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## Explaining Perceptual Entitlement

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How do perceptual experiences entitle us to form beliefs about the objective world? It is this question, perennial and fundamental, that I will be addressing.

I will be offering an answer to the question that brings to bear externalism in the theory of intentional content upon the theory of the normative relation of entitlement. The account draws on some more general considerations about explanation and rationality, considerations applicable in many domains far beyond the mental. If the principles underlying the account are correct, they will apply also to entitlement in some other areas, including beliefs about our own actions.

The very first step in addressing our question must, however, involve some clarification of the several levels at which issues about the entitlement relation can be addressed.

### 1. *Entitlement: The Three Levels*

The three levels at which we may characterize the entitlement relation are levels which we can distinguish for any property or relation. For any property or relation, there is an increase in generality and explanatory power as one proceeds through these three levels of characterization.

Level (1). The first of the three levels I distinguish is simply the level of instances or examples of the entitlement relation. So characterizations at this level comprises true statements of the form 'a thinker in such-and-such circumstances with so-and-so

background information is entitled to judge that  $p$ '. These examples involve a specification of types of circumstances in which an entitlement exists. The types may concern the thinker's environment, his other conscious states characterized in terms of content and his general capacities. If a thinker is entitled to make the judgement, of a seen object, that it is curved, when he visually experiences it as curved, and when there is no reason for doubting his senses, then that would be a statement included at this first level of instances. So would statements about the entitlement to rely on apparent personal memory in making judgements about one's own past.

It is an important matter what we take to be the entitling state. We cannot take it to be something of the kind *perceiving that  $p$* , since that state implies that its subject already believes (indeed arguably knows) that  $p$ . A transition with something of this kind as the specified entitling state would be vacuous as a means of rationally reaching new beliefs. It could be employed only if it were redundant. But there are kinds of perceptual states with the content that  $p$  that are factive (imply the truth of  $p$ ) without implying that the subject already believes that  $p$ . One of these is the state *perceives  $x$  to be  $F$* , or *perceives  $x$  and  $y$  to stand in relation  $R$* . One can perceive the room to be square without believing it is square (one may falsely believe that one is subject to a perceptual illusion). Such a factive perceptual state can be the entitling state for a perceptual judgement without vacuity ensuing.

An alternative approach would be to take as the entitling states perceptual experiences whose contents can be false, such as *having an experience as of  $x$  being  $F$* , or even *having an experience as of there being something in front of one that is  $F$* .

Perceptual entitlement is often said to be defeasible. One's entitlement to judge, on the basis of a perceptual state, that  $p$  can be defeated in the presence of further information, such as that one is in a room with strange lighting conditions, or that one is, unbeknownst, a participant in an experiment in the psychology of perception. It is important, here as in other cases, to distinguish two kinds of defeasibility.<sup>1</sup> Something one thought to be a mathematical proof may turn out not to be so; or reasonable doubt

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<sup>1</sup> This distinction is further discussed in my paper 'The A Priori', forthcoming in *The Oxford Handbook of Analytical Philosophy*, ed. F. Jackson and M. Smith (Oxford: Oxford University Press, 2003).

may be cast on it by the most distinguished experts. I call this ‘defeasibility of identification’. What is in question in these cases is the correctness of the identification of something as a certain kind of ground. One may have good reason for wondering whether something really is a proof. But if it really is a proof, no additional information can establish that its conclusion is not true. If something really is not a proof, it is not a proof all along, whatever we think about it. By contrast, in what I call ‘defeasibility of grounds’, defeating conditions show that the grounds one has are not strong enough. One may make an inductive inference, on fairly extensive grounds, to a generalization that all  $F$ ’s are  $G$ . One’s entitlement to this conclusion is defeated if someone can show that all one’s extensive inferential basis of singular cases of  $F$ ’s that are  $G$  are all special cases in some way. In such a case, one always knew one’s grounds were not conclusive.

Which kind of defeasibility one regards perceptual entitlement as possessing varies with whether one takes the entitling state to be factive or not. When the entitling state is factive, the defeasibility of perceptual entitlement can consist only in defeasibility of identification, not defeasibility of grounds. If someone really does perceive  $x$  to be  $F$ , then it will be true that  $x$  is  $F$ . What can be defeated is only one’s identification of one’s own state as a perceiving  $x$  to be  $F$ . When the entitling state is not factive, we have genuine defeasibility of grounds: an experience as of its being the case that  $p$  may be shown, in the light of further information, to coexist with its not being the case that  $p$ , or to be in the context entirely sufficient to make it rational to accept that  $p$ .

Later in this paper I will be arguing that there are good reasons for taking the entitlement as formulated using factive perceptual states to be more fundamental than those formulated using non-factive states of perceptual experience. For the moment, we can remain neutral on the issue. Both the factive and the non-factive states seem, in the case of a range of representational contents that  $p$ , to give prima facie reason for judging that  $p$ , in the absence of corresponding defeating conditions.

Level (2). The second level is the level of generalizations about the entitlement relation. This level consists of true generalizations which, in the presence of additional information determined by the generalizations, have statements at level (1) as instances. It may be helpful to think of the relation of this level to others as the same as that exhibited by grammatical generalizations to other levels in the theory of grammars. In his

1965 theory, Chomsky wrote that a grammar “is *descriptively adequate* to the extent that it correctly describes the intrinsic competence of the idealized native speaker”.<sup>2</sup> In the same spirit as Chomsky’s use of the term, we could call this second level ‘the level of descriptive generalization’. A descriptively adequate grammar for a language will have theorems specifying instances of the property of grammaticality for the language.

We equally operate at this second level of characterization when, in developing a logic for some particular expression in natural language, we move from particular valid transitions containing the expression but not containing schematic letters to the stage of formulating general schemata that are valid. That is a move to a level of descriptive adequacy. As in the other cases, it can be an important step towards theoretical understandings. It is, for example, illuminating, and a step towards an explanatory theory, to note that though transitivity does not hold for the counterfactual conditional, the schema ‘If A were the case, then B would be the case; if A & B were the case, then C would be the case; so if A were the case, C would be the case’ is generally valid.<sup>3</sup>

In the logic case, as in the grammar case, people are capable of making all sorts of mistakes about which are the correct generalizations at this second level. Van McGee has argued that modus ponens, often taken by many philosophers as an example of an obviously valid rule, fails when the consequent of the conditional is itself a conditional.<sup>4</sup> It is one thing to make judgements for reasons which are entitling states, in a variety of conditions. It is another to be able to articulate correctly generalizations about the conditions under which one is entitled to make judgements of a given kind. This is simply the application to the notion of an entitled transition of a point long recognized about the possible inability of those who correctly use the concept *chair* to offer a correct definition of the concept (even when there is one). Having a classificatory ability is one thing; it is

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<sup>2</sup> *Aspects of the Theory of Syntax* (Cambridge, Mass: MIT Press, 1965), p.24.

<sup>3</sup> R. Stalnaker, ‘A Theory of Conditionals’, *Studies in Logical Theory* ed. N. Rescher (Oxford: Blackwell, 1968); D. Lewis, *Counterfactuals* (Oxford: Blackwell, 1973), esp. pp. 32-5.

<sup>4</sup> McGee’s example: for someone speaking in 1980 of the then upcoming election in the United States, utterances of the premises ‘If a Republican wins, then if Reagan doesn’t win, Anderson will win’ and ‘A Republican will win’ are true, but an utterance of ‘If Reagan doesn’t win, Anderson will win’ is false. See Vann McGee, ‘A Counterexample to Modus Ponens’, *Journal of Philosophy* 82 (1985) 462-71.

another to be able to collect correctly in thought in a non-trivial fashion just the conditions under which the classification applies. What we need to be responsive to good reasons is an ability to respond to entitling conditions with appropriate judgements. Making correct generalizations about entitling conditions is a further ability, not implied by the former capacity.

The generalizations about the relation of entitlement at this second level may be more or less extensive, and correspondingly more or less illuminating. The generalizations may use theoretical notions in classifying circumstances, contents, and capacities. It is information about the extension of these classifying notions that one will need if one is to use the generalizations to derive truths at level (1) about instances of the entitlement relation.

Level (3). The third level is the level of explanation. This third level consists of explanations of the true generalizations at level (2). If certain theoretical notions seem to be involved in capturing the correct generalizations at that second level, then one of the tasks at this third level is also to explain why they do so. In linguistic theory, Chomsky distinguished a level of explanatory adequacy, a level of theory at which one aims to explain why the child selects a particular descriptively adequate grammar.<sup>5</sup> Explanations at that level would be empirical explanations of acquisition in the linguistic case.

In the case of the development of a logic, formulations of explanations at this third level would involve the development of a semantical theory that explains the patterns of validity and invalidity captured in schemata at the second level.

As these examples show, explanations at this third level may be either empirical or a priori, according to the nature of the explananda in the given case. In the case of the explanatory level for the entitlement relation, we are concerned with philosophical explanations. In contrast at least with the linguistic case, the task of characterizing this third level for the relation of entitlement is that of explaining timeless generalizations rather than historical (extended) events of acquisition of a grammar. In the particular case of explaining the entitlements provided by perception and memory, the task is to explain the true generalizations about defeasible entitlement, and to say why those

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<sup>5</sup> *Aspects*, pp.25-7.

generalizations (and nothing weaker or stronger) captures the extension of the entitlement relation.

The development of a third-level characterization of the entitlement relation further divides into two parts. First, one must specify (with arguments) some very general property which is required for an arbitrary transition to be one to which the thinker is entitled. A tendency to lead to true judgements must be one element of an account of what makes a transition one to which a thinker is entitled.<sup>6</sup> This first part can be called *goal-specifying*. The second part of a characterization at this third level is then showing that, and showing why, generalizations about the entitlement relation at the second level have the general property specified in the first part. This second part can be described as *proof of fulfillment of the goal*. One would similarly distinguish these two parts in a level-three characterization of a logic. One would first specify a semantic property that a valid inference must possess; one would then show, in a semantic theory, why the general principles identified as intuitively valid at the second level have this property, and why the invalid ones lack it.

## 2. *The Second Level for Perceptual Entitlement*

How would we describe these three levels in more detail for the case of perceptual entitlement? At the level of examples, I wrote, like James Pryor, of an entitlement to take the perceptual content of experience at face value, in the absence of reasons for doubting it.<sup>7</sup> For a wide range of perceptual contents, there is such an entitlement. It exists for many spatial contents, temporal contents, contents relating to surface texture, colour and illumination, and a range of material properties.

There are, however, also cases where it is much less plausible that perceptual experience alone can supply the entitlement. Consider furniture that looks Swedish;

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<sup>6</sup> For further discussion, see my paper 'Three Principles of Rationalism', *European Journal of Philosophy* 10 (2002) 375-397.

<sup>7</sup> J. Pryor, 'The Skeptic and the Dogmatist', *Noûs* 34 (2000) 517-49, at pp. 536ff.. This position is in the same spirit for entitlement in perception as Burge's on the entitlement to accept the utterances of interlocutors: see T. Burge, 'Content Preservation', *Philosophical Review* 102 (1993), 457-88..

appliances that look like Mac computers; or the properties of looking sad or looking delighted. Are we entitled, in the absence of reasons for doubt, to judge on the basis of such experiences that some furniture we see is Swedish, that some presented object is a Mac computer, or that someone is sad or delighted? In some of these cases, one can follow a strategy of divide-and-rule. One can explain the apparently perceptual phenomenon thus. There is some kind such that the thing or person appears to be of that kind, and the person judges that things of that kind are (say) Swedish people, or Mac computers. The perceptual entitlement holds only for the kind which is given in the content of perception, as opposed to the content of the judgement. But such a division is not plausibly available in all cases. It does not, for example, fit the case of perception of the expression of an emotion. To describe, when seeing the face of a person, the experience in which they look sad in non-emotional terms is not to capture its distinctive representational content. There is no kind, described without reference to the emotions, of which one can say that the facial expression appears to be of that kind, and it is merely an additional judgment on the part of the person that people looking that way are sad.

It is tempting to say that the purely perceptual entitlement holds only for observational concepts. That may well be true; but it is hardly an illuminating generalization at level (2), unless we have some independent account of observability. We are in danger of moving in a circle, for it is only too plausible to say that observational concepts are those that can be applied with entitlement simply on the basis of perceptual experience, and without further information. Unless we have some characterization of observational concepts distinct from that, then to say that the perceptual entitlement holds only for observational concepts will become the vacuous claim that it holds for those contents for which it holds.

