of our body. A single touch sensation can be simultaneously providing us with data about an external object - its shape, size and location - and a part of our body - that which is in contact with the object - and the state it is in - perhaps indented or squashed in some way. It might even be said that not only does every tactual sensation provide us with information about the condition of some parts of our body but that, moreover, it provides proof that the stimulated bodily part exists at all. If you like, external forces acting upon the body are a constant reminder of the fact that we have a body.

That different tactual sensations tend to be associated with different parts of the body as well as with different objects clearly makes those sensations seem more disparate. In a way, they are being burdened with an added level of ontological interpretation which has the effect of submerging the sensations per se.

Furthermore, what we also need to recognise is that there is a realm of tactual sensations which do not relate to external objects at all in the above sense. There are many sensations which are normally taken as tactual, including: twinges, tics, chills, pains, which have a bodily location,

but do not indicate any particular physical influence upon the body, or even any physical condition within the body. There are, also, perceptions of heat and cold, many of which are felt, not in a restricted bodily part, but generally. Additionally, there are sensations of orientation, usually termed, "kinaesthetic" sensations. In saying this, I am not denying that many of the above sensations can also be representations of external or internal physical facts: a pain as well as being a pain may also be an awareness of a sharp object penetrating the skin for instance, it is just that there are pains which are not treated as perceptions of some physical state of things. Also, it may be the case that extensions in our knowledge convert these non-objective/physical sensations into explicit awarenesses of physical states. Thus, for instance, I might come to regard what was just a sensation in my leg as the feel of a blood clot as a consequence of an empirical connection between these two being made for me. What the existence of an area of touch experience not absorbed into physical theory means, however, is that an added level of complexity exists within the tactual domain, further explaining its relative opacity from a categorical point of view.

It might be noted, all the same, that the last mentioned group of pure tactual sensations provide the best images of what the underlying phenomenology of touch is like for all types of touch experience. A pain, which cannot be thought of as a physical object even though it is given a general physical location, is analogous to a sound where hearing is concerned - it can stand for something which could intelligibly be taken to exist even if an external world were denied. Reflection should make us aware that there is nothing exceptional about pains within the tactual realm, it is just that, of their very nature, they impress their phenomenology upon our consciousness in a way that other forms of tactual experience do not. We can expect some separable phenomenologi-

cal element to underlie all areas of tactual perception. One problem I should, perhaps, mention in passing is that the status of pains as tactual experiences might be open to question. If tactual experience is thought of as a mode of perceiving physical objects, then pains might seem somewhat anomalous. Against this I would say that we must remember that pains are physically located, in parts of the body, and perceptions to do with our body are just as much perceptions of external or objective space as those to do with other objects. I have already stated that many sensations of other objects, have a duality in that they are simultaneously informative of the state of or existence of our body. With the development of empirical knowledge, many simple pain experiences can come to be more full-blooded perceptions of physical states. Furthermore, there is a good case for saying that pains are not a special category of tactual experiences but rather a sub-species of other tactual experiences. What I mean by this is that there are not just pains, but different types of pains. There are stabbing pains, burning pains, stinging pains, throbbing pains and so on. Pains can be seen as developments or extensions of other particular types of sensation. For instance, a burning pain can be seen as related to a degree of warmth which is very pleasant, or a degree of heat which is not particularly pleasant yet not actually painful. The pain we feel when we burn ourselves is still a perception of heat, it is not a new kind of sensation nor, I would argue, is it two sensations; the one a neutral perception of heat similar to other sensations of temperature, the other a pain and thus a distinct kind of sensation. Rather, I would want to argue that pains are degrees or shades of ordinary tactual sensations which are unacceptable to us. They, for whatever reason, generate a certain attitude or disposition in us towards them. Simply put, pains are tactual sensations we do not like. I would not want to claim that this is a conclusive line of argument, but I would hold that pains have some place within tactual experience or

perceptual experience in general. They cannot be taken as purely subjective or mental items in a sense that divorces them from other perceptual sensations.

One problem that might be said to emerge from the features we have extracted from touch is that of the sheer diversity of the experience involved and this accepting the argument that there is a genuine phenomenology to all these experiences which we call touch. In terms of the preceding analysis as applied to the other sense modalities, if we ask the question whether there is some constitutive property for touch, any possibility of an answer seems remote. To start with, as we have acknowledged, the phenomenology of tactual perceptions is largely inscrutable and, beyond this, the range of phenomenological items could be very extensive - when we consider that touch is to include sensations of temperature and kinaesthetic experiences as well as those of pains and awarenesses of physical objects. There is patently no uniting property or properties ready to hand for this range of experiences and intensive scrutiny would be required to remedy this. In keeping with previous, less extreme situations, however, I would say that the absence of any conventional acknowledgement of a thematic property for touch does not necessarily give grounds for denying that one exists. At the same time, one has to say that it leaves it an open question whether there is such a property to be found for touch experiences - as presented.

One could say that the sheer diversity of touch experiences, so called, should provoke a scepticism as to whether there can be a uniting property. If we think of, say, pressure applied by an object held in the hand, and the general feeling of a low air temperature, the possibility of there being a common feature to both experiences does not seem great. What this implausibility might suggest, is that touch is something of a catch-all category or a repository for any

sensory experiences we cannot categorize under any of the other sense modalities. Accordingly we might feel that a deeper inspection of the experiences that, putatively, constitute the sense of touch would reveal two, three, or more separate sense categories. Perhaps these might have individual uniting, constitutive properties, in a way that is not currently obvious for touch as we now consider it.

Again, I do not want to pass judgement one way or the other upon this possibility. What I would prefer to do is hold open the option of there being more sense divisions that those commonly supposed, as well as there possibly being fewer then these. In putting up something of a defence for the notion of distinct categories when it comes to the phenomenology of our experiences, I do not mean to rule out all revisions of our assumptions about the senses.

(vi) THE SENSES AS CATEGORIES

Before leaving consideration of touch it is important that we make some comment upon the fact that touch is meant to give us an awareness of a physical property which we have discussed in the context of a different sense-modality, namely the property of shape. The acknowledgement of this clearly poses a threat to the notion of touch and vision being completely separate senses. It is tempting to say that, if senses are defined by the properties or objects they give access to then here touch (or that part of it relating to shape) and sight must be a single category of sense. Clearly this is not something we would normally want to claim. I would argue that the phenomenology of touch and vision are quite distinct, whilst acknowledging that it is possible to have an awareness of shape via touch sensations. Seeing the shape of something and feeling the shape of something are quite different experiences; in fact, rarely do we form an

awareness of the shape of something via a single tactile experience, a process of exploration is normally required. Obviously, there is some relationship between what we experience under the two senses, but this is not one of sharing the same phenomenological content. The question of colour is naturally a telling consideration. The notion of a colourless shape could be said to be absurd, yet we have no awareness of colour via touch.

One could argue that "colourless shape" is contradictory as a possible object for sight, but not so for touch. For any kind of phenomenological parity to be maintained, however, some kind of direct tactual analogue of colour would be needed to "fill-out" the common element of shape or outline when experienced via touch. The experience of surface or texture naturally comes to mind here. This would have the consequence that, in a situation where we both feel and look at a shape we would simultaneously have two experiences of shape; one where it is filled out or defined by colour, the other where it is shaded in by sensations of texture or surface. The shape dimensions of the two experiences would be identical, it would just be the "filling" which would be distinct.

This account has no real plausibility. The tactual experience of shape is just not like this. As I noted earlier, an awareness of shape via touch is acquired by exploration and it is largely achieved by attention to factors which have nothing to do with a simple experience of surface of a quasi visual sort. More important are considerations such as the movement and orientation of the contacting bodily parts and how much of them is in contact with the chosen object. The movement of hands and the shapes fingers have to adopt to conform to an object, it is these that tend to be crucial is determining the shape of something via touch. I would argue that what is going on here is an empirically-based operation

of translating tactual, essentially non-visual data into visual terms. From a history of co-ordinating tactual into visual experience it is possible to take a touch experience alone and form an idea of the related possible visual experience.

This is not to say that objects and shape do not figure in tactual experience, they do, not in some quasi visual way, but rather in terms of a genuinely independent phenomenological form. Providing further argument for this and establishing the complexities involved, however,is a task which is best left until Chapters Four and Five where we shall have occasion to consider the interaction of the different senses and of how they can relate to unitary objects in space. Suffice it to say at this point that the fact that an awareness of shape can be obtained through touch as well as vision does not necessitate the treatment of these supposed senses as one. They are not merged from a phenomenological point of view by the common element of shape, any more, perhaps than are vision and hearing merged by the fact that often one can tell the shape or composition of something through hearing (as when familiar sounds are involved).

To attempt a summing up of the position we have reached via the discussion of this chapter, we can say that there are only two senses where I have isolated properties which can stand as properties integral to those senses, in a defining or constitutive role. These are sight and hearing. For the remainder, suggestions have been no better than tentative, partly because I have been unprepared to devote the space necessary for conclusive results. I want to defend that decision in a moment, but, prior to doing so, it is essential to remind ourselves of the purpose of this chapter and the nature of the results obtained for vision and sound. Having accepted that there is a phenomenology to perception, the first question to ask is whether it simply consists of the

"buzzing", "blooming" confusion that William James once described it as (6), or whether there are interesting conceptual divisions within it.

Bearing in mind, also, that beyond the important objective of trying to elicit the character of the phenomenology upon which I have laid so much stress there is also the matter of the consequences that sense category divisions give rise to at the interpretative, ontological level already alluded to and to be appropriately considered in Chapter Four. Both of which considerations render attention to this issue highly desirable if not strictly indispensible to the central discussion of this thesis. We certainly seem capable of making these category divisions within what we experience and not, I have argued, on the basis, primarily, of empirical or post-phenomenological considerations. The question has been, "what is the basis of these demarcations?" One option is to say that the differences between the content of the senses is brute and simple and something which, although recognised by us, is incapable of further elucidation or analysis. At the end of the day, this may turn out to be the case for some senses, but I have suggested that for at least two senses there is an added level of analysis we can perform. In the case of visual and auditory material we are not confined to saying, "the visual is *this* (ostensive) kind of thing and the auditory is *that* kind". We are able to describe qualities peculiar to each sense which all instances of that sense possess. I have cited these properties as important because they are not contingently present in all known instances of these senses, but *necessarily* applicable to all possible instances. There could not be colour without a particular hue, for instance. (I acknowledge, however, the persistence of certain extreme forms of scepticism vis-a-vis this claim). Moreover, these properties are relational in that every bearer of them possesses them in some degree and is thereby related in a determinate way to all other instances of the

properties concerned. This produced scales or ranges of the property instances (possible instances) concerned.

The importance of such property scales is that it gives us a very clear notion of what it would be for the sense divisions concerned to be spurious. If vision and hearing were not genuinely distinct from each other in a strong, conceptual way, it would be possible for the scales of their properties to merge at some point. Thus, for example, it would be theoretically possible to pursue the pitch dimension of sound along all its instances until it became a given degree of brightness. For any property scale there would have to be an instance which was a natural successor of some indisputable member of that scale and which was also a degree of some "other" property scale. A consequence of this, also, would be that the instance which linked one property scale of one supposed sense with that of another would have to fall under the other properties constitutive of that sense. Accordingly, in the case envisaged, the phenomenological item which was a natural part or extension of the pitch/loudness scales would also have to be part of the hue, saturation brightness and, possibly, shape property scales of colour. I hope I have said enough to establish the inconceivability of this situation. One problem is that of how the cyclical nature of the hue scale of property instances could be "broken into" by a separate linear scale. Whichever point on the colour circle sounds entered at would have to have two, infinitessimally differing neighbouring instances which diverged; one following the line of the colour circle; the other heading off into the pitch/loudness scales.

A further problem arises if we ask the question whether, in terms of the example we are considering (though the difficulty would arise if any of the other permutations were selected), it is a pitch of a specific loudness that leads into

the colour circle (and its brightness and saturation variations) or simply a pitch at any of its possible loudnesses.

A final question, even if the above puzzles have been resolved, is that of whether the instance which is the logical successor of some genuine member of the pitch (/loudness) sequence and which also belongs to the realm of colour properties is meant to have only colour properties or sound ones as well. If such a connecting item has properties of both sound and the visual it becomes both unique in auditory and visual terms and hybrid to a bizarre degree. If, on the other hand, the said item has only visual qualities then it is open to us to protest that it is not a genuine extension of the relevant auditory property ranges. The pitch sequence could be said simply to come to an end and that of the colour circle begin in contradiction, of the claim at issue.

What we can say is that our considerations of the senses of vision and hearing and their essential properties leave it unimaginable that the two senses could merge, and they do everything to reinforce our unreflective belief in the radical distinctness of the senses concerned. Certainly, for the remainder of this study I shall assume that vision and hearing involve discrete areas of our phenomenological experience, and do not admit of certain forms of combination or conflation.

Making this assumption does have consequences for some of what I shall discuss later, but does not strike deep enough to render the essence of that discussion invalid should that assumption, *pace* the preceding evidence, turn out to be false. It is for this reason that I have been happy to attempt no more than a cursory consideration of the more complex sense-modalities. It is sufficient for the purposes of what is to follow that I establish the possibility of sense-experience being divided along categorical lines and take

that possibility into account. It is not vital that I fully determine the number or nature of the ways in which that experience is divided. The visual and the auditory and their clear separation from the phenomenology that remains - the gustatory, olfactory and tactual as we, pre-theoretically, consider it - establish enough of a precedent for the place of sense-divisions within pure sense-experience for our purposes.

(1) As found in Eg. ARISTOTLE.
(2) L. Wittgenstein, REMARKS ON THE FOUNDATIONS OF MATHEMATICS, Blackwell, Oxford 1964.
(3) L. Wittgenstein, REMARKS ON COLOUR, Blackwell, Oxford 1977.
(4) B. Harrison, FORM AND CONTENT, OUP, Oxford, 1973.
(5) See Mundle, PERCEPTION: FACTS AND THEORIES. Ch. 9.
(6) W. James, PRINCIPLES OF PSYCHOLOGY, 1890.

CHAPTER TWO

SOUND WORLDS

In our first chapter, we have directed our attention towards what I have spoken of as the "content" or "phenomenology" of actual experience (and, by "actual experience," I mean that experience which is common to most of the human race.) I have tried to isolate the substance of the different senses which we normally think of ourselves as having. A something that we can regard as uniting all the experiences falling within any given sense, regardless of what those experiences can be said to be experiences of - in an ontological sense. That is, I have attempted to get behind the views of cars or the clicks of doors or the odours of lemons to some feature or features which relate those specific experiences to the rest of the experiences available within the sense-modalities in question, in some generalized sense.

Two things are to be achieved by this process: one is a reinforcement of the basic claim behind this work that there is a phenomenological dimension to experience, the other is that there is some conceptually sound underpinning to our everyday assumption that there are sense category divisions within experience (though the number and nature of these we have not conclusively established). It is really the first of these that is of importance for the present chapter. That we have to allow for sense categories within experience, is something that we will have to give some thought to later when we come to consider the notion of forming a composite "picture" of reality from material experienced within different senses.

At the moment, I wish to take a single sense, strip it of its ontological overlay, as we might call it, and use its phenomenological foundations for speculative purposes concern-

ing the link between experience and metaphysical interpretation. Specifically, I intend to consider how sensations or experiential material belonging to one of the senses we have discussed could ever occur in such a way as to provide the basis for an ontology or "conceptual scheme" quite different from that which we actually arrive at from that sense. The interest of this exploration, if successful, lies in the wedge it drives between experience and ontology and in the consequent promotion of possible alternative ontologies to those currently wedded to given categories of sense experience. Not that, I hasten to add, the function of this is meant to be a sceptical one regarding our present interpretations; rather it is an attempt to eliminate certain tempting prejudices in favour of our everyday, human metaphysical interpretations and to eliminate prejudices which incorporate the assumption that only these accepted interpretations have *intelligibility*, in addition to their being, as a fact, true or correct. Hand in hand with this kind of broadening of metaphysical horizons should go a deeper understanding of what an ontology or an ontological interpretation of experience is. I hope that something essential to perception as a philosophical issue will emerge: some insight into the link between an individual and a space and some elucidation of central notions such as the subjective and the objective.

The sense I have chosen as the basis for this speculative analysis is hearing. The particular suitability of this sense for the project in mind lies in the fact that it has a phenomenology distinctive enough to allow for unproblematic hypothetical manipulations of it (which would not be so true of smell or touch) yet at the same time is not so rigidly associated with space and objects such as to import an unwanted ontology into those processes (something sight would threaten to do). Further incentive to focus upon hearing is provided by the existence of interesting precedents for this in the philosophical literature. Most notable among these is

P.F. Strawson's INDIVIDUALS (1) and the chapter entitled "Sounds," but also worthy of mention is J. Bennett's KANT'S ANALYTIC (2) There is a good measure of overlap between my views and these theories though there are points of disagreement as well. Possibly the greatest source of divergence is in the distinct contexts surrounding the theories in question. Strawson and Bennett's views on alternative spaces or "conceptual schemes" (as Strawson tends to refer to them) are not developed as a part of a general theory of perception or the relationship between experience and metaphysics, as is the case here. However I prefer to develop my own account first and to draw comparisons and contrasts between it and other precedents afterwards.

(i) SOME PRELIMINARY CONSIDERATIONS.

It is worthwhile beginning with a brief consideration of how sounds fit into our actual view of space and its objects. In some respects, sound is peculiar when we confront it in this way. There are certain unresolved ambiguities in the way we talk about sounds. On the one hand, we speak of sounds as if they were themselves a species of object in space, yet, often paralleled with this approach there is our, perhaps stronger, tendency to speak of them as if they were simply *caused* by physical objects in space, and were lacking in spatial existence themselves. When we talk of sounds being in a certain place, in many ways, this is just a kind of shorthand for saying where such sounds can be heard which is not necessarily the same thing at all. If pressed about the claim that there was a sound in a certain place - a room, for instance - we would find it difficult to be more precise, in spatial terms, as to its location. Even if, by exhaustive exploration, we were able to locate all the points in space at which the sound could be heard, we might find it difficult to express the sense in which the sound occupied the three-

dimensional region of space in question. Clearly, its presence is an invisible and intangible one and, accordingly, not a physical one in the sense that we standardly use. There is nothing unique about this in sensory terms: the same state of affairs obtains where smells are concerned. And, it might be said that, although neither can be said to be physical, this does not preclude sounds and smells being genuinely spatial items - objects, of a sort, in space. This can be seen as fitting in with much of our unreflective talk about sounds (or smells). One feature is the intensity of the experienced item. Although a sound may be heard over a range of spatial positions, it will not be equally loud at all of these. Also, the quality of the sound may vary with location and acoustics may affect the pitch of a sound.What these kinds of considerations begin to raise is the question of the individuation of sounds. If, by moving position, we come to hear different things, qualitatively or quantitatively speaking, are we justified in describing what we hear at each position as one and the same sound? Similarly, if what we are listening to is an intermittent sound, albeit unvarying in pitch and loudness, do we hear *one* sound repeated, or several sounds in succession? Consider also the familiar railway train or police car phenomenon, where an emitted whistle or siren sound distinctively changes in pitch as the vehicle passes the listener according to the Doppler effect. In such a situation, how many sounds are heard? We know that for the occupant, of the moving vehicle no changes occur, is this sufficient license to claim that for the stationary listener there is only one metaphysical item experienced? I suggest that a little reflection upon these questions will reveal that there are fairly standard ways of dealing with these situations from a linguistic point of view, but that the solutions are essentially arbitrary. In other words, we will not find anything in the facts of the different situations which explains why sometimes it is one sound and on other occasions two or more. This lack of a consistent prin-

ciple for the individuation of sounds or smells may not seem a serious objection to their being real objects, but, although it may not be decisive, it does represent a difficulty which has to be resolved. Until we are able to say where one sound starts and another ends, we have a major unclarity in our metaphysical account of sounds.

This unclarity may admit of elucidation, but the fact that we do not currently operate a consistent account in these matters is of significance in itself. What it points to is the suggestion that we are unable to take things like sounds and smells seriously as genuine spatial objects or particulars in the way that we assume tables and chairs to be. What I mean here is not that we do not believe sounds and smells to have any objective, and physical status; we certainly think they do have - but that they have that status by an indirect route.

We have to bear in mind that the whole orientation of our study comes from what is immediately experienced and, accordingly, we have to hold the actual phenomenology of hearing and smell firmly in mind. This means that we are not allowed to appeal to causal explanations or theoretical entities in order to account for the existence of auditory or olfactory experiences in spatial terms. In other words, we are not permitted to express the existence we take sounds or smells to have in terms of arrangements of physical particles or wave patterns in some physical medium. The reason being, that these physical or material or objective or spatial features have no necessary connection with the sensory experience they are meant to embody. We have to discover that the experience of a particular sound is caused by a certain disturbance in the air (or more basically, by the activity of certain physical objects). We do not establish "at a glance" what the objective counterpart of a sound experience is; the information is not contained in the experience

itself. That is, we do not take some identifiable part of the experience we have under senses like these and interpret it literally as being, itself, a part of external reality. We do not come to consider an auditory or olfactory experience as an experience of a certain kind of objectively existing object, where the object is supplied by the phenomenology of the experience concerned. When we give a causal/physical type of account of a sound's real-world existence we are not in any way reifying, in the above sense, the experience of hearing that sound. Rather, we are providing an explanation of that sound experience and, at best, pointing to an essentially non-auditory counterpart for that experience. Moreover, a range of different counterparts might have been discovered as the basis for a given sound, for example drums might have sounded like cymbals and vice versa.

To make this clear, we need to consider an example of a Primary Quality (in the Lockean sense) (3), and perhaps those properties derived from vision would be the most straightforward. If we take a feature of visual experience we find that, by contrast, with hearing or smell, we are able to coherently project that feature beyond personal experience into the objective sphere. We can identify the content of an experience with a part of the world. There is a direct connection between the content, at a phenomenological level, of visual experience and the physical object it is meant to be of or inspired by. There is a connection between a sphere as a physical object and the experience that is to be had in seeing it and this is a connection which is radically different from that which holds between a sound wave and the experience of a sound. I do not want to over-emphasise the harmony between a visual experience and an object, for it is certainly the case that an object as a physical entity occupying three-dimensional space has a range of properties that far exceed those present in any image of that object. An object means more to us that than can be experienced in a sin-

gle image of that object or, moreover, a collection of such. I mention this as a caveat here, later it will be necessary to explore these relationships in more detail.

As far as sound is concerned, the point I want to make at the moment is that there is a vague or doubtful link between the actual phenomenology of sound and the external world and objects in that world. It is not that we never take the phenomenology of sound experience and treat it as a direct apprehension of something existing in objective space - if anything, that is our unreflective way of treating such experience. The point is that an attempt to be more self-conscious about this process leads to uncertainties and conceptual difficulties, especially when a scientific understanding of sound emerges. This means that we cannot use a term like "sounds" unambiguously, for it might refer to a kind of object in public space or it might be restricted to the realm of purely subjective experience. For the purposes of what follows, it is important to disregard any objective status given to the phenomenology of sound and to approach it from a neutral perspective so that it is just a species of experiential material in an ontologically unclassified form. From this starting point I wish to suggest an ontological structure for sound which is conceptually viable but which is quite distinct from any we might justify on the basis of present sound experience, or, that is, upon that present experience taken in conjunction with the rest of our sense experience and the ontological commitments it engenders.

In the course of developing notions of alternative sound-based spaces it will, obviously, be essential that we get to grips with key metaphysical concepts such as space and notions of objectivity and subjectivity as well as certain other terms whose importance will soon emerge. This, undoubtedly, will lead us into a realm of controversy and expose the enterprise to charges of question-begging. For, to

claim that certain possible organisations of sound experience will constitute spatial systems will be to presuppose a particular concept of space. This concept will, clearly, be one which involves enough breadth for it to be extended beyond our present form of experience. This, for many, may be a source of objection in that the inevitable differences between any projected form of experience and the one we have could be cited as sufficient to entail a change in the meaning of the term "space" and, thus, to invalidate any claim to have discovered possible alternative spaces.

I do not want to deny the potential for this line of objection. Following Strawson, I would, however, want to present it as a form of dogmatism. Such a position is dogmatic to the extent that it begs the question in the opposite direction from the one just considered: for it takes as its premise the statement that space can *only* be as we currently experience it. The way in which we can slice through the impasse of these competing dogmas is via a strategy which acknowledges the relative unimportance of being able to arrogate terms like "space" to the present enterprise in contrast with an ability to draw certain useful *distinctions* under whatever name. I believe that it is the close similarity that such distinctions have with current metaphysical classifications that provides the interest in our capacity to use them in novel experiential situations.

The best approach will be to build up the situation I am interested in from its most basic elements, hoping to draw out relevant distinctions in the process. Inevitably, general points relating to non-auditory as well as auditory material will emerge, but this is entirely desirable.

Initially, I want to establish the rudimentary situation of a subject confronting a sense-item. Terminology is difficult here; the situation to be identified is intended to be neu-

tral of any theoretical description and what I am looking for is an intuitive acknowledgement of the kind of encounter involved. To have acknowledged a primary, phenomenological component in experience is virtually to have grasped the essence of this situation. One area of potential difficulty lies in the need to talk of a "subject" of experience. I am anxious to avoid being drawn into complex issues of personal identity yet some notion of a subject will have to be presupposed. It is tempting to by-pass such difficulties by simply referring to experiences or awarenesses of sensory items without committing oneself on questions as to who has such experiences or awarenesses. The problem with simply postulating the existence of sense experiences is that, to give a plausible account of how these become the basis of metaphysical interpretations, we need some concept of an active, intelligent subject which can process as well as receive sensory information. I have already stated that, in general, the important question is not whether certain inferences or judgements *are* actually made but whether they *could* be made. This does not, however, represent a faultless means of avoiding consideration of the nature of the subject in relation to experience, because, even confining ourselves to talk of what conceptualizations are warranted by given experiences, we still have to have a notion of the subject that could perform such judgemental acts. I cannot hope to delve very deeply into these questions of personal identity. I shall work with minimal assumptions in order to confine myself to notions which can ultimately be shown to have some genuine basis, whatever that is.

An idea with which I wish to commence is that of a first encounter between a subject and a sense item. "Sense item" here can be a fairly broad term covering not just simple instances of the known senses; sounds, tastes, smells, etc. but also, perhaps, sequences of these; an experience of a string of notes for example. This solves difficulties partic-

ularly in respect of images where questions arise as to whether images have to be uniform as in a total field of one colour or whether they can have separable visual elements. At the same time there has to be some restriction upon the degree of complexity such sense items can have - restrictions which will become obvious as I proceed. The point I wish to make about these situations of initial sensory encounters is that, for the subject concerned there can be no grounds for his (I shall use "his" though "its" really has the generality I intend) forming a judgement as to whether the item or experience concerned had objective or subjective existence. Accurately speaking, the whole question of "objective or subjective?" would not arise. The suggestion that the concepts themselves would be a part of the subject's consciousness prior to the sensory situation which requires them would be avoided. We might want to say that some kind of distinction would be felt, namely the distinction between the sense items and the self. In other words there would be a sense in which the experience was an alien element, quasi-objective in its not being a part of the self. We might, also, want to cite other properties peculiar to such experiences or sense items; properties which distinguished them from other parts of a subject's experience or mental phenomena. One obvious possible distinction to make is that between sense items and such things as memories or imaginings. There are dangers here, however. It is tempting to claim that the key difference between a perceptual item and products of the imagination including memories is the presence of will or control. Volition is something of a red-herring, however, where perception is concerned: the fact that an experience is not created or governed by the will (whatever that means) does not guarantee its objectivity, nor, equally, does the presence of some level of control over what we perceive, in that we have some control over our sense organs and we have some control over the worldly items that impinge upon the sense organs. At the same time,

there are many non-perceptual experiences over which we have no control, such as hallucinations. It is the presence of certain structures or relationships within experience that is crucial, I shall argue, though this does have the consequence that total or unrestricted control over what one experiences would rule out its objectivity.

Returning to our original point, where such initial or limited encounters with sensory items are concerned, we can say that the question of objectivity or subjectivity would not arise. This might be open to challenge in that it could be claimed that the objective/subjective distinction is an exhaustive one, and that the implied neutrality the above confers upon the items of experience is senseless. It may not be clear that anything which is not objective must be subjective; perhaps things are only subjective in a form of experience where other things are objective. That is, if the objective/subjective distinction is a way of drawing a line between two separate areas of experience, then, where there are no grounds for such a division it seems at best arbitrary to claim that the totality of that form of experience falls within one half of this dichotomy, namely, the subjective. Surely the sensible thing would be to say that the distinction does not operate at all in this situation? Having said that, there is much to be said for the view that the objective/subjective distinction is not just *any* operable distinction but a distinction based on specific criteria. That is there are definite qualities which elements of experience must possess in order to be classified as objective. Consequently, if only subjective criteria are fulfilled by a form of experience then that experience is justifiably judged subjective, in its entirety.

Putting this issue to one side, however, there are some points which can certainly be made concerning the situation we are considering. One is that, in a certain sense, subjec-

tivity is a negative property, in that it represents the absence of a certain structure to experience, that is, the structure which causes experience to be objectively interpreted and, as such, the subjective is more amorphous and less easy to conceptualize in the absence of its objective opposite. Thus, from a purely psychological point of view, it is unlikely that a subject will come to identify his experience as being subjective, that is, as not being objective. This is of course, only a psychological point, it is not logically impossible for a subject to form an understanding of the concept of subjectivity in the absence of experience of its more positive counterpart and to apply it to the situation in hand. What, clearly, is out of the question in the present imagined situation is the possibility of the subject classifying his experience, the sense items, as either objective or subjective. He simply does not have enough information at such an early stage. So, to this extent, it is correct to say that the experienced items are neutral. However, according to the view one takes concerning the exhaustivity of the objective/subjective distinction, it may be that the items must belong to one category or the other, but that the subject is unable to say to which one.

We have, then, a situation where a subject (whatever that means) confronts items of sense experience and can do no more than distinguish them, perhaps, from other mental (as we would say) phenomena, and, perhaps, see them as in some way distinct from the self. What we need to do is to explore the ways in which this situation would have to be developed for questions of objectivity and subjectivity to be decided. This will, naturally, involve producing an account of these key metaphysical concepts and, to that extent, what follows must belong to a very controversial area of philosophy. I have already made certain distinctions in relation to scepticism, and I will state here that what follows if it does not capture the ultimate essence of what it is for something to

exist outside the mind or within the mind then it does at least capture all the important consequences of these deep concepts.

Given my earlier claim that we can regard objectivity as the more specific or positive half of the ontological dichotomy we are interested in, the line of inquiry to follow will best be that concerning what causes an experienced item to become part of an objective framework. If we take the insight that it is nothing about a sense item per se that causes it to be justifiably taken as having real or objective existence, then we are inevitably drawn to the conclusion that what makes the vital difference are the relations that item has with something else. The crucial relations, I would suggest, are those between one sense item and another. In proposing the basic sensory situation or encounter, I allowed for groups of sense items as well as solitary particulars to be presented to the subject. Where such groups are concerned, we can expect relations to exist, relations appropriate to the sense category concerned. Relations of pitch and loudness would hold for sound items, positional relations of left/right, above/below would apply for visual information. What would hold for the other known senses it is harder to say given our uncertainties about whether fully inclusive relations exist for smell, taste and touch. Also, I have no reason to close off the possibility of forms of experience, of sense categories beyond the familiar ones and here there can be no way of telling the kinds of properties and relations such purely potential forms of experience might have. Thus, it would seem that we can only devise models in terms of sound or vision which, although not uninteresting, is quite a restriction. I am not convinced, however, that this has to be the case. Obviously, with more intensive investigation appropriate qualities might be drawn from senses such as touch, smell and taste to provide the basis of relations between instances of those for our present pur-

poses. However, without exploiting this avenue, there is an alternative form of relation available which could cover these recalcitrant senses.

Relations of pitch, loudness, or position are relations which can, and normally do hold between items existing or perceived at the same time. Accordingly we can say that they are relations which can hold synchronically or, for simplicity, are "synchronic relations". The obvious alternative to this general form of relation is a diachronic type of relation and it is this which offers the possibility of constructing something to cater for the, otherwise problematic, senses. These "diachronic" relations are different from the synchronic ones in that they have no specific content, nothing which is peculiar to the category of sense they operate in. There is a content difference between a relation like "to the left of..." and "louder than..." but for diachronic relations the essence of the relation is time. The relation is essentially that of "after...." or "before..." This presents problems in that it is open to someone to object that a temporal relation cannot be used as the basis of an objective *spatial* framework. The question would be, how can the fact of an item being experienced after some other item, have comparable status with that of, say, one visual item being to the right of another? It might also be queried how a world constructed out of temporally ordered items could have a separate time dimension, for, surely, it has converted any temporal properties into spatial ones? Although there are *prima facie* difficulties here, ultimately, they do not represent an objection to the proposed use of diachronic relations. The clearest method of demonstrating this is not to continue to discuss it in abstract and general terms, but to set out in terms of a concrete example how the intended form of relation would operate. I propose to do this using an auditory situation. This is, admittedly, somewhat unusual given the fact that I have acknowledged that sounds are endowed

with synchronic interrelations. My reasons for choosing this approach are two-fold: one is to do with the fact that I wish to make some comparisons with the sound model proposed by Strawson. The other is that paradoxically, perhaps, there are special difficulties involved in constructing spaces from synchronic relations - difficulties which should become apparent later.

(ii) A SOUND MODEL:RE-IDENTIFICATION.

Let us start, then, with a situation where a subject experiences or is faced with a given sound, that is, a particular with specific properties of pitch and loudness. This represents the most primitive situation where there can be no grounds for an ontological classification. It is not essential that the subject be only presented with a solitary sound; there could be several, but to assume this introduces a distracting level of complexity. In terms of a progression away from an, at best, ontologically uncertain or subjective situation, the obvious first step is the introduction of further sound items into the perceptual situation. This being a diachronic model, we require the occurrence of a further sound after the initial one. Given the problems mentioned earlier concerning the individuation of sounds, we need to say briefly what a single sound is to count as. For present purposes, I take a single sound to be a note which remains at a specific pitch and loudness: as soon as the sound changes in either or both of these dimensions then it has become a new or different sound. Additional to this, should a sound change in the limiting case of ceasing to have pitch or loudness i.e. of silence prevailing, then that particular sound has ended and any subsequent replacement even of identical pitch and loudness is a fresh particular. Thus, in the present model, sounds can be replaced either by other

sounds or by silence. At the moment, for the sake of simplicity, I shall work in terms of sound replacements of sounds.

Our first sound we can term "a" and then its replacement "b" and so on for any subsequent sounds augmenting this with dashes if need be. Hence we can envisage a situation where the initial experience of a single sound is superceded by a whole sequence of sounds. What would this add in metaphysical terms to the initial situation? Essentially it would make no significant change. The presence of further sense items does not by itself add any more weight to those individual items in terms of their ontological status. It is, however, an important development if it is followed by further features. If the sequence of sounds simply continues as a linear progression, then nothing of any consequence can be drawn from such an unstructured experience. If we imagine, however, that the sequence reverses or in some way repeats - if after sound "z" sound "a" (of "a" type) reappears and then "b" and "c" and so on then we have quite a different situation. It is different in that it now starts to become possible to talk of experiencing the *same* particular sound again. We begin to have grounds for saying that a subject re-encounters the very same sound.

It is particular re-identification that Strawson singles out as crucial to the possession of a genuine objective, spatial scheme. How is it that these kinds of repetitions warrant talk of re-identification? They do so, essentially because they place individual sense-items in a context, an ordering in which they can also re-encounter a "c" and an "a" sound in the same positions relative to "b". It might be demanded how this fixed ordering licences talk of particular re-identification with the attendant metaphysical consequences of this, where the situation involving just an unbroken sequence does not. We could ask both how does the presence of a repeated ordering guarantee that particulars within it are one

and the same and not fresh particulars and, also, what prevents items in an unrepeated sequence from continuing to exist beyond the times during which the subject experiences them? This latter challenge makes sense to the extent that it assumes that, where a particular is re-identified, this necessitates its having continued to exist from the time of its initial identification, during a period when it was unperceived. This seems to be a reasonable understanding of what is involved in the claim that something is identical with something existing at an earlier time.

Perhaps, this is open to challenge, however. There might be those with deeper metaphysical intuitions who would wish to claim that something can go out of existence for a period of time yet reappear at the end of that time (perhaps in another part of space) as one and the same particular. Loosely speaking, it does not seem absurd to say that a thing could disappear and then reappear, but I think closer inspection should cause some measure of puzzlement - certainly a temptation to ask "where" the item went to during its apparent absence. The awkwardness becomes acute when we ask how the reappearing item is distinct from an exactly similar but fresh particular. To such a question no criteria for distinguishing between the two can be given - this is impossible, ex hypothesi. All that could be said is that there is a fundamental metaphysical difference; that the two proposed items, the reappearing particular and the freshly created one, are simply and ineffably distinct. It would be tempting to declare such a claim meaningless but perhaps this approach produces an epistemological crisis in that there can be no means of knowing whether on certain occasions we are being presented with the same or a different particular, absolutely no information can be acquired to decide the issue. Whereas a view of particular identity which takes continuity to be a decisive factor allows us, in principle and often in practice, to distinguish between the two. Consequently, it is

fundamentally this definition of identity that we operate with. Accordingly, I shall take seriously the assumption that continuing existence is implied by re-identification.

If persistence is taken to be implied by re-identification then we can see what a significant leap is involved in the re-identification claim being made for the repeated sound sequence. Continued existence outside of the sense experience of the subject is entailed and this is certainly central to any concept of objective existence. The question we are dealing with, however, is one of how an ordered sequence provides grounds for this claim where an unstructured sequence does not. The essential difference between the two is one of evidence. It is not that it is inconceivable that the sound instances in the open-ended progression are persisting, independent particulars, it is just that there are no grounds for thinking that they are. On the other hand, in the alternative situation, the fact of re-encountering a certain type of sound item in an already familiar location, that is, placed in the same position between previously encountered sound types does provide grounds for saying that such a sound type is the same sound token as the previously encountered one. The reasoning being this, if we experience a certain sequence of separate sounds and then re-experience that sequence - either by the sequence going into reverse at some point or by the beginning being re-encountered - it is more likely that we are meeting the same items again and that they have endured during the period they were unexperienced than that they and their orderings are freshly created.

