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EPISTEMOLOGY OF THE OBVIOUS: A GEOMETRICAL CASE

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The aim of this paper is to cast some light on the circumstances in which one's finding something just obvious is an epistemically acceptable belief-state, perhaps a state of knowledge, even when the believer is unable to justify the belief. Using Peacocke's theory of concepts, I will argue that the relevant belief-state can result from the activation of reliable belief-forming dispositions which are due to the possession of certain concepts. The strategy is to concentrate on belief in a simple truth of Euclidean plane geometry and then to consider general implications. The layout of this paper between introduction and conclusion is as follows. Sections 2 and 3 set out the conceptual apparatus; section 4 uses the apparatus to explain the belief; section 5 concerns the epistemic appraisal of the belief; section 6 addresses the main Quinean objection.[1]

1. INTRODUCTION

Recall how Meno's slave is led by Socrates's questioning to see that the square on the diagonal of a given square has double the area of the given square.[2] Crucially, the questioning alludes to a diagram (Figure 1).

Of course, the questioning is not about the diagram, but about all geometrical squares arranged as the rough squares in the diagram. When Socrates's asks "Is this figure here equal to that?" indicating regions in the diagram, he is not asking the slave to read off a geometrical equality or inequality from his perceptual knowledge of the actual regions indicated. It would not matter if the actual regions were visibly unequal in shape and areas: Socrates's question might still be correctly answered in the affirmative. Whatever might be going on in a case like this, it is not a matter of empirical discovery, not knowledge by generalisation from the evidence of the senses.[3]

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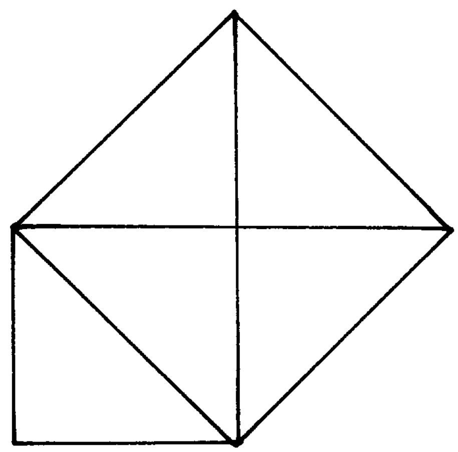

Figure 1.

Something more interesting is going on. Leaving aside the question of what exactly does go on when one makes a discovery this way, let us just note that when the final figure is before us, a simple move convinces us that the square on the diagonal does indeed have double the area of the original square: we count the basic triangles, the triangles congruent to the two in the original (horizontal-vertical sided) square either side of the indicated diagonal. Two compose the original square and four the square on the diagonal; four is double two; so . . .

This little piece of counting and reasoning is fine. But it yields the conclusion (that the square on the diagonal has double the area of the original square) only on the assumption that the triangles counted are themselves all of the same area. How do you know this? What makes you think it so? Part of the answer is that you believe that in a Euclidean plane[4] the triangles in a square either side of a diagonal are the same in area. Call that proposition θ.

[θ] The triangles formed from the sides and one diagonal of a square have the same area.

Why do you believe θ? If you are careful you might say something like this: 'The diagonal bisects the angles of the square at the corners through which it passes; the halves of each bisected angle belong one to each triangle; so the triangles are equal with respect to the size of an angle (half of one of the bisected angles), the length of an adjacent side (the diagonal), and the size of an adjacent angle (half of the other bisected angle); triangles which are equal with respect to angle-side-angle are congruent; so the two triangles are the same in area.'

Responses like this are sound. But they are implausible as answers to the question asked (Why do you believe θ?) when this is a request for an explanation of your believing something, as here, rather than a request for a justification for believing it. Sometimes one believes a proposition because one has accepted an argument for it, in which case giving the argument might be a way of both explaining and justifying one's believing the proposition. But the answer I have suggested is unlikely to be the whole explanation of your belief in θ. The focus of concern here is a belief state rather than the proposition believed. My belief state is such that proposition θ seems immediately and clearly true, i.e. obvious.[5] I assume that this is so for you as well. Now, if you were to believe θ only because you accepted the argument suggested, then θ would not seem immediately and clearly true; for (a) your recognising that θ is true would be mediated by your recognition of the soundness of the argument, and (b) θ would seem no clearer than the argument's least clear premiss, i.e. that triangles which have an angle-side-angle of equal size are congruent; but that premiss is surely not as clear as θ. That is why I think that your acceptance of an argument like this is unlikely to be the whole explanation of your believing θ, assuming you find θ obvious.