I will suggest later on that a by-product of a proper characterization of the second level will be a starting point for characterizing the relevant notion of observability without circularity. Suppose we can formulate a sufficiently wide-reaching true generalized conditional about the conditions under which perceptual entitlement holds. It will have the form 'If such-and-such conditions hold for the content  $p$  and for the thinker's circumstances, then the thinker is entitled to take the content  $p$  of his perceptual

experience at face value'. One way to characterize the non-observational will be as contents not meeting the antecedent of that conditional.<sup>8</sup>

The task of formulating such a generalization about perceptual entitlement lies at the second of the three levels. So I aim to characterize, without using the notion of an observational concept, a relation which holds between a perceptual experience and a particular content  $p$  which it represents as being the case, a relation with the following property: the holding of that relation is sufficient for a subject who enjoys the experience to have a perceptual entitlement to judge that  $p$ , in the absence of reasons for doubt. Various other perceptual entitlements, I will later argue, have their status as such in virtue of the relations in which they stand to this sufficient condition.

In some cases, and to a first approximation, what is constitutive of an experience's having a certain representational content is that when the thinker's perceptual apparatus is functioning properly, in a normal environment, experiences with that content are caused by the holding of the condition which is in fact the correctness condition for that content. This is plausible for the spatial representational contents of perception: the representational contents concerning such matters as distance, direction, shape and size. In *Being Known*, I argued that the same is true for the temporal contents of perception.<sup>9</sup> When all is working properly, in a normal environment, and in the most fundamental cases, a subject's perception of temporal order and magnitude is caused by instances of those order-relations and temporal magnitudes. (The perception of temporal magnitudes, like the perception of spatial magnitudes, is commonly unit-free.)

Suppose we agree that it is constitutive of a particular kind of experience's having a spatial or temporal content that such experiences have certain causes in specified conditions. It does not follow that it is constitutive of that content that it feature in experiences of that kind in any perceiver capable of having states with that content. Experience of different kinds, in more than one sense modality, may have the same spatial representational content. A given subject may be capable of having experiences in

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<sup>8</sup> Pryor uses the notion of propositions which our experience 'basically represent': these are propositions we seem to perceive to be so, but not in virtue of seeming to perceive other propositions to be so (p.539). This will give a wider class of entitling states than results from application of the criterion of observability outlined below.

<sup>9</sup> *Being Known* (Oxford: Oxford University Press, 1999), Chapter 3.



only one of those modalities. Furthermore, the given content may also feature in proprioception. The feeling of moving one's arm in a straight line may involve the same content *straight line* as also features in visual or tactile experience. The spatial content *straight line* can also feature in the non-proprioceptive awareness of acting that can be present even when one's limbs are anesthetized. Indeed, the very fact that perceptual experiences with these contents are individuated in part by facts about their causes in certain circumstances opens up the possibility of the occurrence of such contents in other conscious states, both in perception and in action. The cause that is involved in the individuation may cause other experiences too. Equally, the state of affairs that is the cause may be mentioned in constitutive accounts in which it features as an effect, as in the non-proprioceptive awareness of action. In short, we must be careful not to overstate the constitutive principle which links the individuation of some perceptual contents with the holding of those contents in the perceiver's environment.

What is true, however, is that the spatial and temporal contents of experience are in a certain sense *constitutively basic* with respect to these experiences. That is, these experiences do not have these elements of their content in virtue of the experiences' having certain other relations to other states with the same contents. One can contrast this with contents of perceptual experience which seem to use such concepts as *soldier* or *judge*, as when one says that it looks as if there is a soldier guarding the building, or a judge speaking from the bench in a courtroom. Such experiences, if that is their literal content, have those contents by virtue of their having contents which also feature in the ability to come to believe that someone is a soldier or a judge; and these capacities in turn have to do with some knowledge, perhaps rudimentary, of what it is to be a soldier or a judge. Unlike the case of contents concerning the properties of being a soldier, or of being a judge, perceptual experience can provide a thinker's fundamental fix on spatial and temporal properties and relations.

The experiences of which I am writing are sometimes called externally or anti-individualistically individuated. For present purposes, this not an ideal label. For the essential characteristics of the phenomenon are present in, for instance, proprioception of limb position, and the disposition of one's own body in space. One has an awareness that represents one's limbs and body as being a certain way spatially. It is highly plausible

that what gives this awareness the content it has is that, when all is functioning properly, an awareness as of one's arm being straight is caused by one's arm being straight. This is not a relation between conditions external to the perceiver's body and the perceiver's own mental states. So I prefer to speak of perceptions which are *instance-individuated* with respect to certain of their contents. What makes these perceptions have the content they do is the fact that when the subject is properly related to the world, the holding of these contents causally explains the subject's experience as of their holding.

Even when the subject is properly connected to the world, and the environment is normal, still some spatial, temporal and bodily contents of these sorts do misrepresent. There are some reliable illusions – such as the Müller-Lyer – which occur even in ordinary circumstances when the embedding of subject is as proper as it is ever going to be. In these cases, the experiences have the contents they do because of their relations to those experiences that are directly instance-individuated with respect to perception. These cases of illusion can be described as derivatively instance-individuated with respect to perception.

We can then formulate this generalization at the second level about the relation of entitlement:

A perceptual experience which represents a content as correct, and which is instance-individuated with respect to that content, is also one which entitles a thinker to judge that content, in the absence of reasons for doubting that he is perceiving properly.

This needs some adaptation if perception has nonconceptual content. Suppose it does. Then for conceptual contents for which there is a perceptual entitlement to judgment, there will be a range of nonconceptual contents of experience which generate an entitlement to judge such a conceptual content. Call these 'the range of nonconceptual contents which canonically correspond to the conceptual content'. The generalization at the second level would then be formulated by saying that:

A perceptual experience which represents a nonconceptual content as correct, and which is instance-individuated with respect to that nonconceptual content, is one which entitles a thinker to judge a conceptual content as correct, in the absence of reasons for doubt, when the nonconceptual content is in the range which canonically corresponds to the conceptual content.

Under either variant, the generalization at the second level is equivalent to something simple and intuitive. The generalization is in effect saying that when making perceptual judgments, one is entitled to take it, in default of evidence to the contrary, that one is in the circumstances with respect to which one's perceptions are instance-individuated with respect to the contents in question. So I will call this thesis about the second level 'the Individuation Thesis about Perceptual Entitlement'.

This Individuation Thesis suggests an approach to the issue of what makes something an observational concept. The intuitive idea is that a non-observational concept will not be instance-individuated, because it has commitments which go beyond what is involved in instance-individuation. An experience of something as a Mac computer, or as a PET-scanner, cannot be purely instance-individuated, because that would not capture the commitments of these concepts, the commitment that objects falling under them are capable of carrying out certain functions.

Such a development of a criterion for observability has to be carried out with some care, because instance-individuation is not to be taken as meaning that nothing more than causal interaction is involved in an experience's having a certain content. There is causal interaction in ordinary visual experience with patterns of light reaching the eye; with retinal stimulation patterns; and with the state of the optic nerve. None of these matters enter the representational content of ordinary visual experience. The representational contents of visual experience also serve as input to the subject's construction of a conception of the layout of the objective spatial world around him. This is a feature of perceptual experiences with instance-individuated contents. So the criterion for a concept to be non-observational might be better formulated thus. Non-observational concepts have commitments going beyond the minimal conditions for objective content which are met by the contents of experiences which are instance-individuated. I simply

note the possibility of this approach to observationality, as one by-product of the Individuation Thesis about Perceptual Entitlement. It would take us too far off our main path to pursue here the further elaboration which would be necessary to develop the criterion in detail, and with a rationale.

Our actual entitlement to perceptual judgements rests on far more than the Individuation Thesis alone, applied atomistically experience-by-experience. Consider a stream of experiences, each of which entitles a thinker to believe some corresponding content. If these objective contents cohere, each being a spatial content of a perception reasonably expected to follow its predecessors, then the resulting entitlement to judge each content is massively greater than if each experience had occurred in isolation. Holism of confirmation is as pervasive in the sphere of perceptual judgements as it is in other areas. Even the proposition that objects have rears is something that requires perception from more than one angle, and cannot be confirmed by a single view.

All the same, it seems to me that this holism of confirmation serves to increase a prior level of entitlement that can already exist in the individual case before additional perceptions or evidence are brought in. The additional perceptions or evidence are important because they can give further reasons for thinking things are as an initial perception represents them as being. (They can also serve to show that certain kind of defeating conditions do not hold.) In a sequence of coherent experiences, the later experiences themselves give defeasible reasons for making certain judgements, independently of the occurrence of the earlier experiences. It is only because this is so that the later experiences can then give further confirmation of the judgements supported by the earlier experiences.

There is an abstract, structural argument that if rational, entitled thought is to be possible at all, some concepts must be such that one is default-entitled to presume that one is in the circumstances in which they are individuated. Maybe there could be a concept whose possession-condition makes reference to applications in circumstances one is not default-entitled to presume are one's own. Perhaps there could be a concept which, as a matter of its nature, is to be applied to objects which look a certain way, but only under a certain kind of abnormal illumination. Any entitled application of this concept on the basis of experience will require inference, or some other entitled

transition, to the conclusion that the illumination is of the special abnormal kind. Now could it always be that inference, or some other entitled transition, has to be made before we are entitled to apply a concept? It seems that this could not be so, if entitled application is ever to get started.

This abstract, structural argument seems to me to be sound. But abstract arguments by themselves have only abstract conclusions. It is one thing to know that default entitlements must exist. It is another to explain how they are possible in the first place, and to explain why they have the particular character and contents they do. The abstract argument does not give us an understanding, of any particular generalization about the entitlement relation, of why it, rather than some other principle, holds. To move towards such understanding in the perceptual case is the purpose of my next question, which is at the third of the three levels I distinguished. The question is: if the Individuation Thesis about Perceptual Entitlement is a true generalization about entitlement, what explains its truth?

There would be no further task of answering this explanatory question if the Individuation Thesis about Perceptual Entitlement were derivable simply from the truths about the individuation of perceptual content together with principles about the nature of entitlement in general. But I cannot see what such a derivation from those premises alone would be like. The generalization which is the Individuation Thesis about Perceptual Entitlement does not itself explain why one is, in the default case, entitled to accept what would hold in the circumstances with respect to which perceptual content is individuated. Those circumstances may be special from the standpoint of the theory of the individuation of content; but what is so special about them for epistemology and the theory of entitlement? Why is one entitled, in the default case, to form perceptual beliefs as if one were in the circumstances with respect to which the content of the perception is individuated? To achieve philosophical understanding of these issues, we have to undertake the further substantive philosophical task of explaining the epistemic significance of facts about the individuation of perceptual content. It is part of the task of connecting the epistemology of the theory of content with its metaphysics.

### 3. *The Argument Outlined, and the First Step*

I now turn to the level-three task of explaining the second-level generalization about perceptual entitlement that we have identified in the previous section. The explanation will have the following three steps.

Step 1 consists in the formulation and defence of a general principle about the explanation of complexity.

Step 2 is the claim that the general principle in Step 1 applies to the explanation of the occurrence of experiences with instance-individuated contents, and does so in such a way as to support the presumption that the contents of such experiences are correct.

Step 3 is the claim that this application to perceptual states provides the philosophical explanation, at Level 3, of why one is entitled to take experiences with instance-individuated contents at face value.

The argument has two extensions.

The first extension applies the argument to all 'as-if' states - to all states which are states in which it as if some condition obtains.

A second extension, even more general in character, applies the argument to all non-conclusive entitlements.

Let us take the first step. Here are some illustrations of what I mean by complexity, with some discussion of each case.

(a) Snowflakes

I start with the humble example of the snowflake. Although no two snowflakes have the same shape, almost all exhibit six-fold symmetry. Each undamaged snowflake repeats a pattern around its center, with a repeat each 60-degree segment. This is an example of complexity or order that needs explanation. (The problem of what the explanation is

attracted the attention of Kepler, who wrote a pamphlet about it.<sup>10</sup>) The explanation is as beautiful as the patterns it explains.<sup>11</sup> It is well-known that the most efficient way of packing spheres on a plane results in a hexagonal arrangement. Oxygen molecules in frozen water are roughly spherical, they are arranged on a plane, and the frozen crystals grow in a way that minimizes energy. They do not grow in solid hexagons, however, because long sides tend to break. Growing arms also develop other arms, by the same principles. The differences between individual snowflakes are explained by the varying conditions of temperature, moisture flow and so forth in which they are formed.

What matters for present purposes about this explanation is that the complexity or order at the level of the whole snowflake is explained in a way that does not simply presuppose a similar complexity or order in the states or conditions that do the explaining. There is no appeal here in the explanation to objects that themselves exhibit a similar six-fold symmetry that is simply taken for granted; and it would hardly provide a satisfying explanation if there were. Any such alleged explanation, for instance one saying that snowflakes are built on skeletons that themselves exhibit six-fold symmetry, would simply leave unanswered a major part of the question of how this species of complexity came about. ‘And why do those things have six-fold symmetry?’, one would reasonably ask. The correct explanation of the shape of snowflakes does not leave us with the same complexity again at another level. It reduces – in this case it eliminates – that kind of complexity.