It is difficult, however to say what "likely" exactly amounts to here. "Likely" suggests a law of objects and their behaviour in an external world which renders such conclusions probable, whereas such laws follow upon the establishment of objects and cannot be prior to them, especially not in such

a way as to be instrumental in establishing the existence of such objects. A preferable notion is that of conceptual economy or efficacy. It is, in a way, simpler to treat two qualitatively identical experiences as being of one and the same item, rather than as the same experience repeated. A level of structure, coherence, and organization is introduced by a preparedness to make this kind of re-identification. What is momentous about such a judgement, of course, is the fact that it inevitably involves a move towards objectivity. Following the understanding of identity criteria I have argued for, it is not possible to refer to something as one and the same particular as some earlier experienced item without implying that that something has endured over that period of time and has persisted through a time when it was not experienced by the subject. And existence outside of the experience of a subject, if not the last word on what objective existence is, is at least, crucial to any notion of it.

To see the rationality of making the re-identification we are concerned with here, it is, perhaps, better to turn the situation around somewhat and start with the assumption that an experienced item is an objective particular. Having made such an assumption or, perhaps, conjecture about some element in his experience, the subject has committed himself to certain consequences which flow from the notion of objectivity. One of these is that what he experiences could have existed and could continue to exist outside of his experience. So, naturally, one test of whether the sense item really is an objective particular is that of determining that it can be rediscovered some time after it has disappeared from his experience. One feature of establishing that the same item has been re-encountered, is that of finding an item with just the same qualities as the original, but, also, and relevant to present concerns, is the fact of finding the item in the same "location", that is, discovering it in the same relation to a

sequence of items previously experienced. To re-encounter the same type of sense item in the same context and especially where this involves "retracing one's steps" in the way already described does lend weight to the claim that that sense item is identical with the one previously experienced. At this point, there is little more we can do than present this as a brute fact about what counts as evidence and, perhaps, about human psychology. This may seem painfully inadequate, but there are, at least, two sources of reply to this. One is that the importance of the existence of stable relations between types of sense item in terms of objectivity should become apparent as we develop our model more fully. The other is that, in the final analysis, I believe it is impossible to produce an account of perception and ontological commitment which does not incorporate facts of psychology as well as conceptual or logical truths.

This may appear to be a damning confession in what is intended to be a philosophical account of perception. Surely, there can be no place for any conclusions which are dictated by simple psychological dispositions rather than the compulsion of logic? Naturally, I do not believe that this is the case. Conceptual arguments about the nature of the metaphysical terms involved and about the kind of experience a subject could, conceivably, be presented with take us to a certain point. That point, however, remains short of certainty concerning the existence of objects outside the mind. The final step to that objective destination can only be generated by what are essentially psychological rather than philosophical considerations. We are in the realm of what is, "more plausible", "more convenient", or that which possesses"greater simplicity", or "conceptual economy" - notions which, although endowed with some objective content, essentially escape philosophical scrutiny and find their explanations in psychological dispositions.

From the beginning, I have cast doubt upon the possibility of producing an account of perception which incorporates a refutation of scepticism. The suggestion that scepticism makes, namely that all of the evidence for external objects is compatible with the view that there are no such objects, will always be valid. It will be valid not least because it is inconceivable that there could be evidence of sufficient strength to counter such a suggestion. What is important is not that scepticism is proposing an alternative which might be true, but that its Idealist alternative has no greater claim to truth than the Realist option we are developing. Both theories lack conclusive proof in terms of the evidential data they relate to, that is, our sense- experience. What there is to choose between the two theories belongs to a separate domain, that of psychological acceptability, we might say. Our choice is between an approach which leaves experience endlessly multifarious and an unconnected flow of private sensations and an approach which imposes an order upon what we experience and relates different parts of it to each other.

The point about the inconceivability of obtaining conclusive proof in favour of either a Realist or an Idealist theory is worth emphasizing, I think, especially as it has consequences in terms of the kinds of sensory schemes which can function as the basis of an objective spatial order. The inconceivability in question flows from the nature of the concepts of objectivity and subjectivity themselves. In order to establish that Realism was correct we would have to prove to ourselves that items in our experience continue to exist outside of experience. But, clearly, the problem here is that this could only amount to our *experiencing* such items persisting outside of our experience, in that, it is impossible to imagine confronting anything other than within the subjective, personal medium of our experience. We cannot step outside of ourselves, as it were, and "check up" on objects

not presenting themselves to consciousness. These, if you like, are necessities flowing from the nature of the self and I just take them as given. These consequences apply as much to Idealism as to Realism, for how would one set about establishing that something did not exist when it was not a part of one's experience? For the theory to be true, objects or sense items would have to disappear simultaneous with our awareness of them, and, by definition, we could not be aware of this happening. The simple fact of items disappearing from our awareness proves nothing: we have to be able to establish that they had no existence prior to being a part of our experience and that they have not continued to exist somewhere outside of our subjective awareness, in order to establish that once we ceased to be aware of them they ceased to exist.

All we have, therefore, to decide the case in either direction is circumstantial evidence; evidence, that is, which is susceptible to sceptical doubt. Is it not rational in the absence (in principle) of any more binding form of evidence to act on the basis of such evidence? I think this is made especially compelling by the difficulties of trying to maintain a genuinely sceptical position; one of complete uncommittedness to either a Realist or Idealist interpretation of sense-experience. Consider the difficulties of acting towards one's experience with an open mind as to the nature of that experience - given our earlier comments on the exhaustive nature of the objective/subjective distinction. Again, perhaps this is no more than a psychological issue, but in the absence of a philosophical decision it seems impossible to argue that there is not legitimate scope for such considerations. And, in conclusion, I must represent myself as providing an analysis of perceptual decisions we actually make and as presenting perceptual decisions we could, reasonably, make in certain experiential conditions, rather than as proposing perceptual decisions which are categorically en-

tailed by the experiential evidence. The fact that doubt is possible does not make commitment illegitimate, or decision-making irrational.

One consequence of the points we have made about the significance of unperceived existence in terms of developing objective interpretations of experience is that certain constraints are placed upon the sorts of experience that can plausibly support such interpretations. I mentioned earlier certain difficulties that apply to sense experience characterized by synchronic relations; these are caused by potential difficulties concerning the need for evidence that items persist outside of the subject's experience. The situation is a paradoxical one in that it can arise in circumstances which, in a certain sense, might seem ideal from an epistemological point of view. The difficulty occurs if we take a situation where a subject is presented with an unchanging sense experience, where, say, a collection of sounds are heard. Given that sounds have synchronic relations between each other - relations of pitch and loudness - there is potential for the kinds of spatial framework which can be the basis of an objective interpretation, but the permanent presence of the sound items concerned weakens this potential by precluding evidence about the unperceived persistence of these sounds. In the face of the difficulties as regards proof that an object continues beyond the time when it is perceived, it might, intially, seem that a solution would be found if those objects never disappeared from awareness at all. In reality, however, this would not do anything to reduce what scope there is for the belief that objects of awareness are private to that awareness. What lends support to the speculation that objects of awareness are real *is* the fact that they disappear from awareness and that there is accompanying evidence for their continuing existence. Thus, a form of sense experience which is changing and where types of item are encountered, lost touch with then re-en-

countered, united by some definite chain of intervening items or experiences is a much sounder basis for an objective interpretation of those items. Although I mentioned the example of sounds and their pitch and loudness relations, the problem could be expressed equally well in terms of visual experience.

None of this is meant to suggest that these synchronically related items cannot form the basis of an objective spatial-scheme, merely that the presence of change - disappearance and reappearance - are necessary to provide the evidential stimulus towards such an interpretation. The ways in which synchronic relations can constitute a foundation for an objective spatial system I prefer to delay consideration of until I have completed consideration of our present diachronic model.

To recapitulate, we had reached the point where the subject's experience was described as consisting of a sequence of sounds which repeat in some way, either by going into reverse or by repeating on a cyclical basis. The fact that the subject meets types of sounds he has met before in the same context I have argued supports the view of those experiences as experiences of one and the same sound-particular or sound "object". The question of whether the subject has any control over what he experiences, whether, say, it is some conscious rational act on the part of the subject which determines when the sequence will reverse, is unimportant here, though I shall have something to say about this later. The stability of relations and the fact that all sense items are related to all others via the diachronic sequence is important, however, our example adheres to these principles more closely than it needs to as far as stability is concerned.

(iii) RE-LOCATION OF OBJECTS IN SOUND SPACE

Although an order of some sort needs to be discerned among sense items, there can be limited alterations to that order. This can be demonstrated in the case of the present model. If we take the sequence of sounds we are interested in to be," a,b,c,....x,y,z," we can imagine that having reached z the subject "moves" back in the opposite direction in terms of what he experiences. As a variation upon the situation we have assumed up to now, however, we can suppose that, instead of encountering t, then s, as previously would have been the case, the subject experiences s, then t, on his progression back to a. In such a situation the natural conclusion would be, not that fresh particulars of an s and t-type were involved, but, rather that s and t have exchanged places and remain identical with those particulars previously encountered. That such a conclusion is acceptable is because changes such as these happen against a stable background of relations. It is because sense items hold certain relationships with each other over a period long enough for a subject to comprehend them and form an interpretation of them as constituting an objective space that changes within that created space become possible.

Naturally, the change we are contemplating is a very minor one, but there is no reason why more drastic changes should not be possible. There could be a number of exchanges among the sound particulars within the sequence. What is important is that there has existed enough stability to generate a sense of the external sound space in the first place. Once this has been achieved, there is no reason in principle why the whole of the content of the sound world cannot be re-arranged simultaneously, although more gradual change might be necessary for psychological reasons (comprehensibility). This is because, if we have genuinely formed an objective

interpretation of our sound experience, we will have, necessarily, formed a notion of space and space becomes the fixed background against which the sound-objects can move and retain their identity.

This notion of objects and space going hand in hand may seem an obscurely metaphysical one: why cannot there simply be the existence of objects *tout court*? In fact, the development of a concept of space is an entirely natural one. It is no more than an extension of the idea of position or location in the sequence of sounds. Along with the idea of one item being after or "next to" another, should emerge the idea of the sequence which such items occupy as a form of abstraction from these. We can develop the idea of the possibility of certain relations of the "before" and "after" variety existing separated from any given form of variable in terms of the particular sounds which would hold these relations. In other words, we can form the notion of a sequence, a range of positions and relations between them (each implies the other), without having to think of any particular instantiation of that sequence. Achieving this is simply to entertain the idea of a space; in this case a sound space of a diachronic form.

Relating the development of this spatial awareness to our model as we presently have it, we can see that, with the conceivability of sound particulars exchanging *places* that is, positions in the sequence, arrives the idea of there being something over and above the particular arrangement of sounds. We realise that a place in the sound sequence could be occupied by any other sound; that there must be something which underlies the actual sound items and the arrangement they are in. In other words, a world cannot just be the totality of its objects, its existence beginning and ending with their existence. Objects are crucial to the extent that without them we could have no awareness of space: we

come to know a space, its dimensions, positions, and possibilities by the items we experience in it. Space itself, by its very nature, is imperceptible. The epistemological progression is thus, that we are aware of certain sense items, become aware of certain repetitions of types of these and of stable relations between them and then, on the basis of this, take these sense items to be objects with independent existence and, by this step, become committed to the idea of a space in which those objects exist.

This is not the last word on the question of space, there are other qualifications I wish to make in a moment, but, prior to that, there are some general points about spaces that deserve to be mentioned. Space is not without its paradoxes and one of these is to do with the creation and disappearance of spaces. It is difficult, perhaps, to know what to say of space itself; when we become aware of it, how long has it been in existence? Is it possible that it comes into being at the moment we experience its contents? Obviously, in general, we would want to say that it is our awareness that comes into being rather than space or even the objects involved. This, however, just leads us to the question of whether there can ever be circumstances when it is sensible to talk of the emergence or destruction of space. Suppose, after a period of encountering a form of objects, all such objects ceased and, as a subject, one was confronted with a sensory blank: would this be sufficient to say that space as well as objects had disappeared? We realise that the alternative is simply to say that space continues yet is empty. What is there to choose between the two? If we consider it, once the possibility of a certain kind of object has been demonstrated to us and we have formed a concept of the space such objects imply, the possibility of, at whatever time, further such objects existing is permanently established for us, and this could be seen as tantamount to saying that space is permanently there. The difficulty with this

is that it would seem to suggest that once a space has been created it can never be destroyed. This may appear odd, given that what spaces there are is surely a contingent matter and that it is conceivable that one which does exist might not. This though, may not be valid; for there may be something peculiar about the creation of a space, as opposed to that of other things, such that, where one comes into being, its perpetual existence is logically necessary.

This might cause us to reflect upon the origins of a space: once we know one to exist, can there be a time before which it did not exist or must it always have been possible for items of that spatial type to have existed? I do not know that there is necessarily a symmetry between past and future in this respect, but the idea is compelling, which again seems to minimise the possibility of a space *not* existing. We also need to consider the case of empty spaces in relation to possible yet non-existent spaces. It would clearly seem possible for a space to exist, yet to be empty, and yet, even thus, be a part of someone's experience in that the objects which could have filled it could be perceptible for the subject. Yet, under such circumstances, the subject would have no awareness at all of that space; for him it would be the same as any number of spaces which do not exist. If this is the case then we must be permanently in doubt as to what spaces exist and what do not, in that, failure to be aware of a space is not proof of its non-existence. We could just regard this as one of many areas of irresoluble uncertainty we are faced with as perceivers, but the awkwardness that remains is one of stating the difference between an empty but actual space and a possible but non-existent space. For, the point about a possible space is that, although there is no sign of its existence and it is taken not to exist, we can know just what it would be like for it to exist and for objects to exist in it. This can be taken as equivalent to assuming an empty space to be in existence, because, in real

terms, all that is being held is that a certain type of object could exist. What this boils down to is an issue about whether there is a basic metaphysical difference between possible spaces and actual but empty spaces or whether they really collapse into each other united by the concept of possibility which is central to both of them. What we have to ask is whether, when we talk about a space, we are talking about a real, metaphysical entity or whether we are talking about a modal truth. We have to decide whether the claim that a certain space exists is not just a deceptive way of saying that certain objects and arrangements among them are possible.

This is a difficult issue, and strong intuitions confront what arguments there are against the metaphysical status of space. Surely we feel that what objects entail and exist in is as real as they are themselves. We think of space as a particular in itself with its places and parts, and not merely as the possibility of objective particulars. Also, a disturbing consequence of identifying actual but empty spaces with possible spaces is that all spaces which are conceivable must exist. This seems counter-intuitive to say the least, and I shall have occasion to discuss this issue further in Chapter Three.

To keep things in perspective, however, the actual consequences of deciding for one view as opposed to the other are negligible. What will be of interest, to us is what we can experience, that is, objects or actual, occupied spaces. What is, also, important from the point of view of this thesis is the coherence of the idea that there can be more than one form of space, regardless of whether that is a metaphysical existent or simply a possibility of certain objects and permutations of them. For this, in terms of many traditional views, may be controversial and the development of the pre-

sent sound model is meant to be an argument for a possible multiplicity of spaces.

(iv) EXTENSION

Having made some necessary comments about space in the abstract (it is, after all, one of the central concepts of this perceptual enquiry), it is time to return to the case in hand and the specific form of space involved, though the comments involved will have general relevance. The issue I wish to take up is that of the dimension a space has or the limitations it imposes upon objects or their possible arrangements. In the current model I have implied that via a certain range of experiences of sense items, the notion of objective sound-particulars is generated and from these the notion of a space, a space based on the sequence of sounds in question. We can abstract from the particular sounds and their particular arrangement the notion of locations which could be filled by a whole range of different particulars (either freshly created ones or existing items in new locations). On this understanding, in our sequence, a,b,c,....x,y,z, any sound object can exchange with or replace any other; no restrictions are implied.

Now, a moment's reflection should tell us that this would not necessarily be the case for every spatial system. If we think of the objects in actual visual space we know that, although movement is possible without loss of identity, it is not possible for any object to exchange places with any other object whatsoever. There is a limiting factor of size. Objects occupy a given amount of space or size of place and this imposes a limitation upon what other items can be substituted for them. Visual (and tactual) space, in other words, have extension or dimensions. The sound-space we

have created appears not to have these. This may seem paradoxical - a space without dimension? - but it need not be incoherent. We could say that such a space has logical rather than physical places or positions, the locations of the sound objects are dimensionless points. It is the *fact* of the sound rather than the *size* of the sound that is important. A sound simply exists without any form of dimensions, but, by its existence, establishes a quasi-mathematical point, at which other such sounds could exist and sound-space is simply a sequence of such dimensionless points. This may break with familiar notions of objects and space, but I do not know that it is absurd. We have to decide whether size and dimension in some sense are necessary to any genuine space or whether they are contingent features of our known space. The best way of approaching this is via a deeper inspection of the sound model and of its *prima facie* claim to be a dimensionless space.

There are certain difficulties which arise from making the assumption in question. One is to do with the individuation of objects. If all the sounds concerned are qualitatively different either in terms of pitch or loudness or both then individuation is straightforward; we can use the criteria I have already given. If, on the other hand, we are presented with sounds which are qualitatively the same, but have been fixed as numerically distinct by their separate locations upon the sound sequence, difficulties can arise if we then suppose a situation where these sounds move into juxtaposition in the spatial sequence. For, the two sounds will be heard as one continuous sound. Now, it may be that, because of our inspection of the rest of the known sound sequence, we are, as a subject, certain that the single heard sound represents two objects and not one, but we will, nevertheless, be unable to say where one starts and the other finishes. Imagine, that is, that p and q of the sound world are qualitatively indistinguishable and that p changes places

with q. This might not be held to be a problem, for it is possible in a visual space for two exactly similar objects to be side by side in such a way as to be indistinguishable. Although this is true, the nature of the space concerned does furnish a means of dividing between the two, namely measurement. Because size is a measurable feature of actual space (leaving aside metaphysical questions as to whether the feature is relative or absolute), if we have a knowledge of the size of the two objects concerned, simple measurement will give us a method of distinguishing the two where their visual or tactual qualities fail us. The same cannot be true for the sound world we are envisaging; there is no means of demarcation between the two sound objects. Again, one could say that this is unfortunate, but not a serious criticism of the theory being proposed. For we have every reason to hold that two objects are present and later events might easily cause them to be separated and distinguishable again. It could, perhaps, be presented as one of those situations of uncertainty which we have already acknowledged to be an inalienable part of human experience and our attempts to form an understanding of the world. This, perhaps, should be accepted, though the proliferation of such situations should be resisted and closer inspection reveals that the uncertainty involved does ramify into other areas, as I shall now indicate.

If sound objects have no dimension and if there is no experiential difference between one object and two or more with identical properties occurring together then it will always be possible that in hearing any sound we are hearing (experiencing) several objects. We can have no way of telling: it could be, in fact, that every item on our sound-model sequence is a multiplicity of objects, in fact any number at all, there being no physical limitation that can restrict the number possible. This, surely, is a very pernicious consequence of the assumptions at issue. It threatens

the whole notion of a sound-object itself. The whole basis of generating an objective interpretation of the given sound experience was an ability to identify parts of that experience and to suppose them to be particulars and find this confirmed by their recurrence as elements in an ordered sequence. Present considerations now cast doubt upon the status of these particulars - can they really be taken as the objects we previously assumed them to be? A way around this would be to say that, although we can no longer naively assume such sounds to be single objects, we can still legitimately assume that a particular "something" is present, perhaps a whole group of particulars.

More radically, it might be decided that the notion of a particular object is no longer appropriate and that a mass term should be introduced, so that a given sound (as previously defined) is simply an indivisible "lump" of that sound stuff. This does not really carry us much further, however, as many of the difficulties re-assert themselves. Although introducing a mass term briefly eliminates questions about the number of particular objects present, it really does so by reverting to a form of simple object. This is because the sound-stuff which is present when a sound within the sequence is heard is still particular and has to be kept distinct from any similar sound heard elsewhere in the sequence. Accordingly, the same problem of individuation could be said to arise if we suppose that sound masses of the same sort from different parts of the sound space (the sequence) come together, for how can we tell which part of the sound is which? If it is objected that this is a misunderstanding of the concept of a mass as opposed to an object and that the two masses upon meeting become one mass, as droplets of water might, still another difficulty arises. This is the difficulty of describing what happens in the merger. We start with entities which are apparently distinct from each other and end up with a single item composed of both of them, so

surely the final product must be more than each by itself, yet in what way can it be? Because the sound world proposed is non-extended, we cannot talk about the merger producing a single mass which is greater than either mass alone, because size and measurement do not apply. We become at a loss for descriptions of the situation. Does one item disappear in the merger and if so, which one? Do both disappear and a new sound mass come into being, if so, how do we know this? The whole objective and particular status of the material concerned becomes undermined. Where there appeared to be a firm grasp upon objects there is indecision and confusion with a consequent weakening of the whole fabric of the space in question.

Without pursuing these difficulties any further I think it can be seen that there are at least grounds for doubt as to whether a world lacking some parallel of size or dimension is a possibility. The problem really stems, I think, from the issue of particularity. If it is a necessary consequence of designating a sense item an object, that that object be a particular, or something which is that thing and no other, separate even from items exactly like it, then there seem to be problems for proposed objects which have no substance, for their supposed particularity has nothing to be rooted in, which tends to render them objectively ephemeral. It is hard to see how something which is not a particular in this basic, admittedly unanalyzable, sense can have the qualities objectivity demands, namely, independent existence capable of continuance outside experience. I shall leave things somewhat inconclusive here, however, because there are, in any case, reasons for thinking that our second model does possess properties of dimensionality, or has the potential for them.

The obvious quality sounds possess that is relevant to a diachronic space is that of duration. It is obvious that to ex-

ist at all, sounds or sound objects must have some time-span. We have not, however, given any indication of the actual length of time they exist for in our proposed model. It is perhaps interesting to ask at this point, in the light of our preceding discussion, whether variations in the experienced time of the sound items would threaten an interpretation of them as objects of some simple, absolute and extensionless type. Surely, the difference would have to be accounted for? It might be argued that the subject was in some way "lingering" over certain items compared with others, but even this, given the rudimentary state of our model would have to be explained. There are questions about whether the subject has control over his experience to the extent of being able to "hold" a sense item before him.

The other problem is that the idea of "lingering" is strongly suggestive of the kinds of spatial qualities of extension which are illegitimate here. "Lingering" suggests an idea of motion, of the subject moving across his sound world, but this, of course, is an intrinsically spatial idea in the forbidden sense of objects having dimension or extension. A more likely interpretation is that time is a significant spatial factor where these proposed sound objects are concerned and that, in a sequence where sounds endured for differing lengths of time, this would cause a subject to regard the underlying space as shaped accordingly. In other words, he would think of sound objects as having different sizes according to their temporal lengths and this would mean that they occupied unequal amounts of the sound space. This would have the consequence of placing limitations on the kinds of exchanges that are possible. A sound lasting ten seconds could not occupy the place in the sound sequence of a sound lasting half that length unless there were other rearrangements. Similarly, where a sound object replaces another longer than it, there would be a gap to be either filled by another sound or else a period of silence. Silence we can

take to be equivalent to empty space. With the arrival of this situation, we can see how spatial restrictions which apply in a visual space such as our own could be mirrored in alternative forms of space. It has to be admitted, however, that there is a problem about the measurement of time.

The above example is fraudulent to the extent that it makes reference to precise temporal measurements. Naturally, for a subject to be able to avail himself of notions of time such as seconds, minutes and so on, a vastly more complex world than the one described would have to be presupposed. What I would argue to be possible, however, is some basic awareness or intuition of time on the part of the subject, a sense of certain sounds lasting longer than others. Agreed, this is somewhat vague, and it is difficult to see how a subject could sharpen up his judgements concerning temporal duration, for what process could be fastened upon to act as a point of reference, or clock? But, this said, we do not have to assume that, because there may be a lack of precision in the subject's judgements, (and there may not be - to the extent that one could suppose that the subject was unhesitating in making comparisons of one sound's duration with another) that there is a corresponding lack of precision in reality, in the sound world itself. We can suppose that the sound world obeys rigid temporal laws even though they may escape measurement by the subject. It could be that, although the subject has a rough notion of what rearrangements or exchanges are possible amongst the sound objects, it is only experience which reveals which are actually possible. For instance, the subject might suppose that two sounds at separate points in the sound sequence were equal in duration, but discover, by an exchange between the two, that one was shorter than the other as revealed by an accompanying moment of silence when located in its new position.

We need to recognise the full consequences of adopting this view of sound objects. Importantly, by treating the duration of sounds as metaphysically significant, a strong parallel with physical extension of the familiar kind is established. One consequence of this is that we have to introduce a concept of motion to describe how the subject experiences his world. If we think that there is a sequence of sounds differing in terms of pitch or loudness and lasting different lengths of time and if we hold that these sounds exist outside of experience, that they are external objects in other words, then we have to think of all of what is experienced continuing after experience has ceased. This requires not only the properties of pitch and loudness, but also some temporally related property continuing. I say "temporally related" because there is a basic difficulty about saying that a sound's duration has to continue after the time during which it was experienced. There is an absurdity about saying that the length of time a sound is heard for, has to continue to exist as just that specific length of time, after it has expired. If sounds are held to exist when not being heard then, naturally, their duration is much greater than their duration in a subject's experience. What sense can there be, then, in trying to utilize the duration a sound has in experience for metaphysical purposes? The answer is that duration cannot be taken in itself as a spatial property for sound. Rather, it has to be seen as an expression of a related property. This property can only be some species of extension of a one-dimensional kind. The simplest explanation of the varying durations for the sounds heard, is that the length of time a sound is heard for is a function of its size; its uni-dimensional length.

This, then, presupposes that the subject "moves" (it is hard to see how any other word could be used) across the sound sequence at an even rate. It could be argued that this is arbitrary, to the extent that, on the same evidence, one

could say that all sounds are equal in length (spatial) but that the subject, the observer, moves at varying speeds past these sounds. This has to be conceded: the evidence, as stated does not separate the two interpretations. At the same time, there is a simplicity about assuming the favoured interpretation, if only at a psychological level. Also, in any form of space there will be divergent possible descriptions of motion. In our own space, we might describe a person"s walking down the street as the street moving and the individual remaining stationary. It is only considerations of simplicity which exclude such inversions. It is simpler to ascribe change to a part of the world rather than to the whole of that world, save that part. In the present case it is simpler to assume that things are as they are experienced, i.e. that sound objects differ in size, and then, if they appear to vary at a later time, to account for this in terms of changes in the subject and his rate of travel, rather than a whole shift of dimensions in the sound world.

Putting aside competing explanations such as these, what is of importance is that, however it is presented, there is a genuine spatial object, in terms of dimension, to be derived from the sound situation in question. This is a striking development in terms of our present conception of sound where the entire nature of sounds is meant to be exhausted by qualities of pitch and loudness, the duration of sounds being taken as an external feature of them. Here, because of the contextual situation of sounds, duration becomes significant, it becomes converted into a spatial property of sounds, in keeping with their newfound objective status generally. Having established the possibility of this form of dimensionality for sounds, we can easily see how juxtapositions of qualitatively identical sounds no longer raise theoretical problems, though they may pose practical ones. If we know how "long" a sound is, then, if it is joined by another the same "length" as it, we should know at what point this

occurs and thus be able to distinguish between the two sound objects. The only difficulty is our inability to suggest how precise measurement might occur in this sound world. We can, though simply, assume a decisiveness, or sense of certainty on the part of the subject as far as judgements of duration are concerned. This assumes that the intuition that certain things last longer than others is a primitive one, logically prior to the creation of clocks or other systems for conventionalizing measurement.

(v) MOTION.

This has been a lengthy diversion but a vital one in terms of the metaphysical ground it has covered. I want to return, now, to some other issues arising out of the sound model as developed thus far. One important feature which I have introduced, without giving it detailed attention, is that of change, transition or motion among the sound objects. I have used examples of exchanges between objects at different locations in the spatial sound sequence. Questions might arise as to how these transitions actually happen. In real space objects move through that space by occupying fresh positions within it. For two objects to exchange places both objects would have to occupy a continuous flow of intermediate points between their original positions and their final resting places. These cannot be just the same routes, because, as solid objects, the objects cannot inter-penetrate and pass through each other (if, *per impossible*, they did, their separate identities would be threatened) they must follow routes that diverge at some point in order to by-pass each other. Having before us this paradigm of motion or exchange in actual visio-tactual space, we have to decide whether some parallel form of it has to be found in a sound world for claims regarding motion amongst its objects to be coherent. It does not require any deep consideration to realise that

there is little prospect of articulating an analogous form of motion for the sound world. The most obvious obstacle stems from the one-dimensional character of the space concerned. By definition, there is no second dimension in which sounds can pass by each other. Also, we have no reason to think that sounds could pass through each other without similar logical problems arising as those applying to physical objects.

A second problem is that of deciding what motion could actually be like for a sound. We can perhaps make sense of it to a limited extent. We could, for instance, think of a sound being placed next to a silence - an empty space - and we could think of that sound moving into that space leaving an equal space behind it, thus retaining its own size. The question that arises out of this scenario, however, is that of whether the sound moves in the sense of a fluid motion or whether it merely "jumps", that is, fails to occupy a range of intermediate locations between its origin and end-point. This leads us to the issue of what it would be like for a sound to "flow" (I assume at present, anyway, that a jump involves no particular conceptual difficulties). Particularly, what would it be like to experience such an event? If we focus upon the example just given, I think there is some sense we can give to the notion of experiencing a sound moving its spatial locations. If we imagine the subject pursuing the familiar progression along the line of sound objects and if we assume that after one such object there is a previously established sound gap, but that, on this particular occasion, the subject, upon reaching the sound, hears it for longer than usual and then experiences a shorter gap and that, upon returning along the sequence he does not meet the sound first as usual, but, rather, the gap lasting its normal length, followed by the sound, then under these circumstances we can say that the subject has experienced the sound in motion. What we are imagining is that the sound object is moving as

the subject, himself in motion, hears it - this explaining the fact that it is heard for longer. It seems to be possible to generate some account of how objects might move, to a limited extent, in such a sound world. The limitation involved is that upon objects exchanging places, and this is a direct consequence of the one-dimensional character of the sound space. Perhaps this should cause us to challenge the efficacy of the paradigm of movement that we have been using here, and examine the alternative model using "jumps" or "leaps".

In this type of account, objects would just exchange places in an instantaneous way, without, in any sense, moving through a whole string of intermediate locations. This would cover exchanges between objects separated by other sound objects as well as exchanges between direct neighbours. Although the former involves "leaping over" stationary objects and the latter does not, this really seems to be only a question of degree: the fact of there being a jump - a sudden unmediated change of position - is what is essential to both. The question we have to ask is whether such jumps are conceptually acceptable. If we have before us present conceptions of how objects move in space, there are bound to be difficulties about conceiving of what is happening in this situation. Questions such as "how do these sound-objects get from one position to another?" spring to mind. Or, "do these objects go briefly out of existence or disappear into some other dimension during the transfer?" By itself, deviance from a pattern which may be specific to one form of space is insufficient ground for criticism. We have to determine whether there is some conceptually necessary component to our familiar form of motion. The greatest area of potential difficulty for a theory which posits jumps to explain motion for its objects is the preservation of identity. The danger being that, where an object disappears and supposedly reappears elsewhere a doubt can be raised as to

whether what reappears is genuinely the same particular as the one which disappeared. If we remember, one of the crucial functions of space in relation to re-identification, was its capacity to provide an answer to the question "how can this item be one and the same as an item experienced at an earlier time?" The concept of space allows us to explain how an item has continued to exist between separated times at which it was experienced. Space provides a non-subjective medium for temporal endurance.

Naturally, the suggestion behind all of this is that unbroken temporal persistence is a *sine qua* non for identity, that, for objects experienced on separate occasions to be identical, it has to be demonstrated that there is a temporal link between them; that there cannot be a time between the two experiences when neither existed. The question, thus, becomes one of whether this criterion is reasonable and, secondly, if it is, whether this sound space example falls foul of it. Given the description of the exchanges in question as instantaneous jumps, the sound-space form of motion does, essentially, meet the criterion and consequently, we could ignore the first part of the question. This said, I think it worth suggesting that the rule may not be absolutely invariable. On grounds of sheer simplicity or convenience, it might be preferable to regard certain temporal discontinuities as not affecting the continued identity of an object. For this to be acceptable, it might be that a spatial continuity was necessary for a re-identification to be acceptable. Which brings us to the second prong of our concept of identity. For, part of deciding that two separately identified objects are one and the same, is that there be a spatial as well as temporal continuity between them. If we cannot demonstrate a spatial route between the two items, that is an occupation of intermediate places at all intervening times, then identity fails. It can be seen that this places more problematic restrictions upon the sound world situation. The one thing

that has been assumed is some form of spatial jump when an object moves from one place to another. This could be seen as defying the spatial requirement for identity, in that we are unable to trace an object through the various intermediate locations between its starting point and its supposed final destination.

Again, one possible response is to question the complete applicability of the spatial criterion at issue. Perhaps the most rational conclusion, in a situation where an object with certain qualities is to be found at one location and then disappears, simultaneous with the appearance of an object with the exact same qualities at some other location, is that the two objects are one and the same, and that some form of transition has occurred. Such a conclusion would be further reinforced by the above state of affairs being accompanied by a "move" in the opposite direction by another object creating the space for the first object another object to fill and it filling the space left by the first mentioned object, an exchange, in other words. Where problems could arise is where several qualitatively identical objects were involved in exchanges of position with other objects at the same time. If a, d, and g are indistinguishable and they simultaneously come to occupy the places of p,s and v, how could a subject tell which of the former objects had exchanged with which of the latter? Obviously, confusion of identity is possible in our actual space, but this is for practical or contingent reasons as we may not be able to keep everything under continual observation, whereas, in the sound space, the confusion could not be avoided even under ideal circumstances of observation. Are we to take such irresoluble situations or the possibility of them as a conclusive argument against the coherence of the form of motion being proposed for sound objects? I would submit that there is no particular reason why we should abandon a concept which operates unequivocally in most situations, but breaks down in a few,

where the usefulness of the concept, in general, exceeds that of any alternative.

If our intuitions about identity are strong enough, we can still say that in situations such as the above there remains a fact of the matter, identity will hold between the objects under scrutiny and objects formerly identified in different locations, it is just that it will be impossible to determine which individual is identical with which. It is also worth remembering, perhaps, that our notions of identity as applied to visual space are not entirely free of ambiguity; puzzles and paradoxes can develop from them (consider the classical problem of the ship of Theseus as but one example). In general, we should be wary of setting too much store by features of actual space which may be more contingent than necessary, and of demanding they find counterparts in all alternative spaces.

If, however, it is felt that the theory of motion for sound objects as proposed really does put more logical strains upon the notion of identity for those objects than it can withstand, then we need to assess how much detriment this does to the possibility of such sound objects and their space. Essentially, it is only the theory of motion or transition that is under attack; there is no obvious connection between this and the background theory of the sound space. Naturally, by the standards of our experience, this is an anomalous situation, for we have a space where movement, of any significant kind (the exchanging of places), is inconceivable. The fact that objects are, necessarily, static does not, however, mean that they are not objects, that is, independently existing particulars. It is the ability of the subject to move as an observer within such a space which elicits the objective nature of the items he experiences. In general, though, I incline to the view that sense can be made of exchanges between objects in a one-dimensional space.

Naturally, an area to explore and an enrichment of the present model would be the potential in sound experience for producing a multi-dimensional sound space. This might evade the difficulties attending the one-dimensional space. I prefer to delay discussion of this possibility, however, until a little later, when it can be introduced as a part of a more complete examination of spaces based on synchronic properties. For the moment, I wish to take up two outstanding matters relating to the present model. The two are somewhat related: one relates to the orientation of the space concerned - "linear or cyclical?" - the other concerns how we regard the subject's movement through or across the sound space.

(vi) LINEAR/CYCLICAL SPACE (THE ISSUE OF VOLITION)

At the very beginning of this chapter I introduced the possibility of the sound-space being conceived of on a cyclical or linear basis. Perhaps, more detail of what is meant here should now be given. In linear space, any finite sequence of objects, however long, does not exhaust that space as the sequence is infinitely extendible in either direction, and this is so in principle for, there may be large areas of empty space. Also, no amount of travel along the space in either direction would bring a subject back to where he started. A cyclical space, on the other hand, is finite: there is a limit to the number or size of objects it can contain, and travel along it in either direction will, eventually, lead back to the point of origin. These are definitions of the two types of space, but which of them applies in a situation of actual experience may be a difficult matter for a subject to decide upon. This will be especially true in the case of linear space. For, how can a subject establish that the space he experiences is infinite and that no amount of travel will cause him to repeat his experience? However far one ex-

plores, it will always be possible to think that just a little more travel will bring one back to a part of space previously experienced. In other words, where an experience does not repeat itself a subject can still not be certain that the space involved is linear, such certainty can never be achieved. There is something of an asymmetry between this and the cyclical space, for there, experience may provide evidence of its existence. If one pursues a sound sequence and reaches the point where the sequence repeats, and this continues to happen and also does so when moving in the reverse direction, then this gives a grounding to the claim that the space is circular. Of course, it is possible to suggest that the spaces merely appears to be circular and that, in fact, the subject is continually experiencing fresh particulars exactly the same as those already experienced. This essentially belongs to the realm of scepticism we are already familiar with, rather than of reasonable doubt which the previous uncertainty for linear space falls under. It would be gratuitously contorted to reject a cyclical interpretation of the above type of material. As far as the doubt that affects linear experience is concerned, it does not strike at the objective status of the sounds experienced. It is the fact of a fixed sequence that is important rather than the infinite/finite nature of that sequence.

As a general point, if there is any anxiety about the notion of a circular space, I can only point to actual space and cite the fact that modern physical theories declare it to be circular (finite but unbounded), in that a straight line pursued in any direction would return to its origin. If there are difficulties about the nature of an infinite space, then it is always open to regard what appears to be linear space as a suitably large circular space.