Even if you do not find θ simply obvious but believe θ only because of your acceptance of some argument, you will almost certainly have *some* belief in a proposition which strikes you as obvious, which you do not believe as a result of inference. So the questions that arise for most people over belief in θ will arise for you over some other belief, if not θ. What are these questions? First, there is a question of explanation:

> How can we explain one's believing θ in a way which accommodates the datum that θ seems obvious to the believer?

Secondly, there is an epistemological question:

> How are we to appraise the belief state epistemically? (Could it be knowledge?)

I link the explanatory question with the normative question because I think that an answer to the first might help us find an answer to the second. But why should we be concerned with the epistemology of this somewhat trivial geometrical truth? The fundamental concern here is the epistemology of the obvious. This is a non-trivial matter. All inferential knowledge must rest on some un-inferred beliefs; some of these may be perceptual beliefs, but others will be non-perceptual beliefs in propositions which, the believer feels, are just obvious. Their seeming obvious is not a guarantee of epistemic acceptability, for some propositions which once seemed obvious later turned out to be dubious if not false, e.g.

> Every event has a cause.
>
> The shortest distance between two points is a straight line.
>
> The extension of any mathematical predicate is a set.

When belief in the seemingly obvious is epistemically acceptable, what features of it make it acceptable? What distinguishes the acceptable from the unacceptable instances of the seemingly obvious? These are the general questions which motivate our particular investigation into the nature and epistemology of our belief in θ.

2. A PERCEPTUAL CONCEPT FOR SQUARES

My aim is to find answers to the two questions in terms of our possessing certain concepts. The two questions, recall, are:

How can we explain our believing θ and its seeming obvious to us?
What is the epistemic status of our belief in θ?

The idea is that our believing θ issues in a fairly direct way from our possessing certain concepts; and that this both explains θ's seeming obvious and makes our believing θ epistemically acceptable. The central concept for our purposes is a geometrical concept for squares. How to specify geometrical concepts is not at all straightforward. My guess is that we first acquire perceptual shape concepts and then derive geometrical concepts from the perceptual. Plato would disagree. Nonetheless, we will follow the conjectured order of acquisition: first specify a perceptual concept and then see if we can find our way to a geometrical concept from there. A convincing account of a perceptual concept for squares has been worked out by Peacocke.[6] I will now present that account, with an abbreviated explanation of the point of its various parts. Those familiar with this work should skip to the next section.

Let us accept that there is nothing more to a concept than what is determined by a correct account of what it is to possess the concept. In short, a concept's identity is determined by its possession-condition. Then we can specify a concept by giving its possession condition:

> The perceptual concept ⟨square⟩ is that concept C to possess which it is necessary and sufficient that . . . C . . .

where the open clause is some condition on the thinker involving C. As a first shot we might start to fill out the open clause by saying

> the thinker will believe of any object presented under perceptual-demonstrative mode m that C(m), whenever the object of m appears square to her . . .

This is inadequate because we have not made it clear how something can appear square to a person without that person having the perceptual thought that it is square, hence possessing a concept for squares. Thus there is a danger that the account of the condition for possessing a concept would include possessing that very concept! Clearly no concept could be individuated that way. This does not mean that we cannot use the concept ⟨square⟩ in specifying its possession condition; but it does mean that we cannot attribute possession of the concept to the thinker in specifying its possession condition. What is needed is an account of 'x appears square to y' which does not itself require that y has the concept we are attempting to specify.