(b) Bénard cells in convection patterns

A second example concerns convection currents in heated liquids. Take a closed volume of a liquid that receives heat from a source below it. Within a certain range of quantities of heat applied from below, this liquid will reliably divide into a set of what are known as Bénard cells, within each of which the liquid circulates in rotating a pattern, when one takes a vertical cross-section of the liquid. Consider a small quantity within the fluid that

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<sup>10</sup> J. Kepler, *The Six-Cornered Snowflake*, tr. C. Hardie (Oxford: Oxford University Press: Oxford, 1976).

<sup>11</sup> For an overview, see I. Stewart, *Life's Other Secret: The New Mathematics of the Living World* (London: Allen Lane, 1998), 30-35; and for further details, R. Davey and D. Stanley, ‘All about ice’, *New Scientist* December 18, 1993, 33-37.

is moving upwards. This small quantity enters a cooler region of greater density than it has itself, and so is buoyed further upwards. The opposite applies to a falling quantity. Particles at the top of the liquid are constrained to move horizontally by top of the container.<sup>12</sup>

This explanation of how the convection cells arise does not appeal to any prior division of the liquid into cells or volumes. The complexity or order is explained in a way that does not beg any such questions.

(c) Amoebic behaviour: order over time

Sometimes the complexity or order to be explained has to be characterized in terms of the environmental relations of the system or object in question. A group of amoebae that whose supply of nutrients is reduced tend to aggregate into a single multicellular body. This environmentally described regularity needs explanation. The explanation involves the emission by starved amoebae of a chemical (cAMP) which attracts other amoebae to it, and causes them to emit the same substance.<sup>13</sup>

This explanation does not appeal to any principle that starved organisms tend to coalesce. No such principle is true. Even if it were, it would still need explanation of how organisms to which it applies succeed in coalescing. The correct explanation shows why the complex coalescence occurs without leaving a residue of unexplained complexity. It of course needs explanation why organisms displaying such complexity survive, and why this behaviour is adaptive; that is a good question, but a different one, and it can equally be answered. One needs both an explanation of how complexity occurs, and another – and different - explanation of why objects or organisms which display such complexity continue to exist and reproduce.

These three initial examples give a first fix on the notion of complexity or order, and what is needed for a satisfactory explanation of particular instances of complexity. The general phenomenon of order needing a certain kind of explanation has illustrations in

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<sup>12</sup>G. Nicolis and I. Prigogine, *Exploring Complexity: An Introduction* (New York: Freeman, 1989), pp.8-15.

<sup>13</sup> Nicolis and Prigogine, 31-36.



widely diverse areas. Illustrations range from the biochemical phenomenon of replication of a molecule, through biological phenomena of reproduction, to such economic phenomena as economic cycles of growth and recession. All of these involve a kind of order. All the satisfying explanations of these cases of order do not simply reproduce the complexity to be explained. But can we say something general about the nature of this complexity? What is it, and why does it have to have a certain kind of explanation?

The kind of complexity which needs explanation cannot be a matter of the improbability of the particular arrangement of particles whose distribution constitutes the complex state on a given occasion. The instantaneous distribution of particles at a given moment in a case of convection currents in Bénard cells is no less improbable than an equally detailed specification of the distribution of particles in a case of random Brownian motion. The same applies to sequence of such distributions over time. Correspondingly, the task of explaining this kind of complexity should not be described merely as the task of explaining the occurrence of the very improbable.

Nor does complexity consist in the objective improbability of the occurrence of the particular *kind* of arrangement of particles that makes us classify a case as one involving complexity. On the contrary: a good explanation of the six-fold symmetry of snowflakes shows that that kind of pattern is highly likely, almost inevitably, occurs. A good empirical explanation of the characteristic feature of a particular instance of complexity can hardly be one that shows the case is not one of complexity after all.

Both the preceding attempts to explain complexity in terms of improbability misarticulate what seems to me the correct account of the phenomenon exemplified in the initial examples. The improbability in question is apparent, rather than real. Complex phenomena are ones which instantiate kinds that are apparently improbable; but in fact there is an explanation of why those kinds are instantiated. The challenge is to say what the explanation is. An explanation must consist in showing how what seems unlikely can in fact come about with less difficulty than seemed to be the case. It may be almost inevitable, as with the symmetry of snowflakes. The explanation shows why the empirically possible - as opposed to geometrically possible - shapes for a snowflake all exhibit six-fold symmetry. All the examples of complexity their explanation that we have considered so far conform to this description: there is a wide variety of apparently

possible states for some object, event or process, but there is an explanation of why the actual instances all fall within some restricted, specifiable narrow range of this wide variety of apparently possible states.

The fact that all of the many undamaged snowflakes exhibit six-fold symmetry is evidence that there is some underlying uniform explanation. But frequency of occurrence should not be written into the characterization of what complexity is, or into the conditions under which we need an explanation of it. As Roger White remarked to me, even if there were only one snowflake ever in the universe, there could and would in fact still be an explanation of its six-fold symmetry. When complexity has an explanation, the explanation can apply equally whether the instances are frequent or whether they are rare.

The complexity which has an explanation (if it is not merely coincidental) is not a merely mind-dependent property. It is true that the six-fold symmetry of snowflakes is perceptually salient, and that Bénard cells correspond to perceptual groupings when they are illustrated. But complexity or order can exist, and we can have evidence that it exists and has an explanation, even when it is not perceptually salient. The Fibonacci series is widely exemplified in nature, so widely that it is plausible that there will be an explanation, or explanations, of why it is so. But one does not need to be able to perceive the locations or angles at which (for instance) new shoots grow as instances of the Fibonacci series for the phenomenon to need explanation. The instantiation of a complex property can have, and need, an explanation whether or not that property is perceptually salient. When there is an explanation of a complex property of some object or event, there is an explanation of why the object or event has a property which falls within a narrow range of the space of possible properties of that object or event. Shapes with hexagonal symmetry form a small subset of the geometrically possible shapes for a quantity of a frozen liquid. What needs to be explained is why the shape of actual snowflakes fall within that narrow subset. In this description of the task, neither what is to be explained, nor what it is to be an explanation of it, seem to me to be mind-dependent.

The notion of complexity I am using is not the only extant notion, nor the only significant one. Peter Godfrey-Smith, for example, explains a notion of complexity which

is intuitively a notion of heterogeneity, and puts it to good theoretical use.<sup>14</sup> This is just a different notion from complexity as a certain kind of order in the range of actual phenomena, which is the notion I am pursuing. The range of geometrically possible shapes which might be taken by a solid built from water molecules (independently of minimization of use of energy) goes vastly beyond those with six-fold symmetry. That is, it is more heterogeneous than the actual range of shapes of snowflakes, and so more complex in Godfrey-Smith's sense. But the actual range, with its orderliness, is more complex in the sense with which I am concerned, and which has been intended in the tradition in which Nicolis and Prigogine, for instance, are writing.

Any explanation of complexity as it is conceived here must explain more complex states by less complex states. An explanation which did not do so would not have shown how the apparently unlikely could easily come about, or could come about in less complex ways than one might have expected. If a proposed explanation simply reproduces the complexity to be explained, one will have explained the apparently unlikely in terms of the equally apparently unlikely. One will not have shown how the complexity could easily have come about. Similarly, in cases in which a complex kind is frequently instantiated, one will not have shown why it should be so frequently instantiated. I summarize this point in the 'Complexity Reduction Principle':

Genuine explanations of complexity explain the more complex in terms of the less complex; they reduce complexity.

In accepting the Complexity Reduction Principle as a constraint on good explanations, one is committing oneself to the intuitive principle that it rational, other things equal, to hold that things come about in easy, rather than more unlikely, ways.

That it is rational to hold that things come about in the ways they are more likely to seems to me an a priori principle. It is not something extracted from any particular science, but is presupposed in all empirical sciences.

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<sup>14</sup>See his *Complexity and the Function of Mind in Nature* (Cambridge: Cambridge University Press, 1996), at pp.24-28.

What various empirical sciences tell us is not that things tend to come about in the easier ways. Rather, they tell which ways are the easier ways. Which ways are the easier ways is a wholly empirical matter. Particular sciences may have surprises about which ways are the easier ways.

It is an objective matter how easy it is for an event or state of affairs of a given kind to occur in given circumstances. It is not an epistemic matter. In making judgements about easiness, we should be aiming to get this objective matter right. One way is an easier way than a second for a certain state of affairs to come about if the first way is exemplified in a wider range of initial conditions that could bring about the state of affairs – where this ‘could’ is empirically (rather than being the ‘could’ of pure metaphysical possibility). In assessing how easy it is for an event of a given kind to occur in given circumstances, we have to draw on all sorts of information about those circumstances. The easiest way for a piece of inanimate matter in outer space to move may be for it to be pushed by some other piece of matter, and not for it to be controlled by states with informational content. But for a piece of matter such as human arm, that we know is under the control of states with intentional content, the easiest way for it to move in given circumstances is for its owner to move it.

In giving examples of the explanation of complexity, I considered the illustrations provided by complex spatial patterns, by complex relational behaviour, and by complexity over time. In some cases, complexity is encoded or implicit in some relatively simply described state. Many psychological states with intentional content are like that. The state is simply specified by giving the kind of state in question, together with its intentional content. For a state to have a given intentional content, however, it must stand in an extremely complex network of relations to other states and to the subject’s environment. Any explanation of how the subject comes to be in that state, an explanation that accounts empirically for the presence of this complexity, must not simply presuppose similar intentional complexity.

It is for this reason that the spuriousness is so widely acknowledged of a purported explanation of someone’s ability to recognize his grandmother by postulating a ‘grandmother’ neuron. In fact the whole methodology described by Dennett in ‘Artificial Intelligence as Psychology and as Philosophy’ of explaining intelligent capacities in

terms of less intelligent ones can be regarded as the application, to the special case of certain psychological capacities, of the Complexity Reduction Principle.<sup>15</sup> This methodology, both in artificial intelligence and in psychology, involves the explanation of rich intellectual capacities in terms of the activities of subsystems involving progressively less intelligence, until we eventually reach a level at which the subsystems involved have no more capacities than can be explained in physical terms such as the firing of assemblies of neurons in response to certain patterns of stimulation of those assemblies. A purported explanation that contained an ineliminable violation of this reduction in intellectual capacities would also be a violation of the Complexity Reduction principle. It would be offering an explanation of some intellectual, or more generally content-involving, capacity in terms that presupposed that capacities of a similar degree of intellectual richness were already present. This would involve unreduced, unexplained complexity given the relatively uncontroversial premise that possession of some intellectual capacity is a complex state needing explanation. We can no more accept intellectual capacity as an unexplained, primitive feature of an organism than we could accept primitive, unexplained six-fold symmetry of certain arrangements of matter in a purported explanation of the shape of snowflakes.

In the case of evolutionary biology, the appeal to step-by-step evolution to explain such matters as the existence of as complex and subtle an organ as the eye, and more generally the ability of organisms to survive and reproduce equally involve an application of the Complexity Reduction Principle. Richard Dawkins is explicit about some aspects of this methodology (I have demurred from the point in the following passage about probability, which he himself later qualifies):

“A complicated thing is one whose existence we do not feel inclined to take for granted, because it is too ‘improbable’. It could not have come into existence in a single act of chance. We shall explain its coming into existence as a consequence of a gradual, cumulative, step-by-step transformations from simpler things...”<sup>16</sup>

Dawkins’ ‘could not’ here is not that of empirical implausibility, rather than that of metaphysical impossibility.

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<sup>15</sup> In his *Brainstorms* (Montgomery, Vt.: Bradford Books, 1978).

<sup>16</sup> R. Dawkins, *The Blind Watchmaker* (Harlow, Essex: Longman, 1986), p.14.

#### 4. *The Second Step: The Application to Perceptual Experience*

Consider a particular occurrence of a perceptual experience with an instance-individuated content that  $p$ . This is an event of considerable complexity. Its complexity is in part relational, in two respects.

First, to have this instance-individuated content that  $p$ , the experience must be of a kind which, when the subject is properly connected to the world, has its instances caused by the fact that  $p$  (or else it is derivatively instance-individuated), in the sense discussed earlier. The spatial and temporal experience of organisms, even relatively primitive ones, with well-developed perceptual systems, will in fact have many contents concerning spatial and temporal properties and relations that are instance-individuated in this sense. There is much about the particular experience under this first head alone that requires empirical explanation.

There is a second respect in which this experience displays a relational complexity. An experience with spatial representational content, for instance, must be one whose content is capable of contributing to its subject's conception of the spatial layout of the world around him. Without this, the experience would not amount to having a spatial content at all. The content of the experience must be capable of integrating with other spatial representations in confirming or disconfirming the subject's conception of the layout of the world. The same applies *pari passu* to the temporal contents of perceptual experience, and to their role in building up simultaneously the subject's conception of his history, and the history of the world around him. So in these spatial and temporal examples, the requirement of causal sensitivity to instances of the properties and relations represented as instantiated are only necessary conditions for a perception to have a content of one of these kinds. They are not sufficient conditions. These most recent holistic elements in the possession of spatial and temporal perceptual content all contribute further to the complexity of the property of having an experience with a given spatial representational content that  $p$ .