A difference between the two spaces in terms of the motion of the subject or observer is that, in a circular space, the

sequence which determines the objectivity of the sounds experienced can be apprehended by travel in a single direction. Whereas, for a linear space, a reversal of direction has to be achieved before such a sequence can be discerned. This brings us directly on to the question of how such motion is to be understood. Primarily, there is the issue of control. It would seem that the subject would have to have some influence over what he experienced, that he would have to be able to decide which direction along the sound sequence to move in and, even, whether to move at all. Also (in a linear space) he would have to have the capacity to stop and change direction.

In fact, however, none of this needs to be the case. A subject could be completely the victim of his experience. The question of what volition or control actually is, is a fraught one, philosophically, but insofar as it means anything, we could assume a subject to have no control or influence over the way in which he experiences things, and yet, quite legitimately, form from that experience an understanding of objective particulars and a space. At the same time, it is vital that the subject receives the right kind of experience: the sequence of sounds and, crucially, the repetition of that sequence have to be presented to experience before the relevant basis for objectification exists.

What control on the part of the subject might be thought to have relevance to is the issue of whether it is subject or object which moves. That is, one might think that, in a world where the subject is passive in respect of what he experiences, it is natural for that subject to see himself as static and objects in space as moving past him. Again, I think this is unfounded. What is of prime importance is not whether the subject has agency or not, but broader considerations of simplicity or conceptual economy. To return to an example already mentioned from actual experience, even if

I felt myself to have no efficacy in terms of worldly events, it would still not be sensible for me to regard myself as static and the street and all else connected with it as moving, in a situation where I walk or "am walked" down the street.

One area where volition might have a function in spatial terms is in respect of a possible enrichment of the sound model which I wish to devote some attention to. Even here, though, volition is not essential to the possibility in question, but does render it more psychologically palatable. What I have in mind is a variation upon the one-dimensional model which allows divergence or "branching". The idea being that any sound object in an established sequence need not lead to the sound we currently postulate but could lead to an alternative sound object which, perhaps, forms part of a separate sequence. For example, at point p in the present sequence a subject might, instead of moving on to q, move to sound p'and then p''and p'''and so on, pursuing a separate chain of sounds. Any number of such alternative routes can be supposed to exist, running from any item in any sequence. If we follow through the implications of this possibility we can see what a complexity potentially exists. No longer do we have a single strand of sounds, but rather a huge network of such strands, every sound a junction or crossroads for such sequences. This complexity is, of course, the limiting factor of the viability of such spaces. Repeated experience, we have already established, is the key to any objective interpretation of items within experience. Unless such advanced spaces are manageable enough for repetitions to occur and patterns to become familiar, a subject will be unable to make objective sense of them. This should still allow for a good measure of complexity (consider our present abilities to explore and form an objective understanding of our three-dimensional space with its huge potential for divergence and branching). Where questions of volition have relevance lies

in the fact that exploration of complex sound spaces might be more comprehensible if we assume that the subject has control over his movements. Also, we can assume that there is some internal difference of feeling and will involved in branching in one way rather than another. Much as at a fork in a path there is a difference in sensation involved in moving to the left from that in moving to the right and also the ability to control which of the two occurs, we can assume some equivalent to exist for the sound situation. But, although the possibility of this helps to reinforce the coherence of the proposed development of the sound model it is not strictly necessary to it. Even using what we might call the "passive" account of subject movement, sense can be made of the model. So long as the subject is moved in such a way as to experience the requisite repetitions and sense of order they engender, he can form an objective image of his experience. It is not essential that a specific sensation accompany particular changes in direction: a route will be recognised by its content rather than by some related, quasi-kinaesthetic sensation.

Returning to the model itself and the nature of the branches which are possible, it is worth noting that two distinct forms are available. We have mainly suggested the possibility of sequences of sounds branching off from sounds located within another sequence and then the same possibility of branching applying to any one of the sounds within that branch and so on, possibly ad infinitum. So, that what we have bears analogy with the branch system of a tree. The alternative form of divergence, not previously alluded to, is one which creates a network of sound sequences. The difference being that, here, branches can be taken which may lead back (perhaps by further branching) to different points on the sequence already departed from. Thus, some kind of criss-cross pattern, rather than a strictly linear one, is implied. This naturally, compounds the problems involved in

comprehending the orderings involved. Here, some genuine sense of orientation might be required to prevent the system lapsing into chaos in the subject's mind. It might be necessary for the subject to have some sense of direction he is moving in so that he has some equivalent of saying things like "if I move in a straight line for three sounds and then turn left for two sounds, then left again for three sounds and finally left for a further two sounds, then I will be back where I began". This example suggests an even, symmetrical grid pattern, but any structure could be imposed, however eccentric. Also, although it is convenient to outline the possible situation with a spatial analogy drawn from actual space, we do not have to assume that all possible sound-world networks or branch systems could be modelled in three-dimensional space. We have to remember that we are working in a different spatial medium and need to restrain ourselves from thinking of the sound world in visio-spatial terms subject to the logic of that form of three-dimensional space. Connections might be possible between sound objects which would be incoherent if those objects were conceived of along visual lines.

The possibility of this kind of diversity is certainly an enrichment of the basic model, but one should not be deceived into thinking that the sound space has been transformed into a multi-dimensional one or that synchronic relations have been introduced. Sounds are still experienced singly and successively and, although there may be multiple strands of sound-objects they are still one-dimensional in nature. This latter point is proven by the fact that motion is not significantly altered in such an extended model. Objects still cannot "pass by" each other: "jumps" or "leaps" are still required. The only fresh development is the possibility of items in our initial sequence being replaced by items from intersecting sequences (genuine movement of the sort outlined earlier). For instance, we could imagine our basic a-z

sequences being intersected at f and p by a circular sequence a'-z', so that f and p are members of both sequences (note the possibility of combining circular and linear or apparently linear sequences). We could suppose that f links with c'and d'and p with m'and n'. If we also assume that there is a space in the circular sequence between r'and s', we can imagine the whole chain of objects moving around to fill that space (displacing it, if you like) such that f becomes replaced by c'and p by m'. This gives our model more flexibility than previously, but it is still very limited in terms of its capacity for continuous movement as a means of exchange between objects. Accordingly, we have reached the point where we must consider whether synchronic relations have anything fresh to contribute to this area. This, although primarily an issue relevant to the sound model before us, has far reaching implications for alternative forms of space, in that it should reveal general restrictions and requirements upon synchronic properties.

(vii) SYNCHRONIC RELATIONS

We have a paradigm of synchronic relations used as a basis of a spatial system in actual experience. The left/right, above/below relations of visual or, possibly, tactual experience allow us to relate one object to another (one distinguishable colour patch to another). This gives us the fixed framework of relationships or locations which we should, by now, recognise as the basis of our individuations and reidentifications which are integral to an objectification of sense-items. I have indicated a problem about a fixed and unvarying experience, to the extent that, where items remain permanently within a subject's consciousness, there is a lack of stimulus and evidence for the judgement that those

items exist independently of that consciousness. So, in addition, to the framework of relations between visual items, it is important that the visual field changes such that certain items disappear and then re-appear. Thus, a turning of the head (although this is a loaded description) produces, say, a disappearance of items at the right hand side of the visual field and an emergence of fresh items at the left hand side of the field. A reversal of the process produces the reappearance of the disappeared items.

This gives us a working example of synchronic relations operating as a foundation of an objective spatial scheme, we have to determine whether any of its essential features are provided by sound and its properties.

The two forms of synchronically relevant relations are pitch and loudness. Pitch relates sounds to each other on a "lower than/higher than" scale of relations; a scale which, within our experience has limits. Although subdivisions of the scale cannot be limited in principle, the extremes of the scale may be laid down by experience, although these do not necessarily have to be taken as limits set by logic. Loudness is a relation of intensity rather than of quality. We can say that it is a linear, non-circular scale which has, as one to its extremes, silence. The other extreme is harder to specify, for the same difficulty pertains as applies to pitch: logically, there may not be a limit to how loud a sound can be, but within experience there may be levels of sound louder than which we cannot distinguish. We do not need to concern ourselves, particularly, with this issue. I assume that linear space which terminates is a coherent notion. Historically, this has been treated as problematic: the idea of a limit or boundary has led to questions about what lies beyond the supposed limit, thus revealing the idea of a limit to be incoherent (4). If this continues to prove influential, then the situations concerned can simply be described as

ones where the subject is incapable of exploring and experiencing more of the scale than he does, or where potential points on the scale are uninstantiated.

Let us, then, keep the previous synchronic paradigm before us and consider whether sound properties supply the necessary framework for objectification. What we isolated as being of importance was a structure or ordering of items which was reasonably firm and which provided the basis for recognition or re-identification. Certainly, pitch and loudness provide orderings for sound items. We could imagine a subject confronting a collection of sounds at different pitches or a collection of sounds at different loudnesses. Obviously, it is possible for these to occur as a single set, but, it is necessary to decide whether it is the pitch or the loudness ordering that is of significance, as I shall explain shortly. Also, we have to say that a collection of sounds must be at different pitches for a collection to be said to exist, because sounds at the same pitch would simply merge and be heard as one. Similarly, it will be necessary for sounds at different loudnesses to be at different pitches because if, for the sake of argument, there are two sounds at separate levels of loudness, yet at the same pitch, then they will be heard as one and their loudnesses will simply combine adding their respective intensities together. This caveat aside, we can posit a subject experiencing sounds and being aware of a scaled ordering amongst those sounds of either a pitch or loudness type. This would seem satisfactorily similar to the visual situation. What we added to that arrangement was change: a shift in what was experienced, plus repetition. Taking pitch we could imagine the basic experience changing such that the subject "moved" up the scale, as originally heard. This could then be reversed, bringing the subject "back to" the original experience and the notes which had disappeared. A similar situation could be envisaged for loudness; there would, however, be the

aforementioned requirement that all the sounds be of different pitches. A range of loudness could be established, and a subject could progress across these and return in the appropriate way. Given the potential for infinite gradation in either scale and the specification of only a finite number of sounds, there would be gaps in the spaces resulting from either sequence. In fact, to assume otherwise in the case of pitch would create other problems. A subject presented with the total range of pitches might find it impossible to distinguish the individual sounds which are to form the basis of objects. On the other hand, even if a total block of sound is experienced, but still only a segment of the entire scale of sound, so that sound disappears at the lower end of the scale and appears at the higher end and vice versa, then it would be possible for the subject to think of space as filled by some species of continuous object.

On the face of it, pitch and loudness provide the structure necessary for a spatial system. Items can be identified and re-identified, and an underlying notion of location is engendered. All of which does lend strong credibility to spatial claims for these two synchronic properties. There are, unfortunately, areas of concern, though they may not amount to a total refutation of the spatial claim involved.

The problems arise if we try to contemplate movement or exchange for the pitch or loudness objects we have proposed. What becomes immediately apparent is that, by contrast with our diachronic model, we cannot conceive of sounds occupying fresh locations in the spatial scheme or sequence. This is because the spaces involved have been defined in terms of pitch or loudness scales, and so the locations they comprise have a specific character and cannot be neutral in respect of their objective content. Simply, we cannot think of a sound of a given pitch or loudness moving into the place of a higher pitch or loudness; to do so would contradict the

whole essence of the scale or space. The capacities of such spaces have not been defined by a simple "next to..." kind of relation but by a "higher than..."/"louder than..." form of relation. A lower note occupying the place of a higher note in the scale is a contradiction of the essence of the spatial scale in question. This may seem confusing to the extent that one can quite easily imagine two notes in the scale exchanging places, in that, as the subject moves along the scale, he encounters a higher note in the place of a lower one and vice versa. This is acceptable to the extent that we have spoken of the subject encountering one segment of the scale at a time so that, here, a higher note could be heard as part of a lower segment, and then, as the subject moves, the missing lower note could be heard with notes forming a higher segment of the scale. A little reflection should cause us to see that this does not represent a genuine exchange or transposition. We have to resist the temptation to revert to a diachronic understanding of the sequence involved here; the ordering at issue is not a contingent one, developed from external relations between objects unrelated to their content. For pitch and loudness, it is the inner nature of the properties involved which creates the sequence. Sounds cannot be slotted into the sequences concerned, irrespective of their content. If we consider the case of a subject experiencing a segment of the scale and we suppose he hears five sounds, 'a, b, c, d, e' which are either a scale of rising pitches or of loudnesses and then we suppose, c disappears and the higher sound h joins the group, the subject does not have any reason to locate h between b and d. Why should he? Sound h is higher than any of the other sounds heard, and accordingly, cannot be forced onto the existing scale. The only consistent conclusion a subject could draw in this situation would be that somehow his auditory field had been widened to extend to h and f and g had disappeared. If, however, he "moved on" and a and b disappeared and f and g appeared, the whole coherence of the

subject's sound experience as forming a space would be under threat. Moving further and encountering c would not improve matters because its lower pitch or loudness value would debar it from occupying the place of h between g and i, and so the concept of an exchange between c and h would gain no purchase.

We realise, then, that there is a significant difference between spaces based on these properties of pitch and loudness and others we have considered. The difference being that movement or exchange for the objects which such spaces comprise is inconceivable. The only possibility for change lies in the substitution of an item at a specific location for one at the same point but with a different loudness - in a pitch based space. There is an additional complication for loudness-based spaces, mentioned earlier: if the substituted sound has the same pitch as the neighbour of that substituted for then the sound will merge and produce a combined loudness which will locate them at a different point on the scale. It might be that the subject could deduce what had happened here, and then realise that he was, in fact, experiencing two separate objects "side by side" but it certainly produces a complication. The requirement for the variation in either pitch or loudness for a substitution is that, without it, there would be no reason to suppose that one sound object had disappeared and another had appeared in its place. The exception to this is if a time lag occurred such that a sound disappeared for some perceptible period, and another replaced it. Even here, though, it is possible to claim that the second instance was simply the return of the first sound - a form of debate we have considered earlier.

In general, we can see that the space we can generate purely from the synchronic relations sounds are capable of is severely restricted by the standards of the previous, diachronically constructed sound space; not to mention our

own visual, synchronic space. I do not think that this is tantamount to a dismissal of such a synchronic sound space, however. Basic requirements are met with: there are grounds for a subject to base an objective interpretation upon. Still, one might worry over the fact that visual synchronic relations produce such a rich and changeable form of space, and sound relations of the same type do not. The solution to this puzzle lies in the fact that there is a crucial difference in form between the two sets of relations. Both hold synchronically, but the sound relations of pitch and loudness are essentially internal relations and those of visual orientation are external. Pitch and loudness exhaust the nature of a given sound in a way that "to the left of..." etc. do not for colours. A visual object can come to have completely different relations with fellow objects and remain the same, as an object. If a sound changes its pitch or loudness relations with other sounds it, quite simply, becomes a different sound. I am not denying that there is a loose sense in which we can say that a sound is *the same* sound even though it changes its pitch our loudness (usually where there is a continuous change in these) but this is not the same sense as that in which a visual object remains the same object when it moves through space and establishes different relations with other objects. This is an important division to make among synchronic properties regardless of its scholastic overtones. Although we can form no idea of perceptual qualities other than those we are familiar with, the possibility of them is entirely coherent and we can, at least, expect them to appear with synchronic property relations which will fall under one or other of the two types mentioned here, with the divergent potential for more or less complete spatial schemes these types have been shown to have.

Before closing discussion of synchronic relations completely, it is worth mentioning the topic of synchronic relations combining with diachronic ones in some spatial way.

Specifically, it might be fruitful to consider whether any important contribution could be made to our diachronically constructed sound space by development of its synchronic potential as provided by pitch and loudness.

The most promising outcome one could look for is one where the pitch or loudness qualities of sound added a fresh dimension to the essentially one-dimensional sound world. So that, as well as the diachronic axis of "before" and "after" or "next to" there would be a synchronic axis of "higher than" or "louder than". This would mean that for points on the sound sequence where, currently, there are single sounds (only one sound experienced at a time) there would be several sounds, spatially related to each other as a consequence of their pitch or loudness properties. Ideally, this adds a kind of depth to our sound space, its two- dimensionality would provide the facility for a more sophisticated form of movement than the one we have fashioned from the resources of the sound model so far. Specifically, it might be possible to give an account of objects in the sound sequence "passing by" each other in a continuous sense, not the current jerky, "leap" based one. This is because the possibility of objects existing side by side has been opened up. We have already given an account of what it would be like to experience sound objects in motion: essentially, when they are moving in the same direction as the observer, they would last for longer in his experience and, when moving in the opposite direction, for a shorter time. In this changed situation, there would be the added feature of hearing the sound objects move into new relationships with other such objects. There would be a kind of "overlap" phenomenon. Thus, we could have a scenario where our familiar a-z sequence had running parallel to it an a'-z' sequence, and a a''-z'' sequence, and an a'''-z''' sequence. So that, the subject, as he moves along the sequence, at each point where we previously supposed that he met a single sound from the a-z

series, now meets two additional sounds of the same duration or spatial dimensions, let us suppose, for simplicity. In a situation where one of the sound objects changes its position in the auditory space, that sound will move out of its synchronization with its two associated sounds and start to be heard along with one of the adjacent groups of sounds in the sequence. The sound may end up being in phase with the new group of sounds, but it need not be. As it is, if the transition is to be the fluent one we are interested in, there must be a period when the sound is heard unsynchronized with either the grouping it separated from or the grouping it joins (that is if we are assuming that the movement is witnessed by the subject at all, for transitions might well occur outside of his experience). The finer details of this arrangement should be easy enough to imagine.

Introducing the other qualitative aspects of sound, pitch and loudness, seems to have very productive consequences for our basic model: its rudimentary facility for movement is greatly enhanced. Certainly, the account just given seems unobjectionable, but the question that must be asked is whether its formulation is made possible exclusively because of the properties of pitch and loudness. We spoke of expecting the fact that pitch and loudness can form spatial axes to compose a second dimension for the original sound world; we need to consider now whether this is what actually has been achieved. Our assumption was that the sounds a', a'', etc. which were added to the basic a-z sequence would be ranged along either a pitch or loudness scale and, as such, would form a short spatial dimension of the sort we have outlined for these types of synchronic properties. We immediately see that there are difficulties with this view. One is the fact that the dimension added is merely a fragment: are we to suppose that it is continued into an empty space? Also, the subject does not traverse this dimension; he does not seem to be able to move in the new direction, which is

supposedly, provided by the pitch and loudness scale the new sounds create. Without exploring these issues, however, there is a separate conclusive objection to the proposal we are considering; this is that pitch and loudness *per se* are redundant as far as establishing a mode of transition is concerned. We do not need to specify groups of sounds ordered along pitch or loudness axes. All we need are groups of sounds. It is true that pitch differences will, in general, be necessary in order for the groups of sounds to be heard as such - although on specific occasions we may have sounds of the same pitch together, indistinguishable at that point in the sound space, but with separate histories in the sound space. These pitch differences will not be important in themselves, however, they are merely a necessary condition for the existence of groups of sounds, the members of which can be individually identified.

In total, then, the point we have reached is a satisfactory one in that we have been able to further enrich our sound model, thereby rendering it more plausible as a valid alternative space or conceptual scheme from the one actual experience engenders. That, in the final analysis, this was not brought about by the marriage of diachronic with synchronic relations between sounds with synchronic ones is a disappointment, in that it leaves open the question of whether this could occur in other experiential circumstances. No formal possibility of such a union has been established. At the same time, we cannot take the failure in this situation as establishing the impossibility of such a combination where other experiential situations are concerned - though it must lend some weight to such a claim. This issue may seem significant later on when we come to consider the combination of material from different sense categories into a unified view of space or set of objective commitments.

(viii) STRAWSON AND BENNETT.

We have reached the point where our attempts to fashion the foundations of a viable alternative to the visio-tactual space we standardly take ourselves to inhabit have reached a reasonably mature stage. We have a model of an experience shaped from sound items which embodies features permitting certain objective and spatial interpretations. The kinds of judgements and concepts which are applicable are, in essence, those we are familiar with in our own space. There are differences, of course, but these are not sufficiently major to endanger this formal resemblance. I mentioned, at the beginning of this chapter, Strawson's version of a sound space in his book INDIVIDUALS (5) and his appeal for tolerance concerning its limitations and discrepancies in relation to actual space. I have already made a similar appeal, but I should like to mention at this point a basic divergence between the model I have developed and the one favoured by Strawson; one which leaves Strawson's version more vulnerable to this particular line of criticism. Strawson's model exploits a device which is referred to as the "Master Sound". This is a sound analogue of space itself. Roughly, it involves a continuously present sound having varying pitches so that a subject can move up and down the pitch scale of the sound in an unbroken fashion. Alongside this master sound at various of its pitch "locations" are groups of sounds, which, for Strawson, serve as sound objects. Their status as re-identifiable particulars derives from their being linked to the master sound in a determinate re-experienceable way. Thus the master sound becomes the space in which sound particulars ("complexes" in Strawson's model) are "housed". This differs from the model I have favoured, in that, Strawson's model gives a peculiar status to a subset of sounds in the sound world and of the total sound experience of the subject. In the Strawsonian situation there are, in effect, sounds which are objects and sounds which are space or points of space. The world I have developed only

has sounds which are objects. For me, space exists - as it must in any genuinely objective experience - to house the sound objects, not as itself a kind of sound but, rather, as an abstraction or inference from sounds, and from the presumption of their being objects. I tried to show how there is an almost dialectical relationship between objects and space. The two concepts emerge intrinsically linked: part of forming an idea of one is forming an idea of the other. The significance of this difference is in the affinity it represents between my model and actual space. Space, in our visio-tactual experience, is of a different metaphysical or categorical type to physical objects. We do not see or feel space; it is what objects exist in, it is entailed by objects but is not reducible to them.

If Strawson's model were really an analogue of space in this respect, the fairest visual image would be one where there was a continuous background, against which all objects were set, varying through all the colours of the spectrum. In other words, space would be coloured in just the same way that objects are. Obviously, the master sound does not mirror some kind of "master-image" of this sort. This forms a criticism of Strawson's model from the point of view of parity with actual spatial experience. It is a separate question whether it forms a criticism of the model as a viable representation of *some* possible spatial scheme. Strawson is not terribly concerned about this issue in that his purpose in developing the model is largely heuristic, representing, as it does, a valuable technique for uncovering the essential objective features of actual space through the attempt to map them onto a different realm of sense experience. However, I should like to mention some possible objections to the model as a genuine spatial competitor to actual space.

There are difficulties stemming from the fact that space and objects *in* space are supposed to be of the same character. The obvious problem is that of the spatial background, the master sound, merging with the sound particulars where these particulars are of the same pitch as the master sound at one of its points. I do not think this is an insuperable problem for the model, however, though some explication is required. One area where these difficulties would arise is in cases of motion, which Strawson does not give any account of, his sound world being totally static from the point of view of objects or complexes changing position. Something else not entered into is the nature of the space envisaged, specifically, the question of whether it is finite or infinite. Obviously, in our experience, the range of pitches we can hear is delimited. If such a thing were supposed for Strawson's master-sound, the sound space it creates would be finite. There might be problems here of a type similar to those encountered if we attempt to imagine actual space as delimited, namely that it is always conceivable that the space extends beyond the last experienced point. In this case, it might be that the subject did not experience another gradation of the master sound after a certain point but he could not be certain that this was because space had come to an end at that point, rather than that for some contingent reason he could not "move" beyond it. Perhaps, it would be less problematic to opt for an infinite range of pitches, accompanied, possibly, by a supposition that the subject could experience them all (in principle; time would rule it out in practice). These, as I have said, are all difficulties for the sound model under consideration but not clear invalidations of it. The final argument I want to mention seems to me to be more threatening.

Because there are no qualitative or phenomenological differences between space and objects, in the Strawson sound model, potential exists for a reduction of the two to the

same metaphysical level. That is, the radical difference in status between the sounds which make up the master-sound i.e. what the subject hears at any given moment and the sounds which are the sound objects, might break down, such that the sounds of the master sound become taken as sound objects themselves. If we consider that the Strawsonian model involves the subject in question serially experiencing both sounds at increasing or decreasing pitches and also, simultaneous with some of these sounds, hearing sounds or groups of sounds not necessarily related pitch-wise to previously heard sounds, we can see that there is greater parity with my sound model than might initially be supposed. This has an obvious tendency to erode any distinction between the two models. Other than the pitch ordering which exists between some of the sounds heard by the subject, there is no essential difference between the two proposed sound experiences. The subject at any point in time is hearing a group of sounds one of which is a pitch point of the master-sound, so called. If the subject is able to generate an objective understanding of all the non-master-sound items according to the principles we have already explored, then there seems to be nothing to prevent him from including instances of the master sound in the process also. If this did occur, then the master sound would become a succession of sound objects in a sound space rather than sound space itself. Space would be the imperceptible abstraction we have already described.

This kind of degeneration of the Strawsonian model is a real possibility. It is really only the presence of an ordered sequence amongst the sounds which compose the master sound that provides any possible distinction upon which to base the interpretation Strawson favours. Whether this distinction provides grounds for such an interpretation seems, at least, doubtful, but I shall not pursue the issue further in view of the fact that, even if it is a genuine variant of my

sound world, it is less satisfactory as a sound parallel of actual space for the reasons I have given.

Bennett in Chapter Three of his book KANT'S ANALYTIC (6) identifies some of the weaknesses of Strawson's approach and prefers a model sound space closer to my own. He does not, however, see the potential for incoherence in Strawson's model and regards the master-sound more as unnecessary than as a positive distortion of spatial dictates. This is in keeping with Bennett's tendency to underplay the truly *metaphysical* character of notions such as space and object. He speaks of the language of space and objectivity as a form of "abbreviation" (S.14 A Theory of Concept Utility) drawing upon ideas developed by Quine in TWO DOGMAS OF EMPIRICISM (7). Simple objective statements, he observes, can contain the same information as subjective reports of experience many times their length.

Without wishing to deny this, I think such a view does not go far enough. The transition from pure reports of experience to objective claims is more than just one of linguistic economy. Terms like "space" and "object" are not simply pieces of shorthand, they introduce a new and distinct kind of *thing*. A real conceptual leap is involved in placing the ephemeral particulars of experience under an objective interpretation. Consequently, I find Bennett's approach unacceptably reductionist.

One further quibble I would have with Bennett's, otherwise sound, proposals relates to his view that some kind of "speed limit" would need to operate for the rate of change in the sound world. This smacks uncomfortably of importing contingent laws of movement from our world into the hypothetical sound world. Additionally, Bennett is, rightly, concerned that his sound model does not degenerate into chaos. The "speed limit" notion, however, blurs conceptual requirements

with psychological ones. It may be that, for certain subjects, rapid re-locations of sensory items proves confusing, but there are no logical objections to this *per se* and we can easily suppose subjects with enhanced intellectual capabilities. What *is* necessary is a certain level of stability within what the subject experiences. He needs a sufficient degree of repetition within his experience to build up the re-identifications which introduce the concepts of space and object.

(ix) "EMBODIMENT" IN A SOUND WORLD.

One topic Strawson does discuss in connection with his sound model is that of whether his subject is embodied, whether, that is, the sound model is capable of providing a body for the subject. Strawson gives a sketch of how this might be achieved in his model. I wish to give some brief attention to this question in terms of the sound world I have been developing in this chapter. The topic of embodied perception in more general terms is one I shall be exploring in the next chapter, in particular, the question of whether embodiment is a necessary condition of being an observer or percipient. For the moment, I shall confine myself to the issue of how an observer (auditory) might be embodied in a sound-space. Strawson talks of there being a sound which is constantly heard wherever the subject is in the sound space - at whichever point along the master-sound the subject is. That there is some item constantly present to awareness is possibly a necessary feature of embodied perception (though this is open to debate), but I am not sure that it is a sufficient feature. For the key question is, what is it that causes the subject to regard this omnipresent item as his body rather than some object that simply moves with his viewpoint? This may seem like cavilling, but it is the case that, in actual experience, there are other factors which

cause us to identify one object among the many we are aware of as being our body.

Two considerations which immediately come to mind if we reflect upon our relationship with the object or part of the world we call our own body are agency and causality. We have a sense of direct control over our bodies: control over objects is always mediated by control over our bodies, our ability to affect things in the world is dependent upon our ability to affect those parts of the world we call our bodies. Moving to the passive side of the relationship; as well as our ability to act, we are aware of being acted upon. In perceptual terms, we know that our bodies are directly responsible for what we experience. It is because of impingements upon or changes within our bodies that we have the experiences we do and have an awareness of the world at all.

Clearly, in saying these things the whole controversial area of causality is implicated. In speaking of agency, a certain notion of power may be suggested which may be offensive to those who reject the idea of natural necessity and favour some kind of "constant conjunction" version of causal connections. The fact that some species of desire inevitably leads to changes in parts of the world - our bodies - does not have to be taken as proof that some form of necessity rather than simple regular conjunction is at work. Similarly, where we are "acted upon" the same qualification can apply. Accordingly, I would prefer to use a weak version of causal connection for the causal issue involved in the question of embodiment. Having said this, a problem arises if we reconsider the formulation I gave of the relevance of causality to the issue of embodiment. I suggested that the constant presence of one item to a subject's awareness was insufficient to entail that that item be the subject's body in the sense we normally mean. The idea being that there had to be something to distinguish a situation of coincidence from that of

causal agency. Clearly, if we accept a constant conjunction reading of causality then the distinction just mentioned seems to dissolve. This, however, is not the case: even supposing causal connection to be purely constant conjunction, we can draw a distinction between a case of coincidence and that of agency in the situation we are talking about.

One notable feature of the situation presented by Strawson is that what constant conjunction there is between the subject's point of awareness or observation point and a given item of awareness - one of the group he is aware of at any time. What is missing is a regular connection between the privileged item and some mental state on the part of the subject. In other words, some sense of real control over the item is lacking for the subject. Introducing an accompanying state of will does something to remedy this situation, but what we have is still a pale shadow of our actual experience. The reason being that we have a much richer set of possibilities of control where our human bodies are concerned: we are not just able to move them through space as single undifferentiated items, we can cause a whole range of changes *within* that object which we call our body. This possibility is missing where our sound objects are concerned because they are metaphysical simples; they do not admit of differentiation and, consequently, cannot be the subject of internal re-arrangement. This means that there is less scope for the kinds of relationship between the subject and "his" body than under actual experience. This, inevitably, has the consequence that the subject has a more tenuous link with the item supposed to be his body, from the point of view of his agency, than we are used to. On the other side of the causal link, there is a comparable problem for evidence of the importance of the favoured item for the perception the subject has of his sound world. Because of the greater complexity of our world, in general, and of our bodies, in particular, there is a more obvious connection between our bod-

ies or parts of them and our sensory experience. What is particularly crucial is the fact that we know that certain influences upon our bodies prevent us from having certain perceptions which otherwise we would have had. Obstructions to the eyes and ears, for instance, cause accompanying losses of sight or sound experience. Because we have more than one sense modality, we are able to monitor such changes. Although the sense affected will not be providing information about what is happening in the world and that part of it which is meant to be the body, other senses may be recording the presence of outside interference upon the relevant areas of the body. We may feel the blindfold which covers our eyes, for example. Also, without relying on another sense it is possible by inferential means to be aware of some outside action upon a specific part of the body. Where sight is concerned, we may see an object moving directly towards the eye before we experience the loss of visual awareness.

Comparable richness is not available where our sound world is concerned. There is a problem of differentiation. Sound objects do not break down into parts which can be identified as having an intimate causal connection with sense experience. Sense-organs cannot be identified. In general, there is no way in which the actual sound object put forward as being the subject's body can be acted upon by other objects. The only way in which sound objects come into contact with each other is via sequential or simultaneous existence. There is no way in which they can enter into any other kinds of relationships; the space does not have the conceptual resources for us to articulate ideas such as sound objects moving closer to each other or coming into some quasi-physical contact. The relationships between objects are all identical in form. We are not able to describe a special kind of encounter between the sound object which is putatively our

body and any other object in the sound world which precedes a loss of sensory experience.

If we abandon such an attempt and merely try to construct the situation with the available sound world relationships, then there are other problems. We could suppose that, when the permanently present sound object encountered some specific other object - an object of a certain pitch or loudness or located at a certain place in the sound space - perception ceased. The trouble with this, however, is that if the entry of this said object causes a blackout of sensation then how is the subject to become aware of the existence of this object? He has no other senses to fall back upon for information. Also, there seems to be no inferential mechanism available to indicate the presence and character of such an object. And, setting this aside, even if the subject could become aware of the certain sound particular or type of sound object which caused a deafness in him for the duration of its presence, this would still not provide any evidence that the object put forward as being his body was so or that it had a causal role in his perception, in other words. The only object it would confer agency upon would be the unusual one. No connection is established between such an object and the permanently present object.

It seems difficult, therefore, to maintain that a subject could be embodied in any usual sense in such a sound world. This conclusion may, however, raise a new spectre for the sound world we have so painstakingly constructed - the contentious notion of disembodied perception. There are those for whom (8) the idea of sensory experience of an external world without the experient being a bodily part of that world is incoherent. Having been led to the conclusion that our sound world involves such a mode of experience, we must decide whether that renders our whole world unacceptable and functions as a 'reductio' proof against the possibility we

were proposing. I do not believe that this is the case and the fact that we have been able to describe our sound world as successfully as we have should do much to support this. I shall, however, give some consideration to this question in a more general way in the next chapter.

(1) P.F. Strawson, INDIVIDUALS Methuen, London. 1959. Chapter 3.
(2) J. Bennett, KANT'S ANALYTIC, C.U.P., London. 1966 Chapter 3.
(3) J. Locke, AN ESSAY CONCERNING HUMAN UNDERSTANDING Ed. Woozley, Fontana 1964, esp. Bk. 2. Chapter VIII.
(4) See E.G. Kant's development of this argument in the 'First Antinomy' of 'The Transcendental Dialectic' - CRITIQUE OF PURE REASON N. Kemp Smith, MacMillan 1976, P. 396
(5) IBID
(6) IBID
(7) W.V.O. Quine, 'Two Dogmas of Empiricism' in FROM A LOGICAL POINT OF VIEW H.U.P. 1953.
(8) See Eg. T. Penelhum, SURVIVAL AND DISEMBODIED EXISTENCE. R.K.P. London. 1970, esp. Chapter. 2.

CHAPTER THREE
VISUAL WORLDS

In the previous chapter, we have considered ways in which familiar sensory material might occur such as to produce unfamiliar spatial schemes. In the process of restructuring such sense-experience, we have been able to formulate some metaphysical prerequisites for something to count as an object or a space. The raw material of this speculative analysis has been drawn from the non-visual senses. There were several reasons for this: the content of these senses is structurally simpler and, thus, more manageable for the kind of fundamental exploration involved. Also, these senses are much less wedded to our actual world than visual sense and the process of imagination involved in restructuring them in terms of alternative worlds is, consequently, easier. Having, I hope, laid a foundation using these senses, it is necessary to turn to the sense most of us are dominated by, vision.

In Chapter One we have already directed a good deal of attention to the phenomenology of this sense and this is, again, relevant here. Essentially, we extracted colours and shapes or coloured shapes from normal experience as its vital phenomenological elements. We further distinguished the properties of hue, saturation and brightness as features of colour. In forming this analysis we were isolating elements of vision which were objectively neutral. There are, however, some other aspects of seeing which deserve mention here and mainly because some of them might be contenders for additional phenomenological features of the visual.

Before going any further, though, it is important to indicate the strategy I intend to pursue in this chapter. Essentially, I shall examine the visual and its capacity to ground objective constructions via speculative models developed out of

two-dimensional visual material. Ultimately, this will feed into a description of the essential features of a three- dimensional space. This methodology may be slightly controversial to the extent that it might be felt that a three-dimensional space can only be grounded in some kind of inherently three-dimensional visual imagery. This is a claim I reject. Even if it is possible to have genuinely distinct 3-d images in the sense of having stereoscopic fusions of binocularly obtained images, it cannot be suggested that a 2-d, monocular experience yields an inferior or radically different understanding of three-dimensional space. Those unfortunate enough to lack sight in one eye do not thereby belong to a different visual world, even though their visual experience may have changed in some significant way.

In other words, it is a premise of the analysis I shall develop in this Chapter that it is possible to build up in understanding of three-dimensional space and its occupants from the kinds of images monocular seeing produces. Such an understanding being equivalent to that arising from binocular seeing (or polynolcular seeing in general, for that matter). That there are stereoscopic images formed from the fusion of the differing "flat" images enjoyed by the use of separate eyes does not mean that there is not a strong relationship between the two types of images. The stereoscopic image does not, strictly speaking possess any experiential content that is not contained in the monocular images it draws upon. The crucial extra element consists in the fact that the separate images are related to each other. They are united around the notion of a 3-D object; a single spatial occupant of which they represent different aspects. It is only because a conjecture has been made about the nature of what is being presented that the fusion takes place. Let us, however, pursue the idea that there is some genuine additional phenomenological content to stereoscopic images (or even monoscopic ones) beyond the colour and shape we have

already isolated, in a little more detail. For convenience, I shall loosely speak of the images obtained from monocular seeing as "2-d" and those derived from the use of two (or potentially more) eyes as "3-d" images.

One appealing way of explaining what is involved here would be to talk in terms of the presence or absence of "depth" according to whether an image is 2-d or 3-d. In a 3-d image one is said to be aware of the depth dimension that objects in our kind of space actually have; we have a perception of the thickness of things or how far back they go. Unfortunately, an obvious reply to this is that in a 2-d image we have an awareness of depth also. We do not just see surfaces perpendicular to the eye. In looking at a scene with one eye we see lines of surfaces running away from us, as well as those actually flat to the line of vision. More to the point, as well as seeing such recessive planes, we understand them for what they are; we are able to "read" our 2-d image in terms of a 3-d space. This capacity is standardly said to arise from our sophisticated use of collateral information. Our interpretation is meant to depend upon the presence of such features as shading and changes of hue as well as upon our general familiarity with the objects which come to fill our visual field. In other words, background knowledge or empiricism is cited as the source of our ability to use the images provided by one eye for information of a three-dimensional kind.