Scenario Content

For this purpose we need to say what it is for something to appear square to a person in terms of the *non-conceptual content* of experience.[7] We shall use Peacocke's account of the non-conceptual contents of perceptual experience.[8] There are two components, scenario content and aspectual content. A *scenario* is a way in which perceptible features might be distributed in the space around the perceiver. Locations are given in terms of direction and distance from the perceiver. (The centre of the chest may serve as point of origin and lines through the origin in the directions up/down, left/right and front/back for the perceiver may serve as axes.) For each egocentrically given location the presence or absence of an edge or surface is given, its orientation (if present), together with perceptible qualities of colour, texture, hardness, temperature, and much else. One's experience may represent such a possible distribution of perceptible features around the perceiver – a scenario. This is a kind of content because it may be correct or incorrect: it is correct when the actual distribution of perceptible features around the perceiver instantiates the type of distribution of perceptible features which constitutes the scenario. Note that a scenario must not be confused with descriptions of it; in describing a scenario we are free to use any concepts we want; scenario-content is non-conceptual, but a description of scenario-content must employ concepts.

Now we can avoid the threat of circularity in specifying the condition for possessing the perceptual concept ⟨square⟩. For we can replace

> the thinker will believe of any object presented under perceptual-demonstrative mode m that C(m), whenever the object presented under m *appears square to her* . . .

by

> the thinker will believe of any object presented under perceptual-demonstrative mode m, that C(m), when the object presented under m occupies a square region of the scenario that the thinker's experience represents as instantiated around her . . .

Possessing a concept for *squares*, you may reject the thought that the object is square, even when it is apparently square to you in the sense just given, if you take your experience to be illusory. To accommodate this we simply add

> and the thinker takes her experience at face value.

Aspectual Content

Someone who has a concept for squares who perceives a square floor tile and who takes her experience at face value need not think that the tile is square if she perceives it in the diamond orientation. In such a case the tile does occupy a square region of the scenario that the experience represents as instantiated around her. So the condition is not as it stands a necessary condition for possessing a concept for squares.

When something is perceived as a diamond, one perceives a symmetry about its angle bisectors.[9] When something is perceived as a square, one perceives a symmetry about the bisectors of its sides. There is evidence that symmetries can be perceived without having a concept for symmetry.[10] Perceived symmetries, then, can belong to the non-conceptual content of experience. However, a scenario in which something occupies a square region will contain symmetries about both the angle bisectors and side bisectors; so an experience of a square in which only the angle bisectors are perceived, i.e. the shape appears as a diamond but not as a square, and an experience which differs only in that the side bisectors are perceived instead of the angle bisectors, will have the same scenario content. This difference has to belong to another component of non-conceptual content, which we might call *aspect*.[11]

The upshot for us is that in order to get a necessary condition we must take into account the possibility of perceiving a square region as a diamond but not a square; we should only expect a possessor of the concept to judge perceptually that a thing is square when she perceives it as having equal sides and as symmetrical about the bisectors of its sides. Thus we get the condition

> the thinker will believe of any object presented under perceptual-demonstrative mode m that C(m), whenever the object presented under m occupies a square region of the scenario that the thinker's experience represents as instantiated around her, and she experiences that region as having equal sides and as symmetrical about the bisectors of its sides, and she takes her experience at face value.

This does seem to be necessary for possessing a perceptual concept of *square*. But it is not in fact sufficient, because it does not take into account the possibility of judging something unperceived to be square. So we need to add another clause:

> for an object thought about under some other mode n, the thinker will believe C(n) just when she accepts that the object presented under n has the same shape as others she has experienced, where that is the shape perceptual experiences of the kind mentioned in the first clause represent objects as having.

If we conjoin these clauses, the result is a condition which is both necessary and sufficient for possessing a perceptual concept for squares. I will call this concept: ⟨square⟩.