Taking both these kinds of complexity together, we have another case of complexity that needs empirical explanation; and the Complexity Reduction Principle will apply here too.

I suggest that the explanation of the occurrence of a perceptual experience with the instance-individuated content that  $p$  which most reduces complexity is that the experience is produced by a device which has evolved by natural selection to represent the world to the subject. This involves, other things being equal, the perceptual experiences produced in such a subject being predominantly correct. The occurrence of an experience with the representational content that  $p$  would hardly be a coincidence if its representational content held of the world, and the subject had a properly functioning perceptual system whose holistic complexities were adapted to its spatial embedding in the world. For a subject with such a perceptual system, its being the case that  $p$  would in the predominance of cases then explain the occurrence of an experience with whatever complex relational property is involved in representing it as being the case that  $p$ .

It is a relatively a priori truth that since subjects rely substantially on their perceptual systems in the formation of belief, there will be selection for roughly accurate perceptual systems. As always in evolution by natural selection, there are trade-offs. Some, perhaps considerable, inaccuracy may be traded for speed or range of representations. But perceptual states generated by a system produced and sustained by natural selection can be expected to be in large part correct in their representational contents.

The explanation by natural selection of the existence of roughly accurate perceptual systems reduces complexity. The explanation succeeds by citing states of affairs of lesser complexity than that which is to be explained. The explanation does not postulate the occurrence of other intentional states in the production of the perceptual experience. Nor does it postulate other unexplained states of the same relational complexity as those to be explained.

Why does the explanation of entitlement apply only to the contents of instance-individuated perceptual experiences? It would not be a satisfying answer to this question to say: "The entitlement does not, when we consider the cases intuitively, apply beyond the instance-individuated". If the proposed complexity-reduction explanation really were

to apply also beyond the instance-individuated cases, that would then constitute a serious objection to this theory. For by the lights of the complexity-reduction account, there ought also to be a corresponding purely perceptual entitlement in the cases of contents of experience that are not instance-individuated - when actually there is no such entitlement.

In fact it seems to be intrinsic to the complexity-reduction account that it applies only to the instance-individuated cases. The complexity displayed by experiences with instance-individuated contents is one which involves a causal sensitivity, when the subject is properly connected to the world, to instances of the very properties and relations represented in the experience. This is not true of those elements of the representational content of the experience which are not instance-individuated, such as *soldier*, *clock* or *computer*. It is neither necessary nor sufficient for an experience to represent someone as being a soldier, or something as being a clock, or a computer, that experiences of that kind be caused, when the subject is properly connected to the world, by soldiers, or clocks, or computers. It is entirely sufficient that the perceived features which also cause the subject to perceive something as a soldier, clock or computer be ones which the subject has evidence, good or bad, are sufficient for something to be a soldier, clock or computer, and whose sufficiency for this has been, by some general mechanism, absorbed into the content of the perception itself, so that things are perceived as being soldiers, clocks or computers. This is certainly an easy way for an experience to come to have the complex property of having a representational content involving these concepts *soldier*, *clock* or *computer*. This is an explanation which does not, in itself, imply that experiences with these representational contents are likely to be veridical. It is neutral on that issue (though it does not preclude that further arguments to that conclusion could be developed).

The same explanation could not, in the nature of the case, be given for the occurrence of experiences with instance-individuated contents. In these cases, it cannot be true that the perceiver has evidence (good or bad) that certain perceived features are sufficient for something's being straight, or curved, or, for instance, to be moving slowly. There is no further, more fundamental level of representational content of which it is true that things represented as being certain ways at that level of content are also, as an empirical matter, straight, or curved, or are moving slowly. We are, at the instance-



individuated level, already at the most basic level of representational content. There is nothing more primitive to fall back upon, and which might be merely empirically associated with these instance-individuated contents. This is why the complexity-reducing explanation that appeals to selection of roughly accurate perceptual mechanisms really is limited to the instance-individuated cases. For experiences with contents that are not instance-individuated, that need not be the explanation that most successfully reduces complexity.<sup>17</sup>

I will be arguing that the various skeptical hypotheses fail to reduce complexity. My thesis will be that it is not a good explanation, one reducing complexity, to suppose, in the absence of specific information to the contrary, that an experience with the complex property of having instance-individuated representational contents occur without their being predominantly explained by the correctness of those representational contents.

Skeptical hypotheses about the explanation of perceptual experience can be divided initially into two broad classes. There are those that hypothesize that some agent is intentionally causing non-veridical experiences. Descartes' evil demon and the scientist who controls your brain in a vat fall into this first class. The other class of hypotheses do not involve any intentional production of illusions, but suggest either random or coincidental physical events that result in combinations of matter that produce illusory experiences; or else they suppose, for instance, that the universe has always consisted of one or more envatted brains.

Skeptical hypotheses that postulate intentional agents as the source of the experiences cannot reduce complexity. If the agents producing the illusions themselves have experiences, complexity is manifestly not reduced. The explaining states are as complex as those whose complexity is in need of empirical explanation. If the agents have other complex attitudes, or attitude-like states, without having experiences themselves, these attitudes still display a form of relational complexity that needs empirical explanation. The emergence of propositional attitudes other than experience

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<sup>17</sup> On the perception of the expression of emotions, I've equally said that there is no fallback, more primitive level. This could be the starting point for a demonstration that the easiest way for these experiences to come about involves not just causation by instances, but involves the subject's capacity to experience the same emotion, and to express it.

can be given in evolutionary theory and its byproducts, in a way that does not leave a residue of empirically unexplained complexity.

The skeptical hypotheses as normally formulated do not offer such empirical, complexity-reducing explanations of the emergence of the attitudes of the deceivers. It would of course be possible to modify them to provide such an empirical explanation of the complexity of the hallucination-producer's own states. But if that is then counted as an improved explanation because it reduces complexity, it seems that a greater improvement would be made by not introducing the skeptical hypothesis in the first place.

What of the skeptical hypotheses in which the hallucinations are not intentionally produced? The aim of complexity-reduction in explanation is to show how the apparently unlikely can easily come about after all. This aim can hardly be met by the hypothesis of chance or coincidental motions of matter that produce hallucinations. This is to explain the apparently unlikely in terms of the genuinely unlikely.

What of the hypothesis that the universe has always consisted of one or more envatted brains? Although this does not involve an unlikely kind of event or a coincidence at a particular moment, this still involves initial conditions in the universe that are highly complex. Why should the initial conditions (vats producing hallucinations) involve conscious events with the complex relational properties we described? This remains a case of empirically unexplained complexity.

The hypothesis of a world in which there are and always have been permanently envatted brains does raise another challenge for the present account. Wouldn't it be true of such a world that the easiest way for a perceptual experience to occur is for it to be caused by stimulation of one of the brains in the vats? Such an experience would be a hallucination. Doesn't this point mean that the whole approach to explaining perceptual entitlement by means of the notion of the easiest way in which something can come about, and by Complexity Reduction, is undermined?

I agree that there is a reading under which it is true that in the world of permanently and eternally envatted brains, the easiest way for it to come about that a perceptual experience occurs will make that experience a hallucination. It would also completely undermine the present approach, or else lead to skepticism, if one were to

reply to this point by drawing on empirical knowledge that the world is not in fact that way. That response has two defects. First, it cannot fully explain the empirical entitlement for the knowledge that the world is not in fact that way – its status as knowledge is just taken for granted in this response, rather than being explained. In the face of the objection, appeal to the easiest way in which something can come about would be begging the question. Second, any such response would not leave the status of perceptual entitlement as relatively a priori. It would rather be empirical; and then it would not be clear how one could become entitled to believe anything about the observable world at all.

A better response is to distinguish between what can easily be the case, given that certain conditions hold, from what can easily be the case absolutely, without such relativization to certain conditions. The easiest way for it to come about that an experience occurs, given that the universe contains permanently envatted brains, is for one of these brains to experience a hallucination. It does not follow that the easiest way for a perceptual experience to occur, given no information about the conditions in the world, is for there to be envatted brains and for an experience to occur in one of them. That is precisely what I have been arguing against.

There are many other cases in which we would draw the distinction between the unrelativized and relativized statements of the easiest way for something to come about. Given that DNA molecules already exist, both in natural organisms, and in laboratories, the easiest way for a molecule of a specified type of DNA to come into existence is for one of the existing molecules to be copied, with a certain modification. Without relativization to the condition that DNA molecules already exist, the easiest way for the specified kind of molecule to come into existence is by some kind of chemical evolution.

There is similarly relativization to various conditions in statements of apparently non-epistemic, objective probabilities, for instance statements about radioactive decay. The objective probability that an alpha-particle will be emitted in a given time-interval from a given quantity of matter is greatly increased relative to the condition that the matter is plutonium, rather than being some naturally-occurring substance.

This relativization to specified conditions should not be taken to show that the notion of the easiest way for something to come about is epistemic. The relativization

merely cuts down the range of worlds one considers in assessing how easy it is for a given condition to be met. Within that restricted range, it is still a non-epistemic matter how easy it is for the condition to be fulfilled.

It is a claim of the unrelativized kind I intend when I say that the easiest way for a perceptual experience to occur is one in which it is unlikely to be a hallucination. The case for this claim, whether right or wrong, is made on philosophical grounds, and does not rely for its justification on empirical information attained by perception. There is no relativization in this claim to conditions which are known to hold only on empirical grounds.

It has been noted in several discussions of skeptical hypotheses, and emphasized particularly by Jonathan Vogel, that there are many arbitrary elements as these skeptical hypotheses are filled out in more detail.<sup>18</sup> There are so many ‘unexplained explainers’: why should someone want to deceive undetectably? What is their history? Why should there be these envatted brains from eternity? On the present account, this excess of unexplained explainers, this general lack of constraint, is a consequence of failing to respect the requirement of Complexity Reduction in good explanations. Once that requirement is abandoned, the proposed explanation of the occurrence of perceptual experiences may be arbitrarily baroque. By contrast, there is a parameter that is not adjustable on natural-selection explanations of the emergence of perceptual systems. The explanation, now, of the occurrence of a range of experiences with instance-individuated contents is that the world is, predominantly, as they represent it to be.

This talk of an excessive number of adjustable parameters in the skeptical hypotheses may remind one of the Akaike theorem about the distance from the truth of a family of curves in the curve-fitting problem.<sup>19</sup> Akaike’s measure of the distance from the truth of a family of curves contains a term  $2k\sigma^2$  where  $k$  is the number of adjustable parameters in the equation for the family of curves in question, and  $\sigma^2$  is the variance of

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<sup>18</sup> ‘Cartesian Skepticism and Inference to the Best Explanation’, *Journal of Philosophy* 87 (1990) 658-66.

<sup>19</sup> For an exposition for philosophers, see M. Forster and E. Sober, ‘How to Tell when Simpler, More Unified, or Less *Ad Hoc* Theories will Provide More Accurate Predictions’, *British Journal for the Philosophy of Science* 45 (1991) 1-35. See also Section 4 of E. Sober’s article ‘Simplicity (in scientific theories)’ in the *Routledge Encyclopedia of Philosophy* (London: Routledge, 1998).

the distribution of errors around the true curve. It may be tempting to elucidate all my talk of reduction in complexity in terms of reduction in the number of adjustable parameters in a range of theories. The Akaike result is of great interest, and there may be further connections to be elucidated between what I am talking about and his parameter  $k$  – but I do not think they can be quite the same thing. There is a sensitivity of the measure of the distance from the truth in Akaike’s measure only in the case in which  $\sigma^2$  is not zero – that is, in the case in which there are some errors in the data points. But as far as I can see, the intuitive notion of complexity reduction I have been emphasizing gets a grip even when we entirely prescind from errors in our data points. Even if we have a set of true statements about experiences, with no errors about which experiences are occurring, still there is a truth-related reason to prefer theories which reduce complexity – in this case, theories which explain the relational complexity of experiences. Skeptical hypotheses do have excessive numbers of parameters compared with their non-skeptical competitors, and in the case in which there are errors in our data about which experiences occur, a family of skeptical hypotheses will, other things equal, thereby be further from the truth than some families of non-skeptical hypotheses under the Akaike measure. But I do not think this gives us an account of what it *is* for a theory to fail to reduce complexity, as opposed to a consequence of such failure.