We should remember, however, that it is not difficult to construct situations where a person with stereoscopic vision is deceived as to the depth of what he sees. Which brings us to an important point: the underlying idea behind the distinction we draw between 2-d and 3-d seeing is, I believe, that of direct and indirect awareness of depth or three-dimensionality. The suggestion is that a 3-d image is inherently or immediately informative of depth, whereas a 2-d image is

only derivatively so. Expressed in genetic terms, a subject's first binocular view of anything in worldly space would bring with it an awareness of the depth or three-dimensionality of that thing; a 2-d image would not. An awareness of the depth aspect of our form of space for a subject with 2-d vision would have to be built up from an interaction with the space consisting of accumulating different perspectives of it - that is of things in it. This is a bold claim and we must remember that even as seasoned binocular experients of our space, we are capable of making mistakes concerning the three-dimensional qualities of items in it. Before we subject this to scrutiny, I think it is worth adducing a further notion which might be a candidate for what is distinctive of 3-d seeing. This is the idea of a viewpoint or the idea that in stereoscopic seeing we, as viewers, become part of, or feel ourselves in some way incorporated into the scene or the space we observe. A 3-d image is meant to imply, in some strong, conceptual sense, a viewpoint within the space it is an image of. Thus, in looking at, say, a tree not only am I aware of the tree and its dimensions and, perhaps, also, its three-dimensional spatial relations with other objects, I am also aware of observing it from a certain point in that spatial framework. A physical explanation of what is intended to be an experiential, conceptual fact might be offered in terms of the triangulation effect obtained by looking at something with two eyes slightly apart. We have to be cautious here, though, and it may be useful to consider why the use of two eyes should produce the kinds of effects it appears to do.

Essentially, seeing with two eyes produces two retinal images. These images may be quite different or hardly different at all, depending on the distance between the viewer and the objects viewed and upon the size of the objects viewed. The retinal images for each eye of an apple two feet away will be significantly different; those of an apple one hun-

dred feet away will not be. (Though the degree to which we are sensitive to the effect of parallax even at such distances is quite astonishing, see Mundle: PERCEPTION, FACTS, AND THEORIES. (1),) Consequently, we should be obtaining more information from objects closer up than further away (unless they are especially large: a skyscraper looks much the same from two feet away with either eye, though some small feature on the side of it would not - a case of what we choose to call our object). Presumably it is at this level where the full-blooded 3-d image should occur. Yet what information could such close-up binocular encounters reveal? We have two differing images of one object. Somehow, these images have to be harmonised into images of one object. We, of course, think of them as "aspects" of a single thing, but this does not explicate anything by itself: we need to ask what kind of aspects are involved. The two images might be linked edge to edge in a two dimensional way - in a situation where we were seeing only half of the thing with each eye. However, what we are looking for here is a three-dimensional kind of aspect, one which exploits the depth dimension to express how distinct images can be images of the same thing.

Take the example of looking at a book standing upright on the table in front of one, such that the spine is directly in front of one eye, the cover as well as the spine being visible to the other. Considering each image by itself, one would have no particular grounds for thinking them other than images of two-dimensional items, but, combined, this interpretation is not possible: both eyes would receive the same image if the object were truly flat. Taking the image of the spine and also the cover in conjunction with the other image of the spine only, it is solely by regarding the cover as extending away from the spine and the viewer, in the depth dimension that sense can be made of the two images as images of one object.

This would seem to carry us right back to the claim we were considering earlier that a single binocular glance is sufficient to conjure up the three-dimensional character of an object and, by implication, the nature of the space it exists in. This, I would suggest, does not automatically follow. What gives pause for thought is the question of whether a single, definitive 3-d interpretation is dictated by the kind of binocular encounter we have described. The best way of approaching this is via consideration of certain alternative orientations in the visual confrontation. Imagine, particularly, that the same book is involved, but that the eyes are further apart, so that the eye which sees the cover and the spine sees much more of the cover, that is, it confronts it at a broader angle. Why should this not produce a different unification of the two images in a 3-d space? Perhaps treating the cover as longer than in the first situation. Obviously, one could think of other modifications where the eyes were even further apart. More especially, one could propose a situation where the eyes were located on antennae-like stalks, such that they could confront opposite or unconnected aspects of an object, or aspects only marginally linked (to avoid the objection that the subject would have to have some common point to take as the basis for the unification of the images). Here we can see that there is not an obvious solution to the question of how the images are to be linked together. Questions of angles and sizes become relevant. We have to see that an aspect is not equivalent to a facet - in some physical sense. In other words, the process of unifying separate images into an understanding of a single whole is not like that of assembling a kit of determinedly interlocking pieces. Only when surfaces confront us face-on, do we have a true image of their size. As they deviate from that plane their apparent size diminishes. Consequently, as in the example of the book, surfaces of an object may appear shorter than surfaces they are in fact longer than.

Accordingly, in the kind of paradigmatic visual encounter we have been considering, it is conceivable that some kind of a priori awareness of 3-d space is present such as to dictate the way in which sense is to be made of the varying images, but insufficient information would be present to dictate the exact three-dimensional spatial character the viewed object would have. Further experience has to be brought to bear. Crucially, information relating to the spatial nature of the subject's own visual equipment and the points in space from which his images must arise. These are a vital part of the calculation. From two binocular images of an object we might produce a 3-d spatial interpretation of that object, but those images could also be consistent with a different interpretation, by assuming a different pair of viewpoints from which those images were obtained.

It is only by a shift of position that the required knowledge can be acquired and, hand in hand with that, a knowledge of the characteristics of the observer in terms of the viewpoints his binocular seeing is based upon. A process of movement or exploration can lead to the separate images of the two eyes "linking up": what was initially seen by one eye will come to be seen by the other. One form of movement will bring the eye which saw only the spine to see the spine and the cover of the book, as formerly seen by the other eye (which will have passed on to fresh aspects of the object). The aspects which separated the two will be revealed and, simultaneous with this developing knowledge of the spatial character of the object, an understanding of the two viewpoints behind the original images and their spatial qualities will develop. Only after such an empirical process, will the subject be able to determine, from an initial glimpse of an unfamiliar object, its spatial nature in three-dimensional terms, because only at that stage will he have determined

the features of his own visual standpoint and the contribution this will make to the images he has of objects from it.

The same point arises in respect of the calculation of distance. It is tempting to think that it is the combination of views from separate eyes which allows us to calculate how far away things are. We think in terms of obtaining a "fix" on an item, by "homing in" on it from separate viewpoints, but if we consider the fact that, in imagistic terms, any two binocularly obtained images of an object are consistent with a range of objects of different sizes at different distances then we start to sense the problem. For example, what we take as an object of size x at distance y could also be, on the basis of the same images, an object of size 2x at distance 2y. What breaks into this indeterminacy is knowledge about the viewpoints of the images concerned, but this cannot be obtained in a single visual act; the information is not integral to the images themselves. The evidence suggests that we are able to feel the angle our eyes are positioned at when we are focusing them on an object and, by dint of experience, we are able to couple these sensations with the idea of things being at different distances. I am not assuming, in talking of distance here, that it is a simple or absolute property of things. Distance here can be a relative property, taking its meaning from a given unit of measurement or from certain familiar objects - "x is the thickness of so may y's away". I am suggesting that there is a kind of interdependence between the two elements involved - the observer and his visual equipment on the one hand and, on the other, the objects viewed and their distance away. To determine a value for one, it is necessary to have a value for the other. Where no such knowledge of either element exists, a variety of interpretations of the visual imagery is possible. Only some process of experience can provide the knowledge necessary to resolve this uncertainty.

In the above it is not that the subject must make *physical* assumptions about his viewpoints, merely that *spatial* conclusions must be drawn. He does not have to assume that he has eyes or a body or any physical or material form of visual receptor, only that there are two *points* in space from which his images arise.

In terms, then, of the claim we considered about binocular seeing producing an immediate sense of viewpoint this no longer seems defensible. An awareness of where one is viewing things from is something which has to be built up by experience, by interaction with the objects of sight. In most cases, our knowledge of the distance between us and objects will be based on the familiarity of the objects concerned,: knowing *what* we are seeing, we will be able to judge how far away it is by its relative size in our visual field.

(i) DEPTH AND VIEWPOINT

Some may still feel that depth is some special visual element of an image over and above its colour properties - even where monocular seeing is concerned. It is difficult to see what this element might be. One misleading source of this sense of depth as an intrinsic feature of images (apart from the presence of shading, which is really a colour feature) is the operation of focusing. When we regard a 3-d scene not everything will be sharp, only by exploring the image and changing the focus of our eye we can experience the whole thing clearly. It is this more than anything which tells us that we are viewing a picture or a photograph rather than reality (where no usual collateral pointers are present). A painting can be completely in focus, a photograph partly in and partly out of focus, but unalterably so. Also, in looking at a picture we will be aware of only having to focus at one distance, which could not be true of looking at the real 3-d scene depicted.

Clearly, internal sensations of the focusing of the eye are used by us as part of estimating depth or distance, but, neither this nor the fact that images are a mixture of sharp and blurred elements provides an a priori element of depth in an image. In other words, the presence of these factors does not entail the three-dimensionality of what is seen. It is only by having established the depth dimension of what is visually experienced that factors such as blurriness or sensations such as focusing can be used to infer depth or distance. An empirical connection is required. A certain bodily sensation accompanying a particular image cannot, a priori, tell us anything about the nature of the world represented (if any is at all). Only once we have acquired an understanding of 3-d reality, can we begin to investigate the features of the visual equipment we use to perceive that 3-d space.

I have already made similar points earlier in connection with the question of viewpoint and the way in which it may not be logically entailed by an image, even a 3-d one. That is, in treating the image as of a 3-d space, it is not necessary, as a logical consequence of that, to assume a point in that space from which the image is had or formed. Perceiver-location may not be a necessary presupposition of 3-d perception. We do not have to assume that the viewer is a part of the space he views, even in the non-embodied sense of his being a dimensionless point. Why should one assume that to be aware of a space one has to be in it?

There are, of course, strong intuitions that a viewpoint is necessary where visual perception of a space is assumed. Surely, one might argue we must at least be in front of an object to have an image of it, even if no particular point in front of it is entailed? The idea, perhaps, being that we could not form an image of something if we were not in some way confronting it or if something else were blocking it off.

This line of thinking is based on specific beliefs we have about the mechanics of seeing in our world; the fact that it is light-mediated and that light travels in straight lines. That this is the case is something we discover about our world and not something determined by the nature of the imagery by itself.

It may be useful to narrow discussion of this point down to a consideration of seeing a 2-d space, which is the kind of experience we are interested in here. It might seem less controversial to deny a viewpoint for such images. For, if there is no depth in the space observed, how can there be a location for a viewer or viewpoint to occupy? Some might use this, however, as an argument against the possibility of a 2-d space, because they might think a viewpoint so essential to an image that a space which had no place for one could not be a source of visual images. Spelt out in terms of the proposed 2-d space: the subject is meant to experience a flat "wall" of colour(s), the space has no depth, it cannot, therefore, be assumed that the subject views from some point in front of this "wall". The objection would, thus, run that, for the subject to experience this wall of colour, he would have to be somewhere in front of it; otherwise, his having the image at all would be incomprehensible. Consequently, There would be not a metaphorical "wall" of colour but a literal one: the attempt to interpret the image in terms of a 2-d space would fail. Images would be taken as entailing viewpoints and thereby entailing a 3-d interpretation of themselves.

The key question, then, becomes, is it inconceivable that an image have no viewpoint? There is, of course, one sense in which this is answerable in the negative. An hallucinatory or dream image cannot have a viewpoint because there is no space for it to exist in. Such images are taken as no more that subjective items, and as only deceptively representa-

tive of space and such a fictitious space cannot imply a real viewpoint from which it is experienced. A response to this is to say that an illusory space dictates an illusory viewpoint. There is a viewpoint in potential where such images are concerned: if the image were of real space then there would have to be a real viewpoint within that space. Insofar as a subject takes such images seriously, he has to assume a viewpoint for those images within the space he, mistakenly, believes them to represent. Just as, when we make 3-d senses of a picture, we create a viewpoint, a point the scene would have to be viewed from if it were actual.

If viewpoint is meant to be entailed by any visual image then it can only be so in some phenomenological sense rather than in an objective, optical sense. It is in every way unacceptable that the simple experience of a visual image dictates the existence of an actual space. Purely subjective images do occur. This presents the problem of what the phenomenological nature of viewpoint is. It is not difficult to identify other phenomenological features of images such as colour and shape. Viewpoint, if it exists, is much less concrete. It can only be a feeling which an image engenders of being at a point in a space, viewing three-dimensional objects. This awareness may prove to be subjective in the sense that, in fact, one is not in any such space at all. A failure to be able to explore such a space and to change one's viewpoint would establish the subjective status of the perceived viewpoint - in the same way that the objective status of the experienced coloured shapes might be disproved by subsequent experience. Just as the phenomenological nature of the coloured shapes would not be changed by such a discovery, it could be claimed that viewpoint as a phenomenological or logical feature of such an image would be similarly unaffected.

This would entail that, in the situation of a subjective image, although its subjective status would not be challenged (viewpoint being treated as a phenomenological feature such as colour), any attempt to give it an objective reading would require the postulation of a three-dimensional space. This is clearly quite a dramatic claim (bearing in mind that we are discussing monocularly generated images), and one I believe to be false. Partly, I would suggest that the belief in a viewpoint has to do with our, contingent, scientific views about the nature of seeing and also, that attachment to this idea stems from the fact that our world is a three-dimensional one and that we automatically impose a three-dimensional interpretation upon our images. Someone committed to the visual as intrinsically three-dimensional might find this sort of explanation hopelessly positivistic or empiricist, but little reflection should reveal the highly elusive nature of viewpoint as a genuinely phenomenological feature of the visual. For, can it really be denied that a sense of viewpoint is parasitic upon qualities of colour and especially of shape? If this were not the case, and viewpoint were really an independent phenomenological quality (as colour and shape are) then we should be able to countenance the notion of any viewpoint being combined with any experienced coloured shapes. For instance, we should be able to allow the shapes in an image to change and viewpoint remain the same.

This separation can be achieved but only to a limited extent. It can only be done by revising and, perhaps, radically so one's understanding of the three-dimensional character of the shapes seen. One is compelled to assume that, either the 3-d objects which the shapes are meant to be aspects of have all changes their orientations in space relative to the fixed viewpoint or, more unconventionally the objects have actually changed their form, and have evolved into different kinds of three-dimensional objects. The spatial upheaval in-

volved in this kind of interpretation is monumental compared with the simple assumption of a change of viewpoint for the changes in the shapes seen. We can see the total interdependence of visual shape and viewpoint when a 3-d interpretation is presupposed for the content of what is seen. In this relationship, viewpoint will be subjugated to the form and orientation of objects. This should show the non-phenomenological character of viewpoint.

If one is still in doubt about this, then consider the extreme possibility which the phenomenological view licenses, that one could entertain the view of the front of an object in terms of the coloured shapes experienced yet experience the phenomenological element of viewpoint as of being positioned behind the object. In fact, although a given shape or collection of shapes is compatible with a range of assumed viewpoints, by having different interpretations upon the overall 3-d form or size of the objects posited, it is not compatible with absolutely any supposed viewpoint.

I suggest what happens when a subject entertains an image is as follows:- from the shapes seen (and possibly from their tonal shading) the subject conjectures that he is aware of certain objects with a 3-d character and orientation, and, in doing so, ascribes a relative viewpoint to himself. This conjecture will be tested by subsequent changes in imagery (those which we would impute to a change of position) and will be either confirmed or revised in the most spatially economical way, either by modifying assumptions about the spatial character of objects seen or by adjusting notions of the original viewpoint. We can make such conjectures because we are not approaching our images "cold" but, rather, equipped with presuppositions gained from previous experience. We assume, firstly, that we are in the presence of a 3-d space and, secondly, that certain familiar types of objects are observed (tables, chairs, people and so forth).

Because of this background experience, we can leap from an image that can only be of a single aspect of a scene to attribution of a complete 3-d character to what is seen.

That these kinds of presuppositions are involved is often demonstrated by cleverly devised visual constructions or experiments which exploit them to deceive the viewer as to the real 3-d character of what is presented. Consider for example the room designed by Adelbert Ames which causes items within it to look the wrong sizes when the viewpoint for which it was intended is used. The rear wall, in fact, slopes away, but we conjecture that we are viewing a normal rectangular room and judge items inside it accordingly. (2)

What I would want to claim is that, not only is it possible to be mistaken in the 3-d interpretation one applies to an image but that, also, it is possible to be mistaken in applying any kind of 3-d interpretation to an image. In other words, I am claiming that a single image does not, by itself, dictate any one spatial interpretation of it. Such an image is compatible with a range of 3-d interpretations or a two-dimensional understanding of it. Which one is ultimately applicable is determined by subsequent images with which the initial image becomes linked (a process I shall have more to say about later). This is true whether we are discussing monocular or binocular situations: for, as was established earlier, even the pairs of differing images involved in binocular vision can be consistent with more than one 3-d interpretation. There may be sequences of images for which a 3-d interpretation is utterly inappropriate; necessitating, perhaps complex and bizarre properties for 3-d objects, yet for which a simple, consistent 2-d reading can be produced. If viewpoint in a 3-d sense evaporates as an intrinsic feature of all forms of imagery, as is suggested, then there is no obstacle to adopting a 2-d conceptual scheme for certain

forms of visual experience. This will be especially true where monocular seeing is involved.

We do not decide that what we see is three-dimensional because we have the primitive visual experience of viewpoint. Rather, we decide that we are seeing from a certain viewpoint because we have independently attributed a certain 3-d character to the shapes in our visual field. Our basis for making this attribution, will, ultimately, be the relationship these shapes have with other experienced shapes. The only caveat that might be inserted at this point is that, from a phenomenological point of view, we have been considering the possibility of a viewpoint as a phenomenological feature *independent* of other such features such as shape and colour because this quality of independent, unrestricted variability has been present in all of the phenomenological items we have considered thus far. It might, just, be possible to argue, however, that, although viewpoint is not a feature independent of other such features, it is still genuinely phenomenological *once* established. In other words, although viewpoint is not immediately given in an image, in the way that shape and colour are, it could, once fixed in the way just described, become a real, phenomenological feature of an interpreted image. This seems to me, at the absolute least, very curious but, even if the case, it only applies in a situation where a 3-d interpretation of visual imagery is dictated; and does not affect the proposal of a 2-d visual space given that we have established that viewpoint is not an inherent, immediate feature of images, even if it may arise as a phenomenological feature of visual experience at a later, interpretative stage.

Perhaps, at this point it should be mentioned that, although we are concerned with examining the phenomenological character of visual experience, we have been unashamedly dealing in facts about seeing in the actual world. This is justi-

fiable on two counts: one, it is, in general, necessary to decompose our developed, theory-laden experience as an initial step in the search for phenomenology. Secondly, it is in this particular case, necessary to commence with qualities which, within our actual conceptual scheme, may commonly be supposed to have phenomenological counterparts. Once scrutiny reveals that spatial qualities such as depth and viewpoint do not have their origins in distinct phenomenological properties, the whole existence of such properties is rendered questionable. There may be additional properties of pure visual experience than those of colour and shape but these are not ones which form the phenomenological foundations of any spatial, ontological interpretation. The only remotely imaginable additions to visual phenomenology were properties projected out of depth or viewpoint. With the failure of these to be substantiated, no other genuinely discrete properties of the visual present themselves.

Potentially, more than simply visual experience is affected by this debate. In effect, we had a form of viewpointless spatial experience where our sound worlds were concerned. The possibility of embodiment, in auditory terms, gives some scope for a notion of viewpoint in that we could think of ourselves as a perceiver located at certain points in the sound space, next to the sounds we were hearing. I strongly suggested that the sense in which a sound could serve as a body was questionable, but even if we accept the possibility, there may be other difficulties in respect of viewpoint. As we presently understand it, viewpoint is dominated by visio-spatial concepts. It is a very specific notion: we do not see things from "around about here"; we see them from a specific point or points in space. Being composed out of a different kind of sensory stuff, a sound world does not have extension and divisibility in the way that a visual space does, and, consequently, the same kind of specific location of a viewpoint is not possible, even in principle - setting

aside the evidential problems involved in identifying it. The sound-body cannot be broken down into parts some of which can serve as sense organs. Either the whole body is taken as the hearing-point for a subject's sound experience or none at all. This does not give us a close analogy with actual experience but the demand for such parallels we have already deemed unjustified. Accordingly, it may be coherent to use a particular sound as the auditory equivalent of a viewpoint, the real question, however, is not is this coherent, but is this necessary. In other words, is it absurd to assume the we perceive sound objects but do not do so from some location (however broad) within that sound space? The question becomes particularly acute when there is no constantly present sound which can be identified as a subject's body. If there is no such sound then there is simply no space available in the sound space for the hearer to occupy or be identified with. The prospect of this may make us feel awkward: how could we hear sounds - a stretch of sound-space - and not in some way *be* there? Also, the fact that we are hearing that particular part of the sound world as opposed to others surely indicates that we are in some kind of close proximity with it?

The first of these two intuitions is open to greater criticism than the second. It would not be difficult to argue that the reason we feel some kind of spatial, bodily presence to be required, is because we know this to be a necessity in our world. Essentially, we have well-established causal beliefs about the nature of our perception, the mechanisms involved and the roles played by our bodies or certain parts of them. We know there must be a physical, spatial link between objects perceived and our sense organs, even if this is as intangible as electromagnetic vibrations. Given the necessity of such a link, we have to consider the nature of the necessity involved: is it natural or causal, or is it conceptual? We might be able to suppose different physical in-

stantiations of the link between observer and object (it took centuries of science to characterize some of those involved) but can we accept the idea of no link of any kind? I would suggest that we can and that to suppose otherwise unnecessarily begs the question in favour of causal or representative theories of perception.

There seems nothing inherently absurd about a direct awareness account of certain forms of perception, a view that a subject is simply aware of objects in an unmediated way. The account only seems untenable in the context of our actual experience, but this is because the facts of our form of experience are not consistent with such an approach; not that it is absurd under all possible forms of experience. If anything, the causal-type of account generates all sorts of sceptical problems, which a direct awareness approach avoids. We have to recognise that nagging doubts of the, "but if I am here and the object is there, how can I come to know it or it impinge upon me?" - variety have their origin in contingent, scientific assumptions rather than philosophy.

If we can dispense with a causal link in a situation where embodiment is presupposed, then there is no greater leap involved in dispensing with embodiment. If no physical chain is needed to link an object to a body for perception to occur, then there seems no necessity for a physical instantiation of the perceiver, for the body is, in any case, only the last link in the eliminable causal chain. Why does the observer have to be *in* space as well as simply aware of it?

The second intuition we have in this context - that some account has to be given of the fact that at, any given time we are aware of one stretch of space rather than another - is less easily dismissed. In fact, I think we would be wrong to ignore it. There is an obvious sense in which, in the sound models we considered and in actual experience, an individual

observer or experient is aware of only limited areas of what is to be experienced at any time. There is a specific sensory field, a sort of "window" for each sense which moves across the world. In the case of our world, we know the physical grounds for the limits upon what we can experience, but just because there can be such grounds, especially involving the notion of embodiment, does not mean that there *have* to be such. There is nothing to stop us supposing that a subject's field of sense is restricted yet that he is not embodied in the space he experiences or is in any way spatially present in it.

Thus, the question for a given possible form of spatial experience of whether the percipient is only aware of a parts of space at any one time is separate from the question of whether he is embodied or whether his awareness presupposes a viewpoint (or whatever equivalent of it is relevant to a particular space). There seems no good reason why we cannot assume someone to be aware of particular'part of space or its contents without postulating a point or an object within that space from which that awareness is had. In certain forms of space, all sorts of reasons may arise as to why some kind of body or viewpoint has to be assumed. In our kind of 3-d visual space, part of building up an idea of its objects is the formation of a concept of observer location or viewpoint. This does not mean that such assumptions are required in all possible forms of spatial experience. In the kinds of sound worlds we considered there is no place or need for viewpoints. Also, as far as this chapter is concerned, I am claiming that 2-d space is just such a form of experience.

If we construct a simple 2-d seeing situation where a subject is aware of a patchwork of colours, on a two dimensional understanding, there is no place in such a space for the subject to occupy or observe from. Some part of the

coloured patchwork would have to be singled out, because, given the lack of a third dimension there is no possible space in front of what is seen for the observer to occupy. The part of space seen totally comprises the coloured patches, there can be no empty space between them and the observer to occupy. The part of space seen totally comprises the coloured patches, there can be no empty space between them and the observer. Isolating a part of what is seen as a viewpoint is the only option in this sort of space, yet, surely, to do so would be senseless. Why should any part of the 2-d scene be preferred to any other? One might say that the centre of an image should be picked as the logical place for the observer to be, but is there any reason for this other than that, in actual 3-d seeing, the viewpoint is a point back along a line from the centre of the image? Further, there is no reason why we should assume that the image has an obvious centre. The assumption seems to be that a 2-d visual field would be circular or symmetrical, much as our actual field is, but it is conceivable that visual fields occur in all kinds of bizarre and irregular forms. At best, the selection, of a part of the 2-d world seen to be a viewpoint seems perverse and arbitrary: there is nothing about the nature of what is seen that logically dictates it. Nor is there any stronger justification for picking some point in the 2-d world outside of the field in question as a viewpoint.

Of course the absurdity of trying to find a viewpoint within what is seen, rather than outside of it but implied by it, (which is the only available option in a 2-d visual space), could be taken by an opponent of such a possible space as an argument against its intelligibility. By doggedly holding to the notion of a viewpoint one can reject the possibility of 2-d spaces. I hope to have said enough to make such adherence to the notion of a viewpoint suspect, but a more de-

tailed working out of the features of a 2-d space might undermine it further.

(ii) A TWO DIMENSIONAL MODEL

The primary 2-d visual experience is that of a subject simply being aware of a coloured expanse. The expanse may be of one colour or may be broken up into different areas of colour. The expanse will have limits (we have already discussed the problem involved in supposing a limitless awareness of space). These limits may be "blurry" or well-defined. Our seeing involves an out of focus fringe around the visual field, this is produced by the mechanism of seeing we depend on. There is no reason, in principle, why a subject should not be free of such limitations, and be aware of things clearly, in all their detail. Blurred perceptions of things produce some philosophical difficulties. How, for instance, does the subject know whether it is his image which is blurred or reality itself? In the process of exploration essential to building up an objective understanding of his experience, the subject, by employing principles of simplicity, should be able to decide such questions relatively uncontroversially. Because the visual field or window can be moved across the 2-d space, the items which were at the periphery of the image and, consequently, blurred can be brought into the centre of things and into focus. Of course, it is open to a sceptic to say that the subject has no grounds for thinking the item at the centre of the image is the same as that previously seen at the edge, for, if they look different then they *are* different.

Such identifications, are acceptable however. The gradual unbroken transition between the two images as the field shifts is an important counter to the idea that one item dis-

appears and the other leaps into being. This would also fit into the logical pattern necessary for the movement of shapes at the centre of the field of vision; shapes, that is, which preserve their distinct outline. For such shapes the *rational* thing would be to see them as the same particulars through changes of position. As I have indicated earlier, the rational or conceptually economic judgement to make may not be the only one and a sceptical re-interpretation may be possible, but this is something we can come to terms with. Moreover, the way I have been talking implies that there are two types of image involved - a sharp one and a blurred one - as if either could do duty as an object. Really, this cannot be true: a blurred shape is not another kind of shape to a sharp one as, say, a square is to a circle; it is in some ways an absence of shape. Blurred images are ambiguous, they are confused, partial images of shapes, they do not leave us with a definite impression which we can recall or use to fashion objective particulars out of. For this reason it is not tempting to wonder whether the blurred fringes of our visual field show objects as they are or whether the clear central area does: the latter is the only possible contender.

For the present model, I shall assume that the whole of the visual field is in focus. I shall also assume that the field has a regular shape - basically circular - though this is not of great importance. Saying that the whole of the field is distinct or "in focus" (to use what, here, can only be a metaphorical term) is not the same as saying that the subject is attending to or concentrating upon all of it. I have had occasion before to assert the need for a distinction between what a subject is aware of and what he attends to. This distinction is particularly applicable in our visual experience because of the richness and complexity of the awareness involved. As well as exploration by shifting the scope of one's visual awareness and taking in fresh objects,

there is exploration within a single image or act of awareness by shifting the scope of one's attention. At one level, one is aware of the whole image (to suppose otherwise would lead to absurdity) but, at a deeper level, one is only intellectually engaged by parts of it. The first level we characterized in Chapter One as a kind of passive or negative experiencing; the second involves the formation of judgements and concepts recallable of what is experienced and of images. Again, we could incorporate the distinction into the subject's experience in our model, but, for simplicity, we can assume him to be attending to the whole of what he sees. There can be no conceptual objection to postulating creatures with greater powers of attention or concentration than our own: the limits involved are contingent.

If we assume the content of the subject's awareness to be an expanse of coloured shapes, a kind of patchwork (I leave aside for a moment the question of a single coloured field) one of the most important specifications we must build in, if this is to be the basis of a 2-d space, is a characterisation of how the shapes "move" when the subject alters his view (as we hope to be able to describe it). What cannot occur is the kind of alteration of shape that would happen in a three-dimensional world. If the shapes supposed here were merely painted on a flat surface such as a wall and the subject, literally, moved past them or changed the angle of his head, the shapes would alter in accordance with the rules of perspective. They would not remain constant, in pure visual terms, even though we would know them to be constant in "real" terms as patches of pigment. (So entrenched is our idea of the "real" or "actual" shape of what we are seeing, however, that we are very insensitive to the shapes really in fact being presented to the eye - witness most people's difficulty in accurately drawing coins and so forth seen at an angle (3).) If we assumed that shapes changed in this way as they changed position in the 2-d subject's visual field

two problems would arise. The first, less pernicious, difficulty is that, if the shapes change, the subject, if he were objectifying them, would have to attribute change to the objects themselves. At best, objects would be fluid, constantly changing items, but it might be that, because of the changes accompanying every adjustment in the field of view, the subject would be unable to make the re-identifications necessary to create a sense of object (though, this is unlikely).

The more serious problem presented by the suggestion that shapes change in this way as the field of view is moved is that the subject has all grounds for assuming that he is in the presence of 3-d space and objects. The phenomenological dynamics of the two situations are the same. Consequently, we cannot jeopardise the conceptual viability of our 2-d visual space by building in what are central phenomenological features of a 3-d visual space, from the very outset. We have to assume that the subject we are considering here is presented with a collection of shapes which do not alter as they move across his field of view and are replaced by fresh shapes. It may be a little hard to imagine this because in the only visual experience we have, change or distortion of image being linked with a change of view is the norm. Surely, there can be nothing intrinsically absurd, however, about the notion of an experience where shapes are seen and move without such alterations? Let us then postulate such an experience.

Before going any further, I think it is important to make a few observations about the shape aspect of the visual field itself. I suggested, for simplicity, that, in this model, we consider it to be circular. I also suggested, in a slightly different context in Chapter One, that a need to specify shape in addition to colour as a defining element of the visual might be eliminable in that it might be impossible to conceive of a colour that had no shape; mainly on the

grounds that our visual field, being restricted, would impose a shape on the colour seen. Two possible qualifications could be made to this. Firstly it is not clear that there could not be experients with very wide visual fields; if God exists, and space is infinite, perhaps God entertains images of that infinite space, images which, presumably, could not be bounded. The question of God and perception is a fascinating one, but far too complex to enter into here, so I merely mention this as a possibility.

The qualification I wish to give more attention to is that concerning the imposition of a shape upon an experience of an undifferentiated colour by the limits of a visual field. Prima facie, it seems obvious that if a subject cannot see the whole of space at any time then the part he does see must fall under a certain shape. We could map out the shape of a person's visual field, by considering his position and the objects or parts of objects he can see and those he cannot. All this is undeniable: once a knowledge of space and its contents has been built up, it is possible to determine the shape of a visual field (2-d or 3-d) by reference to which "bits" of reality are included in it. This does not mean, however, that the visual field or the images a subject has have a shape in the intrinsic sense. A subject experiencing a simple expanse of colour or collection of colours forming shapes within the image, does not also have a visual experience of the overall boundary or shape of the image itself. Seeing, from a phenomenological point of view is positive: we do not have an image representing the areas of space we cannot see. Logically, for a shape to exist it has to be bounded by something different in colour: the limits of one shape are where its colour recognisably ceases and those of another begin. We cannot have a shape that is just internally defined. Consequently, if the visual field it to have a shape in visual terms it cannot just come to an end, it has to be bounded by some, different, surrounding colour.

This, of course, amounts to an extension of the visual field and a restatement of the same problem leading to an infinite regress.

We must recognise that a visual field does not have a shape in the same sense that items within it do. The activity of seeing and having a defined visual field is not analogous to looking through a porthole, where one is both aware of the scene through the window and also of the shape of the window. We simply see things - colours or coloured shapes - we do not also see the limits of our seeing. These are inferred from what is seen, or from acquired knowledge of what is not seen, but are not themselves experienced. Visual fields can, generally, be said to have shapes, but not in the primary sense we might immediately assume.

Another important issue, partially raised by the preceding topic, is that concerning experiences consisting of undifferentiated expanses of colour. This takes us into metaphysical questions about the criteria that have to be met if visual experience is to be objectified. The conclusions we have just drawn about the shape aspect of visual fields should tell us that, where a subject faces such a blank expanse of colour, he cannot expect a shape to be imposed upon it by his visual field, even assuming that he has a well-defined visual field. As there is no internal structure to his image - no patchwork of shapes - the subject cannot build up an idea of shape from the visual data he does have. The only way a shape could be ascribed to his image is by a process of shifting the scope of his seeing to include different items surrounding the initial image. The philosophically interesting situation, however, is where the subject fails to be able to achieve this: where no other experience is achieved other than the simple colour.

Ex hypothesi, let us describe the subject as surveying his visual world thus; he shifts his field of view across different parts of it, yet fails to see anything other than the same colour. Remembering that we are approaching the situation in phenomenological, epistemologically basic terms, merely assuming a subject having certain sensory experiences and no prior knowledge or experience to go upon, how, from such an experience could the subject form spatial, objective notions and, specifically, conceive of himself as "looking around" or "shifting his field or view" to explore the space around him? Phenomenologically, there can be no change in what he experiences as between, supposedly, looking at one area of space and that of another. We, with well-developed notions of space and of ourselves as bodily perceivers within in it, can use all sorts of collateral information upon which to base the belief that we are looking around or moving our field of view. The physical sensations of moving our head or our eyes, for instance, tell us that we are taking in a fresh view of things. By themselves, such feelings have no such meaning, they acquire it by a process of experience connecting with a primary understanding of views actually changing. From our visual, phenomenological experience we have to generate a notion of space and of seeing different parts of it at different times and it is only from there that we can give recognition to interesting contingent connections between such views and other non-logically related parts of our experience. The subject we are considering does not have this crucial phenomenological foundation.

In psychological terms, it is doubtful whether the subject would be aware of his visual experience at all: just as a constant hum or, even, the ticking of a clock becomes such an embedded part of our total experience that we cease to notice them at all. In philosophical and phenomenological terms, the subject would be aware of it. The distinction be-

tween attention and awareness has application, again. The negative features of pure awareness would be present, if colour stopped altogether or changed, the subject would notice this and not just in the sense of being aware of the fresh sensory state, but also of having an awareness of what had ended or disappeared.

What is important, here, is that, as in the previous chapter, we have isolated a form of experience which is incapable of being objectively interpreted. This reiteration of the general principle that there are firm criteria for objects and space and not every possible form of experience will conform to those. Such species of phenomenology will not break out of the inner subjective realm. We should turn now, within our 2-d visual model, to consider the ways in which it would have to be ordered for objective criteria to come into play. Naturally, many of the principles we established in respect of possible sound worlds are applicable here. Consequently, the same degree of argument for some of these principles should not be necessary.

(iii) OBJECTS IN A 2-D WORLD

One of the observations we made in the previous chapter was the somewhat, ironical one in terms of traditional scepticism that a constant, unchanging slice of experience does not provide strong grounds for an objective interpretation of it. Where a subject confronts certain sense-items which do not disappear from his awareness to return, as qualitatively identical or strongly similar items, at some later point, the subject does not have any good reason to think of those items as having any existence outside of such a situation. The subject may wonder if he is experiencing an objective particular or not, but he is incapable of deciding the ques-

tion on the basis of the evidence he has. The situation is uncertain, no feature is present in what is experienced to suggest an objective rather than a subjective understanding of it. This is interesting given the traditional focus upon the situation where items disappear from our experience and upon the metaphysical doubts that is meant to give rise to. In fact, the situation of constant awareness gives rise to more intractable doubts. It is only where two items occur in experience at different times having identical or very similar properties that we have reason to entertain an objective interpretation of them: to see them as being the same particular with an existence in a spatial system.

In terms of our 2-d visual experience, how do we create such a situation? Let us begin with the basic image we have mentioned already: the patchwork of different coloured shapes, finite in scope, circumscribed by the subject's visual field (bearing in mind the above caveats). This is a static image and, if that was all a subject experienced, the difficulties just mentioned would prevail. Some form of change has to be introduced. Two basic types of alteration are possible and a combination of them. The observer can move (that is his field of view can be altered) or there can be re-arrangements within the original image. In some ways, these are not radically distinct given the relative nature of movement. I shall consider both, but initially I want to describe a situation where, in conventional terms, we would say that the subject or his outlook moves. Let us suppose, that, as far as the original image is concerned, the right hand side of the image starts to disappear from view and fresh items appear at the left hand edge. The process is gradual and continuous and there are not leaps or jerks, where the whole new shapes just appear. The situation envisaged is very like that where an observer faces a large patterned wall, his gaze fixed, rigidly upon it: any usual effects of distortion and blurriness being excluded.

In the course of such experience, the subject would acquire an awareness of certain coloured shapes and their relations with each other within the initial image and then an awareness of further shapes (or continuations of existing ones) and of their relations to those already established. The kinds of relations involved are synchronic ones, rather than the diachronic ones that were important in the models discussed in the previous chapter. The relations are given in the single act of awareness, as part of an image had at any single moment in time. It is, perhaps, conceivable that visual experience could occur in a form such as to produce a spatial scheme embodying diachronic relations. If a subject first experienced one image - maybe an expanse of red - then a different image - perhaps an expanse of blue - then, yet another image and so on, until a sequence of such was produced (the images need not be the uniform ones suggested so long as they are all distinct and unrelated in synchronic terms) then we would have the basis for a linear space of colour particulars. As it is, we are interested in the paradigmatically visual relations which are synchronic in form. The most basic relations, here, being, "to the left of..." / "to the right of..." and "above..." / "below..." (in terms of conceptual economy we can dispense with either half of these pairs.) A more expressive system of relations is available in the geometrical system of degrees or the points of the compass or even numbers on a clock face, but there is a problem about how these would be applied by a subject at a rudimentary level of experience. It is, however, necessary to attribute some kind of awareness of these relations to the subject, because they are part and parcel of having the kind of visual images or awareness in question. In having an image, a subject cannot be unclear about where shapes are in relation to each other. He may lack the terms to express these relations and, more importantly, he may be unable to measure these relations in such a way as to make

comparisons between images had at different times. He may, that is, be unclear about whether shape "a" in image "i" is in the same relation with shape "b" as is shape "y" with shape "z" in the later, different image "i'".