3. A GEOMETRICAL CONCEPT FOR SQUARES

The Concept ⟨Perfect Square⟩

The perceptual concept ⟨square⟩ is a vague concept, that is, there may be things for which it is neither true nor false that they fall under the concept. Soho Square is square and Gordon Square is clearly not, but Russell Square is in the twilight zone. Among things which are clearly square, such as a floor tile or a CD case, we can sometimes see one as a better square than another – edges sharper, straighter or closer in length, corners more exactly rectangular and so on. Sometimes we can see a square, one drawn by hand for instance, as one which could be improved on and we can imagine a change which would result in a better square. This relation, the *better square than* relation, partially orders its relata – two squares may be incomparable – and its extension would be vague.

It can be part of the content of an experience of those having the concept ⟨square⟩ that one square is better than the other. It can also be part of the content of experience that a square is perfect. Since there is a finite limit to the acuity of perceptual experience, there must be maximally square regions of a scenario; it is beyond our powers to experience better squares than these *as* better. Parallel points apply for the non-conceptual experience of symmetry and equality of length. There are lower limits on perceptible asymmetry and perceptible differences of length i.e. asymmetry about an axis or difference in length which is so slight that it falls below the lower limit will be imperceptible; so there is maximum perceptual acuity for symmetry and equality of length. This means that there is a maximum degree to which a region of a scenario can be symmetrical about a given axis, and a maximum degree to which two edges in a scenario can be equal in length. When in an experience in which an object appears square[12] these maxima are reached, the object will be experienced as having perfectly sharp, perfectly straight edges, with absolutely no asymmetry about their bisectors and absolutely no inequality of length. In other words the objects will appear perfectly square.[13] Note that this allows that one can judge of something which appears perfectly square that it is not. Now we can say:

> The concept ⟨perfect square⟩ is that concept C to possess which it is necessary and sufficient that for any plane figure y, when y appears perfectly square to the thinker, [a] if she were to judge, of a plane figure x, that x has Σ (where Σ is the shape y appears to her to have), she would find it primitively compelling[14] that C(x), and [b] if she were to judge that C(x), she would find it primitively compelling that x has Σ.

No doubt there are other more sophisticated concepts expressed by the word "square" which qualify as geometrical concepts. But this works for basic geometrical knowledge.

If one has the propensity to find it compelling, for any x, that Gx, given that Fx, I take it that one would also find compelling the validity of the inference form 'Fx; so Gx', provided that one can represent this form. This in turn would make it compelling that every F is G, provided that one has a concept of restricted universal quantification. In what follows I assume that you satisfy these conditions for generalizing, i.e. that you can represent to yourself the relevant inference forms and that you have a concept of restricted universal quantification. Now suppose that an object y appears perfectly square to you and that you have the concept ⟨perfect square⟩. Then (calling the apparent shape of y "Σ") your believing of something that it has Σ will compel you to believe, without intervening reasons, that it is perfectly square; and your believing that it is perfectly square will compel you to believe, without intervening reasons, that it is of shape Σ. As you satisfy the conditions for generalizing, this means that you have the following belief-forming disposition:

(Sq) If something were to appear perfectly square to you, you would believe of its apparent shape Σ that whatever has Σ is perfectly square, and that whatever is perfectly square has shape Σ, without intervening reasons.

Symmetry

Let x and y be two plane figures having the same shape but differing in position, size, orientation, sense or some combination thereof. Then for any line (straight line segment) through x there is a corresponding line through y. What is *correspondence* here? Imagine y contracting or expanding uniformly until it is congruent with x; then imagine the contracted or expanded version of y moving so as to coincide with x. A transformation of this kind maps each line through y onto a line through x. So we can say: a line s through x corresponds to a line t through y if and only if such a transformation maps t onto s.

Now suppose you perceive a plane figure y as symmetrical about a line t through y, at a non-conceptual level. Let 'Σ' denote that shape which y appears to you to have and let us take it that you have relevant concepts of *same shape, same size* and *corresponds to*. Then, for any figure x you take to have Σ, you will find it primitively compelling that for some line s through x which would correspond to t through y were y as it appears, the parts of x either side of s are the same in size and shape. If in addition you satisfy the conditions which, from a disposition to find transitions of a certain form compelling, brings a correlative general belief, you will be convinced that for any x having Σ and any line s through x which would correspond to t through y were y as it appears, the parts of x either side of s are the same in shape and size. The belief is immediate because acceptance of it does not depend on reasons. Thus a possessor of the relevant concepts who satisfies the generalizing conditions will have the following belief-forming disposition:

(Sym) If a plane figure y were to appear to one perfectly symmetrical about a line t, one would believe that for any x having Σ (that shape y appears to have) and for any line s through x which would correspond to t through y were y as it appears, the parts of x either side of s are exactly the same in shape and size, without intervening reasons.