These claims I have made about the easiest way in which perceptual experiences with instance-individuated contents may come about seem to put me in disagreement with at least part of what is intended in two widely held theses about simplicity and confirmation. They are widely held amongst thinkers who disagree on much else. The first of these theses states that simplicity is irrelevant to confirming something as true. Bas van Fraassen, for instance, regards simplicity of a theory as a pragmatic virtue, one speaking specifically to human concerns. Of the pragmatic virtues in general, he writes that “In so far as they go beyond consistency, empirical adequacy, and empirical strength, they do not concern the relation between the theory and the world, but rather the use and usefulness of the theory; they provide reasons to prefer the theory independently of questions of truth”.<sup>20</sup> Lycan writes “Simplicity? Absence of mess? Why not prettiness and niceness? Why should these virtually *aesthetic* properties, which smack in any case

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<sup>20</sup> *The Scientific Image*, p.88

of laziness and corner-cutting, be thought to count in any way towards *truth* (John Keats notwithstanding)?”<sup>21</sup> One could quote many other writers to similar effect.

As an essential preliminary to considering this view, I suggest that we need to distinguish simplicity of an explanation from simplicity of a state of affairs. In particular, a simple explanation need not cite an explaining condition whose truth consists in a simple state of affairs. Under one of the no doubt many kinds of simplicity, a simple explanation is one that reduces complexity, in the way we have been discussing. In a good explanation the cited explaining conditions are, other things equal, less complex than those being explained in the sense of complexity I tried to elucidate earlier. The explaining condition in an explanation that reduces complexity may not be a simple state of affairs on all intuitive notions of simplicity. In fact, in some cases it would be problematic were it to be so. All of the following are simple states of affairs in an intuitive sense: the state of affairs of the northern half of a globe being entirely covered with ocean, and the southern half being entirely dry land; the state of affairs of a plane surface containing just one black square, the rest being entirely white; the emission of a particle of a given kind at regular one-second intervals by some quantity of matter. These are all orderly states of affairs. They would be counted as simple on the account of simplicity given by Elliot Sober.<sup>22</sup> In the sense of complexity we were relying on earlier, all of these simple states of affairs are complex! In the range of all possible states of the entities involved, they instantiate a distinctive property found in only some of those possible states. Such simple states meet the earlier characterization of complexity, and their occurrence requires explanation. For those who regard complexity as a kind of orderliness, given that simplicity is itself a kind of orderliness, it is clear that complexity and simplicity must in many, if indeed not all, cases overlap.

I have suggested that good explanations of the occurrence of complex states involve a reduction in complexity from what is to be explained to the explaining conditions they postulate. I suggest too that the reduction in complexity makes it more likely that such an explanation is true. There was a reduction in complexity, and corresponding simplicity of explanation, in the explanation of the six-fold symmetry of

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<sup>21</sup> *Judgement and Justification*, p.134

<sup>22</sup> E. Sober, *Simplicity* (Oxford: Oxford University Press, 1975).

snowflakes, of the existence of convection patterns in heated liquids, and in evolutionary explanations of the existence of complex capacities and organs. It is not credible that these explanations are preferred merely on pragmatic grounds, or as a matter of aesthetic preference. Nor is it credible that a proper preference for these explanations has nothing to do with truth. Insofar as simple explanations are ones that reduce complexity, the simplicity of an explanation is not something mind-dependent, or something speaking merely to human concerns. I am therefore in disagreement with those writers on simplicity quoted earlier if their views do entail that the simplicity of the explanations in the snowflake or Bénard cell examples is something mind-dependent.

The second extensively-held thesis about simplicity and confirmation with which I am committed to disagreeing is that the evil-demon hypothesis about the explanation of perceptual experience is equally well-confirmed as the real-world hypothesis. When what is to be explained is not just the occurrence of a series of experiences, but the occurrence of something with the complexity of the relations in which they must stand to have the representational contents they do, the evil-demon and other skeptical hypotheses, I argued, fail to reduce complexity. That is their defect, rather than failing to have the occurrence of the experiences in question as a consequence of their hypotheses.

Those who hold this second thesis sometimes see it as a result of their acceptance of the first hypothesis. Sometimes too skepticism is thought of as a consequence of the view that only truth-relevant considerations can contribute to the confirmation relation. William Lycan calls this view of confirmation ‘the spartan view’. He says

“It is also the spartan view that drives evil-demon scepticism about the external world: by hypothesis, the evil-demon theory makes exactly the same observational predictions as does the realist external-world theory, so both are equally probable or well-confirmed on our evidence, so we have not reason to believe the external-world theory to the exclusion of the other”.<sup>23</sup>

On the position I am defending, there can actually be acceptance of what Lycan

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<sup>23</sup> ‘Theoretical (Epistemic) Virtues’, in *Routledge Encyclopedia of Philosophy*, vol. 9, p.341; note also the emphasis in this passage on the explanation of the occurrence of the experiences, rather than the complexity of the relations in which they must stand. Crispin Wright, in a seminar at NYU, has also argued that the evil-demon hypothesis is equally well-confirmed as the real-world hypothesis.

calls the spartan view. What I do dispute is that the spartan view (that holds that only truth-relevant considerations are pertinent to the confirmation relation) must always omit anything to do with simplicity. If what I have argued is correct, the fact that an explanation reduces complexity counts in favour of its confirmation, because it is an explanation that does not make it hard or excessively improbable for the postulated explaining condition to be true.

5. *The Third Step: The Philosophical Explanation of Perceptual Entitlement*

The third step of the argument is that the preceding considerations in Steps 1 and 2 provide the philosophical explanation of a thinker's entitlement to take at face value the instance-individuated content of a perceptual experience. Explanations that reduce complexity are more likely, other things equal, than those that do not. What explains the entitlement in question is the fact that explanations of the occurrence of experiences with instance-individuated contents which succeed in reducing complexity will also result in the representational contents of those instance-individuated experiences being predominantly correct. Such representational contents are predominantly correct in the case that is most likely, that of the complexity-reducing explanation which appeals to the evolution of a perceptual system through natural selection.

The argument is open-ended in that I have not shown that explanations by natural selection of the existence of perceptual systems provide the only satisfactory explanation of complexity that succeeds in reducing complexity. I have not proved that there are no others: I have merely not been able to construct any. It is, however, striking that the wide range of skeptical hypotheses that have been presented over many centuries now do not succeed in reducing complexity. Complexity-reducing hypotheses other than those that lead to predominantly genuine perception of the world have not been easy to come by.

The complexity-reduction explanation of the entitlement to take certain perceptual experiences at face value has two properties that we should require of any such explanation. First, it is a priori. We have not appealed to empirical features of our external environment in the actual world in explaining why this entitlement exists. If the explanation had done so, it would have failed to explain why the (defeasible) transition



from instance-individuated representational content to judgement of the correctness of that content – or to a suitably related conceptual content – is itself an a priori transition, not resting on other empirical information.

Second, as required, the explanation explains the defeasibility of the entitlement. Complex states may in fact have complex explanations. What is less likely is not thereby impossible. Further information that makes it rational no longer to take a perceptual experience at face value is information which also shows that the complexity of the perceptual experience does not have a maximally complexity-reducing explanation.

Perceptual states have specifically representational (not merely intentional) content. In this they differ from states such as imagining or wishing, which have intentional content but not representational content. In being in a state with representational content, the subject of the state is thereby under the impression that the world is a certain way. Intuitively, it seems essential to the entitling character of perceptual states that their content is representational. But has this specifically representational character featured in the explanation offered at level 3 of perceptual entitlement?

This feature is playing an essential role in the explanation. The complexity-reducing explanation of the occurrence of perceptual states invokes the adaptive advantages of having roughly correct perceptual states. But this is an advantage only if the representational content of these states is indeed taken at face value. The states would have no adaptive advantage otherwise if their contents were not taken at face value. But it is only because they have representational content at all that perceptual states even have a ‘face value’.

Our task was to explain empirically the complexity of perceptual experiences with representational content. The kind of explanation possible for these states will not be available for states without representational content. For states without that sort of content, some additional mechanism, involving inference or some other operation, would have to be invoked before any adaptive advantage can be established. I should note that in making this feature of representational content part of the level-3 explanation of perceptual entitlement, I am assuming that it is a priori that perceptual experiences, in default of reasons to the contrary, tend to produce corresponding acceptance of their

representational contents. Only to the extent that this is a priori is the present explanation of perceptual entitlement also a priori.

It is one thing to hold that complexity-reduction and its consequences provide a level-3 explanation of the entitlement to make perceptual judgements in the case of instance-individuated experiences. It would be another, and in my view false, to claim that ordinary thinkers who make judgements in an entitled way must know that this is the explanation of the entitlement (or even to know these points about complexity-reduction without knowing that they explain entitlement). This is partially parallel to the case of valid transitions involving certain operators in logic. Ordinary thinkers are entitled to make certain transitions involving logical constants, or the counterfactual conditional, and so forth. They will recognize instances of certain transitions as valid, and others as invalid. It does not follow that they can state the explanation of why transitions of these various forms are valid or are invalid. For that, as we noted, a semantic theory is required.

One difference stands out from the logical case. A case can be made that ordinary thinkers have some form of tacit knowledge of the axioms of a semantic theory, have (as I would say) implicit conceptions whose content is that of the axioms of a recursive semantic theory. Ordinary thinkers have the following actual abilities: to evaluate certain sentences as true or as false with respect to certain circumstances; to assess certain argument forms as valid and others as invalid; to appreciate the validity of new primitive forms of transition. These abilities are best explained by the postulation of tacit knowledge of the semantic contribution made by an expression to the truth-conditions of the complex sentences in which it occurs.<sup>24</sup> But corresponding points do not apply to the explanation I have offered of the entitlement to take the contents of certain perceptual experiences at face value. What are the capacities or judgements of a thinker whose best explanation would be tacit knowledge of those points about complexity-reducing explanations? Of course thinkers will offer some kind of reaction when presented with skeptical hypotheses. But what they say in such circumstances is likely to have as little, or even less, to do with the explanation of why they are entitled to make perceptual judgements than the ordinary thinker's stabs at the formulation of grammatical rules have to do with the correct explanation of his grammatical and semantical competence. We

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<sup>24</sup> 'Implicit Conceptions, Rationality and Understanding', *Philosophical Issues* 9 (1998).

should note also that the level-3 explanations of entitlement have to do with the philosophical explanation of normative truths, rather than the explanation of empirical capacities.

What is the explanation of this difference between the logical case and the observational case? A straightforward answer is that the possession-condition for the logical concept requires the thinker to have an implicit conception with a certain semantic content, while there is no such requirement for the existence of an implicit conception on the part of the thinker in the possession-condition for the observational concept. This seems to me to be a true answer - but the worry motivating the question is likely to need more if it is to be allayed. The worry is likely to be that we need to have a closer relation between the rationality of a transition and the fact that a thinker makes it than I have provided for in my account of the third level for perceptual entitlement.

Here it seems to me important to avoid an illusion about the nature of the connection between the rationality of a judgement or transition and the fact that someone makes it. Consider a paradigm case of rationality of judgement, say a normal thinker's acceptance of the thought that  $31+1=32$ . Does he accept this *because* it's rational to do so? A full explanation of the rationality of this transition is a complex thing. In my view, a full explanation would mention the fact that the same principles involving '+' that we find primitively compelling are the ones which individuate the very function of addition on the natural numbers (by the recursion equations).<sup>25</sup> This philosophical explanation of the rationality is not anything the ordinary thinker knows. Nor is the philosophical explanation something that enters the content of what we tacitly know. There are no philosophical impressions or judgements made by the ordinary person for the explanation of which we need to postulate such tacit knowledge about the elucidation of the rationality of a judgement or a transition.

It is certainly legitimate to say 'We make the judgement because it's rational to do so'; but I suggest that this means roughly 'We are rational; and rationality here involves finding this content primitively compelling'. This does not imply that the fact that

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<sup>25</sup> See 'Explaining the A Priori: The Programme of Moderate Rationalism', in *New Essays on the A Priori* (Oxford: Oxford University Press, 2000), ed. P. Boghossian and C. Peacocke.

something is a content it is rational to accept enters the causal explanation of why we accept it.

If these points are correct, the connection between the rationality of a transition and the fact that someone makes it is as close in the perceptual case as it is in such a clear case of rationality as a simple arithmetic judgement. In the perceptual case, as in the arithmetical, rationality involves finding certain contents compelling (under the additional condition that perception is taken at face value in the observational case). In both cases, this is written into the possession-condition for the concept. In neither case does the philosophical explanation of the rationality of the transition or the judgement causally explain why one makes it.

We can now return to issues about the particular account of perceptual entitlement I offered. The argument I have developed applies only to experiences with instance-individuated representational contents. But is there not equally an entitlement to take at face value the content of experiences that represent something as a soldier, as a clock or as a computer? There certainly is such an entitlement as things actually are; but on my view that entitlement does not have the same source as the entitlement to take instance-individuated contents at face value. There can be more than one source of an entitlement to take a given component of the representational content of an experience at face value. In more detail, I would distinguish at least the following varieties of perceptual entitlement.

(1) There is *basic* perceptual entitlement, which exists for cases in which the thinker takes an instance-individuated content of an experience at face value.