Thus, in terms of our model, the subject has an awareness of individual shapes and of their relations with each other. His experience is, also, progressive, in that he acquires an awareness of new shapes (while loosing an awareness of some others) and of their relations with existing or disappearing shapes. As the process goes on, he will lose all parts of the original image and confront entirely new items - qualitatively speaking. Shapes will enter at one side of the image and flow across it to disappear at the opposite side. We could imagine this continuing for any length of time (or number of shapes). The only limit on the process, for our purposes, would be the memory span of the subject. Obviously, we are at liberty to ascribe any capacity we choose to our hypothetical subject; one, perhaps, prodigiously greater than our own. The only thing that is crucial is that the subject has some powers of recall. They may be recognitional rather than imaginative; that is, the subject, may have the sensation of having already encountered a certain type of shape in a certain relation with a certain other type of shape, without being able to *picture* the previous encounters after they have ended. This basic sense of having met something before (or something just like it) is one of the essential building blocks in our metaphysical enterprise. Unlike most of the features we are discussing, it is not something that has to be predicated of experience but of the subject who has that experience. It is important to remind ourselves that, in general, the subject has to be possessed of certain intellectual capacities, and cannot be some kind of passive "sponge" for experience. Of course, sceptical thoughts can be entertained in respect of memory, as elsewhere, and I shall not trouble to repeat the same counter-arguments here.

Suffice it to say then, that it is necessary that our subject experiences a certain flow of imagery and that he has some power to remember what he has seen. This is important because the next step is to assume that the flow reverses and that the subject experiences the same sort of shapes in the same sort of relations, except moving in the opposite direction. Shapes appear at the right hand edge of the image and disappear at the left. Shapes most recently encountered reappear before those more distantly encountered. At this stage our description is meant to be in terms of shapes and relations, of qualitative similarities or identities, even if, at points, it has been difficult not to fall back one more ontologically-loaded language. It has only been appropriate to talk about an experience of coloured shapes and their relations and not about seeing objects or parts of space, albeit a 2-d one. We have reached the point, however, where the subject would be warranted in making certain metaphysical judgements about the content of his visual experience. Reencountering the same types of shapes would invite the tentative speculation that one and the same particulars were re-experienced. Meeting them in the same configuration with other objects, however, shifts the balance firmly in favour of such an interpretation. It would, quite simply, be more rational or economical to treat experience in this way, as united by spatial particulars rather as just unconnected repetitions of qualitatively similar subjective items.

At this point, I should like to acknowledge the close similarity between the model I am developing and that outlined in A.J. Ayer's THE CENTRAL QUESTION OF PHILOSOPHY (4) in Chapter V of that work and part C especially. I do not find it necessary to use his terminology of "percepts" and "qualia" (the latter borrowed from Nelson Goodman's THE STRUCTURE OF APPEARANCE). Also, it has to be said that Ayer's model is

meant to articulate a subject's construction of a three-dimensional visual space. Curiously, however, I believe it to be more descriptive of a two-dimensional visual experience. Although Ayer talks about variations in the appearance of objects, he does not fully get to grips with the potentially infinite diversity of appearances which is central to the notion of a three-dimensional object. One feels that there is something essentially "flat" about the objects, or the "cat patterns" and so on that move across his observer's visual field. The force of this comment should emerge later in this chapter when I consider a 3-d visual world. Ayer's discussion of the connection between the visually constructed world and data from other senses is also rather sketchy. A proper development of this issue will be attempted in my final two chapters.

The metaphysical essentials of Ayer's model I am greatly in agreement with. The contribution I have to make to it is to develop it in greater detail adding a level of complexity to it which strengthens its adequacy as a theory of perception of the visual world.

To return to our model; we have just suggested a very simple form of "movement" across the possible 2-d space - movement and return along a single route. However, just as "branching" was possible in our auditory space, so it is possible here. In fact this is one of the most immediately obvious possibilities of visual experience. All kinds of complex sequences of shapes can be envisaged, all compatible with a sense of order and repetition sufficient to ground a spatial scheme. It is possible to leave an image along one orientation and return to it from a different direction. Exploring a visual space in this way is much more demanding on the subject. Experience is more likely to come over as confused and lacking in structure if a process of movement and reversals along the same axes is not employed. It would take the sub-

ject longer to build up a sense of space and of its objective particulars in this way, though, in the end, his grasp upon that space might be stronger. A more discursive exploration of the 2-d space would produce a better understanding of how shapes lock together in all directions not just along certain axes. A sense of a 2-d space as a network rather than a linear kind of space would arise more strongly.

There is, perhaps, a question as to whether a 2-d visual space such as this has to be a network in the way suggested or whether it could be restricted to a simple "strip" of shapes. Does a 2-d space have to extend in every possible direction and does it have to be infinite in scope? Suppose a situation where a subject finds he can only have a certain type of visual experience. He simply experiences the same sequence of shapes, much as in our description of a moment ago. He may move backwards and forwards along this line. but he may not "branch out" from any shape in a different direction to take in fresh shape-particulars. It is difficult to know how to describe the restriction involved in this situation. The simplest thing to say would be that, as a fact, the subject does not experience anything beyond this linear stream of images, but, perhaps, we could talk in terms of him somehow trying to get out of his given orientation into the potential space beyond, but being in some way prevented from doing so. At any rate, we assume a situation where the subject never experiences anything outside the chain of shapes described. The issue that arises is whether the subject here could be said to be experiencing a finite, linear 2-d visual space or whether he is simply confined to an experience of only a part of an infinite visual space extending fully in two dimensions. The linear and the finite properties can, to some extent, be separated. On the face of it, if the space is linear it may still be infinite as long as there is no last link in the chain of shapes at either extremity.

This, in itself, however, raises the question of how there could be such a "last link". How would the subject know that he had come to the end of the line, that space has come to an end at a certain point? The final shape would be a shape much as any other, so what would prevent it from linking up with a further shape? If the reply is that it just does not link up, the question would be how the subject could know this - what experience would reveal this failure to him? Presumably, he would have to see the proposed final shape, and then somehow see the blank beyond it. In terms of a 2-d visual space, in particular, this suggestion produces an absurdity. In seeing something beyond a given shape, one is still seeing something: calling it a blank does not do any work here. A blank must still be a visual item, and in the form of space we are discussing there is no means if distinguishing between coloured shapes which are objects and those which are not. All visual items are to be objects or none are. Even if a blank were properly expressible within this form of 2-d space, it itself is a spatial notion and represents the continuation of space, not the end of it. It is merely empty space. Thus, there is, also, the question of knowing that the empty space, if pursued far enough, would not lead to more shape objects.

There is, decidedly, a problem about trying to incorporate boundaries into the actual experience a subject has of a space. There is the problem we have raised in respect of the limits of our visual field: an infinite regress arises if we try to have a visual boundary to what is seen. The proposed final shape-object cannot be seen to come to an end, because this would raise the question of what it ended *in* or was terminated *by*. Awareness simply comes to an end; not what one is aware *of*. One would simply be aware of so much of a certain shape and not be aware of any more than that. One would not, that is, be aware of a certain shape and also

aware of the nothing beyond that shape, or the point where the shape ended, in the sense of being aware of a limit. By itself, such experience cannot ground a conclusion that space is finite or bounded. The fact that one is only aware of a part of space at any time is the norm and uncontroversial. The subject's experience constantly involves situations where his awareness of space is partial owing to the limits of his visual field, but ones where he goes on to achieve a greater awareness of space by a change of position (as we might want to term it). All of this is true in the situation described as regards what we might call the vertical dimension, also. The height, as it were, of the linear shape sequence will not be experienced by experiencing limits along a vertical axis, it will be experienced in the negative way already expressed of not being aware of more than a certain amount of visual material.

This means that the limits imposed upon a spatial experience cannot be internal or logical (taking either of the dimensions of our 2-d space) they can only be based upon certain contingent limitations. Space will be finite to the extent that a subject is only able, as a fact of his experience, to experience so much space. The question has to be whether this is sufficient to declare the space itself finite. It might be true that as a consequence of such a well-contained experience, the subject is not tempted to think of space beyond that which he experiences and is able, for all intents and purposes, to think of space as being exhausted by what we experience, but this leaves open the theoretical question of what is the correct judgement to make of the space in question. Even if finite or bounded spaces are possible it is arguable that the subject cannot be certain that his experience reveals such a delimited space. Surely, it is always conceivable that space extends beyond what the subject is assumed to be aware of, and that the limits imposed upon his awareness derive from some contingent source, rather than

the limits of space itself? Much has been said to cast doubt upon the idea that a finite, bounded space is a conceptual possibility. If it is not possible to articulate what form the limits could take then, surely, it is doubtful that there could be such limits.

In some ways, we are taken back into an issue we gave some attention to in the previous chapter: this is the question of the particularity of space and whether this entails more than certain possibilities of objects. If empty space is just the unfilled possibility of objects, then, in the situation we have here, it is an admitted possibility that space extends beyond what is perceived. Here, we have a situation where what is conceivable is spatial. If one can conceive of an object existing, then there is space for that object to exist in: space is implied by the possibility of that object. So, in the present situation, if one can imagine there being something - some further coloured shapes beyond those experienced - then the space for such an object to exist in must exist, even if the object does not, in fact, exist or there is some other object occupying that bit of space.

If one takes a more concrete view of space, then one might take the view that its existence was more a question of fact than logical possibility. This might, in the present context, incline one to see what space there is as determined more by what objects one experiences rather than what objects one can imagine. In the past I have spoken of the close logical relationship between objects and space. Objects exist *in* space; it is the notion of space which makes sense of how something one experiences might disappear from experience yet still continue to exist. Space is the possibility of certain sorts of objects, it has a definite character: not any kind of object may exist in a given space, although, in a sense, becoming aware of something as an object involves seeing it as belonging to a space; it is a reciprocal pro-

cess. There is an implication in this that, somehow, objects define space, that the character of a space emerges from what we find in it. If one took such a view, then, in the present case, it would not be legitimate to extend the limits of space beyond areas that were known to be occupied by objects, even if it is conceivable that space extends beyond them. This might seem to be of a piece with taking space seriously as a particular, as a contingent thing which might or might not have existed. For, if we start defining space according to possible, rather than actual objects, then we will end up in the situation where all possible spaces are actual, even if most are empty, which is, surely, counter-intuitive.

This, however, is not a position we are compelled to accept. It is possible to give weight to conceivability as regards defining space without actualizing all possible forms of space. There is an important connection between experiencing objects and establishing what spaces exist, but that does not mean that the nature of a space is wholly decided by what objects are found in it. What spaces exist may be a contingent matter, but the character of those which contingently do exist is not entirely a matter of contingency. A priori or conceptual considerations come into play. The existence of a certain type of object establishes the existence of a certain *type* of space and a *particular* space. A particular object exists in a particular space, *this* particular space, as it were. Yet, consequences are introduced thereby which go beyond the reality of the object in question.

The existence of an object does not just establish a space for itself and, at most, objects of the same character or size as itself, it forms a fragment of a wider, complete space. We can project (literally, we might say, in visual contexts) a whole space from a single part of it, its character

is logically dictated by it. It is here that conceivability acquires its legitimacy. If, from an experience of a part of space we can conceive of unexperienced areas of it, then we have every reason for committing ourselves to the existence of these. The consequences of not doing this are conceptually much more problematical: for, on arbitrary grounds, we would have to think of possible areas of a known space not existing. We have already highlighted the problems of expressing how a space comes to an end, the question of limits or boundaries that are final ones and do not lead to an infinite regress. An even greater problem is involved in making sense of the idea of a part of space, to which everything else points, not actually existing. In 3-d terms it is like being presented with a box which is not said to be empty, but said to contain no space at all and, not in the sense that one is physically unable to get into it. In general, I am suggesting that there is a difference between entertaining the idea of a possible space not existing (I do not believe any of the possible sound spaces of the previous chapter to exist for instance) and entertaining the belief that parts of a possible space exist and other parts do not.

If this line of argument is rejected, we still do not have an overwhelming reason in the situation envisaged for denying existence to certain areas of possible space. Although the subject does not gain experience of these areas, that they exist as possibilities cannot be denied - it would not be at all peculiar if he suddenly had access to them. There is as much reason to suppose that he, contingently, does not get sensory access to them as to assume that they, contingently, do not exist. Coupled with the undeniable problems of articulating the non-existence of such areas of space, it is, arguably more sensible to assume that such areas do exist, even if unperceived.

This does not quite dispose of the question of whether visual spaces can be restricted or not. In Chapter Two, we spoke of cyclical spaces, spaces where, pursued in any direction the particulars would repeat. This is a possibility, here, also. The analogy of the surface of a sphere is particularly apposite. If we imagine that the network of shapes which the subject is free to explore is cast upon a sphere, then he will be able to move in any direction he chooses without coming up against any form of limit, yet a finite number of shapes or an area of space will be perceived. Such a space would be finite but unbounded. Naturally, this is still a metaphorical device: we cannot, literally, assume the 2-d visual space to be "bent" around a sphere, this would contradict its 2-d character and present us with the perspectival problems I strove to exclude from our model. It is certainly possible to take the type of sensory situation I have described and build in the feature that explorations in any direction eventually lead to the same shapes or images. Obviously, saying that shapes are "the same" is somewhat controversial from an ontological point of view. The same doubt that it was possible to raise of proposed cyclical sound spaces can be raised here also. Perhaps there is a repetition of types and not particulars: the subject perceiving fresh tracts of space but occupied by objects which are qualitatively the same, both as regards their internal properties and their external relations, as those found in earlier parts of space.

Although this latter interpretation is coherent, there is no particular reason to employ it. It involves an avoidable multiplication of entities. There is no limit to the number of times a subject might perceive the same set of shape types and relations; and each time he identified a shape of a given type he would have to treat it as a fresh particular. Thus, we could have a plethora of individual items identical to each other in qualities and relations. This would be very

unwieldy: the only way the subject would know at any time which particular he was seeing would be by referring to a strict system of counting. From his first encounter with the shape sequence in question, he would have to count through all the subsequent different instances of it to distinguish them from each other. There is nothing else, other than this ordering, to pick out any given shape-object and identify it with any one previously experienced. This, obviously, produces practical complications, but, moreover, there is no reason why a subject should feel obliged to adopt this interpretation of his experience. It is perfectly possible to describe a situation where the same objects are perceived at different times yet without a reversal of the sequence they are in. We do not run up against any of the difficulties presented by attempts to make spaces finite by postulating boundaries for them. It is metaphysically much simpler to assume re-encounters with the same particulars than to assume fresh encounters with particulars of the same type. Qualitative criteria can be used to determine whether one is confronting the same particular as at some earlier time, rather than an extraneous system of counting. The only real stimulus to adopt a cumbersome system of assuming all repetitions to be repetitions of types and not individuals, could be that a finite space was incoherent and it is not at all clear that this is so.

Returning to the basic visual model we are developing, we have assumed an experience by a subject of a certain sequence of shapes and an ability to re-experience that sequence in reverse order. We also supposed the possibility of a more complex form of observation where the subject can start from one image, experience a whole sequence of other images and re-experience the initial image, without a repetition of the sequence in between. This was due to the 2-d character of visual experience. Shapes are linked in a network not simply along a line. We discussed the possibility of

a restricted kind of 2-d space, a "strip" of images possibly bounded at either end and found there to be major difficulties in this. Let us then for present purposes suppose a visual experience which is fully 2-d, where the subject can move in any direction and not simply backwards and forwards along straight lines.

(iv) CHANGE IN A 2-D WORLD

With a fairly basic set of assumptions we were able to create a foundation for a visual space, for the subject's objectification of his experience. The model at this stage lacks many familiar refinements. Most significantly, it is completely static. The subject experiences and re-experiences the same sorts of shapes in the same sorts of configurations. In some ways this is a strength: the subject is not presented with any ambiguities or puzzles about whether a shape is the same particular as one experienced earlier - everything is just where he left it, as it were. On the other hand, it is only in a more changing form of experience that a deep grasp upon the notions of space, particularity and re-identification is really called for. It is in these situations where the latitude in these notions is elicited: the subject has to be creative in his application of them.

The same parallels apply, as earlier, with the sound models we considered. Objects may come to change their position, that is, enter into different relations with other objects, subject to certain constraints. A wholesale, instantaneous re-ordering of space might be so radical as to plunge experience into the chaos upon which objectivity can gain no purchase. All points of reference would be lost and, consequently, a sense of the underlying space also. The difficulties might not be so great if a finite form of space were in-

volved. If the subject were familiar with all the objects in his space then a kaleidoscopic re-arrangement of them, although initially disorientating, might, after a period of careful exploration become comprehensible. Even this possibility depends upon an original state of stability. The subject needs a period in which to establish the particulars his space contains. This cannot be achieved if everything is in a state of flux: one has to pretty much find the same things in the same places to know that they are one and the same. In a non-finite space a radical re-ordering might pull in items from outside the subject's past experience and put certain familiar items outside the scope of his future experience. This would, clearly, put a much greater strain upon the subject's grasp of space and objective particulars.

In reality, it is the space - so called - in a constant state of flux, where the subject has no framework in which to build up a sense of particular objects and spatial locations, that is unacceptable from the perspective of objective interpretation. There has to be some means of determining, of items experienced at different times, that they are identical. The idea of providing a spatio-temporal link between the items, is prominent. If item "x" experienced at time "t", can be shown to have persisted through to time "t2" when item "y" with the same qualities as "x" is experienced and there is a continuous spatial link between the two, then "x" and "y" are one and the same particular. Of course, the problem is that it is often not the case that a particular is constantly observed over such periods of time. Other criteria are pressed into use to determine such questions of identity. These we shall consider in a moment. Spatio-temporal continuity is considered important in terms of identity because it represents a means of dealing with the possibility of two or more items with exactly the same internal qualities. In a situation of dispute - "is a or a'" identical with an item exactly the same as these experienced at some earlier time?" - the

test of continuity through space and time can be brought to bear, to uniquely distinguish between the contending items.

This idea of spatio-temporal continuity, although still important, does not have the same prominence in a static world. The criteria that establish the identity of objects perceived at different times where they have not been continuously observed are relational in origin. Deciding that an x is "*this*" x and not "*that*" one is a matter of seeing where the respective items are in terms of the total pattern of shapes the space. In a space where objects can move, this question of maintaining the same relations with other objects cannot be paramount. The assumption being that an object can enter into different relations with other objects and remain the same particular. Here, where a space includes two or more qualitatively indistinguishable items, deciding which, if any, are identical with items experienced at an earlier time may not be a question of inspecting the relational patterns the items fall into. All may have moved between the two times in question. What, then, becomes decisive is the spatio-temporal history each has. For an item, "a'" observed at time "t2" at location "l2" to be identical with an item "a" observed at time "t1" at location "l1", a must have been in existence throughout the time-span between t1 and t2 and moved in a continuous line of spatial locations between l1 and l2. In the simplest case this twofold continuity could be observed, but the interest is in situations where this does not occur, especially in view of the fact that we have noted that constant experience of the same phenomenological items is inimical to the process of building up a sense of the objectivity of what is experienced. In the situation where first hand experience of continuity through change of position cannot be obtained, certain inferential assumptions can be employed.

A simple instance of this is where an item "a" with a set of properties "p" is no longer experienced at a spatial position it had previously been experienced at, yet an item "a'" with the same set of properties is encountered at a different location. If it is known that there was not, previously, a p-type item at the location where one is currently to be found, then these are grounds for inferring that a' is in fact a. If, further, at various intermediate times a p-type object was observed at one or a number of locations between the location of a and that of a' then this lends additional weight to the inference in question. Knowledge of the latter variety could, also, be important in a contentious situation where there was more than one candidate for identity with a. If at t1, there were two known objects with p properties and at t2 neither was still in its t1 location, yet there were two objects with the same properties in different spatial positions then, armed only with the first sort of assumption, we would not be able to decide which later object was identical with which earlier one, even if the situation provided grounds for thinking that some kind of identity held between later and earlier items. Having an awareness of intermediate "movement" of the items involved would do much to reduce this uncertainty insofar as it would suggest spatial routes linking up the respective earlier and later perceived items.

Sceptical doubts are always possible, of course, and doubts of a less radical kind will arise in many possible situations. Where the subject does not have intermediate "sightings" of disputed items this will be the case, or where the routes taken by objects clearly cross in such a way as to make it unclear which will have departed from the convergence along which line. This is not a problem confined to our model space, it is something we encounter in the actual world. Although we are greatly aided by a battery of empirical laws about the physical properties of space and the motion of objects in it, there are still situations where we cannot pos-

sibly attain certainty about which identities hold between items experienced at different times. Imagine trying to track grains of sand being churned over amid millions of others.

It might seem unquestionable that we have, in the foregoing remarks, provided a satisfactory outline of how our basic visual model could incorporate change or movement among its shape objects. There are, however, certain awkwardnesses generated by this form of space, flowing from its 2-d character. We have spoken of changes in position - an object of type p leaving one set of relations with one set of objects and coming to occupy other relations with other objects. This is unproblematical, given certain provisos. We could imagine a blue square at one point in the spatial pattern coming to occupy the place of a red square of the same size at a different point in the scheme of shapes. What raises difficulties is if we start thinking in terms of an object of one shape coming to occupy the place of an object of a different shape or of a larger object occupying the place of a smaller one. These presuppositions present a clash between the transferred object and those it is meant to fit in with. Not all of the existing shapes can be maintained: something must be excluded or "blotted out" by the new arrival. This may not be conceptually unacceptable in itself: we could assume that parts of objects are destroyed by other objects moving in upon them (an overlap is unacceptable because there is no third dimension to accommodate this). It is, however, a fairly radical suggestion and if movement were assumed to be thus the wholescale disappearance of objects would occur which might seriously reduce a subject's capacity to make objective sense of such an experience in the first place. Potentially, the number of objects would be falling all the time as more and more were destroyed - this might compel one to assume some mode of objects coming into being. In addition, as it stands, this account gives no attention to the spaces left behind when an object moves. This

is the aspect which presents problems of a more general sort in terms of our 2-d space.

The simplest way to account for objects changing position is in terms of them moving out of their original relations with other objects and moving through fresh sets of relations until they reach their final resting point. Other objects would move out of the path of the travelling object, changing their relations with each other, somewhat, in the process. To change position objects would "push their way through" the other objects not impinging upon their shapes in doing so, but modifying their positions relative to each other. Such an account requires spaces or "gaps" within the spatial scheme. If objects are not to be intrinsically altered they must have space to move into to allow another object to pass by them. This creates a new kind of motion within our visual space as presently described, the 2-d space represents a kind of plenum: it is entirely filled by shape objects, they fit flushly together like the pieces of a completed jig-saw, so there is no scope for re-arrangement of the sort needed. The only possible form of motion here is like that proposed by Descartes in his PRINCIPLES OF PHILOSOPHY (5) where he speaks of the movement of objects in actual space as involving a "circulation" a view dictated by his disbelief in the notion of a vacuum. The situation is one of continuous displacement. If a circle or wheel or ring composed of different coloured shapes is imagined, it is possible to conceive of this being rotated without disturbance being caused to any other items than those in the circle or etc. Genuine movement occurs - the position of shapes in the circle are different vis a vis those surrounding it, yet the notion of empty space does not have to be involved. Many more complex versions of this can be envisaged for our 2-d space using continuous chains of shapes of the same thickness - some operating within others. Clearly, however, this is a re-

stricted form of motion compared with that made possible by empty spaces.

The obvious response would seem to be to include some gaps or spaces in our visual model, but this brings its own problems. From a phenomenological point of view, a gap must appear the same as an object in such a 2-d space. We cannot have invisible gaps, if they are to exist in the network of objects they must have a visual presence. Even if we could imagine such a thing as a non-colour in such a context, a shape would be given, negatively, by the configuration of shapes around the space. The first difficulty this presents is that, from an initial visual encounter with such a space, a subject would not be able to distinguish objects from spaces between them, visually they would be equivalent. So, we would have to suppose that an understanding of what was space and what was an object would have to be built up through experience of the movements of the shape objects. Perhaps, for instance, the subject comes to see a certain shade of blue as being empty space. Initially, he sees this shade as being a normal part of the patchwork of shape objects, but later, as certain other coloured shapes move around, he notices that they always move into these blue areas, thereby impinging upon and reducing the blue shapes in question. At the same time, he might notice fresh blue shapes appearing between the moving shape and the shape-object it has moved away from. Perhaps it is also observed that shapes of no other colour are affected or created by changes in the position of shapes.

Such a scenario certainly gives a plausible account of how a distinction between objects and empty space might be established. There are metaphysical difficulties which persist, however. There is a basic problem about objects and what they occupy - space - being the same sort of thing from a phenomenological point of view. In Chapter Two we spoke of

the dubiety of the "master sound" in Strawson's sound model because it involved the representation of ontologically distinct entities in a phenomenologically identical way. Space and objects are separate but inextricably linked notions; objects are perceived, space is not. The existence and character of space is inferred from an awareness of objects. At least, this is the pattern we are familiar with. In our actual 3-d world, the idea that empty space is visible leads to incoherence, for it is essential that empty space be transparent in order for anything to be seen at all. If empty space were visible in its own right we would effectively see nothing but empty space given that there is always a gap between us and objects. One could go so far as to say that entertaining the idea of a visible 3-d space, qua space, is a contradiction of the nature of a 3-d space. In fact, such a suggestion, insofar as it could be given content at all, might generate the phenomenology for a 2-d rather than a 3-d visual space, given that we could be constantly presented with a coloured expanse of space itself.

Of course, it is not that we see nothing when we experience the empty spaces in a 3-d space. I have argued that a 3-d form of perception is based upon primary 2-d imagery. That is, there cannot be invisible parts of our visual field in 3-d perceiving anymore than for 2-d. Every part of our images of 3-d space is occupied by some coloured patch. When 3-d objects change position they must visually encroach upon other objects in just the same way as described a moment ago in our 2-d model. Visually, parts of what is seen will disappear and other items appear, as objects move. The crucial difference here is that the assumption that the space observed is three-dimensional allows one to account for these disappearances and creations without reference to empty space. When one part of what is seen comes to be occupied by another part of what is seen (where one object moves in front of another) what disappears is only taken to

disappear visually, not objectively. We are not witnessing space being filled and a fresh space being created. An empty space is filled and a fresh one is created simultaneously elsewhere, but that is not what is *seen*. What one sees is one part of physical space - objects - being obscured and another part - other objects - being exposed by the movement of a nearer object. The necessary empty space in this process is not a part of the visual field. In the situation we sketched for the 2-d model, space itself was taken to be a visual element in what is seen. Is this, then, a completely unacceptable situation? After all, we have already stated that there must be significant differences between a 2-d and a 3-d space.

What was problematical in Strawson's model and its use of the "master-sound" concept was, firstly, that there was a tendency for space and objects to blur into each other because of their being experientially the same. Secondly, the master-sound was actually redundant from the point of view of creating spatial or quasi-spatial relationships between sounds. The first of these difficulties does apply to the proposal we are considering at present. There is potential for space and shape objects to become confused, though we have suggested that experience could provide a means of distinguishing between the two. The issue in point does not arise at all, however. It has not been assumed that space itself be visible in order for 2-d objects to be located in it. A sense of location and of particular parts of space is generated by a framework of relatively unchanging objects - shapes - rather than by the fluctuating colour spaces between them. This corresponds to actual space, in which we do not build up a sense of location from empty spaces, for one space is very much like another, but from objects which are usually very different from each other. The present proposal does not face the same level of criticism as the master-sound spatial model, but difficulties remain.

The crucial issue is whether the intelligibility of our 2-d model is destroyed by the assumption that empty spaces and objects can be phenomenologically identical. Once a subject has become familiar with the dynamics, if you like, of his visual world, of the way in which shapes move and the empty space colour is affected, there seems no reason why his grasp upon the enduring shapes as objective particulars should be jeopardized. They still seem to meet the criteria for external objects. The controversy has to centre upon the changing shapes; of the colour we have designated for the empty spaces, that is. If objects are not threatened, however, half the battle is won; the issue simply becomes one of how exactly to categorise the changing gaps between objects. It is possible for the subject to see these as empty spaces, that is, an entirely different sort of thing from objects. The only problem with this is accounting for the fact that what is essentially the absence of objects should have a visual presence - equivalent to that of objects themselves. A way round this would be a version of the account I discussed earlier where motion was achieved by the destruction of certain objects and the instantaneous creation of others. In this case, only objects of a certain class - the given shade of blue - would be subject to this process. Such an account involves all the awkwardness already mentioned, but is not, essentially, absurd. It seems to me that, as long as the model contains sufficient order to ground an objective interpretation of items within it, then the details of how motion is to be accounted for are, relatively, unimportant.

The only practical difficulty that could arise is from the possibility of there being objects having the same colour as empty space because, obviously, there is the problem of such objects being mistaken for empty space and there is, also, the difficulty of such objects moving through space them-

selves for they would completely merge with it. If certain patches of the blue in question retained their integrity, never becoming smaller or disappearing then this would be reasonable grounds for assuming them to be objects rather than spaces, but doubt would always be possible. It would, however, be wrong to assume that doubt, uncertainty and ambiguity never occur in real 3-d space or our perceptions of it.

I implied earlier that, for certain areas of a visual image to be regarded as empty spaces other areas would have to retain their shape under re-arrangements at the expense of the first areas. In general, this kind of distinction must prevail; the shapes which are to be objects cannot be as mutable as those which are to be the empty spaces. At the same time, it is possible for a measure of change to apply to shape-objects. There is no reason why they should not alter their shape or their size. There is also no reason why they should not break up into smaller objects or more interestingly, enter into composite objects with other shapes. The norm in our visual world is objects which are composed out of many, visually distinct elements and are complexes of colour patches. What causes us to treat such disparate elements as if they were all aspects of one object is the strength of the bonds they exhibit between them. In cases of movement, they all move together retaining the same configuration. A similar situation can be envisaged for shape objects in our 2-d world. There could be collections of shapes which moved around as a unit, and demonstrated the kind of dynamics we associate with parts or aspects of a single object. Again, what is called for is a rigidity in general; variation is still possible. "Parts" of objects could become detached, to be free-floating or part of other conglomerate objects. Naturally, there is much more scope for all of this in a model which incorporates empty spaces, but it is still pos-

sible to a limited extent in the more restricted kind of model we considered.

One other form of motion or re-arrangement remains a possibility in our 2-d model. This is a version of the "jump" or "leap" based form of transition discussed in respect of sound spaces. Here, one would envisage instantaneous substitutions of shapes for each other. Thus, shape "a" at one location in the shape scheme might exchange with shape "b" at some different location. Or, more complexly, shape "a" might replace shape "b" which, in turn, replaces shape "c" which perhaps fills a's location. These substitutions would be simple and sudden and involve no displacement of other shape objects. No process of motion, in the sense of a continuous transition through a line of points between origin and resting place would occur; what is located at one point would simply come to be located at another. Some constraints might need to be imposed: if empty space is unacceptable, then only objects of the same shape and size could exchange places. There does not seem to be any great problem about describing such a form of movement, though, as ever, we have to assume that such rearrangements happen on a manageable scale; unintelligibility would set in if all objects were exchanging places from moment to moment. It is still open to question, however, whether such a process is metaphysically acceptable.

The difficulty with such a mode of transition is that it, clearly, breaks with one half of our principle for identity i.e. spatio-temporal continuity. Objects start off in one place and end up somewhere else without there being any spatial link. This presents several puzzles: one is the question of how the object got from A to B without there being any occupation of points between. One response to such a query is to say that it is mistakenly based upon assumptions derived from actual experience. In our world, objects cannot

just dematerialize to reappear elsewhere, but this might be considered a contingent feature of our world with no conceptual ramifications. Essentially, an object at one point in space is found at another point in space an instant later; we do not have to assume any temporal break. The qualities of the object remain exactly the same. Surely, it is ontologically gratuitous to assume that a fresh particular has come into being? Even if we do take such a strict line, no essential damage is done to the notion of the space itself. We still have a framework of other objects which remain constant. What is important, in general, is that we can have a range of experiences structured in a certain way, and that it is possible for these experiences to repeat. We need the ability to re-encounter certain configurations of objects, to be able to build up a belief that certain things not being experienced at a given time can be experienced. It is from such regularities and dependabilities, that a sense of objects enduring outside of experience arises and, more importantly, the idea of a space with a character defined by such objects. It is the commitment to a space, a potential for certain configurations of objects/experiences that is crucial. This can only occur by a repetition of certain experiences; by re-encounters with things filling and defining space. This can be achieved by less than perfect persistence or regularity. Not everything must endure between or during perceptions nor need the same relations between things persist. The notion of the sudden re-arrangement of particulars spoken of does not radically break with the basic requirements of consistency.

The issue of identity remains: what are we to say of shapes which occur in this way? Are they one and the same or different? Simplicity would demand that we treat them as identicals and maintain the idea of shape-objects moving around their world, albeit in a rather dramatic fashion. The one consideration which goes against this treatment, however, is

the question of discrimination in a situation where two shapes, exactly the same, move at just the same moment. Where we have qualitatively identical shape objects "a'" and "a'" at one moment, and then objects "b" and "b'" with the same qualities as a and a' in the places of other objects which have taken the places of a and a', a moment later, who can say which of b and b', a or a' is identical with? Of course, uncertainties can arise in our world, but there is always a fact of the matter, a difference in principle, because spatially distinct histories would apply to the disputed objects. Here, this cannot be the case: no possible difference can be attributed to the objects to allow identity to be traced. Perhaps, this is enough to rule out the proposed exchanges as a mode of exchange of particulars. As it is, alternative acceptable modes are possible for our 2-d visual space.

We have said quite a lot about the possibility of a 2-d visual world, and tried to show how an experience involving 2-d images could conform to the basic requirements necessary for an objective interpretation of it. Possible sophistications of the most basic model of 2-d space have been outlined. What it is important to do now is to consider the relationship between 2-d and 3-d visual experience. Given that I have claimed that an awareness of a 3-d world can be achieved purely from 2-d images, it is important to see how this process operates.

(v) A 3-D MODEL

From what has been said earlier, the difference between a visual experience of a 2-d world and that of a 3-d world is not encapsulated in a single image. On an image by image basis, there is nothing to tell us whether an image is that of objects in 2-d or in 3-d space: any given image could be part

of a 2-d or a 3-d experience. What, therefore, is decisive is the context a single image exists in, the sequence or network of images to which it belongs. What was noted as characteristic of the sequence of images for a 2-d space was the unchanging shape presented by the shape objects as the field of view passed over them. Objects could move from one side of the subject's visual field to the other and remain constant in shape throughout. What is characteristic of 3-d space is that its objects do alter in shape as the subject's visual field moves (apart from certain exceptional circumstances where the objects are rotating in synchronization with the viewer). The alteration is fluid and constant: the subject does not have a set of different images in an obvious sense, because a finite number of images is not involved. At arbitrary points in a sequence, the subject will be aware of different images, but generally, what he will be aware of are images evolving through a series of infinitessimal variations. The seamless quality of the change involved is important because it precludes the division of the image flow or sequence into separate items. It is not possible for the subject to review a finite collection of distinct images. This is important because it "welds" the images in a subject's visual experience together and prevents it from being fragmentary. When we walk around an object we are not presented with a broken sequence of differing images, rather, we experience a continuum of images, a seamless flow.

Thus, in our world, the subject's experience would change from an initial image which could be of either a 2-d or a 3-d image, to an image that was a modification of that image, where all the shapes of the first image had changed to some degree, but this transition would not involve a leap or a sudden jump from one image to a differing one. One image flows or evolves from another. A continuous sequence of images is involved in a 2-d experience, of course, but there

all that alters is what is seen and what is not seen, not the shapes of the things seen. In an exploration of a 3-d space, we will still expect the phenomenon of items leaving or entering the visual field: it is the alteration in the shape of items remaining within the field of view that is distinctive of an experience of 3-d space. Of course to talk of "items" changing or altering within the field of view is controversial at this point in a reconstruction of the epistemological process involved. From the perspective of a naive subject, all that is untheoretically experienced is a change in the shapes within his visual field. It is a further step to think of the shapes that change being the shapes of particulars or individual objects. Because of the "flow" that is involved in these shape changes, it is not possible for the subject to regard his experience as a succession of unrelated images. One shape clearly becomes another and, to that extent, a basic kind of order exists in such an experience.

The fact that shapes evolve, however, does not amount, by itself, to those shapes being objects in a space or their being the same particulars through change. One could envisage all kinds of shape evolutions within an image which bore no relation to those characteristic of an experience of a 3-d space. Think of an image consisting of shapes in a constant state of flux, in no way would this correspond to the visual experience of walking past or around three-dimensional objects.

Consequently, to put our subject in touch with a 3-d space in any sense at all, we must assume a certain kind of flow of images; a continuum which conforms to a certain ordering. This does not mean that there is a finite number or pre-defined set of image sequences. The possibilities are infinite but not unrestricted: certain patterns or criteria have to be conformed to. Characterizing the exact way in which a given image or shape within an image has to alter in order for that

image or shape to be treated as belonging to a 3-d space is no easy task in terms of producing a geometrical definition. It is not necessary for our purposes. As visual experients of a 3-d world, we all have an intuitive grasp upon what fluctuations in images are consistent with an experience of a 3-d space and which are not. The understanding involved is an impressive one given the infinite range of sequences available for any image.