In what follows I restrict attention to thinkers who possess the relevant geometrical concepts and have the belief-forming dispositions designated (sq) and (sym). I also assume that the thinkers have concepts for perfect triangles and for diagonals.

4. EXPLAINING THE BELIEF STATE

Seeing Squares as Square Diamonds

Whether one perceives a square merely as a square or merely as a diamond or as both depends on which symmetries are perceived. A square figure drawn with a horizontal base on an otherwise blank surface will be perceived as a square but may not be perceived as a diamond, because this orientation usually causes the symmetries about the edge bisectors to be perceived, but not the symmetries about the angle bisectors. If a square is drawn on an otherwise blank surface standing on one of its corners, its sides at 45 degrees to the horizontal, the symmetries about the angle bisectors will normally be perceived, whereas the symmetries about the side bisectors may not. But in certain perceptible contexts or 'frames', squares at 45 degrees will be perceived as squares, because those contexts will cause us to perceive the symmetries about the edge bisectors.[15]

What happens if we first draw a square in the 45 degree position on an otherwise blank surface and then draw a frame around it at the same angle, as in Figure 2 read left to right? What may well happen is that something we see first see as symmetrical about its angle bisectors we come to see as also symmetrical about its edge bisectors and so as a square symmetrical about its angle bisectors. Or suppose we first see a square figure with a horizontal base on a blank surface. If we then draw a rectangular frame around it at 45 degrees, we may again come to see it as a square symmetrical about its angle bisectors. And I think the same can happen if we draw one

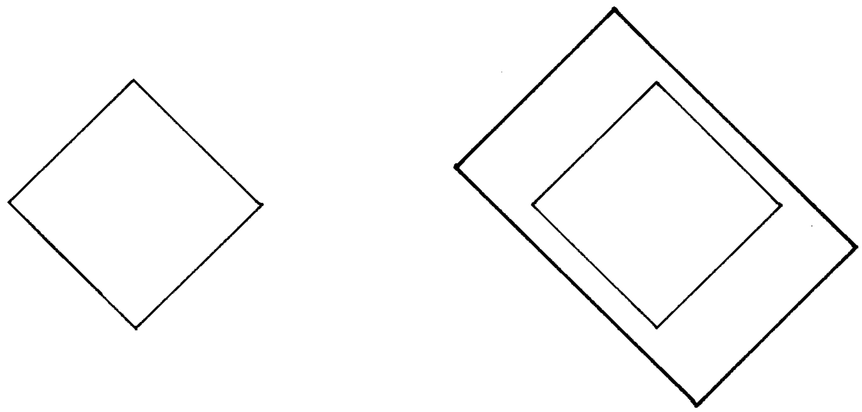

Figure 2.

of the diagonals of a horizontal square. In each of these three ways we can come to see a figure as a square symmetrical about its angle bisectors.

Since a diagonal is just that part of an angle bisector not external to the square, seeing something as a square symmetrical about its angle bisectors entails seeing it as a square symmetrical about its diagonals, possibly at the non-conceptual level of aspect perception. Again, seeing a figure as symmetrical about some axis is to see the parts of the figure either side of the axis as congruent, as the same in shape and size. So these ways of seeing something as a square symmetrical about its angle bisectors are ways of seeing it as a square whose parts either side of a diagonal have the same area. These remarks continue to hold for experiences in which the squares appear perfectly square, the symmetries appear perfect and the equalities of size and shape appear exact.