(2) There is *sequentially corroborative* perceptual entitlement. As we noted earlier, a sequence of experiences, even a sequence with purely instance-individuated contents, can give a thinker additional entitlement to take its later members at face value, simply because the later members are as one would expect them to be if indeed the contents of the earlier members of the sequence are veridical.

(3) There is *informational* entitlement. This is a wide category, covering many different sub-types. In the case of contents that are not instance-individuated, a thinker may have memories, knowledge from which he can make inferences, testimony and any variety of background information and informational states that make it reasonable to

believe that what is in front of him is, say, a real computer, or a real clock, and not, for instance, a stage-prop. It is information of this breadth James Cornman was drawing on when he wrote "...a common explanation of why I have a visual experience of mail in my box, and, indeed, see this mail, is that a postman puts mail in my box in the morning whenever he has mail for my address, and this morning a postman had mail for my address...[...]...because it has remained there till now when I am looking in the box, I have now a visual experience of mail in the box..."<sup>26</sup>

Although informational entitlement for the veridicality of an experience can come from virtually any background knowledge, we ought to distinguish in thought between one's entitlement to think that one's environment is a certain way, and one's entitlement to think that it has come to be that way as a result of a certain history. One can be entitled to think, and can know, that one's environment is a certain way without having any idea of how it came to be that way. The principles one uses in establishing how one's environment came to be the way it actually is will involve general-purpose principles about testimony, memory and other sources of information that are not specific to one kind of conceptual content. Basic perceptual entitlement, by contrast, involves principles of entitlement that are specific to the instance-individuated content in question.

I suggest that as things actually are, we are indeed entitled to take a wide range of representational contents of our experiences at face value even when those contents are not instance-individuated; but this is so only because there is informational entitlement, in the sense displayed above, to take such contents at face value. This seems to me to correspond to an intuitive distinction. It is a highly intuitive position that while you can tell just by looking that some line is curved, you need more background information to be entitled to judge that the thing you see in front of you is designed to carry out the functions of a computer. You need yet more information to be entitled to accept a particular explanation of how there came to be a computer at that location.

This is one of the many points at which my position differs from those who offer entirely indiscriminating arguments to the effect that the best explanation of the occurrence of our experiences is that they are veridical. Bertrand Russell famously, and

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<sup>26</sup> *Skepticism, Justification and Explanation* (Dordrecht: Reidel, 1980), p.255-6.

admittedly briefly, developed such a position in *The Problems of Philosophy*.<sup>27</sup> As against his view, I do not think that there is any sound unrestricted argument, applicable to an arbitrary component of the representational content of experience, however theoretical, to the conclusion that the simplest explanation of why such experiences occur is that their contents are correct. Such a conclusion always needs some additional information when we move beyond the instance-individuated contents. This point applies equally to several other varieties of explanationist epistemologies.

A rather different kind of objection claiming that the account of perceptual entitlement I have given is too restricted appeals to a different kind of case. These are cases in which it is not plausible that the way in which the experience represents something involves further commitments like the *soldier* or *computer* case. The cases in question are also ones in which additionally, because the property represented as instantiated is regarded purely dispositionally, it is also not possible to hold that experiences in which the property is represented as instantiated are caused, in any cases, by its instantiation. Some have held such purely dispositional views of colour-properties, but a more plausible range of such cases is given by such a property as *sparkling*, as when one sees the sunlight sparkling on the lake. It is very plausible that there is a defeasible entitlement to take such experiences at face value. It is quite implausible that this entitlement relies on informational entitlement of the general kind mentioned in (3) above. For the light to be sparkling does not require the holding of further commitments about function, structure or the like that require additional information before there exists an entitlement to judge, on the basis of perceptual experience, that the light is sparkling on the water. Yet it is plausible to treat the property of sparkling as purely dispositional: it is no more than the property of producing such experiences as of sparkling in properly perceiving subjects. The same arguably applies to various taste properties, and certain other sensory properties. If that is so, then the presence of the pure disposition cannot be a causal explanation of manifestations of the disposition. It follows that experiences of something as sparkling are not instance-individuated in the meaning given, since that requires precisely such causal explanation when the perceiver is properly connected to

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<sup>27</sup> OUP: Oxford, 1973 reprinting, at pp.10-11.

the world. So the question arises of whether the entitlement to take such contents at face value has been accounted for adequately.

I think this entitlement does exist, and is purely perceptual; and that it can be captured consequentially under the present approach. It is a consequence of what I have been arguing that the thinker is entitled to accept, in the absence of reasons for doubt, that he is perceiving properly. But if he is perceiving, and has an experience in which some surface is represented as sparkling, then under the dispositional account of this property it will be true that the perceived surface is sparkling. So the thinker will in these circumstances be entitled to the judgement that the presented object is sparkling. This explanation draws, in the rationalist spirit, on the truth-condition for ‘That surface is sparkling’. This reasoning is available both to those who think that these dispositional properties involve some species of non-representational properties of experience, like the so-called ‘sensational’ properties of my *Sense and Content*, and to those who think that the relevant properties of experience are purely representational.<sup>28</sup> All that matters for the point is the dispositional nature of the property, not the nature of the properties of experience that are manifestations of that disposition.

As promised I note two extensions of the argument of this section so far. The First Extension is to a wider range of ‘as-if’ states. Suppose a state or kind S of event is individuated by the relations in which its instances stand to other events and objects. Suppose also that we can draw a distinction between genuine instances of the state S, instances that stand in the required relations, and ‘merely as if’ states or events which are in a quite specific sense qualitatively similar to and parasitic upon to those genuine instances. The ‘merely as if’ states do not stand in those relations as things actually are. They are also parasitic in the sense that they are given as states which, although they do not in fact stand in the required relations, it is as if they do. For illustration, we can use a helpful example of Crispin Wright’s.<sup>29</sup> Suppose, remarkably, a group of people ran around kicking a ball for 90 minutes, without any idea or intention of playing soccer, but engaging in the same bodily movements that would be involved in a game of soccer. We

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<sup>28</sup> *Sense and Content* (Oxford: Oxford University Press, 1983).

<sup>29</sup> C. Wright, ‘(Anti-)Sceptics Simple and Subtle: G.E.Moore and John McDowell’, forthcoming in *Philosophy and Phenomenological Research*.

can say that their movements are as if they are playing soccer, even though those movements do not have the right relations to their own and to others' mental states for it to be a game of soccer. Similarly, a visual hallucination does not stand in the right relations to things in the environment to be a genuine perception; but it is, subjectively, as if it were so related. On the way I will use the terms here, we will say that genuine soccer games and genuine perceptions are as-if states, though of course they are not merely as-if states.

The First Extension of the argument I propose then states this: in a significant range of cases, given just the information that an as-if state qualitatively similar to an instance of S occurs, the easiest way for this to be the case is for it to be a genuine instance of S, and not a mere as-if state. For it to be a genuine instance of S is the explanation that most successfully reduces complexity. Let us take Wright's soccer example again. (We will in fact end up with a very different position on the issues from Wright's, and I will eventually be drawing different conclusions from his own examples.) For the movements of a set of 22 people to replicate those of a soccer match without their having any idea of soccer is not metaphysically impossible. It would, however, involve a massive, extraordinary series of coincidences. An explanation that proposes that there is accidental replication of movements of the same kind as would occur in a real soccer match is a much less simple explanation than that they are playing soccer, and that their bodily movements are controlled by the intentions that are made understandable by their meaning to play the soccer.

It would not be a coincidence that the agents' movements matched those of a game in the other case Wright mentions, that in which they are under the control of a movie director who wants his movie to represent a game taking place. But the hypothesis, given only that people are moving as if playing soccer, that they are under the control of a movie director, seems to me more complex, to demand more of the world, than that they are simply playing soccer. It demands not just that the agents have the notion of soccer, but that they all be influenced by some further individual.

A Second Extension of the argument, which I leave as a thesis for development in other work, is that the argument of this paper is applicable to all non-conclusive a priori entitlement. The idea is that in every case in which we have a non-conclusive a priori



entitlement to make a certain judgement on the basis of certain states or evidence, this is so because the easiest way for those states to come about or for that evidence to obtain is for the content judged to be true. This would, for instance, assimilate the philosophical explanation of sound inductive argument to the same model that we have applied in the non-conclusive, defeasible perceptual case.

## 6. *Features of the Treatment*

(1) The approach does not say that it is a priori that hallucinations are rare, nor that an evil-demon world is impossible. Hallucinations may be frequent, and there are genuinely possible worlds in which there is a deceiving evil demon. The present position is only that the explanations of the experiences in those worlds do not reduce complexity in the way that complexity is reduced in the explanation that the experiences occur because they predominantly represent the world correctly, and occur in a perceptual system that has evolved by natural selection.

(2) The argument I have offered goes far beyond the very modest position which states that *if* we're going to commit ourselves to anything about the relations of experience to the nonmental world, the perceptual hypothesis is best, but that it is preferable outright just to remain neutral on whether the experience stands in any such relations at all. This very modest position is offering no explanation at all of the complexity involved in the occurrence of an experience with a representational content. The conclusion of our argument is not just that *if* we say anything at all about the environmental relations of the experience, then the explanation that most reduces complexity is one that entails that perceptual experiences are likely to be predominantly veridical. What needs explanation is that a perceptual experience with a certain representational content occurs at all, with the complex of relations to the nonmental world this requires in the case in which its subject is properly connected to the world (and the complex of relations to other mental states whether or not the subject is so connected). Remaining neutral on the experience's relations to the environment is no explanation of these relations at all. Correct application of the Complexity-Reduction

Principle takes us all the way from the mental world to the nonmental, unconditionally - though, as always, defeasibly.

If this approach is correct, it suggests that a widely-accepted dichotomy is false. The dichotomy is well-expressed by John Pollock, though he is by no means unique in accepting it. He writes:

According to internalism, the justifiedness of a belief is a function exclusively of internal considerations, so internalism implies the denial of both belief and norm externalism. That is, the internalist maintains that epistemic norms must be formulated in terms of relations between beliefs or between beliefs and nondoxastic internal states (e.g., perceptual states), and he denies that these norms are subject to evaluation in terms of external considerations.<sup>30</sup>

The argument I have offered suggests that what Pollock counts as an internal state, an experience as of something's being so, can in some cases give defeasible reason for thinking that something holds of the world outside the mind of the thinker. If this is so, norms formulated in terms of perceptual experience may help towards the fulfillment of goals which are formulated externally, in particular in terms of truth. If the dichotomy is false, the possibility opens up of a general accommodation of norms which mention internal states in Pollock's sense and an overarching aim of judging only what is true.

(3) If the argument of this paper is correct, the following passage from Daniel Dennett seems prescient. It concerns what Dennett calls 'skyhooks' – procedures, capacities or information that are not conceived as resulting from earlier selection processes and testing of the sort envisaged in natural selection. Dennett writes “The renunciation of skyhooks is, I think, the deepest and most important legacy of Darwin in philosophy, and it has a huge domain of influence, extending far beyond the skirmishes of evolutionary epistemology and evolutionary ethics.”<sup>31</sup> If the theses of the present paper are right, the Darwinian legacy is of significance even in the relatively a priori domain of theories about the normative notion of entitlement. This significance does not result from a confusing of the normative and the descriptive. Rather, the claim is that a proper

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<sup>30</sup> *Contemporary Theories of Knowledge* (Totowa, NJ: Rowman and Littlefield, 1986), p. 126.

<sup>31</sup> 'In Darwin's Wake, Where am I?', *Proceedings and Addresses of the American Philosophical Association* 75 (2001), at p.23.

philosophical explanation of certain truths about the normative – the entitlement relation – must be accounted for by the special explanatory status of Darwinian mechanisms.

(4) How can the Complexity-Reduction Principle be the basis of perceptual entitlement when, for instance, it seems to be so different from the notion of validity which underlies logical transitions to which one is entitled? I offer three remarks in reply. First, when we consider other transitions to which a thinker is entitled but which are not conclusive, moving to the least complex hypothesis seems to play a role. It would be hard to deny that in the entitlement to inductive inference by enumeration, supposing that not all F's are G when all the encountered F's are G is more complex than supposing that all F's are G. If we think such cases are to be explained as tacit inference to the best explanation, avoiding complexity still plays a part in the choice of hypothesis, and of what one takes as needing explanation. Second, I will be arguing below that a range of nonperceptual entitlements that involve relying on psychological states are also ones in which the Complexity-Reduction Principle is implicated. If this is right, the perceptual case is not unique. Third, if we see a spectrum of cases ranging from conclusive entitlement through strong but nonconclusive, to weaker nonconclusive cases, we can see conclusive entitlement as the special case in which the entitling grounds give a sufficient condition of truth without needing to appeal to complexity-reduction in our philosophical explanations. With the nonconclusive, complexity-reduction needs to be brought into the philosophical account, but it is still serving a purpose which is uniform across the conclusive and the nonconclusive cases - contributing to the determination of which grounds are really reasons for thinking something to be true.