In our 2-d model the subject could "move" or his field of view could change along any number of flat axes; the world is two-dimensional and the possibilities of exploration are the same. In a 3-d world these possibilities are infinitely enhanced. There is the kind of exploration which can be conducted in a single plane, as in a 2-d world, but producing different sequences of images. There is, also, exploration which involves movement in both planes. If we think of confronting a single object, the possibilities of movement around it are potentially infinite, as are the images available thereby. Consequently, in terms of our theoretical subject confronting his first image, we must make available to him ranges of images flowing from that image that are of the sort obtainable by viewpoint changes in 3-d space. In a way, we are thinking of strings of images, and an infinite number of such, leading off from a single image or shape, each one to represent movement along a certain 3-d spatial route. Naturally, these sequences are not all separated from each other, there are infinite possibilities for their interconnection. If one thinks of an object being surrounded by an infinite galaxy of observation points at all different angles and distances from the object each affording its own distinct image of the object then it is clear that these points can be linked up in any number of ways, though not in any way at all (unless we allow a subject to jump from point to point - although that may not be an unintelligible option.) In actuality, many of these observation points are not available to

an observer, even in principle, because the space involved is filled by other objects. If our model is not to consist of a space occupied by a single object, this feature would have to be incorporated which, of course, demands further visual possibilities in itself; namely those connected with the visual appearance of the obstructing object.

Although a given image or shape determines what further images or shapes it can be linked to, under a 3-d interpretation of it, it does not do so absolutely. Because a side of an object seen at one point does not disappear with an immediate change of position, though a part of it may disappear from view, the later image will have to incorporate it although in changed form. The fresh shape that this side presents from a new position is subject to the kind of rules characteristic of a 3-d space that we have spoken of. Not any new shape is possible. At the same time, however, the change of position may have brought a part of the object into view that was not previously visible, and what this is and the image it presents is not something that could be predicted from the previous image. A given image, if it is taken as a view part of a 3-d object, pre-determines how that side will appear in later images assumed to be had from different viewpoints, but not the character or appearance of other, unseen sides or parts of the object, in detail.

From a sceptical point of view, one might want to argue, at this point, that although we have provided our subject with an initial image and then, perhaps, an experience of images which involve variations of that image which are of the type we have in our visual experience and which we have just been characterising, it is still possible for the subject not to treat his experience as of a 3-d world. There are two possibilities: one, traditional, total scepticism about the objective nature of what is experienced, the other, a 2-d interpretation of what is experienced. I shall not consider the

first of these, because it is a topic we have discussed elsewhere, but it is worth mentioning that in a form of experience where things vary constantly, as they do in 3-d experience, the scope for scepticism is, perhaps, greater. The second possible re-interpretation is more interesting. What would be required would be a notion of a 2-d space filled with very volatile objects. In the 2-d model we have already outlined, the possibility of objects changing yet re-identification remaining feasible has been established. Thus, the shape modifications an object undergoes when we think of ourselves as moving around it, could be interpreted as a 2-d object evolving or altering its character whilst we remain static. This might not be entirely the case, some combination or alteration in the character of the objects and movement of the observer or the scope of his visual field might be required, given that objects would still disappear from and reenter the visual field.

Is this a viable alternative to a 3-d interpretation? I think that are several serious obstacles to such an approach. One immediate problem is that of deriving a firm sense of space from such an experience, that is, achieving a sense of places or particular "bits" of space. In the earlier 2-d model it was possible to acquire a sense of the underlying character of space from the shape objects occupying it, because, in general, they remained static during an exploration of space by the observer. Here, every movement of the visual field, i.e. every time a part of space leaves or enters the view, produces a change in the shape of the object. This makes it difficult, if not impossible to form an understanding of the permanent properties of the 2-d space; the properties that endure through the fluctuations in the objects. Without this concept of space, the alterations in the shapes are meaningless in objective terms; all we have is a subjective sequence of images. What, possibly, prevents this reduction occurring is the fact that it is possible to re-lo-

cate shapes and earlier configurations. Some kind of route can be traced through experience by the observer, he can move back through familiar images and find previously encountered shapes. This at least allows a facility for re-identification, even if an understanding of the space in which objects have persisted is uncertain.

A further, possible, difficulty is the fact that objects, in such a spatial scheme, change in ways which are completely ordered yet inexplicably so. A subject can move his field of view along a certain stretch of the supposed 2-d space and objects will be constantly changing before they leave the visual field and others enter it, and at any point, the subject can reverse the direction of his observation and re-experience the same shapes. The shape-objects can be made to flow back through all of the shapes they have passed out of. That this is the case can only be taken as a completely arbitrary feature of such a world. A 3-d interpretation, however, gives a rational explanation of this fact: such changes in appearance and their reversibility derive, necessarily, from the nature of 3-d space. This, takes us to the heart of the difference between adopting a 2-d as opposed to a 3-d interpretation of the same experience. A 3-d understanding makes the phenomena intelligible in a way that a 2-d reading cannot. One source of perplexity in a 2-d account is the fact that objects alter their shape every time the field of view is moved. It is surely strange, if the items obscured are meant to have an existence independent of the observer, that every change of his observation point is accompanied by a change in the shape of objects.

One of the most important features of the difference between the two accounts lies in the area of the predictability of future experiences. If we consider another problematic aspect of a 2-d interpretation, we can see an illustration of this. It is possible for a subject to move so as to return to

his starting point without simply reversing the direction of his observation and this is true for the 2-d interpretation as well as the 3-d one, given that both are taken to share the same phenomenology. Expressed in 3-d terms it is possible to approach an object from an unfamiliar aspect. One can leave an object having seen one side of it, travel through space, viewing different objects and circle round it so as to re-experience the object from another side.

Considering this situation in 2-d terms the first problem would be to state what reason the subject could have for thinking the later experience an experience of the same object given the fact that the shape seen would be different from the earlier one and not one that had been seen to evolve out of it. As it stands, the subject would have no reason, on the basis of a 2-d interpretation of his experience, to think the later shape identical with the earlier one as an object. A reason could be obtained if the subject went on to experience the intermediate shapes or modifications existing between the later shape and the earlier one: if he moved his visual field over the object until he reached the initial image. Only by linking up with former experience in this way can a re-identification happen.

This is not necessarily the case under a 3-d interpretation of the same experience. Here, a subject would have two reasons to treat the later shape as an image of an object experienced in the previous shape. Firstly, in his movements or as the sequence of images went by, the subject would be forming a conception of himself as moving through different locations in 3-d space. The subject would treat his changing visual experiences as those of moving past objects (fixed in character, rather than in a state of flux) in a certain direction through specific parts of space. Thus, by the time he re-experiences the original object, he should already know that he is approaching the same point in space, but from a

different direction. He should not need further experiential data to determine this, it is implied by the experience he has already had, coupled with a 3-d interpretation of that experience. Even if the object looks quite different from a different side, the subject has every reason to be sure that he is seeing the same spatiál particular. He is, indeed, compelled to assume so by the logic of the assumptions he has already made about what he has experienced.

A second reason for a subject, operating with a 3-d spatial interpretation, to make the re-identification in question is the fact that the earlier image does, to some extent, dictate the form the later image must take. We have already discused this when we spoke of how the appearance of the object from one aspect has consequences for the appearance of the object from other aspects. The closer the aspects are together, the more this is the case, but the effect is always present in some measure (primarily in shape terms rather than those of colour). Having seen an object from one point of view, we have a reasonable idea of what it will look like from a different point of view in that not just any shape is possible. Consequently, in the present situation, the subject has grounds, in the character of the shape he sees, for thinking that he is viewing the same object, irrespective of any other spatial considerations that apply of the sort just mentioned.

It has to be conceded, however, that it is possible to give an account under the 2-d interpretative scheme of how a subject could have these predictive or anticipatory powers. By an empirical process a subject could build up an understanding of the shape transformations that are possible for 2-d objects. A set of geometrical laws or regularities could be established from the behaviour of objects in the 2-d world which would allow, perhaps, the same sorts of predictions to occur as those we have just judged to be available under a

3-d interpretation of the visual material. The system would be immensely complex, but this is not an objection in itself. The crucial difference between this mode of prediction or anticipation and one based upon a 3-d space is at a conceptual and explanatory level. The system that is based upon the assumption of a 2-d space and continuously fluctuating objects is essentially one of laws or regularities which are contingent. Patterns are discerned in the experiential phenomena, shapes are related to shapes under laws, but no deeper explanation of these regularities can be given. Whatever necessity is involved is a contingent one of constant conjunction. It is a simple fact that 2-d shape objects behave as they do, other patterns could be envisaged without detriment to the notion of a 2-d space being present.

In the case of a 3-d interpretation of the same experience, the surface laws are the same, but there is also an underlying explanation for the existence of such regularities. A metaphysical structure which grounds the laws in question is present, namely that of 3-d space. The geometrical regularities are no longer contingent ones; they are necessary, given the commitment to a 3-d space. This does not mean that a 3-d space exists necessarily; that such a space exists is a matter of contingency. Experience might have been different and the grounds for a 3-d space absent from it. Given, however, a phenomenology which allows for a 3-d interpretation of it, the assumption of such a space necessitates the kinds of regularities - connections between appearances - that we have spoken of. In this situation, it is inconceivable that things had turned out otherwise: relationships between aspects of objects have to be as they are; to assume differently is to contradict the 3-d spatial interpretation of the experience given - in direct contrast with the freedom allowed by a 2-d interpretation.

What is being invoked, here, is the fundamental concept of 3-d space itself, the essence of what it is to conceive of experience as revealing objects in a 3-d space. Even if the net effects of both interpretations are the same in phenomenological terms, it should be seen that, at a conceptual level, the 3-d interpretation unites experience in a much more radical and powerful way. It is quite a different thing to comprehend experience in 3-d terms as opposed to 2-d ones. The weight in favour of a 3-d interpretation given by considerations of simplicity and greater intelligibility is, of course, significantly added to by the conjunction of our form of visual experience with our form of tactual experience. Coupling the two together leaves no room for a 2-d interpretation.

It is in the notion of an aspect that the difference in question, importantly, reveals itself. What would have to be accounted for as alterations in the shape and size of an object in a 2-d scheme, can be explained in terms of different aspects in a 3-d interpretation. The essence of the idea of an aspect is that items in space present more than one image or appearance. This is achieved in one of two ways: by a change in the orientation of the spatial items or by a change in the position of the observer relative to the item. Thus a two-fold concept is involved: objects do not just present different aspects, they do so in accordance with a change in position relative to an observer or a viewpoint. In making three-dimensional sense of the changing appearance of a visual object, a subject has to assume a complex visual character for the object and also alterations in the relationship between the object and the observation point. It can be seen that the key 3-d spatial concepts do not arrive piecemeal but as a complete package. If changes in visual imagery, (i.e. the shape evolutions we have been considering) are to be given a 3-d understanding, then it is not just a conception of these shapes which is extended, for an inte-

gral part of understanding those shapes along 3-d lines is developing the full range of 3-d spatial notions. The rest of the space the object exists in and the spatial relationship between the subject and the object must arrive at the same time (6).

Perhaps, the most significant notion that is involved in a 3-d conception of experience is that the nature of an object or occupant of space cannot be exhausted by a single perceptual encounter with it. This is a radical departure from previous spatial schemes we have considered. Sound objects and 2-d visual objects could be known completely in a single perceptual act - to experience them at all is to experience all of them, they have no hidden qualities. Here, it is possible to experience an object but only have a partial awareness of its qualities. In fact, it is actually impossible to be aware of the full nature of a 3-d object at any moment. That this is so follows directly from the nature of 3-d space. It is a contradiction of the notion of a 3-d object that it be apprehended in a single perceptual image. One reason for this is that there must be an infinite number of different aspects to any item extended in 3-d space - albeit minimally different in many cases.

I have spoken as if a viewpoint is logically entailed by a 3-d interpretation of items in visual experience; this may not fully be the case. What is required is that some account be given of the changes in shape an object is supposed to undergo. The basic situation is that of a subject experiencing a shape within his visual field which subtly changes into different shapes. Under a 3-d interpretation, a subject must, in such a situation, assume himself to be continuously viewing the same object and also an object which remains the same and does not change its qualities. This presents the difficulty of explaining the undeniable visual change in the object - its shape alterations. I suggested that there are

two ways of achieving this, one is to attribute a change of position to the object, the other is to attribute a change of position to the viewer. Perhaps, all that is required is an assertion that a different side of the object is being seen. This may avoid any suggestion that the viewer is observing *from* a particular point in space and rather, that he is simply aware of different sides of objects at different times. This may not be successful, for it could be argued that it is necessary to be in different positions to see different sides of things and that the idea of seeing a different side of something necessarily involves the idea of seeing an object from a different point or perspective. In seeing a fresh shape, one is seeing what an object looks like from *here* or what is looks like when it turns away from *where* we are. If we accept that this is a part of the entailments of a 3-d space, this does not mean that we are committed to physical embodiment of an observer; seeing can be mediated by points in space without the observer having to spatially occupy those points.

The idea of a single perception or perceptual act is definitely entailed by a 3-d visual theory. This cannot simply be defined as what one sees at any single moment because binocular vision is a fact and the possibility of seeing from a multitude of points (or of seeing many sides of an object) at once is a viable one. A visual perception in this case has got to be logically related to the notion of a 3-d object. Going along with the idea of an object in 3-d space is the idea of that object having an infinity of distinct aspects. Having these aspects involves giving rise to separate images for a viewer. The notion of an aspect and that of a single view or perception are interlinked: it is not possible to explain one without reference to the other.

The situation is complicated, somewhat by the possibility of perfectly symmetrical, regular objects, objects which pre-

sent the same shape and appearance from any perspective. Here, although what one sees does not change in imagistic terms (although the background may do so) one is seeing different spatial parts of the object. A 3-d spatial understanding dictates that one assume, in spatial terms, that different parts of space or different bits of an object are being seen, even if they appear qualitatively the same. The potential exists, in such objects to be irregular: one cannot know in advance, from an initial glance, that an object is uniform in appearance. Discovering that an object is the same from all sides (and this is something one can never be absolutely certain of) is as contentful concerning the 3-d character of that object as the more usual discovery that an object does not present a uniform appearance. Of course, there are possible epistemological difficulties where there are no background clues as to changes in the observer's view - if the object continues to look the same how does he know whether he is seeing a different part of it or not? One could expect such situations to be exceptional.

The question of spatial surroundings or background objects is, generally, an important one and one which has been neglected so far because of the rudimentary approach we have been following in focusing upon the individual object. In fact, most of our understanding of 3-d space comes from experiencing collections of objects. Part of building up an idea of space is, not just experiencing the different aspects of individual objects, but seeing how those objects visually interact with other objects in space. If we consider an initial image, prior to a spatial interpretation, it will consist, let us suppose, of a collection of shapes. Even if the subject speculates that these shapes are 3-d objects, he cannot know exactly how they are related to each other spatially; he can have no idea of which object is in front of which, for instance. As the image changes (as the subject moves) and the individual shapes start to change, in the

characteristic ways we have been discussing, so, too, the relationship between the shapes will change; some will get nearer to each other, some will get smaller as others get larger; nearer objects change more than those further away. The forms these alterations can take are manifold, as many as there are ways of moving through a spatial scheme, but it is by experiencing such changing patterns that a subject builds up a full sense of 3-d space. The exact process involved being, of course, very complex.

To sum up, as far as 3-d space is concerned: what is vital to it is that there be a visual experience where shapes evolve continuously into different shapes and do so in a particular kind of way (not any flow of shapes will do). It is this seamless quality of change which allows for the postulation of continuity of particulars. Also, relationships between shapes will change in certain types of ways. Upon this changing experience is imposed a 3-d interpretation which unites the changing appearances under an assumption of stability at the objective level. It does this by introducing the metaphysical notion of a 3-d object. One of the central features of this concept is the aspectival one. This provides for an object enduring without a change in its nature (or, possibly, position) while presenting a multitude of distinct appearances. By means of this metaphysical structure a whole range of predictions about the form of future visual experience is possible.

The aspectival character of 3-d objects is probably the most conceptually taxing one. It represents a departure from previous assumptions about objective particulars. It is harder to think of there being an essence to objects, some well defined character, that is, which can be experienced in any encounter with these objects. Rather, an object is some kind of aggregate of a multitude of different possible appearances. More than one perception is needed to arrive at an

awareness of the full nature of an object, and there is always an element of uncertainty, given the infinite number of possible perspectives. This is something we are prone to forget at a conscious level (though not intuitively) and we have a welter of conventional images of worldly objects. A penny, for instance, is always thought of as round and not as an ellipse or an oblong. Prima facie, it might seem a problem that 3-d objects are like this; surely an object must be one thing and not an infinity? There is no reason why this should be so. The fact that an object has a massive even infinite number of qualities does not mean that it is not determinate for it has its *own* characteristic infinity. Also, we must remember that an object fills a determinate part of space. The aspects or sides are not just piled up on top of each other, they are linked together around a given part of 3-d space. The different aspects of a thing give us an understanding of how a particular part of space is occupied, they are harmonized with each other.

What is interesting about this is that the terms in which we think about objects can no longer be simple or straightforwardly imagistic. We cannot, as was possible earlier, identify an object with any single experience or phenomenological encounter with it. Nor is there a definite totality of such images which captures the nature of an object. Our belief in the existence of a particular object commits us to the possibility of certain perceptual experiences, and we can test the validity of our belief by the occurrence or absence of these, but what an object is is not strictly reducible to these phenomenological experiences. This is a good example of the way in which elementary sensory experiences can ground or be subsumed by theories or ontological commitments which are not simple summaries of those experiences but intellectual extensions of them. Where 3-d space is concerned, one is moving suddenly from concrete phenomenological roots to sophisticated abstractions. I think it

is important to note that, even in terms of a basic model such as ours, lacking in any of the physical phenomena and qualities of actual, material objects, a significant level of theory and conceptual complexity is involved. This will be seen to be of importance later.

Another sophistication of our visual worlds (mentioned already in connection with 2-d spaces) lies in our individuation of objects. In a sound world, an object is a simple thing and, possibly, the same would be true in a taste or smell world also. There is not, in general, a difficulty about deciding where one item stops and another begins. This is not nearly so true in a visual space. Metaphysical simples do not occur to visual sense. Visual space is occupied by matter; by something which is impervious to sight, which presents a particular colour to an observer on its surface. Large tracts of the space we experience are occupied in this way, if they were not we would have no experience of space at all, although it would still be there. These areas of space are not filled by some kind of uniform material, however. There is great diversity in the visual appearance of matter and, most importantly, this applies within spatially continuous occurrences of it. It is not just that spatially separate areas are separately coloured but, within those areas themselves, a variety of colours can be presented. The simplest way of dividing up the visual into particular objects would be on the basis of colour: continuous areas of the same colour would constitute single objects. In a 2-d space, such an approach might be reasonably successful, but, even there, we noted how such coloured areas might break up and move in conjunction with areas of a different colour. It is the exigencies of a world that changes which dictate what is to be treated as an object. Movement in a 2-d world decided what collections of coloured patches should be treated as objects. If, during a process of re-arrangement, certain coloured expanses maintain their relations

among themselves, then this provides grounds for treating them as comprising some kind of single unit. The motivations for this are ones of practicality and convenience and not essentially ones of metaphysics. In such a world, there cannot be some deep or ultimate unit which is to constitute an object. There has to be a sense in which divisions are arbitrary or relative to a particular purpose.

All of this is especially true in the case of 3-d experience. The fact that space has depth means that anything occupying space presents more than one aspect and can be viewed from different positions. This means that what we tend to treat as a single object is a continuous piece of matter which is detached or easily detachable from other areas of matter, something, in other words, which can be inspected from all sides. The property of moving as a unit is, of course, important here also. Colour becomes largely irrelevant to the individuation of objects. In a 3-d world this is particularly pronounced because of the fact that any spatial occupant is very unlikely to show a uniform coloration from all perspectives; if only for the reason that light and shade will always be relevant factors.

It should be clear to us that objects are defined by our purposes and activities. We may unite all kinds of disparate things to create something of use to us, but having done so, we see ourselves as possessing one kind of item. The naming process, clearly, has much to do with the "objectification" of matter and reveals the importance of context and purpose. Often we will have hierarchies of names centered upon a single spatial occupant. Thus we might have "chair" but also "legs", "spells", "seat", etc. and perhaps below that "wood fibre" or "cellular structures" and below that, perhaps, molecular names. Thus, according to our interests, the same area of space can be referred to in a variety of ways: one implying that it is occupied by a single object, the others

suggesting that it is occupied by many. Of course, in a world with such seemingly boundless possibilities of demarcation, there has always been a desire for some ultimate constituent of physical reality, some absolute unit out of which all other, nominal objects are built. A moment ago it may have seemed surprising that I did not extend my list of names to include atoms and, particularly, sub-atomic particles. For, in some ways, science could be said to be striving towards a kind of "building-block" of the universe. I do not think it is appropriate to include such items in this discussion. We are still considering physical space as visually experienced, and when we move into the realm of "theoretical entities" we have moved outside the realm of what can be experienced. This does not mean that such entities are illegitimate in general, just that they cannot be included at a stage of our analysis which is still phenomenologically orientated. The whole question of scientific postulates and scientific revision of our ontology is one I hope to address myself to in the final chapter.

Suffice it to say, at present, that, even assuming a very limited form of visual experience, one concerning a 3-d world which is not particularly rich either in terms of its objects or their interactions, the question of what is an object may not admit of a single or final answer. The issue is an arbitrary one in a way that would not be the case in a sound space or some of the other alternative worlds we considered. This difference stems from the inherently separate character of the sensory material involved in these different categories of experience - a diversity we shall need to remind ourselves of in the next chapter.

(1) C.W.K. Mundle PERCEPTION FACTS AND THEORIES, O.U.P., Oxford. pp 8,9.

(2) For a more complete description of this experiment see eg. R.L. Gregory THE INTELLIGENT EYE, Weidenfield & Nicholson, 1970 pp 26, 27 or W.H. Ittelson THE AMES DEMONSTRATIONS IN PERCEPTION (1952).

(3) See in particular Thouless' Experiments in this area reported in BRITISH JOURNAL OF PSYCHOLOGY 1931-2 P.23 and in Mundle, Supra, P.17

(4) A.J. Ayer THE CENTRAL PROBLEMS OF PHILOSOPHY Pelican 1976 P.89 et. seq.

(5) R. Descartes PRINCIPLES OF PHILOSOPHY Pt. II Principles of Material things. esp XXXIII.

(6) c.f. Merleau-Ponty PHENOMENOLOGY OF PERCEPTION trans. C. Smith R.K.P. London 1962 see eg. Pt. 2 page 203-4.

CHAPTER FOUR

MULTIPLE SPACES

At this point we have reached a position where we have considered the basic phenomenology of experience and considered the ways in which that phenomenology can be structured so as to form the basis for an objective scheme. We have done this in terms of a sound-based space and then 2-d and 3-d visually based ones. The first two of these are speculative in character; we do not inhabit or experience such worlds and have no reason to believe they exist for anyone. The purpose of proposing them was to establish their possibility and to challenge any tendency to treat our particular world as if it were uniquely intelligible. Also, the elementary and artificial nature of these sensory constructions allowed us to cast direct light upon basic metaphysical issues and principles which have an application to actual experience.

The 3-d model we have just left, naturally, had a direct bearing on actual experience; in that our experience does include 3-d visual awareness. However, we left our model at a fairly undeveloped stage by comparison with the experience that is familiar to us. This is defensible to the extent that a full structural outline relevant to actual experience was given even if much detail was absent. The important discrepancy between this model and the experience we actually have lies in the fact that the model treats the visual in isolation from other forms of sensory input. This has been in keeping with the sort of revisionary analysis we have pursued thus far, where the possibility of worlds based upon a single form of sense has been explored. It is necessary now to consider subjects possessing more than one form of sense. Preparatory to this, we need to remind ourselves of some of the phenomenological conclusions we arrived at in Chapter One. The important lesson of that chapter was that there is

every reason to believe that there are strong divisions within what we normally experience. These divisions may not be as many as, or along exactly the same lines as the commonly accepted five senses, but the evidence that categories do prevail within our sense experience is strong and I propose to take this claim seriously. I suggested earlier that, believing that there are areas of experience which involve radically different phenomenological content, has important consequences for perception as a process of forming an understanding of an objective world, I now wish to spell out what these are.

The issue has already been hinted at in remarks I have had occasion to make about touch. I have commented on the phenomenon of touch and vision sharing some of the same properties. I have, also, mentioned the difficulty of identifying a phenomenology for touch because of the fact that it shares its objects so closely with visual sense. Shape terms such as "round" and "square" and so forth and also ones of texture (which might be considered a species of shape properties) like "rough" or "smooth" are to be found amongst the vocabularies of both senses. Despite this close connection, I have argued that there is all the difference in the world between *seeing* that something is round and *feeling* that it is. Phenomenologically, the experiences are distinct; if they were not that would provide one major ground for saying that not two senses were involved, but one. What we have is a particular kind of harmony between the experiences achieved under the two senses. This connectedness is present also, but to a less pronounced extent, where the other senses are concerned. Sounds, tastes, smells do not just occur unconnected with the rest of what we experience, invariably they are closely associated with other things in the visual sphere. The difference is that experiences from these senses are not so strongly linked with visual qualities. It is not the norm to be able to tell what shape a thing is from

the sound it makes. Empirical connections can be established, of course (we can be pretty sure of the visual appearance of what we hear when we hear bagpipes being played!) Also, we are quite good at recognising different materials by the sounds they can make: metal, wood, plastic, and so on. But these senses, especially taste and smell, are very poor at providing us with a visual understanding of things which we have had no prior visual encounter with. Touch, however, does involve a capacity to anticipate the visual appearance of things unseen. The potency of this capacity should not be over-estimated, however, (many familiar blindfold games exploit the visual confusions and distortions touch produces).

The general point it is important to make is that, if we assume that the phenomenology of the different supposed sense modalities is radically distinct then, in one sense, we cannot experience exactly the same thing through different sense modalities. Some kind of account has to be given of how there is a sense in which the same thing/property is experienced via different modalities. That we can see and feel roundness should, prima facia, be a mystery to us, because the proper, phenomenological objects of these senses, sensations, if you like, are distinct. Essentially, it is because of contingent connections that we can take ourselves to be experiencing the same thing through different senses. There is no logical connection between an experience belonging to one sense and that of another. The sensations involved in looking at a sphere and in moving one's hands around it are quite different and there is no reason, per se, why they should be connected with each other. This may sound strange or counter-intuitive. Because we are so used to there being such a connection, it is difficult to think of there being no stronger link than that of contingency. If we consider the consequences of making such a claim this difficulty will, perhaps, deepen. The implications are two fold: firstly, it

should be the case that a given tactual sensation could have been coupled with a different visual experience/image from the one it actually is. Secondly, the realm of tactual experience might have had no connection at all with that of visual experience.

Taking the first of these, is it really conceivable that any tactual sensation could be mated up with any visual one? There seem to be strong objections to such a view. Central among these is the importance of some kind of isomorphism between the two realms of experience. Tactual and visual experiences which are linked may be different in terms of phenomenological content, but they will be formally or structurally similar. Thus, in the case of the sphere, the visually symmetrical appearance is matched by the regular feel of the object to the touch. Just as there is nothing in the image of the sphere which marks out one part of it from the rest, there will be nothing that stands out as different in the tactual experience of it. Consequently, to suppose that something with the visual appearance of a sphere could produce the tactual sensations of, say, a cube seems incoherent. Yet, is this really the case? Let us describe to ourselves the supposed situation where, looking at a sphere, we sweep our hands across its surface to feel, not the usual, smooth unvarying sensations, but the angular tactual pattern of a cube. We watch our hands: they hug the surface of the sphere, there is no visible variation in the surface of the thing, yet, tactually, it feels as if there were. Such a situation is bizarre, but is it unintelligible? If we allow that there is a genuine domain of tactual sensation then we must be committed to such a possibility. Absurdity would only arise if we assumed that to feel an object were just like looking at it, because, then, in the above situation we would, effectively, be saying that the object presented the appearance to the senses of being both round and square, in the same phenomenological sense of these terms.

Maybe there are those who would want to bite the bullet here and declare that there is no real difference between the content of touch and of visual experience and state that shape terms such as "round" and "square" relate to just the same kinds of experience when used in tactual and in visual situations. If such a view has its advantages, it also faces difficulties. Primarily, there are many unignorable differences between touch and visual experience. Tactual sense gives us no awareness of the colour of things. Perhaps one could argue that touch provides its own analogue of colour, in that, in feeling the surface of something the tactual sensations occurring - possibly ones of texture - "block in" the shape of the object much as colours do in seeing. This view is tempting until we think of how shape is generally perceived by touch. In most cases, the amount of an object we can feel by touch is very limited. We are largely working with our hands and we are exploring the edges of things as much as their surfaces. It is the sensations of the movement, orientation and separation of the hands - largely felt in the arms - which are crucial to deciding the shape of an object, not the tingles and so forth felt where the skin is in contact with the object, for, these are only really informative of the textural qualities of the thing, not its overall shape.

Of course, there are a few situations where an awareness of an object's shape could be obtained in the way described above: where an object is small enough to have a large part of its surface in contact with a part of the skin. A coin lying in the palm of the hand ought to present a tactual image like the one described. Its circular shape ought to be "shaded in" by the sensations its surface generates upon the hand. Yet, in reality, I strongly suggest that people would be hard-pressed to determine the shape of such an object resting on the flat of the hand. We are not tactually

sensitive enough in this way. Characteristically, a process of "exploration" would be necessary before the shape of the coin began to be apprehended. In contrast to the passive process described, the coin would be "squeezed" in the palm of the hand or, more likely, explored by the finger tips; again, revealing the importance of the edges rather than the surface of an object for determining its shape and the importance of an awareness of the movement and orientation of the contacting parts of the body as opposed to the actual sensations of contact.

This leads us to another major difference between touch and sight. In vision one can form an instantaneous image of a large tract of space and its contents, myriad shapes can be perceived at once. With touch, however, a laborious process of exploring the surfaces and edges of objects would be required to arrive at the same understanding; if it could be achieved at all. If we take any one of our visual images and think of the task of producing the same awareness purely by tactual means, we should sense the near impossibility of the task. Of course, whole areas of our visual experience are passed over by tactual sense, anyway: shapes that depend solely upon colour, rather than physical outline are invisible to touch, as, for example is the writing on this page. A persistent adherent of the views I am questioning here might want to present touch as a very restricted form of seeing with a tactual analogue for colour which only registers outline and not surface patterns. His tactual "viewer" is like someone with a very extreme form of tunnel vision, he has to get right up close to what he observes and sees only short stretches or fragments at a time. If there is any plausibility in this view at all, it is overridden by the previously mentioned fact that the colour analogue account does not fit with the actual way we tactually arrive at the shapes of things, which is essentially by following the surface of an object.

Another problem facing anyone supporting the view in question is that of marking off those tactual experiences which are visually relevant from those which are not. We have already spoken of the variety of tactual experiences and of the way in which it is normally taken as covering temperature perceptions, pain sensations, kinaesthetic awareness as well as awarenesses of physical objects. Presumably, the person we have in mind would have to claim that there is a significant difference in content or phenomenology between, so called tactual sensations which represent "images" of objects and those which do not. In a way, the view that touch breaks down into more than one sense category would be being argued for here. I have already indicated that there may be good reasons for suggesting this, but I am not sure that this is because the difference between tactual sensations of physical objects and the rest is one of quasi-imagery.

It seems to me that there are many physical tactual sensations which do not involve what we could call a "tactually coloured image": a jab in the arm by a compass point, itching powder down the back of the neck, total bodily immersion in water, none of these obviously gives rise to the kind of phenomenological item we are looking for. Also, there are many bodily sensations of a piece with the archetypal tactual ones of pressure applied across a well-defined area of the skin which do not give an awareness of a visual item at all. A sensation of air striking or moving across the skin is an obvious case in point. Here one can be said to be aware of something physical, but non-visual. Of course a proponent of the approach we are considering might take this as an example of the superiority of touch over sight in some respects. It would, perhaps, be on a parallel with being visually sensitive to infra-red or ultra violet light or other parts of the electro-magnetic spectrum we are not actually attuned to. Once this step has been taken, however, it is

hard to see an objection to further extensions of tactual awarenesses of physical and non-visible states. In the case of the temperature sensations, these could be said to be awarenesses of the molecular state of things. Certain tingles and shocks might be said to be perceptions of electrical activity. Pains might be taken as awarenesses of biological states and activity in the body. The problem with these is that, although they are all sensations which are informative about the physical state of things they cannot in any sense be said to be images of those states. In many cases the idea of an image being achieved is senseless in itself - what appropriate image (along coloured, shape lines) could there be for a flow of electrons? I shall argue later that tactual sense is a genuine source of perceptual awareness of such diverse and sophisticated physical happenings but not by being a quasi-visual sense.

I wish to return now to the second implication arising from the purely contingent relatedness of the experiential content of touch and vision. This is the possibility of no connection at all between what is experienced visually and what is experienced tactually, rather than just alternative connections from those at present. Here, we would have a realm of visual encounters and a realm of tactual ones but no link between the two. What would be required is a 3-d visual experience of the sort outlined in the previous chapter developed to the point, say, where the subject had an awareness of a world of objects as rich as our own. The important point being that his whole awareness of those objects would be based upon visual experience of them - he would have had no encounters with them mediated by any other sense and, notably, not touch. It has been my contention in Chapter Three that it is perfectly possible to build up an understanding of 3-d objects and space much as our own solely through visual experience; though I do not claim that understanding is not deepened and extended by sensory experience from other

sources. What we need to add to this situation (although we would expect it to arrive at the same time as visual experience) is a realm of tactual experience, but not of the type we are used to. Visual objects would provide no tactual sensations, they would have no tactual dimension. We could imagine this being the case in one of two ways: one where we assume observer embodiment and one where we do not.

Taking the first of these: this would be a situation where a subject had reason to think himself embodied because of the omnipresence of a certain visual object in his experience. In "moving" though space in a visual sense, obtaining different views of space and seeing different objects or aspects of them, the subject would find that, in amongst the changing scene, one object was constantly present. He might also notice a connection between the experience of seeing and the state of a particular part of that object. He might in other words realize the causal importance of something like eyes for seeing ("if blocked off then a loss of image", and so on). Additionally, the subject might identify some ability in himself to control or influence that object, to re-arrange its parts, as we have discussed elsewhere. These, however, would be the extent of his grounds for thinking himself embodied in the sense we usually understand. For, in the situation we are developing, he would have none of the tactual cues for thinking that a particular object was his body. He would not be able to obtain sensations by placing parts of this object in contact with other visible objects. We can imagine such operations occurring but being blank from a tactual point of view.

Perhaps the question of solidity arises: touch is often taken as being particularly informative of the solid nature of physical things. I think this is often misleading. Imagine the following situation: a person sweeps his hand towards a stone pillar, it reaches the surface of the object, the per-

son feels absolutely nothing at all yet his hand comes to a stop at the pillar. Perhaps, he tries to move his hand through it, that is, he performs whatever mental or volitional operation was successful in moving his hand towards the pillar, but simply nothing happens. He does not feel the familiar sensations of contact or resistance he just witnesses the failure of the hand to make any further progress. Surely such a situation is a non-tactual experience of solidity. That solidity is not an essentially tactual quality can be demonstrated if we consider the opposite situation where the hand does pass through the pillar. Imagine this progress accompanied by all the feelings of strain and resistance which are normally attendant upon pushing against a solid object and of failing to make any impression upon it. Would the fact that all the tactual sensations of solidity were present make us judge the object to be solid? I think it is obvious that they would not. Rather, if this were our normal experience of "contact" with objects, the sensations involved would be interpreted/reinterpreted as informative of the act of moving a part of the body through an object.

The situation just described is another form of deviant connection between the visual and the tactual; there is still a correlation between the visual objects and tactual experiences. The state of affairs we are looking towards is one where such connections are absent. We can, perhaps, utilize one important feature of the above example, however. This is the idea of visual objects imposing no limits or structure upon tactual experience. We could suppose that a subject whom we can still assume to be embodied in the sense described, could move anywhere in visual space, even into parts occupied by objects and experience tactual sensations at any of those points. In other words, a subject could have tactual sensations in a way which is arbitrary or random from a visual point of view: sometimes having them in open space, sometimes where his body is in contact with, or actu-

ally inside other objects. We have spoken of the possible diversity of tactual experience, (although, as we have noted, this might be open to challenge) so the question, perhaps, arises as to what tactual sensations the subject is assumed to have in this example. For the moment, we can assume that the subject has any at all: tickles, twinges, pains, sensations of contact with different textures, compressions of areas of the body and so on. A first model is where they just happen without order or pattern. In this situation a subject's touch experience would be objectively meaningless: it would neither relate to the objective scheme of visual objects nor be constitutive of some alternative scheme.

Alternatively, we can conceive of a second model where the touch sensations occur in a certain ordering, not just randomly but in a sequence of such sensations. We could think of any combination of sensations from the range indicated above or we could limit the sequence to a certain type of tactual item. We could, for instance, think of the sequence as drawn from sensations of texture. Accordingly, we could have touch sequences which went along the lines of "first, the feel of bare wood, then a sensation of silk, then the touch of sackcloth, then rough granite" and so on. We could envisage such a sequence fulfilling all the conditions we have already discussed for spatial schemes. The question of whether such a space would be synchronic or diachronic in the relational nature of its sensations would be raised. Given the fact that more than one texture can be felt at once - a hand could experience silk and sackcloth juxtaposed - there would be grounds for saying that the relational basis was synchronic. Thus a situation very like our 2-d space could be achieved: textures could enter, travel across and disappear from a tactual field. The only doubt that attaches to this is whether a kind of intrinsic relation of the left/right, above/below type exists for touch, which

instantly creates a spatial ordering of textures on an analogy with visual items (not the same as, though) or whether the relationships between textures have to be learnt as in the sound-model (diachronically). I merely leave this as something to consider, given the fact that it does not have direct importance for present purposes as, whether synchronically or diachronically, some kind of spatially relevant ordering seems possible using touch sensations. Another possibility worth mentioning in passing is that of "branching" effects in a tactual scheme; we do not have to suppose a uni-linear progression. We can entertain the notion of a network arrangement of the sort we have discussed previously. Perhaps, again, the 2-d visio-spatial model provided the best paradigm for a tactual scheme.