Effects of these Perceptions

Suppose that you possess the concept ⟨perfect square⟩ specified earlier, as well as relevant concepts[16] for (perfect) sameness of size, line-correspondence, diagonals and triangles, and the minimal awareness that brings the belief-forming dispositions, such as (Sq) and (Sym). Suppose that while in this state you have a perceptual experience of one of the kinds just described, so that you perceived some figure F as a perfect square perfectly symmetrical about its diagonals. Then, calling the shape that F appears to have 'Σ', the experience will cause you to believe this:

[1] Whatever has Σ is perfectly square and whatever is perfectly square has Σ.

The experience will cause you to believe this because you have the belief-forming disposition (Sq). As you also have the belief-forming disposition (Sym), you will be caused by the experience to believe this:

[2] For any x having Σ and any line s through x which would correspond to a diagonal of F if F were as it appears, the parts of x either side of s are perfectly equal in size.

But if these belief-forming dispositions are activated simultaneously by the same sense experience, one could be caused to believe, without active inference from [1] and [2], that

[3] For any perfect square x and any line s through x which would correspond to a diagonal of F if F were as it appears, the parts of x either side of s are exactly the same in size.

How is this possible? Let us distinguish between a belief state (believing that ϕ), the content of a belief state (the thought that ϕ), and a mental occurrence in which that thought is represented as true (thinking ϕ). Occurent thinking does not entail that one articulates the thought, but it does mean that there is some mental episode which is a thinking of that thought. Sometimes one acquires a belief without thinking it. Sometimes, however, one acquires a belief in being caused to think it. The type of visual experience described earlier can cause one to think [1] and [2], and as one has dispositions (Sq) and (Sym) one will be caused to think them with belief. Thinking [1] and [2] with belief will cause one to think [3]. This is because believing [1] includes a disposition to move in thought between 'having Σ' and 'being perfectly square' whenever one thinks a thought containing one of these and the other has been recently brought to mind – [2] contains the former and the occurrence of [1] brings the latter to mind. So this is how the experience can lead one to think [3]. This is different from active inference in the sense that the thinker does not direct attention to the logic of [1] and [2] and apply some rules or patterns of inference. One could reach [3] from [1] and [2], for example, by detaching the second conjunct of [1] and applying

$$\frac{\forall x Fx[Gx],\ \forall x Gx[\psi x]}{\forall x Fx[\psi x]}.$$

Nothing of this sort is going on in the kind of process described above. Instead there is a cascade of disposition activations initiated by the perceptual experience and ending with belief [3].

In just the same way the experience could cause someone who thinks [3] and has a concept for diagonals to think

[4] For any x having Σ and any diagonal s of x, the parts of x either side of s are perfectly equal in size.

This is because, when you perceive F as a perfect square perfectly symmetrical about its diagonals, you will find it immediate that a line through a perfect square x is a diagonal of x if it would correspond to a diagonal of F were F as it appears, given that you possess a concept for diagonals.

Again, if you possess a concept for perfect triangles as well, you will find it immediate that the parts either side of a diagonal of a perfect square are perfect triangles; and again I suggest that if the disposition which would produce this belief is activated by the same perceptual experience, one would be caused to believe without active inference

[5] The perfect triangles either side of a diagonal of a perfect square are exactly the same in size.

Thus you will be caused to believe proposition θ, or if you believed it already, that belief will be reinforced in you. One possible explanation, then, of one's having that belief is this: one has had an experience of the kind described one or more times while possessing (a) the constituent concepts of the belief and (b) a propensity to convert an inferential disposition into a corresponding general belief. Of course this is an explanation of a weak kind, it needs elaborating;

in particular one wants to have a clearer idea of the mechanism of automatic synthesis which results in beliefs normally reached step by deliberate step.

There are other possible explanations and it is likely that a variety of explanations are correct for different believers. A closely related possibility is one in which the triggering experience is of the kind described except that the figure is seen as a square but not a perfect square. In this case I suspect that one can again be caused to believe θ, but the route goes through visual imagination: perceiving the figure as a square symmetrical about its diagonals causes one to imagine a perfect square as perfect symmetrical about its diagnosis.[17] Thence the causal path is parallel to the one given. This may in fact be more common, though harder to investigate. But we confine our attention to the original possibility.