(5) Some widely-discussed approaches in epistemology characterize normative notions in ways that seem to leave the challenge of explaining generalizations about perceptual entitlement unaddressed. A distinguished, well-known treatment is that of Alvin Goldman, in his book *Epistemology and Cognition*<sup>32</sup>. Goldman requires of a legitimate method only that it reliably produce truth in 'normal' worlds. He writes:

“Imagine, the objection goes, that our *actual* world turns out to be an evil demon world. (Or imagine that we are actually brains in a vat being deceived by scheming scientists.) Intuitively, our beliefs would still be justified; yet the belief-

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<sup>32</sup> Cambridge, Mass.: Harvard University Press, 1986.

forming processes being deployed are not reliable. Again the case is easy to handle. Its apparent strength rests on the assumption that the justificational status of the beliefs is determined by the reliability of their causal processes *in the actual world*. But this does not accord with our theory. Reliability is measured in normal worlds; and in this case, the actual world is an abnormal world!” (p.113).

So Goldman is classifying worlds in which the thinker is a brain in a vat as abnormal. Now I would not want to say that they are normal. But there seems to be a legitimate question: ‘Why should I rely on a method which yields true belief only in worlds which I haven’t, on Goldman’s theory, been given reason to think are actual?’ A more satisfying treatment must give the thinker some reason, if only a defeasible one, for thinking that he is not the brain in a brain-in-a-vat world. Otherwise, we will be back with skeptical conclusions. The Complexity-Reduction Principle aims to meet this need.

## 7. *Links and Applications*

(a) The Complexity-Reduction Principle is pertinent to wider issues about the relations between rationality and truth. It can be deployed in arguments over the issue of whether such notions as the default entitlement or default reasonableness of a method or rule can be elucidated in terms of its tendency to yield true beliefs. Hartry Field regards such an elucidation as “thoroughly implausible, on numerous grounds”.<sup>33</sup> One of his grounds is

“The standard ‘internalist’ criticism: it is implausible to hold that our methods (assuming them reliable in the actual world) would be straightforwardly unreasonable in a ‘demon world’ (a world designed to make those methods unreliable, but undetectably so).” (Op. cit., p.125).

The treatment I have been proposing still permits a truth-based elucidation of default reasonableness for the practice of taking certain experiential contents at face value. Although this method is certainly not productive of truths in a demon-world, we argued that that world provides a more complex explanation of why there are experiences than does a world in which there is no such demon. The default-reasonableness of taking

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<sup>33</sup> ‘Apriority as an Evaluative Notion’, in *New Essays on the A Priori*, at p.124.

certain perceptual experiences at face value can be elucidated in terms of the tendency of doing so to produce true beliefs in the worlds which have the least complex explanation of why such an experience occurs, the ones in which it comes about in an easy way that there is such a perceptual experience. This is only the first step in accounting for default reasonableness in terms of a more elaborate relation to the production of true beliefs: but it is an essential first step.

(b) On the present approach, a thinker is entitled, in the absence of reasons for doubt, to take certain perceptual experiences that represent it as being the case that  $p$  at face value, and to judge that  $p$ . In the right circumstances, this judgment can be knowledge. Under this account, the transition is from perceptual experience to knowledge. There is no reliance on a premise to the effect that this experience, or experiences of some kind under which it falls, is perceptual. If there were such reliance, it is not clear that perceptual knowledge would ever be possible at all. If the transition to perceptual knowledge were even partly inferential, it could yield knowledge only if the premises of the inference were also known. But how is the premise that this experience (or experiences of such-and-such a kind) are perceptions to be known? It is not known a priori. If it is known a posteriori, it must rest on other cases of perceptual knowledge. But how are these other cases of perceptual knowledge to be attained, if they themselves rely on some premise to the effect that the experiences they involve are perceptual? This way lies infinite regress. Entitlement will never be attained unless some perceptual entitlement is non-inferential.

Gilbert Harman has argued to the contrary, that what he treats as Gettier examples in the area of perception give us reason to say that ordinary perceptual beliefs are based on inference. He writes that “If we were to suppose that direct perceptual knowledge does not involve inference, these Gettier examples would require special treatment of an obscure sort”.<sup>34</sup> The kind of case Harman cites is that in which someone looks, has an experience as of a candle ahead of him, and comes to believe that there is a candle ahead of him. There is a candle ahead of him, but it cannot be seen because it is behind a mirror, which is reflecting a similar candle off to the right. This thinker is justified in believing that there is a candle in front of him, and the belief is true, but it is not knowledge.

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<sup>34</sup> *Thought* (Princeton, NJ: Princeton University Press, 1973), p.174.

Harman's diagnosis of why this is not knowledge is that the belief is reached inferentially, by a false premise about explanation. He writes of this thinker: "He infers that it looks to him as if there were a candle before him because there is a candle there and because of the normal connection between the way things look and the way things are. Since that explanation is essential to his conclusion but is false, he does not come to know that there is a candle before him even though his belief is justified and true".<sup>35</sup>

There is an alternative explanation of why the belief that there is a candle in front of him is not knowledge. This existentially-quantified content, that there is a candle in front of him, rests on a perceptual-demonstrative belief with the content 'That candle is in front of me', where the perceptual-demonstrative 'that candle' refers to the candle he sees – which is the one off to the right. But *that* candle, the one presented in his perception and demonstratively thought about, is not in front of him. So his existentially-quantified belief that there is a candle in front of him does rest on a false belief, about that candle. The false belief upon which it rests is not a hypothesis about the explanation of his perceptual state.

Far from this philosophical account of the example being of some obscure sort, this explanation of why the belief is not knowledge appeals to the same compelling principle that Harman himself identified and uses, the 'no false lemmas' requirement to the effect that a belief which is inferred from a false premise is not knowledge.<sup>36</sup>

If the mirror interposed between the subject and the candle reflected a second mirror, which in turn reflects that candle, then the subject's belief 'that candle is before me' would refer to the candle that is before him. The belief would be true, and the 'no false lemmas' requirement would not apply. But the defeasible entitlement to take perceptual experience at face value holds only in normal circumstances, and such an arrangement of mirrors makes the circumstances abnormal. This is not to imply that normality of the circumstances is a premise on which observational beliefs rest. On the

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<sup>35</sup> *Thought* p.174. Examples of this kind – though used for a different purpose – trace back at least to H. P. Grice, 'The Causal Theory of Perception', repr. in *The Philosophy of Perception* ed. G. Warnock (Oxford: Oxford University Press, 1967): see especially his example of the pillar ahead of the perceiver, obscured by a mirror which reflects a numerically different though similar pillar, at p.104.

<sup>36</sup> *Thought* Chapter 3, section 6.

contrary, if it were a premise, it would need empirical support – and regress would again be threatened. Quite generally, the conditions under which an entitlement exists should not be identified with premises used by the thinker in judging in accordance with that entitlement.

If perceptual knowledge is not inferential, that fact bears on the correct diagnosis of what is wrong with the most famous argument of G. E. Moore's 'Proof of an External World'.<sup>37</sup> Moore wrote, "I can prove now, for instance, that two human hands exist. How? By holding up my two hands, and saying, as I make a certain gesture with the right hand, 'Here is one hand', and adding, as I make a certain gesture with the left, 'and here is another'. And if, by doing this, I have proved *ipso facto* the existence of external things, you will all see that I can also do it now in numbers of other ways: there is no need to multiply examples."<sup>38</sup> This 'Proof' is sometimes criticized on the ground that Moore's own perceptual experience entitles him to judge 'This is a hand' only in the presence of the additional premise that his experience is produced (in the right way) by the external world.<sup>39</sup> Under this diagnosis, since this is what the skeptic is questioning, Moore's 'Proof' fails because its conclusion is already taken for granted in one of the argument's (suppressed) premises. If what I have said is right, this cannot be the correct diagnosis. Perceptual entitlement does not rely on such additional premises.

Does this mean that the present approach is committed to accepting Moore's 'Proof' as successful? Here we must distinguish between the existence of an entitlement, and having a dialectically effective reply to the skeptic. If there are not in fact any good reasons for Moore to doubt his perceptual experience, he is entitled to judge that he has two hands, and to move from this to the conclusion that material objects exist. Entitlement is preserved throughout Moore's line of thought.

If, however, the skeptic is challenging whether there really is an entitlement to rely on perceptual experience, then to offer Moore's reasoning and nothing more is to beg the question. One needs at the very least to say more about why there is an entitlement to

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<sup>37</sup> In Moore's *Philosophical Papers* (London: George Allen and Unwin, 1959), and reprinted in *G. E. Moore: Selected Writings*, ed. T. Baldwin (London: Routledge, 1993). Page references are to Baldwin's collection.

<sup>38</sup> 'Proof of an External World', pp.165-6.

<sup>39</sup> '(Anti-)Sceptics', op.cit..

rely on perceptual experience. If the skeptic has more specific grounds for doubt, those too must be addressed. The important point is that it is entirely consistent to acknowledge that Moore's argument should not by itself rationally convince the skeptic, whilst also holding that an entitlement to perceptual judgment is not a matter of inference.

For any given application we make of the earlier claims about entitlement, we can ask: is that application dependent only upon the first level of characterization, or does it additionally dependent upon the second level, or upon the third as well? If an application depends only upon a given level, that application is neutral on theses about the deeper levels. Theories that disagree on correct characterizations at the later levels may still agree on the application in question. In these initial remarks about the diagnosis of Moore's 'Proof', the application depends only on the idea that there is defeasible perceptual entitlement of a non-inferential nature. This particular application is not dependent upon any one theory of the second and third levels. Theorists who disagree about those levels may nevertheless agree on a diagnosis of Moore's 'Proof' which does not construe perceptual knowledge as inferential (and does not attribute that construction to Moore either).

(c) The generalization I formulated about the conditions under which a thinker is entitled to take for granted the representational content of his perceptual experience bears on the relationship between entitlement and factive states. I suggest that the generalization I formulated at level (2) supports the view that we can in some cases formulate the conditions under which a thinker is entitled to make a judgment in terms of his sensitivity to factive states, such as genuinely perceiving something to be thus-and-so, rather than formulating them in terms of a sensitivity to experiences whose content may or may not be correct.

Let us take an observational content  $Fa$ , and consider the conditions under which a thinker has a perceptual entitlement to accept it. We have so far been considering a defeasible rule, concerning the nonfactive state of perceptual experience (D):

(D) Nonfactive-defeasible:



A thinker is entitled to judge  $Fa$  if perceptual experience represents it as being so, where  $Fa$  is observational, in the absence of good reasons for doubting he is perceiving properly.

How should we formulate a rule that mentions a factive state? There may be an initial temptation to say this: a thinker is entitled tout court to judge  $Fa$ , where  $Fa$  is observational, if he perceives  $a$  (so given) to be  $F$ . That is, however, an implausible conditional when we consider the case in which the thinker is perceiving  $a$  to be  $F$ , but does not realize he is, and also has good (though misleading) grounds for thinking that he may well be hallucinating. In those circumstances, he is, contrary to this formulation, not entitled to judge that  $Fa$ , even though he perceives  $a$  to be  $F$ .

A better formulation of a rule involving a factive state is this Rule (O):

(O) Factive-outright:

When you perceive  $a$  (so given) to be  $F$ , then, if the question arises, judge that  $a$  is  $F$ .

What is the relation between the factive-outright rule (O) and the defeasible rule (D)? In the domain of rules in general – not just epistemic rules – we can distinguish between an objective rule and its subjective counterpart. The objective rule for making a chicken casserole has the form: obtain chicken and vegetables, then prepare them and cook them in a certain way. The subjective counterpart of this rule is: obtain what you believe to be chicken and vegetables, then do what seems to you to be preparing them and cooking them in the specified way. Someone who aims to follow the objective rule will also be conforming to its subjective counterpart, since doing so is the best he can do by way of trying to obey the objective rule. But the only rationale he would have for following a subjectively formulated counterpart rule is precisely that it would be a way he could hope to follow the objective rule. The subjective rule has no relevant rationale independently of that fact. A rule formulated in subjective terms that was not the reflection of some objective rule would, in particular, have no connection with the goal of making only true

judgements. For these reasons, the objective rule is explanatorily more fundamental than its subjective counterpart.

I suggest the same is true of the relation between the objective factive-outright rule (O) and the nonfactive-defeasible rule (D). The latter is the subjective counterpart of the former, and has a rationale only insofar as judging in accordance with it will respect the objective rule (O). The complexity of (D) is precisely what one would expect if the thinker were aiming to make his judgments sensitive to his genuinely perceptual states. It is not as if one would find intelligible a statement of perceptual entitlement that had defeating clauses relating not only to reasons for thinking that one is not perceiving properly, but rather to some other arbitrary condition not having to do with one's perceptual mechanisms. The practice of taking one's perceptual states at face value is the practice of taking it that they are delivering factual information about the world. Anything which makes it rational not to take them at face value must be something which undermines the proposition that one's senses are delivering factual information about the world.