So far, I have sketched out a form of touch experience which is the basis of an objective scheme and one which is independent of that based upon visual objects. Before going any further, there are two possible objections to things I have said which need to be considered. The first relates to the feature I have proposed of a subject being untrammeled in his movements in visual space, specifically, the capacity to pass through visual objects. This might cause conceptual problems, problems of expressing just what this is meant to be like. Clearly, I do not wish to suggest that this happens by accepted accommodations in visual terms. I am not suggesting, that is, that visual objects be in some way hollow. Even in a world of objects deprived of their tactual impact, there would still be a visual difference between objects which are solid and those which are hollow: they would look different if sawn in half, for instance. The proposal is that visual objects retain all of their visual qualities but that it is possible to move through them as an embodied observer. The questions that arise here are those concerning what happens to each body when this happens and, possibly what kind of visual experience would be involved. We cannot sup-

pose that both items, the body and the other object persist unchanged through this: logical, conceptual laws would be breached. We cannot see in the same part of space, say, a hand and a part of a pillar. Thus, we need to assume something like that the part of the body disappears as it enters the outside object and reappears when it reaches the other side. To deal with the situation where the part of the observer's body that is involved is the head, or specifically, the eyes, we could imagine that the visual experience was of the colour of the material immediately in front of the eyes (this might change as one progressed through the object).

Clearly, this account cannot be made to conform to scientific beliefs about actual objects - I am assuming the objects of this possible world to be only superficially the same as ours. The internal structure of objects proposed here would have to be different, and the importance of light to vision ignored completely. These I take to be contingent features of visual objects anyway: no mediating force had to be involved in seeing, from a conceptual point of view. One can easily adopt a "looking-out" rather than a "taking-in" view of seeing where one supposes seeing all one normally sees but not on account of some force linking the eye and the world. A naive realist approach can be adopted. That light is important for seeing is something which we discover not something which is logically dictated by the nature of images or by the fact of being aware of objects. Queries of the "but, if I am here and the object is there, how can I have experience of it?" - variety are misconceived in that they beg the question in favour of scientific principles which have to be empirically established rather than taken as necessary truths. Thus, it should not be unintelligible that, in passing through an object, a visual experient perceives colours.

A remaining objection to this kind of dematerialization would be one we briefly encountered in Chapter Two concerning loss of particular identity where one item disappears into another. We have had occasion to question very rigid notions of identity already and this might be another relevant point at which to do so. Considerations of economy and simplicity would seem to dictate that the re-emerging bodily part be treated as identical with the disappeared one. I shall not pursue this issue further, however, as the possibility of the objection being conclusive is not devastating to the general line I am proposing. One way of dealing with it is to abandon embodiment for the subject. I have indicated, already, that occupation of a part of space is not entailed by being aware of objects in that space. So, what one could imagine is a subject who sometimes sees the outside of objects and sometimes the inside of them without problems arising about bodies disappearing and reappearing.

At this point, it is important to say what is meant by "unconnected" as far as the visual and tactual schemes go. An obvious objection to their unconnectedness would be that, even if one did not get tactual sensations by contact with objects in the usual way, one would always be at some point in the visual scheme - observing particular aspects of space - and that the tactual sensations could be linked with these points. Suppose, for example, that one walks down a path passing various trees, bushes, flowers and so forth and that, continuous with this visual progress, one experiences a flow of tactual sensations and that re-tracing ones steps produces a reversal in the tactual experience, these would be grounds for saying that the two spatial schemes were clearly linked to each other. Moreover, one might want to say that the tactual sensations in some way qualified parts of visual space, that they were tactual perceptions of those visio-spatial situations. It is not this kind of scenario that I had in mind in proposing separate visual and tactual spa-

tial schemes. The intended situation is more radical. Crucially, it is envisaged that one could move in one form of space independently of movement in the other. Thus, whilst remaining at the same point in the visual space (observing the same scheme) one could be moving in the tactual space (pursuing a sequence of tactual sensations) or vice versa. Also, one could be moving in both spaces, but at a faster rate in one than on a previous occasion from the same starting point in both schemes.

Both of these possible situations would produce a separation or re-structuring of relationships between the two spatial systems. Essentially the two worlds would be floating as against each other, and there would be no basis for the kind of link-up of experiences outlined above.

The idea of occupying or being in two unconnected spaces at once may be a difficult one to come to terms with. Perhaps it would seem that some kind of fragmentation of the subject is entailed, so that a person can be in two places at once, or stationary in one world and moving in another. All of this only seems necessary if we base our thoughts too strongly upon our actual visual space and, also, if we cannot free ourselves from our visual beliefs about embodiment. If we remind ourselves that two radically different forms of space are involved here, one with visual objects and one with tactual ones, then contradictory notions such as "being in two different places at once" do not arise. The different places that one is "in" belong to different spaces, they are qualitatively different. Also, it may not be the case that one is "in" space at all, in the sense of being a bodily occupant of either space. A subject might be a disembodied observer of both spaces. So, here, all that could be said to be moving in either space is a subject's awareness: the subject is variously aware of different points in each spatial system. Of course, embodiment could be presumed in both spaces. As

well as a usual sort of visio-spatial body for the visual experiences, some kind of tactual body could be suggested for the tactual realm, along the lines suggested in Chapter Two. If the bodies are made from different kinds of metaphysical substances no logical problems are generated. We have to take on board the notion of having two different bodies at once, but this does not amount to any more than being able to experience different types of sensation at the same time and this is an ability we already know ourselves to have.

The logical possibility of being aware of existing in two separate, unrelated spaces is persuasively argued for by A.M. Quinton in his paper SPACES AND TIMES (1). The argument is developed somewhat further by T.E. Wilkerson in his book KANT'S CRITIQUE OF PURE REASON (2). (Interestingly, both writers draw a distinction between space and time in this respect, finding the notion of existing in two separate and unrelated times to be incoherent (3)). These writers are pursuing slightly different purposes to my own and structure their arguments around a different model. Neither contemplates being simultaneously aware of two distinct spaces, both think in terms of an alternate awareness of these different spaces (though there would be a bodily presence in both spaces at the same time). Also, the kinds of spaces they consider are of the same metaphysical type; they are not structured out of the categorically distinct phenomenological material of separate senses. Rather, the two worlds are both much as our own; they draw upon all senses and do not postulate radically new kinds of objects (4). Despite these differences, the general point made reinforces my own (in fact my model avoids some of the problems of personal identity which these writers encounter).

I shall return to this idea of rival spaces shortly, but before doing so, I think it is necessary to consider a final line of objection to the tactual possibility being proposed

here, in general. In many ways this challenge is just a continuation of a familiar objection to the whole notion of a genuine tactual phenomenology. So, although remarks have already been addressed to this issue, I shall consider a more specific formulation of it.

We have spoken of tactual sensations being linked together so as to form a spatial scheme and one unrelated to visual, physical objects. This whole programme might be objected to as logically incoherent, on the grounds that tactual experience cannot be separated from beliefs about a visible, physical world. The tactual sensations we have spoken of, it could be argued, are not ontologically neutral items that can be used as building bricks for an alternative non-physical space, they have an inalienable content which binds them to a physical interpretation. In other words, we do not have bare tactual sensations we have sensations as of a pointed item touching the leg or a tingle in the back of the neck and so on. The argument would thus run that physical, perhaps visual, notions are part of the essence of touch experience. Just as we could not imagine a re-arrangement of visual experience that divested it of its basic formal properties of left/right and so on, it would be supposed here that there are essential properties of touch sensations which are of the same order. This does not necessarily mean that touch would be presented as an incorrigible form of sense. It would not mean that every touch sensation implied the existence of some physical object or state, just that, if any objective interpretation were to be placed upon such a sensation it would have to be of a physical kind. Sensations would have to be understood along the lines of; "if this experience is of anything objective at all, it is of a pointed object touching my leg". Thus every tactual sensation (except, perhaps, ones of temperature) would literally be a sort of image of physical things in three-dimensional space, which, according to other evidence, a subject could treat objectively or not.

Maybe these "images" are meant to be of the peculiar non-coloured variety we have already considered for touch. If they are, then the difficulties which we decided attach to such an idea apply again. These I shall ignore in order to progress to other problems that are thrown up by such an approach, however.

One consequence of the view under consideration is that, a priori, one has an idea of one's body from touch sensations. For, imagine the following situation: we have a subject who is blind and has had no sensory experience of any kind at all, this subject then receives a touch sensation - let us suppose that the sensation is of a pointed object digging into his leg. If the theory under examination is correct, the subject will instantly have an image of the situation described, just as if he were flashed a visual picture of it, because the content is the same except for the colour aspect of the scene. The subject may not choose to treat this sensation as of something real at this stage. What we have to query, however, is what the sensation contains. A pointed object pressing into the leg is actually a very information-laden description, particularly as far as the "leg" part of it is concerned. Does the sensation of a part of the leg being touched give the subject the idea of the whole of the leg? In having the idea of a leg is the subject not also given the idea of the rest of his body? Surely it is a contingent matter what the precise character of a person's body is and it seems absurd to suggest that a sensation in one part of it could provide an awareness of the whole thing. Thus, we must be forced to assume that the touch sensation here would only provide a picture of the restricted part of the body affected and only of the part of the object actually in contact with it. Even here questions remain: does the subject have any awareness of the nature of the material the part of his body involved is made of - any notion of skin, flesh, muscle and so on? There is also a question as to whether the sensa-

tion in question provides any kind of awareness of *where* the part of the body and the object are in space. Presumably, the idea of space would go along with the awareness of the particular items. So, it should be possible to form an understanding of space, its contents and their relations with each other by piecing together such tactual fragments as the one under consideration. It would be possible on this account for a subject to instantly gain an image of his whole body (or "a" body - the question of ownership not necessarily being decided thereby) by, say, taking a shower (an impression of the water also being generated at the same time).

We have to consider how such an image of the body would compare with that obtained via sight. Significant differences would have to be allowed for: all of the information that colour provides would have to be left out. This may not invalidate things in itself; touch could still be said to relay shared qualities of shape and surface. The problem with this account seems to be not so much that it is incoherent (although there are problems if we think of touch as belonging to a different sense category from vision), but that it does not conform to the actual nature of touch. Tactual experience does not suggest that we could build up this kind of specific knowledge in the way described. One reason for saying this is that we often have tactual experiences which do not arrive complete with the sort of bodily and spatial "labelling" we have been speaking of. There are the occasional tics, tickles, twinges which are uncertainly placed; a process of exploration or experimentation is required to locate them. Also, there are the many pains and internal sensations we experience which are often indefinitely located and relate to unknown states or processes. If touch were so intrinsically spatially informative, these sensations should be as revealing as those relating to the surface of the body and what touches it. There are, also, sensations which are

partially informative such as those of temperature. We may know whereabouts we feel heat and what the heat is in, but the sensation does not tell us anything about the internal molecular activity of the object, a priori.

What I suggest goes on in these situations where a sensation becomes located by an empirical investigation, or where a process or a structure is discovered as the basis of the sensation is that an otherwise spatially or physically neutral item takes on just such a meaning. The sensation *becomes* the sensation of heart murmurings, appendicitis, or whatever. The connection is an empirical one and not a logical one. It is my contention that this is the essence of all tactual awarenesses of physical and visio-spatial states. Some qualification is needed to this: I do not mean to suggest that all tactual sensations have to be laboriously related to some physical state by empirical investigation. Some general properties of touches can be discerned which allow a subject to interpret previously unexperienced sensations. Thus, if I have experienced a line of jabs moving up my arm and, have determined, by observation, that this is what they are, I should be able to tell that a further jab is higher up the arm still, because this later jab possesses some property that the previous jabs displayed in relation to each other. Also, we may have a genetically dictated system of reflexes which relates our movements to stimulations of parts of the body. The fact that our body behaves in this way does not reveal any intrinsic spatial content in the sensation itself as an item of consciousness. It would be possible for our reflexes to make mistakes; a tap on the knee could produce a jerk of the arm. A subject can only use his reflexive behaviour, once he understands it, as a guide to the spatial locations and nature of his tactual sensations.

As a final source of criticism, I should like to mention what seems to be an implication of the view under scrutiny which it is difficult to embrace. Touch is a peculiarly restricted sense: it only directly relates to one object in space namely our individual bodies. I am tactually aware of other objects by their coming into contact with my body and causing awarenesses of changes in it. This is one of the features that links our consciousness with our bodies, it reinforces the other features we have noted elsewhere which create a sense of a particular object being *our* body. We constantly witness objects in the world being altered and physically impinged upon, but it is only when the object we call our body is affected that we experience tactual sensations. This is, surely, a contingency just as the fact that I see from and by means of my eyes. I could easily conceive of my vision being mediated by some other spatial thing, say two of the leaves in a tree across the road. Similarly, if touch is an intrinsically physical-spatial sense, as is argued, then it should be conceivable that my tactual awareness be shifted out of my body into, say, that tree. I should be able to make immediate sense of what it would be like to perceive the spatial nature of and influences upon, that tree. I would not have to suppose any process of relating my sensations to the visually observed character and movements of that tree. If I know what it is like to have immediate, explicitly spatial, tactual images of my body then I should be able to conceive of what it is like to have such images centered in that tree. The basic, formal content is there, the spatial vocabulary of touch, if you like, it is just a question of it being used to express the character of a different physical object - the tree as opposed to my body.

I do not seem able to make this kind of imaginative leap yet, as I said, this is quite easy for the sense of sight. It might be argued that touch is a more complex or sophisticated sense than sight, but if anything, all the evidence suggests

the opposite. The informative content of visual experience far exceeds that provided by touch.

I think I have said enough on this topic. Touch should not be regarded as an alternative form of seeing, it has its own distinct phenomenology. It is the case that our tactual experience links up with our visual experience, just as the experience obtained via our other senses does, but this is, from a philosophical point of view, a contingency. The two senses might have been unrelated and have grounded independent spatial schemes. Support for this derives, essentially, from the fact that it is possible to imagine or describe the divergence in question. We would not abandon our commitments to visual objects if we ceased to have tactual experience of them or if we had tactual experiences unconnected with them (and we *can* still make sense of having tactual experiences in this way).

I have tried to establish the possibility of divergent spaces being represented within a single subject's experience by using tactual and visual sense. This is probably the most demanding combination to use because of the difficulties touch gives rise to. The advantage of this is that, if it is successful, it should clearly render combinations involving other senses unproblematical. Even if, *pace* preceding arguments, it does not succeed it should still not be difficult to see how a case could be made out in terms of the remaining sense. The simplest approach, would be to combine one of the sound models we developed with a visual space: a subject could have experience of both in the ways described, yet there be no connection between the two. Of course, we need not confine ourselves to just two concurrent spaces, there could be as many as there are modes of sense (and the possible number of these we have been unable to delimit). Keeping track of several spaces may be psychologically implausible but it does not present any problems in principle.

All of this represents an interesting speculation, but the relevance it has for actual experience might be questioned. Its significance lies in two areas; firstly, it highlights the fact that up till now we have been constructing spaces for single-sense subjects and, secondly, it makes the point that, where we assume a subject with more than one mode of sense, these senses do not have to harmonize in the way that we are familiar with. Moreover, there should be something puzzling about the fact that disparate senses cohere in the way that they do. If there is anything genuine about the notion of the senses as categories at all then there should be some question as to how such divergent material can relate to or represent a single space and set of objects in it. In particular, attention is drawn to the issue of what the essence or nature of objects is under such circumstances. Are objects complex items drawing their qualities from all the senses? Or, are some senses to be taken as giving only indirect awareness of objects as they objectively are (perhaps in a Lockean Primary/Secondary sense)?

In the next chapter, I intend to consider actual experience and the way in which it involves a combination of senses. Prominent in this discussion will be the question of what is an appropriate understanding of space and objects and of our perceptual contact with them.

(1) A.M. Quinton SPACES AND TIMES in Philosophy Vol. 37 1962.

(2) T.E. Wilkerson KANT'S CRITIQUE OF PURE REASON Clarendon, Oxford. 1976 Chapter 2. See also R.G. Swinburne SPACE AND TIME MacMillan, London. 1968.

(3) M. Hollis, however, in his article "TIMES AND SPACES" in Mind 1967 thinks even this is a possibility.

(4) Interestingly Bennett (see end-note Chapter 2, at Chapter 5:20) hints at a situation similar to the one I propose.

CHAPTER FIVE;

ACTUAL EXPERIENCE;
(i) COMBINING THE SENSES

To summarize the results we have attained so far: we have from a consideration of basic sense-experience been able to propose simple spatial schemes formed from one mode of sense. We have also considered the situation where a subject is endowed with more than one category of experience and, in keeping with the models developed in Chapters Two and Three, we decided that one natural version of this would be where the subject is simultaneously aware of several distinct spaces at once. This is a novel suggestion in terms of our own multi-sensed experience, but, from a speculative point of view, it is the most straightforward way of handling the situation ontologically. The kind of single-space understanding of categorically divergent material that we operate with poses many more conceptual problems. So let us now attempt a fundamental review of this experience.

Being granted experience from more than one form of sense, the possibilities of interpretation are essentially fourfold: an experience of no spaces at all (an entirely unstructured, subjective experience); an experience of a space and also an experience of non-spatial sense material; an experience of one space drawing upon material from all the categories. Where our experience is concerned, some significant level of order prevails and it is possible to create objective schemes from it. Yet order is not significantly present in *each* sense category sufficient to found five (or more) separate spaces. At the same time, all the areas of sense seem to have some degree of spatial significance; none deserves to be treated as a purely subjective domain. The question of permanence is relevant however: the "items" perceived by

smell, taste, and hearing are very largely ephemeral and sporadic; they do not slot into a scheme of similar items drawn from the same category. We could not close our minds to all other senses and confine ourselves to a smell world that is a world of related, re-identifiable smell particulars and a spatial system of smell locations they exist in. Nor could we do this for taste or hearing. These senses do not provide material enduring, or ordered enough for such self-contained interpretations of them. Having said that, they do bear a relation to items occurring in the senses of vision and, to some extent, touch, so they are not completely free-floating and insignificant from an objective point of view.

Our visual sense provides us with an awareness of many fairly enduring items (as well as a number of transient ones); items which have clear, enduring relations with each other and which, consequently, can be easily identified and evoke a general sense of spatial location. Sight is an impressive sense: in a single perceptual act we can be aware of a great diversity of visual objects, we can be in no doubt as to where they stand in relation to each other and, because of the permanence that most of these objects have, it is easy to relate them to other objects seen in further perceptual acts. Large collections of objects can be explored very quickly, relationships between them discerned and landmarks established: it does not take long to have a fairly developed awareness of a visual space. By comparison, the other senses are piecemeal and disjointed. Touch is something of an exception in that it tends to deal in fairly enduring and repeatable experiences (in those areas where it overlaps with visual sense) but it is still a fairly restricted and piecemeal mode of objective awareness. Consider the time and difficulty involved in forming a tactual awareness of what can be experienced in a single glance. Where taste and smell are concerned, there is a basic physical handicap to exploiting their objective poten-

tial. It would be hard to taste our way around the world, building up the requisite taste sequences, even if all material had a significant taste identity. We can exercise our related sense of smell with greater facility, but it is not a particularly developed sense in human beings and we spend a good deal of our time unaware of any smell at all. The difficulty with sounds is that they are very ephemeral and do not really occur in fixed relations with other sounds.

It is not difficult to understand how sighted people become dominated by their sense of vision. It is the sense upon which most reliance is placed and, more importantly, the sense which tends to be the basis of spatial and objective commitments. Space *is* visual space and objects *are* visual objects. This at any rate is the tendency, a tendency in terms of the way we think about things. If you like, what could be said to happen is that a basic spatial, objective understanding is built up from visual experience and then the experiences gained via the other senses are related to this scheme (though this is a conceptual view of things and is not meant to be a genetic or psychologically accurate account). Why should there be any stimulus to incorporate the other senses in this way? The motivation stems from the fact that, although for the reasons I have just mentioned there is insufficient structure within the senses in question for an independent spatial reading of them, there is a discernable link between them and the visual realm (and the tactual domain as well - which would be particularly important for the visually handicapped). It is this link which provides the basis for ascribing some kind of spatial/objective significance to these senses.

The link resides in the fact that smells, tastes, sounds do not simply occur, they happen in connection with or are *caused* by items which have a visual and tactual presence. There are rarely simply tastes, smells and sounds, rather

there are the tastes, smells and sounds *of* things; of physical objects. There is an interesting difference between sounds on the one hand and tastes and smells on the other in that the latter are related to states of things; they are like inherent properties of objects whereas the former are associated with changes of state, with actions of objects, events or occurrences. At the same time, there is a similarity between sounds and smells in that both are spatially pervasive experiences and are not tightly restricted to the objects which could be said to cause them. A taste is an exclusive property of an object in a way that a sound or a smell is not for it is only experienced by direct contact with the object. Smells and sounds may be experienced over a wide spatial area, though they may vary in quality according to where we are in relation to their physical source.

In this context, we do need to say something about the relationship between touch and sight. I have drawn a distinction between it and taste, smell and hearing in that I believe our tactual experiences contain sufficient order and complexity to found a tactual space. One could, as we and the world are physically constituted, have a purely tactual experience and, from this, form a conception of a touch space. What has to be emphasized, however, is that this space would be an inherently tactual one, it would not be a quasi-visual space. This is for reasons that we fully explored in the last chapter and which derive from the categorical status of touch. It would be an implication of this that a blind person does not form the same spatial conception of physical objects that the sighted do. In one sense, such a person could be said to occupy or experience a different world from those of us who structure their objective notions in terms of visual experience. What prevents this from being a totally bizarre state of affairs is the fact that there are strong links between the tactual domain (as we think of it, ignoring possible doubts about sense demarcations expressed in Chapter One)

and the world of visual objects. These links are richer than those with tastes, smells and sounds and it is because of this that one can derive a full-blooded spatial scheme from touch experience and also one which forms an analogue of visual space and, in some sense, can be said to constitute an awareness of the same objects. In keeping with the spirit of the last chapter, we have to stress that the existence of such links is a contingent feature of our experience. What is important about these links is that they involve an isomorphism between tactual and visual experience. From a phenomenological point of view, the *content* of touch and sight experiences of the same occupants of physical space is quite different yet, in abstracted, structural terms, the *form* of the experiences can be said to be the same. There is something in common between a tactual exploration of the chair opposite me and my visual appreciation of it. Where there is a change in the visual appearance of the thing there is a corresponding change in the feel of the object. As I run my hands along the top of the chair I get one, identifiable kind of sensation and as they reach the corners and move down the sides this changes and another type of feeling arises. For most visible variations in the surface shape of things, there is a corresponding touch sensation - right down to the minimal variations we call "texture". That there is this correspondence is notable in that we did much to show in the last chapter that visual and tactual experiences might have been discontinuous, to the point, even, of being conflicting.

Of course, there is not a complete correspondence between the experiences obtained under each sense. Significantly, colour has no tactual representation: touch does little to help us enjoy a picture, for instance. There are visible items imperceptible to touch: certain optical effects such as mirages and rainbows or holograms (though it should be noted that these do not behave visually as other objects do) or

shafts of light in dusty air. Also, there can be items which have a tactual presence but are invisible, glass under water or in low-light conditions can take on this quality, the best example, however, would be the air, the physical properties of which are constantly brought home to us. Already, in these examples, we have reached an important feature of the relationship between touch and sight. Touch does not just act as a back-up to sight, as a kind of auxiliary awareness of objects; it actually extends the sense of sight and has its own ontological contribution to make. Our world experienced by a creature without the sense of touch would, in certain respects, be metaphysically different for him. A phenomenon like wind would be as mysterious as gravity or magnetism, not a force with a reality akin to the visible objects it moves. This is not to say that such a creature would not be able to build up an understanding of air equivalent to our own in scientific terms, but that the route by which the knowledge was acquired would be different. The awareness would be obtained by empirical or scientific but, above all, inferential means, rather than by direct sensory acquaintance. A subject with a sense of touch gets used to the feel of objects as well as their appearance and, because of this, can find himself in situations where similar sensations are had but no visual item is present. Conversely, he may find himself in situations where there is a visual stimulus but no corresponding tactual one - as in some of the optical situations we mentioned.

Naturally, it is a question why any weight should be attached to these tactual sensations or the lack of them. They could be dismissed as some form of tactual hallucination, as with "phantom limb" sensations. The reason they are treated as indicative of the presence or absence of some physical thing is because they do not formally contradict the visual evidence and, also, they are supported by other visual information. In the case of invisible items, like air or glass,

the visual evidence is only to the effect that nothing is there, not that some other kind of object is where the felt item is sensed to be. The observed behaviour of other visual items is consistent with the belief that some physical object is present. For they behave as they would if some sort of visual object were there. In the alternative situation where the physical reality of a visible item is doubted, a good reason for believing the absence of touch sensations to be significant is that the item in question does not have the effects upon other visual objects that one would expect if it were solid. In the phantom-limb situations, other visual objects are seen where the tactual item is felt to be and other visual evidence points to the absence of the limb in question, accordingly, there is good reason to reject the tactual sensations and to give authority to the visual data.

What should emerge as a key term in the above discussion is the notion of a physical object. It is a term I have had to use several times already in exploring the relationship between our senses and our ontological commitments. A background understanding of it can obviously be pre-supposed, but it is necessary now to give an account of it in terms of the analysis we have been pursuing throughout. One point that should be made right away is that the physical is not an exclusively tactual quality. I tried to make this clear in the previous chapter where I demonstrated that one's tactual sensations could be irrelevant to the question of an object's solidity. Also, it should not be assumed that the remarks I have just made indicate that the physicality of objects, in the sense of solidity, can only be obtained through a sense of touch. A direct awareness of the material or solid nature of certain items can only be obtained via touch, just as a direct awareness of the visual qualities of certain other things can only be gained via sight. That these awarenesses are direct does not mean that they are incorrigible, as the examples just discussed should prove, simply that,

where they are representations of *physical* properties, they are immediate, sensory ones and not inferential or derived. A purely visual understanding of the material nature of objects is perfectly possible and is capable of embracing invisible items. What makes an object solid is its tendency to resist other objects. It is a quality of impenetrability, and one which has consequences for the way objects behave when they come into contact with each other. It is important to point out that it is a contingent feature of visual objects and one independent of their three-dimensionality. In the 3-d model developed in Chapter Three, it should be an open question whether the objects proposed are material or not. It is something that is determined by the modes of behaviour assumed for them. Approached from the world that we are familiar with, these claims may be difficult to accept. But a little reflection should reveal that, considered from a purely visual point of view, it is not an a priori truth about visual objects that they resist one another or react when combined in just the ways that we are familiar with. Objects might interpenetrate, some might disappear into others, some might pass through other objects, objects might combine without becoming bigger than the larger of them and might instead, for instance, alter their colour properties. All kinds of possibilities exist for visual objects without supposing that object resist each other. That moving one object at another one tends to cause the second one to move rather than absorb the first or that, for one item to breach another the latter must break up or its parts be rearranged or it increase in its size are matters of contingency. As it is, those sorts of things do happen and they are all actions or dispositions which can be visually determined. Solidity is primarily a feature of the way objects interact with each other and not a tactual sensation they give rise to in us. As I said in Chapter Four, the fact that I had all the characteristic sensations of resistance or of my hand not moving would not mean that an object I observed my hand to pass

through was solid and especially not if other objects were seen to pass through it and if all subsequent experiences were inconsistent with my hand having moved into the observed new position. Not that this would be other than a highly deviant and disturbing occurrence.

I do not mean to suggest, of course, that there are no limits upon what is possible for visual objects. There are conceptual constraints dictated by the very nature of colour. We cannot imagine two objects combining to remain just as they individually were (where they have different appearances). The same part of space cannot be occupied by two different colours. There are restrictions stemming from the supposition of visibility but these do not rule out every form of interpenetration for objects.

Touch, then, does not exercise a monopoly over the solid or material aspect of objects, it is a property we can articulate in visual terms and visual evidence may take precedence in a clash with tactual experience. But, that touch can give us sensations of solidity is important, it extends our capacity to form an immediate awareness of physical objects and the contents of space. It gives us reason to believe that physical items are present even when there is little or no visual sign of it. It may cause us to form a common conception of visible and invisible items because of their tactual similarity - being pushed by a strong wind feels like being pushed by other, visible entities.

Setting aside the question of its origins whether in tactual or in visual sense, we arrive at the notion of the solidity of objects or visual things. This is an important step, because, unlike a property such as extension, this property is detachable from the visual qualities of objects. It is possible to conceive of there being instances of physicality or materiality where there is no visual correlate and, as we have

mentioned, our experience includes actual occurrences of this. If we are approaching things from the point of view of a construction of space and objects out of visual sense then this is a significant ontological step because we are beginning to include in our view of the world things whose intrinsic nature cannot be expressed in visual terms. As well as having physical things which can be seen, we also have physical things which in themselves lack visual qualities, although they may have visible effects. Thus our ontology has begun to outgrow the sense experience or phenomenology it is rooted in. Once this point has been reached, objects can no longer be understood as reifications of sensations or parts of sense-experience. Perceiving objective items, that is, cannot consist of taking parts of what one is experiencing and projecting them into the world or of treating them as direct awarenesses of things as they actually are. Or, at least, this understanding cannot be applied to these invisible entities. One could suggest that the sensations which are reified for such objects are tactual ones, but, as we have just established, commitments to such items can arise from purely visual experience. What we have the potential for here is the situation of a subject building a spatial scheme out of his sense experience, investing the objects thus generated with properties directly from that experience and then, on the basis of further experiences, coming to form a commitment to other objective occupants of that scheme which do not possess properties found in his sense experience. These items will not be directly represented in experience. Just such a process is involved in the development of our objective commitments. This is a further example of a phenomenon we have already had occasion to mention, the way in which, by a rational, interpretative or judgemental process one can move from an awareness of phenomenological particulars, to enduring objects in a space and to items which are not simply identifiable with any part of our phenomenological experience. Commitments can arise out of the

experientially given and be evidentially rooted in it, yet, in a real sense, transcend these origins.

Of course, we have discussed forms of experience which give rise to ontologies which could be understood in a straightforwardly realistic way. The sound models we developed involved objects whose nature could be exhausted by a single perceptual act, phenomenological particular. A subject in such a world could take his experience to be a direct awareness of external objects: he could take the relevant phenomenological items - sounds - and directly identify them with objects in space. His experience of these sounds would be an experience of objects as they are in themselves. A similar identification could be made in the two-dimensional visual world we discussed. Where, however, this simple mode of understanding a perceiver's contact with objects in a space is inapplicable is where spaces such as three-dimensional visual ones ar concerned. Here we discovered that the nature of objects cannot be exhausted by any single perceptual act or by any phenomenological item. This is a conceptual impossibility; the nature of images (the phenomenological input) does not allow for the representation of the 3-d objects we become committed to, by any given image. Nor is the nature of such objects expressed in any given number of images (an infinite number are required) and, even if this were the case it, arguably, would not be possible to combine the relevant images into one comprehensive image. What we come to understand by a 3-d object is not simply reducible to imagistic terms, even though we become committed to the existence of such objects by having experience of individual images. This should serve to remind us that, prior to commitments to things such as invisible objects or substances, by the very nature of a 3-d space, subjects commit themselves to items which defy direct location in the phenomenological scheme they are derived from.

It is worth mentioning in this connection that there is another area in which this feature arises in our understanding of visual objects. Our experience of shapes and how they vary but are related to each other causes us to subsume them under the notion of a 3-d object. Similarly, our experience of the colours these shapes or objects bear and the way they vary but in a structured way causes us to unite these different colours under that notion of a nominal colour which is not reducible to any single phenomenal colour or collection of them. Colour variation as a phenomenon of appearance - the way things look in the sense an artist would be interested in - is familiar to all of us, yet it is also something we are strongly inclined to forget, under the influence of the nominal or abstracted system of colour descriptions just referred to. The railings outside the window present a striking collection of contrasting colours from near whites to near blacks through a range of intermediate greys yet I should not hesitate to describe them, if asked, as simply "light grey". Moreover, it is not just that I would readily use this single-colour description but I also tend to see the railings as more uniformly coloured than they actually are in pure, visual terms. This is part of the effect psychologists call "colour-constancy"(1) a tendency for objects to be perceived as the same colour under changing light conditions - a sheet of paper carried from the window to in front of the fire is not perceived (judgemental) to change from white to red. Of course, we all sense the colour variations of items we speak of as uniformly coloured, to some extent, but it takes a good deal of concentration, even training, to accurately identify them for the purposes of , say, depicting them.

How does it come about, then, that objects which display a variety of colours, at the same time - through shading - and over time - through changing light conditions - are spoken of and thought of as being one unvarying colour? The answer

is that, to say that something is the same colour all over is to say that all parts of it would look the same (appearance-wise) if placed in the same situations, the same light conditions. Furthermore, there is a specific range of colour variations for each colour term. These sequences we can, in good measure, become quite familiar with. Obviously, a degree of relativity is important also, as there is a potential for circularity in references to specific light conditions. "Yellow light" might mean no more than "that light which makes white things look yellow". The problem is that all sorts of non-white things can be made to look yellow (not including yellow ones!) Also, our only actual awareness of the state of the light is by the way things appear in it - we know that the light is failing because things generally start to get darker. What becomes important, then, in the question of what colour (nominal) an item is how other items appear at the same time as it or in what we can be sure is an unchanged lighting situation (how this would be determined needs to be elaborated in itself). A piece of paper is white if it looks yellow when something else appears brown and if something else had appeared grey when the piece of paper had looked white! A whole range of other comparisons would be necessary too, the system behind our apparently simple colour judgements being surprisingly complex. Obviously, we are aided by experience and can surmise the colours of many items by knowing what kind of things they are.

To say that two things are different colours (nominal) is to say that they do not look the same colour (appearance) in all the same circumstances - there may be some situations where both appear the same and it may be that either item can be made to look a colour the other one has appeared at some time, but, in the light conditions necessary for this the item imitated will be looking a different colour. Thus, to say that something is a certain colour in the nominal sense we have been talking about is an informative thing to do.

Objects may appear many different colours (possibly an infinite number) but where we attribute a specific colour to them this is done on the basis of the particular range of colours they exhibit and how this range relates to those ranges displayed by other objects. It is not surprising that we think of there being an underlying unwavering property which determines the colour changes an object will undergo under changing light conditions, a something which yields one particular sequence rather than another and makes, for instance, one object appear yellow when another appears brown. Practical concerns dictate the colour instances we select for the nominal colour descriptions of things: if we spent most of our lives in blue light our choice of direct white light as our reference point would be perverse.

Although it is not difficult to understand why we choose a particular colour from the many an object appears, to do duty for its colour determining property, it is unfortunate to the extent that it blurs the essential conceptual distinction which exists. We are identifying a property which is stable yet we are doing so by reference to something which is changeable. The semantic import of these descriptions is clear from their use, however; my railings are still solidly "grey" despite their great colour variations now or when they move into a uniform blackness with the onset of darkness. That our visual world gives rise to such concepts is interesting, in that it represents another example of moving from phenomenological particulars to higher level notions which subsume those particulars but are not reducible to them. Our experience of the different colours objects appear gives us every reason to believe that there is some common property of objects underlying colours and which accounts for them. But this property is not something which itself appears in our sense experience, it cannot be identified with any of the instances of colour we experience, rather it is an inference or an abstraction from them. It is something we be-

come committed to on the basis of our sensory experience of colours. The use of colour names is not even a shorthand for definite collections of colour appearances, there may be a range of colours a given colour property appears which is usual or familiar but, however wide it is, it is always capable of expansion. There are as many colours as there are light conditions - although our understanding of these and their potential for variation is an empirical discovery. We know that we do not close off the range of possible variations for a named colour; we are always prepared to accept a new instance without saying that an object has changed its colour. The individual character of a colour is determined by the particular sequence of colours it can give rise to and, moreover, how this sequence relates to the sequences produced by other, proposed, colours. As we have noted in other connections, the fact that a range is infinite does not mean that it does not have an individual character, or that it is indistinguishable from other such ranges.

We can say, then, that our visual experience gives rise to two important interpretative or theoretical ontological notions: that of a three-dimensional object and that of a colour as a non-phenomenological property. These concepts occur in addition to those, now familiar, ones of an objective particular and a space, and they can be said to be of a higher order of inference or interpretation. Also, beyond those developments we have mentioned the emergence of a notion of spatial, physical objects which have no visual properties. That is, although our commitment to and understanding of objects and space can be entirely based upon having visual experiences, it is possible at a later stage to become committed to spatial entities that do not have all the properties of the primary form of objects, to become committed, that is, to entities which have shape and solidity but no colour. These items have partial phenomenological reality in that they can give rise to tactual sensations, but our pri-

mary conception of them can be derived from visual experience, inferentially, as described, a fact which is borne out by the possibility of becoming aware of them by purely visual means and by the overriding influence visual evidence may have in respect of them. Given the claims we have made about visual and tactual experience as distinct senses, it is already established that the character of space and objects, for us, is fashioned from visual phenomenology, there is not such an intrinsic connection between the content of touch experience and these objective notions. Tactual experience has a contingent connection with the space and objects derived from visual sense, though as we have said, a nonetheless informative one, both in terms of the shape and solidity of objects (as visually conceived) but also in terms of adding a distinctly tactual dimension to objects. Touch, as we have established, is an independent phenomenological sphere and, although it correlates with the visual and can be thereby informative of visual properties of objects, it can also be taken as a source of additional qualities of objects. A distinctly tactual "colouring" can, potentially, be attributed to objects, over and above whatever essentially visual qualities they may be taken as having. This possibility should emerge more clearly from a discussion of the non-visual metaphysical contribution the other senses have to make, which I now wish to commence.

We have reached a useful position from which to review the remaining senses of taste, smell and hearing. Already certain features of the way they figure in our experience have been noted. That they do not produce the experiential basis from which to construct spatial schemes independent of each other and of visual space is clear, yet they cannot be thought of as entirely subjective. A connection exists between them and visually-based objects, though a weaker one than that between touch and these objects. Unlike touch, the spatial significance of these senses in terms of providing

information about properties such as shape and colour is negligible. Hearing does give some awareness of distance and location, but could not claim to be as rich as touch in this respect. If anything, these senses appear to add new qualities to objects rather than provide alternative means of experiencing existing ones. Perhaps the best analogy for the material generated by these senses is with colour. Just as we can think of objects as being shaped physical things with colours added on to them - an object can take on any colour - so we can think of tastes and smells and sounds also being "added onto" or qualifying such objects. The analogy works particularly well with tastes as these are encountered only directly upon the objects. Just as colour is restricted to the spatial area of an object (we do not move through a kind of haze of colour as we approach an object) taste is similarly confined. If we think of sounds and smells as properties of objects then, here, there is a sense in which we move through an ambience of sound or smell before we reach its objective source. Knowing that the dispersed sound and smell experiences are related to certain objects has to be achieved by a process of discovery, of causal investigation, or of measuring intensities of sound, it is not immediately evident in the way that it is for taste.