Obviousness

In the account just given, the believer did not make inferences;[18] in particular, θ was not inferred from other beliefs. Rather, certain belief-forming dispositions were activated in the thinker, and this resulted in new beliefs or strengthening of existing beliefs. Here I am supposing that when an experience triggers several belief-forming dispositions, certain links are made in the thinker (not *by* the thinker), resulting in the novel belief. We sometimes get a sense of this when, as we say, things suddenly 'fall into place', when we experience the 'Aha!' phenomenon. We seem to see the light all of a sudden, without any effort.

This kind of occurrence, I conjecture, can also produce a sense of obviousness. This I take to consist in a sense of immediacy, lucidity and certainty. In the case under discussion, the accompanying sense of immediacy results from the rapidity of the cascade of disposition activations and the total absence of inferences. No inferences mediate the relevant experiences and the acquisition of belief. In particular, those experiences are not taken by the perceiver as evidential data from which a conclusion is drawn. Rather, the experiences cause the belief, by activating certain belief-forming dispositions.

The sense of lucidity may result from the vividness, sharpness and stability of the experience which activates the belief-forming dispositions. The strength of these dispositions, which may depend on how frequently and how recently one has used the constituent concepts, may produce the sense of certainty. These considerations make it plausible that the explanation of belief given here can be elaborated to provide a full explanation of the accompanying sense of obviousness.

5. EPISTEMIC APPRAISAL

What about the epistemological question? How should we appraise a state of believing θ generated in the way described? I will argue that this way of reaching the belief satisfies a combination of externalist and internalist conditions which, on my view, yield knowledge. Even if fulfilling these conditions is not enough for knowledge, beliefs so arrived at might still have an important epistemic status akin to knowledge. This will be my assumption. The externalist condition is one of reliability. We look at this first.

Reliability

Is the way in which the belief state was reached reliable? If it was reached as described, it was the result of nothing but the activation of a number of belief-forming dispositions. Those are the belief-forming dispositions resulting from possession of the concepts which are constituents of the thought θ. So the question is: Are those belief-forming dispositions reliable?

A belief-forming disposition is reliable under this circumstance: if the antecedent conditions were realised, the beliefs mentioned in the consequent would be correct.[19] Recall first the belief-forming disposition that issues from possessing the concept ⟨perfect square⟩, along with the ability to represent the inference types involved and possession of a concept of restricted universal quantification:

(Sq) If something appears perfectly square to you, you will believe of its apparent shape Σ that whatever has Σ is perfectly square, and that whatever is perfectly square has shape Σ, without intervening reasons.

Recall that an object appears perfectly square to you when it appears square to you (see note 12 for a reminder) and you experience it as having perfectly sharp, perfectly straight edges, with absolutely no asymmetry about its edge bisectors and absolutely no inequality of edge lengths. So if an object r appears perfectly square and an object s actually is as r appears, s will actually be a square with perfectly sharp perfectly straight edges of exactly the same length, absolutely symmetrical about its edge bisectors. In other words s will be perfectly square. So (Sq) is reliable in the sense given: the beliefs mentioned in the consequent would be true if the antecedent condition were realised. The other belief-forming disposition spelled out earlier is

> (Sym) If a plane figure y appears to one perfectly symmetrical about a line t, one believes that for any x having Σ (the shape y appears to have) and for any line s through x which would correspond to t through y were y as it appears, the parts of x either side of s are exactly the same in shape and size, without intervening reasons.

Again, the reliability of this should not be hard to accept: when the antecedent is fulfilled, the beliefs mentioned in the consequent have got to be right. Finally, the reliability of the other belief-forming dispositions involved in the route to θ, those resulting from additional possession of concepts for perfect triangles and diagonals, is just a matter of checking. (I spare you the details. For the relevant dispositions see note 16.) Given that the checks reveal nothing amiss we have no reason to doubt the reliability of the described way of reaching θ.