This receives partial confirmation from the fact that the qualification in (D), that the thinker is entitled only if he has no reason for doubting he is perceiving properly, could not be replaced by something more general, to the effect that there is no reason for doubting that *Fa*. If that were a correct formulation of a principle about entitlement, one could never be entitled to set to rest one's doubts about whether it is the case that *Fa* by coming to perceive *a* to be *F*. One is frequently entitled to do just that. Doing so seems to be a paradigm of rationality. The fact that the qualification in the correct formulation of (D) concerns reasons for doubting that one's experiences are genuinely perceptual further highlights the fact that this defeasible condition is simply aiming to make judgments to which it counts one as entitled sensitive to whether one's experiences are genuine perceptions of the way the world is.

There is an argument that, under the level 2 generalization I formulated, the nonfactive-defeasible rule (D) and the factive-outright rule (O) are in a certain sense equivalent. That sense is that: a thinker is entitled to judge the observational content *Fa* in exactly the same circumstances whether he is following the defeasible rule (D) or the factive/outright rule (O).

We consider two cases, according as (1) the thinker does not, or (2) does, have reasons for doubting his perceptual states. In case (1), where the thinker has no reasons for such doubts, consider the case in which he judges that *Fa* by rule (D). Then, by our earlier arguments, he is entitled to assume he is in the circumstances with respect to which the observational content of his experience is individuated, and these, I argued earlier, are circumstances in which his experience is a genuine perception. So in the absence of reasons for doubt, our thinker is entitled to treat his experience as perceptual. Hence he will equally be entitled to judge that *Fa* if he is following rule (O).

Conversely, and trivially, if our thinker is entitled to judge *Fa* when following rule (O), he must be entitled to take it that he is perceiving, which he would not be if there were good reasons for doubt. So he will equally be entitled to judge *Fa* if following rule (D). If there were any reasons for doubting that he is perceiving, then he would not be entitled to judge *Fa* under rule (O) either.

In case (2), where the thinker has reasons for doubting that he is perceiving properly, he will not be entitled to judge *Fa* under either rule.

The argument could be refined, without essential alteration, to treat the case in which the thinker has reasons for doubting just certain of his perceptual states. We would just consider cases according as states with the perceptual content *Fa* are in the doubtful category.

The claim of equivalence for (D) and (O) will have analogues for other informational states in cases in which there are contents which stand to those states as observational content stands to perceptual states.

It is a plausible principle that what a thinker is entitled to judge, and what is justified and what is rational, depends only what seems to the thinker to be the case, and not on which factive states he stands in. The truth of this principle (if it is true) does not imply that principles of entitlement, justification and rationality cannot mention factive states.<sup>40</sup> It does not follow, because the thinker who responds to seeming-, non-factive states, may be doing so because he thinks or takes for granted that they are perceptual. The rules he is trying to follow may still mention factive states.

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<sup>40</sup> Contrast R. Wedgwood, 'Internalism Explained', forthcoming in *Philosophy and Phenomenological Research*.

If the claim of equivalence of (D) and (O) is correct, then at least some entitlement rules mentioning only non-factive states are equivalent to rules mentioning factive states. If the equivalence holds, it must be false that there are entitlements which are captured by rules mentioning non-factive states, but not by rules mentioning factive states.

(d) The above explanation of perceptual entitlement bears upon the theses of my book *Being Known*. There I argued that certain concepts can be individuated by the conditions under which certain contents containing them are not merely rationally judged, but are known. This was part of the ‘Linking Thesis’ of Chapter 2 of that work. The idea was, for instance, that the concept a Babylonian expressed by ‘Hesperus’ is distinct from the concept he expressed by ‘Phosphorus’ because there are certain circumstances in which he can come to know that Hesperus is *F* without thereby being in a position to know that Phosphorus is *F*. Now if a skeptic questions whether a thinker is entitled to take perceptual experience at face value, his skepticism will extend to this Linking Thesis too. If perceptual knowledge is not possible, it follows that it is not possible to know by perception that Hesperus has some property without knowing that Phosphorus has it. Much of the discussion of *Being Known* would then collapse. One would be left only with skeptical responses to the challenge of integrating metaphysics and epistemology, rather than the ones attempted in that book which aimed to show that we really do know much of what we think we know, and without weakening our conception of truth for the propositions in question.

*Being Known* thus presupposed that some answer to skepticism exists, without actually supplying that answer. I take the theses about perceptual entitlement at the third level of explanation to be the start of such an answer. They can be seen as a contribution to the task of explaining why, in the perceptual cases, the Linking Thesis is true. In a discussion essay written after *Being Known*, I spoke of a ‘Second Linking Thesis’, linking instance-individuation with entitlement and, thereby, with knowledge.<sup>41</sup> The theses at the second and third levels in the present work certainly say more than the Linking Thesis of *Being Known*. They are, however, contributions to the tasks of

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<sup>41</sup>‘The Past, Necessity, Externalism and Entitlement’, Contribution to a Symposium on *Being Known*, *Philosophical Books* 42 (2001) 106-17.

explaining the conditions under which the Linking Thesis is true, and of explaining why it is true, rather than being autonomous, additional theses.

The claims of the present paper also bear on the somewhat creaky discussion of the ‘rationally nondiscretionary’ in *Being Known*. The rationality of judging an observational content on the basis of perceptual experience requires the rationality of two things: the rationality of moving from the content of the perceptual experience to the content of the observational judgment (in theories under which these are distinct contents); and the rationality of taking perceptual experience at face value in the first place. What I have been offering is an explanation of why this second thing is rational; the approach of *Being Known* is incomplete without it.

(e) The existence of defeasible but non-inferential entitlement structures goes far beyond such cases as perception and the various forms of memory, and possibly testimony.<sup>42</sup> The existence of defeasible, non-inferential entitlement relations can also provide more room for maneuver in the philosophical account of some areas of moral thought. One example is provided by the discussion in an important recent paper by Allan Gibbard, ‘Normative and Recognitional Concepts’.<sup>43</sup> In the part of his paper concerned with ‘Thick Recognition’, Gibbard observes that one’s understanding of a situation may be ‘heavy with demands for action’ (p.163). One may, for instance, perceive an unjust act as demanding rectification. Such cases pose a problem for views that sharply separate how things are and what to do. Gibbard observes, acutely, that it would be completely unacceptable to think that the thing to do is to act on every impression that the situation demands a certain action. We are all subject to prejudices, and there can be illusions of demands. He says that “the principle we’d need to accept” in order to take the apparent demands as face value is “appalling” if it means we should act on any impression of any demand. His conclusion is that we should just take it as part of our situation that we have this sense, and this is “a psychological aspect, not plan-laden in itself” (p.164).

These cannot be the only two possibilities, if defeasible but non-inferential entitlement structures exist. Taking the seeming-demands of a situation at face value in deciding what to do may be something to which one is prima face entitled, an entitlement

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<sup>42</sup> On testimony, see Burge, ‘Content Preservation’.

<sup>43</sup> *Philosophy and Phenomenological Research* 64 (2002) 151-67.

which can be defeated if the seeming-demands are promoting a course of action one has reason to think is morally wrong. The “appalling” principle Gibbard cites is the analogue of the epistemically wholly unacceptable principle that one should always take perceptual experience at face value – even an experience one knows to be of a perfect *trompe l’oeil*, or knows to have an inconsistent content. Putting the fact that there are certain seeming-demands into the specification of one’s situation is the analogue, for the practical case, of the treatment of perception that says one has a premise to the effect that one is having an experience of a certain kind. That approach has made it impossible to see how perceptual knowledge could be attained. The believer in the importance of thick concepts can and should insist that the apprehension of demands for action should not be assimilated to a model that has proved unworkable in the perceptual case. The defender of thick concepts and their significance should invoke the structure of a defeasible, non-inferential entitlement relation. I am not necessarily endorsing this position: my point is just that defeasible, non-inferential entitlement relations makes available this position in logical space.

#### 8. *Further Extensions*

Some of the features of this account of perceptual entitlement generalize beyond perception to cases in which the direction of the relation of causation between world and mind is the opposite of that in perception. It is not crucial to the general form of the account of entitlement I outlined in the perceptual case that the entitling mental state be caused by the conditions to which one is entitled. The general structure of the account can still get a grip provided that the mental state is individuated by certain of its relations to the conditions mentioned in a statement of the entitlement. In my view, this applies in the case of action - as one might well expect from the many symmetries, now widely recognized, between perception and action.

For basic bodily action-types  $\phi$ , the mental event-kind of trying to  $\phi$  is individuated by the fact that events of that kind tend to produce  $\phi$ -ings, when the subject’s central control system is properly connected to his body. Now thinkers normally know what they are doing. In fact, they have a distinctive phenomenology of action. It

can seem to the subject that he is  $\phi$ -ing, and this apparent awareness can be present even in the subject who is acting with an anaesthetized or damaged limb from which there is no proprioceptive feedback (nor any illusion of such perceptual states). In such cases, the distinctive apparent awareness a subject has of his own actions seems to be a result of his tryings. The fact that he tries to  $\phi$  causally explains his impression that he is  $\phi$ -ing.

Some striking experiments by Tony Marcel suggest that apparent awareness of one's  $\phi$ -ing can be produced by one's trying to  $\phi$ , when one is not in fact  $\phi$ -ing, even if the limb employed is neither anaesthetized nor damaged.<sup>44</sup> The experimenter induces in the subject an illusion about the location of his hand. The subject is then asked to move his hand to a new location. This new location is chosen in such a way that for his hand to move to it from its actual present location, it has to move in one direction (clockwise, say); while it is in an opposite direction (anticlockwise) that it would have to move if his hand were at its apparent initial location. Subjects succeed in moving their hand to the new location, but they have the impression that they have moved it in the opposite (anticlockwise) direction, a direction in which of course they have not so moved it. The content of their trying (or some event causally related to it) seems to cause the content of their impression of action, even though the actual motor instruction issued requires, and produces, movement in the opposite direction.

The question then arises: how can this distinctive awareness yield knowledge, on the part of the subject, that he is acting a certain way? A reliabilist would say that in circumstances in which the agent does know, trying to  $\phi$  is reliably correlated with  $\phi$ -ing. But there are strong objections in other cases to pure reliabilism. Is there some explanation of how we have knowledge of what we are doing which is not dependent upon perception of ourselves, or upon proprioceptive feedback, but which does not involve a reversion to reliabilism? I suggest that there is, and that it relies on a generalized version of the principle on which we have relied in the account of perceptual entitlement. The event-type of trying to  $\phi$  is individuated by its relation to  $\phi$ -ings in the

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<sup>44</sup> See the description of his vibro-tactile experiments in his paper 'The Sense of Agency – Ownership and Awareness of Action' forthcoming in *Agency and Self-Awareness*, ed. J. Roessler and N. Eilan (Oxford: Oxford University Press, 2003). For further philosophical discussion of the issues, see also my paper 'Action: Awareness, Ownership and Knowledge' in the same volume.

case in which the agent's control center is properly connected with his body. The thinker is entitled to take it that he is in the circumstances with respect to which these event-types are individuated. (Again, an explanation in terms of complexity-reduction could be given of why he is so entitled; though the present argument for knowledge of action requires only that such an entitlement exists.) But in these circumstances, tryings to  $\phi$  do produce  $\phi$ -ings. The awareness that is produced by the trying to  $\phi$  can then, with entitlement, be taken at face value. In suitable circumstances, this can yield knowledge on the subject's part that he is  $\phi$ -ing. If we reject this approach, it would be a real task to explain philosophically how we have knowledge of actions we are performing, without reverting to reliabilism. One cannot simply apply the perceptual model straight, since as we saw, it is not the bodily action itself that causes the apparent awareness of action.

It is tempting to apply the same generalization to other cases too, outside the realm of perception and action. Consider, for instance, the entitlement to self-ascribe beliefs on the basis of one's own judgments. Judgment is individuated as an event of a kind which, when all is working properly, leads to belief. So one can explain how one can know what beliefs one has by making self-ascriptions that are sensitive to one's own judgments – even though this is certainly a fallible method. This explanation does not involve a reversion to pure reliabilism. The method is a rational one. Again too, one could develop an appeal to complexity-reduction to explain why the entitlement exists, given the complex relations an event must stand in if it is to be a judgment with a given intentional content.

At this point, there are many tasks for further work. Here are some of the questions which arise. Can every case of entitlement by a state with intentional representational content be assimilated to the present model, or to some natural extension thereof? If so, how? If not, why not? And if not, what is the correct explanation of entitlement for cases which no extension of the present model can capture? There is evidently massive further work to be done. But I do conjecture that entitlements that are rather different from that of the perceptual case, or any extension thereof, are possible



only because perceptual entitlement is also possible. The cases in which the Complexity-Reduction Principle applies are fundamental.<sup>45</sup>

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