In recognising this, it becomes arguable whether sounds and smells can be taken as properties of objects at all: should they not, rather, be treated as separate entities which are caused by or emanate from physical objects? In the case of sound we seem to adopt this approach: we do not ask what sounds things *are* or *have*, but what sounds they *make*. It is also understood in this that what is being asked for is the sound things make when they are being used in some characteristic way. Sound is rooted in activity, so the sound a car makes is not the sound of a garaged car but of a car with the engine switched on or being driven. The same cannot really be said of smell, it is not so event based; if smell is

caused by some activity the odoriferous object is involved in, it is rarely clear to us what this activity is. Objects usually give out smell in a passive, continuous way that is not true for sounds. Accordingly, we tend to talk of the smell things *have* as we would for tastes. On the other hand, smells do have a claim to be independent of their sources, as do sounds, in that they can be experienced over a wide area away from these sources. We frequently identify sounds and smells in themselves, without reference to a physical object - "there is a nasty smell in there" or "it's noisy in there". It may well be that we assume that both these apparent entities have physical causes and would find the suggestion that they did not absurd, but there is nothing incoherent about thinking of smells and sounds as items with an existence separate from objects. It would not be difficult to imagine our world as it is, but with sounds and smells occurring unconnected with physical objects and events. We might have to suppress the feature of rising intensity as certain objects are approached - as this is one ground for linking them to objects (though not the only or, most important one). We could go further and imagine tastes unconnected with objects, either experienced in a very specific way or else dispersed over an area of space - i.e. experienced whilst one is at various spatial locations. One interesting response to this line of thought might be that such experiences would not be as of distinct entities but of properties qualifying space itself, properties of empty space.

Our world seems to have potential for both the attribute and the object interpretations of sounds and smells, so, as a prelude to deciding which approach is appropriate, let us consider them from an abstract point of view. Pursuing the above view that smells and sounds could be their own kind of object, we have to consider just how they would be conceived of. We have established that they do not occur in such as way as to form their own alternative space, so, in

order to have any objective status at all, they must be related to an existing space. In our situation, this will be the space essentially derived from visual experience. One immediate problem is how a relation can exist between such things. Our sense-category analysis entails that sounds, smells and images are phenomenologically distinct. This means that there cannot be a direct relation between a sound or a smell and visual objects: we cannot place sounds and smells in the visual scene in visual terms. Yet we can attribute spatial properties to sounds and smells - properties which are also shared by visual objects and which can be said to have their own origins in visual experience. These are properties of shape or location. Sounds and smells have these ascribed to them empirically. Sounds and smells have no intrinsic shape or distance properties: an initial encounter with either does not tell us the spatial area the item occupies, in relation to physical objects. That is, the spatial area a sound or smell covers, the area it can be heard/smelt over, and it is this that is of relevance here in terms of contemplating sounds or smells as spatial objects. It is possible to argue that there is an intrinsically spatial dimension to sounds in that, in hearing a sound, one is always aware of the direction or location of its source. I believe the claim that auditory or olfactory experience, *simpliciter*, brings with it an awareness of visio-spatial features is a questionable one and arguments could be deployed against it along similar lines to those used in the previous chapter against the putative three-dimensionality of touch experience. This is irrelevant to present purposes, however, as it could not be claimed that any individual contact with a sound or a smell determines the spatial area over which that item extends. A sound or a smell acquires its shape and location by our visually noting the places we are in as bodies (or sense-organs) when it is experienced. We have already found a place for the notion of entities which have spatial qualities but not visual ones, these also had physical prop-

erties which registered to the sense of touch. Here, we have items with basic spatial qualities but without colour or solidity; in their place are properties of sound or smell, which have no visual representation - unlike solidity. Like the shape and location of invisible objects the shape and location of smells and sounds is determined by indirect means. This would seem to give us an acceptable basis upon which to make sense of the notion of sounds and smells being a distinct kind of object in space. For sounds and smells to be construed in this way, certain other features might have to be presupposed, however.

Stability or regularity are important for establishing the objective existence of something. If sounds and smells occurred in an erratic and transient way our willingness to objectify them would be doubtful. If I have a headache for the duration of my walk into town, I am not inclined to make the headache a spatial object extended over the route I have taken and which I have thereby perceived. A major reason for not making such a judgement is the fact that I do not expect the experience to be repeatable: if it happened to me in just that way every day I might be inclined to form such a view. Another important factor, of course, is the testimony or behaviour of other perceptual subjects; if other people report the same experience, then this might be grounds for objectifying the headache (2). (There are other obstacles, stemming from the nature of pain sensations.) This source of evidence is of enormous importance, generally, in terms of our ontological commitments, but it is not something which can be introduced at this stage in our analysis. A commitment to other experients occurs at a later level of interpretation of experience and a semantic interpretation of another's behaviour even later. Ultimately, justification for objective claims based upon the behaviour of others is rooted within our own experience.

If we move on to consider the attribute approach to such sense items, we are faced with the same difficulty as mentioned for the object account, namely that they cannot be visually incorporated into the spatial scheme. Taste may be very analogous to colour, but it is still categorically different from it. Discovering the taste something has adds nothing to our image of it, yet, as with items experienced over an area of empty space, tastes are clearly connected with physical and visual objects. We are able to precisely relate taste to physical things or parts of them. Do we have any conceptual means of making sense of things like tastes as real properties of physical objects? It seems to me that we do. Again, we can enlist a notion we have already found a use for, the notion of what we might call an invisible property. Somewhat ironically, we discovered that our colour attributions involve this notion. The property of being a given colour (in the non-appearance sense) is not one that can be identified with any experienced colour the object gives rise to. Yet we feel that the particular colours an object can appear can only be explained by the existence of a property that underlies or causes them all. It seems to me perfectly possible for taste to be such a quality, we have no difficulty determining its spatial location and extent, it is just that, not being coloured, it cannot be seen, but only experienced in the gustatory domain. Also, in keeping with smell and sound, taste has no visual effects or consequences - we cannot infer the taste of something from its visible behaviour. There does not, then, seem to be anything inherently absurd about attributing to physical objects objective properties which do not appear to visual sense - not least because physical objects do not, themselves, always have to be visible.

Returning to our actual experience, we have to ask ourselves which is the correct interpretation to apply to our experience of sounds, tastes and smells. In the case of tastes,

the attribute approach is obviously the most fitting one and, in so far as we do not treat tastes as objectively existing, we take them to be qualities of physical things. The situation is not so clear for sounds and smells. If we take smell, it is a property firmly rooted in objects: we can trace a smell back to its physical source and locate it quite precisely in something. Smell is not typically event-based, so its relatively fixed nature contributes to its being taken as a property. On the other hand smells can be detected over a wide area away from their physical sources. Moreover smells can be detached from their sources, they do not always lead up to them. If I switch off a paraffin stove and remove it from a room, the room will still be filled with the smell of paraffin. So the objective approach seems to have its application also. Similar ambiguities apply to sounds. They are strongly related to physical things; we can trace them back to a physical source and be quite precise about what gives rise to them, but they cannot straightforwardly be made properties of physical objects. This is largely because of the event-based nature of sounds which creates two obstacles for the attribute interpretation. Their sporadic, transient quality makes it difficult to treat them as a property of things, but more problematic is the fact that it is not clear exactly what physical thing should be taken to bear the property. When a hammer strikes an anvil what is the resultant clanging sound meant to be a property of? The anvil? The hammer? Both? Perhaps just the clashing surfaces of hammer and anvil are to bear the property? It can be seen how it is simpler to think of the sound as something created by the activity of the hammer striking the anvil and which extends over an area of space outwards from this origin. This, of course, is to adopt the object approach.

It is not clear to what extent this approach is followed, however. Although we can hear sounds over a wide area, it is questionable whether we treat them as spatial entities ex-

tended over this area. In hearing a sound our attention is constantly drawn towards the physical origin or cause of the sound. This is largely because it is these physical things and their actions which are of interest to us. Sounds are frequently of little importance to us in themselves, their significance lies in their being informative of physical things as a result of their well-established connections with them. It would only be fair to say that there is a good measure of vagueness and inconsistency in our everyday conceptions of items like sounds, smells and tastes, and we could include in this things like tactual sensations of a non-spatial kind like temperature and possibly, pains, tingles and so on. One reason for this is the fact that our ordinary conception of things is heavily infected with scientific beliefs. We know that sounds are vibrations in the air, that smells are fumes and gases, that tastes are to do with the chemical identity of substances, that temperature has something to do with the molecular state of objects. In other words, a part of us has reduced these items to non-phenomenological physical items and activities, yet, at the same time, we give some kind of reality to the phenomenology of sound, smell, taste and temperature. The development of scientific concepts and entities is something I wish to examine in a moment. Before doing so, I should like to mention a general difficulty we experience in trying to interpret the experiences obtained through separate sense modalities.

Although, as I have tried to demonstrate, it is not incoherent to think of tastes, smells and sounds as objects or properties with spatial qualities but not visual ones, psychologically there is something puzzling about the situation. This derives from the radically distinct types of phenomenological items which are involved, coupled with the tendency for our conceptions of the world to be dominated by visual experience. Because of the scope and richness of vision, for the sighted, objects become visual objects, everything that

is real is thought of in visual terms. The ideas we carry around with us of what the world comprises are visual ideas - pictures. Consequently, it becomes difficult to interpret non-visual existents into these thoughts. Sounds, smells, tastes (and pure touch sensations) start to seem anomalous - how can they be real and a part of the world in the way that visible objects are? The problem is that we are being influenced by our images of objects not by our concepts of them. Three-dimensional visible objects are just as recalcitrant to the mental process of picturing just referred to as are invisible occupants of space. There can be no single image of a 3-d visual object; what we do when we think of such an object and picture it is to select one of the many possible images it gives rise to or a limited collection of them. As we have established, what we come to understand by a 3-d object transcends any of our visual experiences of it. The picturing process that accompanies thoughts about 3-d objects may be psychologically inevitable or even useful but it is essentially irrelevant to having a concept of the objects in question. Our concepts of such objects are not reducible to images of them, to the phenomenological material they have developed out of. In a simpler form of experience this might not be the case. In our sound models, a given sound object is more straightforwardly identifiable with a subject's experience of it; concept and phenomenological given are more strongly linked and the properties of such objects are exhausted by any single sensory encounter with them. This still does not mean that the phenomenology and the concept are one. The concept of the sound object involves the belief that the sound is an object, that it exists in a space independent of any experience of it.

This is a basic, yet crucial point to grasp. Doing so prevents us from answering the question "but what is an object, *really*?" by pointing to a particular experience of it; by simply introducing a piece of phenomenology. If we recognise

that purely within a 3-d visual experience objective concepts arise which cannot be translated into imagistic terms, remembering also the possibility of commitments to invisible physical objects and a non-visual basis to colours, then we cannot object to the reality of sound, taste and smell and the rest simply on the grounds of their having no visual presence and on the impossibility of incorporating them into a mental picture (3).

Even at the basic, non-scientific level we are talking about here, there are further ways in which 3-d objects give rise to experiences which heighten the complexity of our conceptions of these things. We have spoken of the way in which the colour appearance of objects varies under different light conditions, but added to this are the colour and shape variations that accompany observations from different distances. We have already mentioned fluctuations in the size of objects relative to our visual field and also relative to other objects: an apple two feet away may well look far larger than the tree it has come from standing half a mile away. Such variations in perceived size become part of our system of judging how far we are away from things. This feature of overall size variation with distance is extended by the phenomenon of observed variations of the surface detail of objects over distance. At this distance the bark of the tree outside the window presents an even, brownish appearance, yet, if I were closer to it I should start to notice variations of colour and texture in the same surface. The closer I got, the more detail I should see and the less resemblance there would be between these later views and my original one. One could think of a sequence of views of what I should undoubtedly take to be the same part of the tree - the same bit of space - obtained at different distances from the tree, all of which would be visually incompatible with each other. The possible range of such images is, as elsewhere, potentially infinite.

Moreover, the limits upon such imagistic variations are not determined by the powers of the naked eye; in this context optical devices become relevant. Magnifying glasses take us one level deeper and then there is the huge range of magnification available via microscopes. There is, of course, the question of why we should place any faith in the images produced by such devices; why should we assume that the images these methods produce are images of the same part of space as seen without them? The answer lies in the fact that there is an evidential connection between some magnified images and those seen with the naked eye. There is a close resemblance between what is seen with the unaided eye and what is seen through weak forms of magnification, perhaps, virtually the same details can be seen by each means, but more easily so with magnification. Also there may be non-visual corroborations of the features magnification reveals - tactual sensations, or physical behaviour on the part of the object concerned which would only be explicable on the assumption that it had the structure the magnification suggests. If we come to trust weak forms of magnification then, by having some understanding of the physical basis of magnification and also by the way in which higher levels of magnification are related to lower ones through the feature of image similarity already mentioned, we can have rational grounds for treating magnified images as images of familiar parts of space.

What in objective terms are we to say of this enormous range of possible appearances? Which image depicts the tree as it really is - one where it is a barely visible speck on the horizon or one obtained via an electron microscope or one of the infinity obtainable in between? Perhaps most people would feel compelled to opt for an image or understanding of the tree based upon the ultimate degree of magnification (it should be remembered that three-dimensionality is a compli-

cating factor still operating here). It has to be said, however, that in having an understanding of how an instrument like an electron microscope produces the images it does we also have an appreciation of its limitations. Such an instrument does not afford an ultimate level of magnification; it cannot produce an image of items smaller than those it itself uses to detect things. It cannot give a picture of electrons, even; because to do so, it would have to bombard them with particles finer than themselves. This is as much a logical limitation upon its powers as an empirical, physical one. Also, it has to be said that, by the time we reach the point in the development of our understanding where we can construct and explain such devices, we are already committed to the existence of more basic constituents of reality than those they reveal. These items could not have a visual presence even in principle. Their character is elucidated by models and analogies, but is only really captured in mathematical descriptions. What then do we say of all the visual experiences these abstract ultimates give rise to? Are they all figments, or subjective "seemings"? I see no reason why we should conclude this. It is not logically absurd to suggest that something like a tree is all of the various appearances it does and could give rise to, as well as a good deal more besides, (although many thinkers have found this impossible to accept, Bertrand Russell and Arthur Eddington being two of these (3)). We have noted that many of the images available are visually incompatible, but all of these images are obtained under specifically different conditions and, if our objective claims are relativised to these conditions, no contradictions need arise. The tree can be both as it is to the naked eye at twenty feet and also as it is at 1000 times magnification. The tree is appearance x when seen by human observer h from point p and the same tree is also appearance y when seen by human observer h at point p2 or z by h at magnification m (5).

It is important to relativise in the human observer because the kind of visual equipment used to observe the tree will make a difference to the experience of it. We could imagine creatures with more wide-angle vision which would produce a distorted variation of our images (though no less faithful for that). Or, we could think of a creature sensitive to different areas of the electromagnetic spectrum from ourselves. Consider the bats that frequently fly round trees; we have every reason to expect their experience of a tree to be phenomenologically quite different from ours (6), yet we believe that they are sensorially in touch with the same spatial object and that their understanding of it corresponds to ours in important ways. What are we to say of possible conflicts in the appearances each being experiences via their own distinct forms of sense? Are we right and the bats wrong? Surely it is better to say that both are right in different ways. Bats and humans pick up some of the nature of physical, spatial objects via their respective perceptual equipment, but neither detect all of it by those means. Thus we can see that hand in hand with having certain phenomenological experiences and with treating those as perceptions of objects goes the development of a notion of the circumstances of observation. Qualities of space or objects are understood to be perceived as a result of utilizing particular perceptual equipment from a position or a perspective. With a change in any of these factors goes a change in what is revealed of spatial reality. What can be said to be common to the different perspectives of a single observer or to different types of observer, such as ourselves and the bat, is the notion of 3-space itself. The different experiences we have at different distances from an object or the differing perceptions of another type of perceiving entity are all united around the same portion of space. The different qualities perceived relate to the same part of the three-dimensional space. Whether perceived by ourselves at different distances or angles or by a different perceptual system the

spatial boundaries remain the same, it is the qualities which "fill out" those boundaries which differ.

To be committed to objects on this approach is to be committed to items which are endlessly rich in their qualities - but, then, is this not how we do think of them, really, however simplistic our mental pictures of them can be sometimes?

The usefulness of objects having different qualities or appearances under different perceptual conditions can be appreciated with a little reflection. It would be possible for us to see the things we currently see, at a higher level of magnification, say. The scene outside the window could be displayed to me at the highest degree of magnification available. The effect would be unimaginably cumbersome, one feels that the image would be massive, certainly it would be immensely rich in detail. At a psychological level the effect would be overwhelming: from the wealth of microscopic detail, we would have great difficulty in distinguishing the objects we are normally familiar with and interested in. This brings out the crucial point about our level of visual perception; it is appropriate to us as physical beings, it is on a scale fitted to our own physical size in the world, to the kind of objects we can handle and which are important to us, particularly in terms of our survival. For most of our purposes, the kind of detail a microscopic view of the world would produce is redundant. Knowing the cellular structure of what is in front of him is of no value to the lumberjack in his task of cutting down and preparing timber. Similarly, the atomic structure of cells might be of little importance to the biologist. Given the undoubted value of taking objects at a given level of understanding, of ascribing qualities to them that a particular form of perception or analysis reveals, why should we not treat these qualities as part of the objective nature of those objects, though not the whole of the nature

of those objects? I shall return to this issue shortly, but first, it is important to say a few words about the development of science or of a not directly perceptual understanding of the world.

(ii) SCIENCE AND REALITY

In discussing the way in which an exploration of the visual qualities of objects can lead into a microscopic analysis of them, we have described one area where science gains a foothold. Such methods extend our sensory understanding of objects into beliefs that have no direct perceptual representation. This is clearly an important development in the intellectual process of moving from raw phenomenology to a complex ontology. There are other important sources of this initiative. The single most significant of these is the impetus towards the explanation of phenomena and the desire to produce physical laws. These motivations arise at the level of a sensory based understanding of the world which, as we have noted, is already quite sophisticated and involves complex notions such as that of a three-dimensional object which is a significant abstraction from any phenomenological visual item. So it is not surprising that attempts would be made to account for occurrences at this level of understanding by reference to other objects and events of the same accepted domain. It is the failure of this approach which generates the need to look for and, moreover, postulate the existence of new entities and forces - items which have made no direct appearance in sense-experience. Many of the perceived qualities of things turn out to be of little value in the search for law-like physical qualities and propensities. Colour would be a classic example of this failure; perceived colour usually has very little to do with the rest of an object's physical qualities and behaviour and this is compounded, of course, by the way in which the apparent colour

of things varies in the ways we have discussed. Imagine trying to relate the combustibility of objects to their perceived colour, for example.

Measurement emerges as an important activity. The formation of laws depends upon relating identifiable states to other identifiable states. Perceptual identification of these turns out to be unreliable, it does not provide a basis upon which to frame laws. Ordinary perceptual judgements of size, shape and quantity fail to provide identifications which can enter into law-like relations. Whereas, resorting to indirect systems of measurement does produce suitable relations for physical laws. Perceptual judgement is involved in these determinations but indirectly so; it is involved in the act of measurement which will involve the use of some form of instrument. Of course, a degree of theory will attach to these items: their stability or rigidity will be assumed and this will be derived from their observable qualities, from their perceived relationship with other objects. But, ultimately, the justification for these assumptions will be retrospectively acquired from their pragmatic value. If using a created system of measurement produces results which ground successful laws, in a way that using direct perceptual judgements does not, then that provides an argument for saying that these devices really do isolate properties of objects. Naturally, sceptical considerations can still be applied to these methods and their background assumptions, but, as in previous situations, it is a question of making a rational interpretation of events rather than *any* possible interpretation.

The motivation behind the search for laws and regularities in the behaviour of worldly objects is not purely abstract curiosity; a desire to increase one's control over the world is of prime importance. This means control over the world as we experience it at the level of our perception, even though

acquiring this control involves becoming committed to entities and properties which do not directly figure at this level. Possessing an understanding of how certain things happen, in the sense of understanding precisely what events or states of affairs lead to other events or states of affairs, is an important means of gaining this kind of control. Although it is essentially a descriptive activity and based upon particular past regularities, making such laws has a significant predictive dimension. This can be enhanced if the laws are not tightly confined to very specific sets of circumstances but are more generalised, allowing one to extend them to unfamiliar situations. To achieve laws of this generalised nature, a process of investigation and experimentation is required, in order to sift out common properties from seemingly disparate sets of conditions. This power to move from known situations to unknown ones, in the sense of being able to predict or create them, can be further enlarged by the development of theoretical explanations of established laws. Some measure of theoretical interpretation may be involved in the formation of laws, in that, non-perceptual features may be posited as part of establishing a regularity, but frequently this will be minimally present. The sort of theoretical element I am considering, here, is the postulation of a metaphysical underpining to the observable relationships between states of affairs. That is, an explanation of these connection which relies upon the notion of a structure, or mechanism or entity which is present, but which is not perceptible. A new level of metaphysical commitments is thereby introduced. The terms in which these new, imperceptible items are conceived may draw heavily upon familiar objects and properties which do figure in perceptual experience. It may also be an assumption in such theories that the metaphysical sub-structure is imperceptible merely through being too small and that it would emerge under a suitable degree of magnification. Many items which are observable under the microscope had a prior existence for us as theoreti-

cal postulates; viruses, would be an example of such. Other theoretical entities have an intrinsically more shadowy existence. The character they are assumed to have may make it impossible in principle for them to be perceived even by sense-enhancing devices. Fields of force such as magnetism would be like this and also the high level particles of nuclear physics, which are as much energy as they are objects. Simpler postulates such as sound waves could not be perceptible as they are actually conceived to be, the patterns they make in the air are invisible and whatever tactual sensations we might experience from loud, low pitched sounds they do not give an accurate representation of them as they physically are. Light-waves are in a similar situation; for logical reasons, it is not possible to see that which mediates one's seeing and this is further compounded by the kind of mixed analogy light is articulated in terms of. Light is supposed, in some ways, to behave like a stream of particles and, in others, like a wave. The "wave-packet" model is meant to do justice to both aspects, but one can see the difficulties this entails from a perceptual point of view. There is a tendency to feel conceptually more comfortable with the first kind of theoretical entity than with the second. It seems less controversial to ascribe existence to items which could ultimately figure in our experience as they are posited to be than to ascribe existence to items which never could be perceived by us and which, in fact, have properties which make them unimaginable in terms of the kinds of objects we are perceptually familiar with. Several considerations apply here, however. It should be remembered that where perceptual contact is attainable it is mediated by devices which depend upon a theoretical justification and, because direct sensory experience is not possible, it is an issue whether the representation produced by the machine is reliable (in the case of the electron microscope, justifying the images produced would involve reference to entities of the non-perceptual variety). A crucial source of justifica-

tion as far as these mediated forms of perception, as we might term them, are concerned is the fact that assuming them to be faithful involves beliefs which have consequences at the directly perceptible level. The assumptions concerned have testable results; they imply things not just at their own abstracted, theoretical level but also at the level of our direct awareness. If the entities supposedly revealed by microscopes failed to gain confirmation at this level we would have no good reason for taking them seriously. In saying this, however, we have cited a justification which applies equally well to the more controversial type of theoretical entity, the non-perceptible variant. What is significant about such postulates is that they do have testable consequences in the above sense. They both explain known behaviour of objects or physical laws and also embody predictions about future, unfamiliar situations. We are able to say, if a theory is correct, not only that it should entail the events it has been tailored to explain, but that it should also entail the occurrence of other events provided certain conditions arise and it is this that provides a possibility of justifying the theory and the entities it posits ("justification" here does not mean establishing to the level of certainty). It is the rich predictive import of theoretical explanations which gives them their practical value and expands the kind of control afforded by descriptive laws.

I have argued that we should accommodate extensions of our knowledge achieved via sense extending instruments such as microscopes into our conception of what is real. The view of an object obtained from six feet away with the naked eye and the view obtained with a powerful microscope, although visually very different from each other, both reveal a part of the nature of that object. We should not think of one revealing the *true* nature of the object and the other merely a subjective appearance. One reason for this derives from the impossibility of producing something like a "true picture" of

reality. The three-dimensional character of objects precluded this to start with (consider the conclusions we arrived at in Chapter Three as to what the character of a 3-d object and corresponding space would have to be to unite disparate images under the notion of a single particular) and also the fact that we become committed to features which could not be incorporated into some kind of single unitary image, partly because of our drawing upon different senses. I would suggest that having a full or rich understanding of an object involves entertaining a whole complex of beliefs rather than one or a few privileged images of it. Many of these interlinked beliefs will have a perceptual content; they will be commitments to possible appearances of the object. Others will be more theoretical and will only cash-out indirectly in perceptual terms. The question of context is important also. We do not just believe that an object is "like this" - an image from six feet away - and "like this" - an image through an electron microscope. We have to relativise such perceptual beliefs to a mode or level of perception. The significance of such images is only relative to such levels; only in a certain context can they be informative. Gilbert Ryle's remarks in DILEMMAS (6) at pp 75-81 are relevant here when he tells us, for example, that an artist's rendition of a landscape is compatible with a geologist's description of the same area. To think that a microscopic image of a tree was an image at a certain microscopic level would be a grave misunderstanding; the informative content of the image would be lost. This is because much of the context for these items is a purposive one - an ability to act upon the basis of the information given and to achieve certain effects. There should be a connection, in other words, between any particular belief and other beliefs and experiences. If a given belief about an object fails to be confirmed by other experiences, then that puts it in doubt. If we know the context or level of the belief then we know the kind of information it can give and the purposes to which it

can be put. This is why I would claim that an image of an object obtained through some "distorting" medium is still a genuine image of that object and not some kind of non-veridical impression of it. It only fails to be informative if it is understood as being produced through some other medium than the one it actually is. Once one becomes used to it, the data it gives can be related to the rest of one's experience. One might be able to make it informative of the touch properties of the object concerned. There is no such thing as a neutral or uniquely correct way of looking at things. Why should our eyes be preferable to the more wide-angle variant of a fish? The fish is quite capable of connecting the information its eye provides with the rest of its sensory experience, just as we can similarly interpret the information our eye provides. We also have every reason to believe that the fish has an adequate understanding of what it sees. It does not swim into things and is perfectly skilful at evading threatening objects. Problems would only arise if we attempted to bring an understanding appropriate to the images of a human eye to the fish-eye. This relativity is generally necessary: macroscopic information would be useless for certain operations just as microscopic detail would be for others. Thus, we can see that any given sense-experience or phenomenological item is subjected to a complex metaphysical interpretation, one which involves the image pointing in two directions at once. The phenomenological item points forward as it were, to an object and its qualities and also backwards to the observer and his mode of experiencing that object. The appearance the object presents through that particular sense-experience has to be seen as dependent upon certain facts about the perceiving situation. We can come to think that differences of perspective, distance and perceptual equipment allow for different aspects of an object's nature to be apprehended. Different modes of perceptual encounter allow for different levels of an object's properties to be "peeled off", as it were. There is a

kind of symbiotic relationship between the object and the perceiver involved in the process of building up an understanding of the nature of each: both arrive together, interlinked. As a subject moves towards an object and its appearance changes, the only way that he can make the changing images compatible with the idea of their being of a single object is by availing himself of the concept of a three-dimensional space and by conceiving of himself as perceiving the object from different places in that space. The notions of an object and its qualities and of perceiver location emerge together and they determine each other. As a subject develops a deeper understanding of what is involved in the perceptual process (as ever this is a conceptual rather than a genetic, individualistic account) other factors enter into the equation and become points to which the qualities of objects are relativised. Ultimately, the stage is reached where one can conceive of other creatures with perceptual systems differing from our own and it becomes reasonable to countenance their having access to qualities of objects which we are denied.

Having made these comments, it should be said that one impulse behind scientific endeavour is the desire to produce a description of the world which is *independent* of any mode of perceiving it, but which can account for or predict those perceptual experiences. What is aimed at, if you like, is an account of the world which is neutral as between a bat's, a fish's and my experience of it, a something which is common to all three, and which each of us by dint of investigative and intellectual activity could become committed to, in spite of our radically different phenomenological experiences. Should we hold this understanding up as capturing the essence of objective reality, then? We could do so and I cannot say that such a purist approach is actually wrong; it is more that there is no good reason for taking such a line - common though it is. Also, such an understanding is still

relative to a viewpoint namely, the scientific one, as Strawson points out (8). Although, unlike those other viewpoints we have considered, it is an intellectual rather than a perceptual one. Additionally, one might claim that the notion of space itself which prevails in the scientific account is derived from the perceptual level of understanding. It is not as if, once we have a high-level theoretical understanding, we can dispense with all our perceptual beliefs and commitments. They are essential to living our lives and carrying out many of our purposes. It would be impossible to deal with the world purely in terms of these abstract, non-perceptual items. We can retain a commitment to the perceptible lower-level objects and properties as well as the high-level theoretical ones to which, in some sense, they may be reducible. To use what is only partly a metaphor, we can believe in the existence of houses no less than in the existence of configurations of bricks. Further it is important to remember the contingent link between the initial, low-level perceptual commitments and the abstract, scientific commitments that are developed out of them. An empirical and investigative process is involved: the behaviour of the familiar, perceptual world might have dictated different underlying theoretical entities. Just as the appearance and functions of a house could have been achieved by other material components than bricks.

This leads us into another justification for the retention of our ordinary, perceptual level of ontological commitments, a justification based on their evidential primacy. It is from a world of perceptual objects and properties and a desire for greater explanatory power over their nature and behaviour that we arrive at the world of non-directly perceptible entities, and this original perceptual level persists as a source of review for these entities (9). It is only insofar as a theory's consequences are consistent with perceptual experience that it is acceptable (a theory that has no perceptual

consequences, although, perhaps a metaphysical possibility, is of no value - given the explanatory motivation behind theory-formation). However abstracted research might be, it can, ultimately, only be contradicted through its having a connection with happenings at the gross, observable level. I do not wish to suggest in this that there is a simple link between theories of this sort and individual bits of perceptual data. Theories rarely stand alone and as science advances the relationship between theory and observation will be highly complex and such that the power of any single observation to revise or refute an important theoretical tenet will be very limited (10). This does not mean that, in the final analysis, experience does not have the last word; ultimately it does. Also, it has to be remembered that the highly developed set of theoretical commitments we have has been arrived at by a lengthy process beginning with fairly basic connections between experience and theory and accompanied at each stage by a fresh observational input.

In the light of this and given that there is no actual contradiction involved in ascribing perceptual and theoretical or scientific properties to reality - so long as we do not conflate the two - there is no reason why we should discard familiar perceptual entities from our ontology. Such entities still meet criteria that many other phenomenological particulars do not: they recur in structured, systematic ways and, once this level has been reached, they are subject to interpersonal agreement. In other words, a commitment to the existence of such perceptual entities does not, by any means, amount to a carte-blanche objectification of everything that we experience. Many phenomenological items we encounter are to be treated as subjective; dreams, hallucinations, afterimages, and the like.

It should be clear from this, that a Primary/Secondary quality (11) analysis of experience is not appropriate. Firstly, I

have suggested that the development of science does not compel us to downgrade many of the qualities we unreflectively take the world to possess; they are not necessarily suspect just because they do not figure in a scientific account of what there is. In addition to this, the approach in question does not bear scrutiny even on its own terms. The supposed harmony between science and perception upon the Primary Qualities such as shape does not exist. Size and shape are not in perception as they are for physics. Purely visual (or tactual) judgements of these qualities would be woefully inadequate for the purposes of science. Our perceptual assessments of these qualities lack the accuracy or consistency of scientific determinations of them. We have already stressed the crucial role instrumentation plays in the scientific measurement of these qualities, perception being only indirectly involved. Additionally, there are well established difficulties about the Primary/Secondary distinction dating back at least to the writings of Berkeley and Hume but also to be found in the work of Ayer among others (12). These criticisms center upon the problem of how properties such as size and shape can be allowed to enter into our perception as they objectively are when the property of colour is denied such a status; given that it is hard to imagine how an object could yield up its properties of size and shape without doing this through the vehicle of colour.

I should, perhaps, briefly mention one source of challenge faced by a theory of perception which accepts the claims of science and, in particular, claims that relate to the mechanics of perception itself. There has been a traditional belief that the acceptance of a causal basis for perception leads to some kind of incoherence or that it undermines all our normal perceptual judgements. The idea is that if our sensory experiences are caused by physical processes, many of which bear no content relation to what is sensed and if our having the particular experience we do is purely dependent

upon the last event in such processes then it might be that we could have all of the experiences we do, without any of the items we believe we are thereby perceiving actually existing. But, to assume that such is the case is to negate all of the perceptual commitments upon which the causal account is based. It is only by taking our perceptions seriously that we arrive at the theory in the first place. Just because, from a conceptual point of view, there is potential in a causal account for the possibility of being perceptually deceived does not mean that the theory entails that such *is* the case. A causal account is not plainly self-contradictory. To assume that the possibility of permanent deception does prevail is, essentially to reject the presuppositions of the theory, so the principles of the theory never come into play in the first place. The theory, thus, would not become self-refuting, but rather, would never be generated at all. Consequently, a causal account of perception is perfectly self-consistent and there is no logical objection to adopting such a view. Whether a causal understanding is required is determined by the character of a subject's experience. Our form of experience supports such a interpretation, others, such as the proposed sound space, might not.

(iii) CONCLUSION

By way of conclusion, then, it should be apparent that there is not a tension between our more ordinary perceptual beliefs about the world and our developed, scientific views, contrary to what is so often supposed. Our scientific commitments arise out of our lower-level perceptual commitments and, properly, should be seen as an extension of them, rather than a replacement of them. The complexity of such scientific views and their failure to translate into simple perceptual terms should not be a source of criticism of them,

because, in this, they are not radically different from our so-called "direct" perceptual allegiances. We have noticed that, for objectification to occur at all in our form of experience, complex and abstracted postulates are required. To interpret experience along three-dimensional spatial lines is to postulate entities that are not simply reducible to phenomenological particulars. Possessing an objective interpretation of experience is not like having an unglossed résumé of past phenomenological experience; it is to have subsumed that experience under abstract theoretical constructs. Theory is not something that enters late in the day in the development of our ontological scheme, it is present from the very beginning. Thus, science belongs to a single activity which commences with a subject's first tentative speculations about the ontological status of parts of his experience. This should be a reiteration of a point that has lain behind much of what has been said in this work, namely that it is possible to have an account of perception which grounds it in a basic phenomenological awareness without this entailing that the beliefs and commitments which arise from this source be simplistic, unsophisticated, and lacking in abstraction. The point to be stressed is that, although perceptual knowledge is founded upon a simple, uninterpreted awareness of phenomenological particulars, an intellectual or judgemental process has to be performed upon the sensory raw material before an objective spatial scheme can emerge. I have suggested that the experiential base may never actually *necessitate* the objective judgements that are made, in some logical sense - scepticism may remain an alternative possible interpretation of it - but I have argued that such judgements can at least be *rational* in the light of such experience (not forgetting that there are some possible forms of experience for which no objective interpretation could be rationally justified).

In all, I hope to have given a philosophical outline of how the range of ontological commitments we have is justifiable on the basis of the kind of experience we have. In the process, I have tried to illuminate some general principles concerning the form (or forms) experience needs to take in order to support an objective conceptual scheme and thereby to shed light upon certain crucial concepts such as objectivity, subjectivity, space and objects.

(1) See eg. R.H. Thouless, British Journal of Psychology 1930-1 pp 229-34. or H. Van Helmholtz, PHYSIOLOGICAL OPTICS Vol II p.285 1924 ed. and Comments in Mundle PERCEPTION: FACTS AND THEORIES.

(2) c.f. A.J. Ayer's comments in FOUNDATIONS OF EMPIRICAL KNOWLEDGE, Penguin p 201

(3) Here, Wittgenstein's comments on the inadequacy of identifying meaning or concepts with mental pictures may be relevant, see PHILOSOPHICAL INVESTIGATIONS Blackwell, Oxford 3rd. ed. 1967 see eg. 'Remarks' 139-41.

(4) See Bertrand Russell THE PROBLEMS OF PHILOSOPHY O.U.P. 2nd. Ed. 1967 at page 9, also AN ENQUIRY INTO MEANING AND TRUTH reprinted Penguin 1970 at page 15, and Arthur Eddington THE NATURE OF THE PHYSICAL WORLD at p.XI.

(5) I am particularly indebted here to P.F. Strawson and his article PERCEPTION AND ITS OBJECTS in "Perception and Identity" G.F. Macdonald ed. Macmillan 1979 - Festschrift for A.J. Ayer - and his outline of a 'relativistic' approach. Strawson argues that we should "Acknowledge the relativity of our 'reallys'" when we consider the question of what properties an object has *really* (p. 57 and part III generally). It is not clear to what degree Strawson relativises in the observer and his perceptual equipment as well as his position and perspective, however.

(6) Thomas Nagel's article WHAT IS IT LIKE TO BE A BAT? collected in his 'Mortal Questions' C.U.P. 1979 is of some passing interest here, perhaps not least because discussion of a bat's experience arises as part of a general argument for the indispensability of the phenomenological in a characterisation of mental activity.

(7) Gilbert Ryle DILEMMAS C.U.P. 1954 .

(8) Ibid p 58.

(9) Again see Strawson ibid p 59.

(10) For a classic statement of this view see W.V.O. Quine in TWO DOGMAS OF EMPIRICISM collected in 'From a Logical Point of View' Harper and Row, New York 1961 (2nd. ed.) particularly at page 41 "Statements about the external world face the tribunal of sense experience not indi-

vidually but only as a corporate body" and also for his views on the continuity of common sense and science. Other sceptical voices about empiricism and scientific theory are amongst others, T.S. Kuhn in THE STRUCTURE OF SCIENTIFIC REVOLUTIONS University of Chicago Press, Chicago 2nd. ed. 1970 or P. Feyerabend, AGAINST METHOD Verso, London 1978

(11) As archetypally expounded by J. Locke AN ESSAY CONCERNING HUMAN UNDERSTANDING Fontana ed. 1964 book 2.

(12) Ayer THE CENTRAL QUESTIONS OF PHILOSOPHY at p 85-86.

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