Justification

The internalist conditions are conditions of justification. There are several grades of justification. A reliably acquired belief may be justified at the lowest grade by satisfying certain weak coherence constraints; the next grade up requires in addition that a fully explicit account of the way in which the belief was acquired (or re-inforced) could provide a justifying argument for the thought believed; a higher grade still requires that the believer is actually able to articulate a justifying argument.[20] On my view of propositional knowledge, a reliably acquired belief with the lowest grade of justification counts as knowledge. But I contend that the second grade of justification is achieved in this case.

Let α be a belief acquired by means of reliable belief-forming dispositions. Suppose one becomes aware of having beliefs inconsistent with α and of lacking grounds for greater confidence in α than in the beliefs inconsistent with it. In this circumstance it would be irrational to continue believing α (with full confidence). Another such condition would be having a rational conscious (but false) belief that the way in which α was acquired (and sustained) is unreliable. There are probably many other *defeaters*, conditions under which it would be irrational to come to believe a certain proposition or to continue to do so, though that belief was acquired by reliable means. A reliably acquired belief-state is justified (at the lowest grade) when there are no defeaters.

There is no good reason to think that avoiding defeaters is impossible or even difficult. The contrary thought probably results from a mistaken view of rationality requirements. An example is the common view that consistency of one's belief set is required for avoiding irrationality. (This is too harsh because it overlooks the possibility of arriving at a number of jointly inconsistent beliefs, each with high grade justification, when the inconsistency is extremely difficult to detect. In this case the believer would be unlucky but not necessarily irrational.) So it is possible, perhaps easy, to get a belief by activation of a reliable belief-forming disposition and keep it, in the absence of defeaters. Thus one may get belief θ in a reliable way and keep it without defeat. Such a belief state has the lowest grade of justification, and on some views this already suffices for its being a state of knowledge.

A higher grade of justification is achieved when, in addition, an articulation of the way in which the belief was acquired (or reinforced) would constitute or contain a justifying argument for the proposition believed. It seems plausible that this is true for θ acquired in the way described earlier. Substantiating this fully would take too long, but part of the story given in section 4 supports the contention: [1] and [2] entail [3]; [3] and a proposition about diagonals and a proposition about the appearance of F jointly entail [4]; [4] and a proposition about triangles and another proposition about the appearance of F jointly entail [5]. The argument would of course have premisses e.g. that inferences of certain types (those we find primitively compelling in possessing a certain concept) are valid. These premisses and the inferential steps of the argument do not involve anything contentious, to the best of my knowledge. It is plausible then that an argument of this sort justifying θ could be extracted from a fully explicit account of the mode of belief-acquisition sketched earlier.

To sum up this section: if one's belief that θ was acquired in the way described, it was reliably acquired; it has a low grade of justification provided that defeaters are absent; and it is plausible that it has a further kind of justification as well. Thus the belief state can have an epistemically valuable status, which on some views qualifies as knowledge. In what follows I will assume that this status makes a belief state epistemically acceptable.[21]

6. THE MAIN OBJECTION

If one first gets belief θ in the manner described, the causes are experiences with certain contents; but those experiences do not serve as reasons or grounds for belief, because the believing does not depend on the believer's taking the experiences to be veridical. It is enough that a figure F appear perfectly square to a possessor of the concept ⟨perfect square⟩ for her to believe that things shaped as F appears to be are perfect squares. She does not also have to take her experience of F to be veridical; she may on the contrary believe like Plato that nothing perceptible is a perfect square. So the experience does not furnish reasons or grounds for the belief. The same applies *mutatis mutandis* for the role of the experience of perceiving F as perfectly symmetrical about some line. Thus this way of acquiring belief θ is *a priori*, not in the sense that the belief state was causally independent of experience, but in the sense that no experience was used as grounds for the belief. In this sense epistemically acceptable beliefs may be *a priori*. If epistemic acceptability suffices for knowledge, there may be groundless *a priori* knowledge. If this is not contentious enough we can go further. Acquiring the belief θ this way depends only on the activation of dispositions which issue from possessing the constituent concepts of θ; we can therefore say that this is a conceptual belief which, if knowledge, is conceptual knowledge.

This will certainly meet resistance in some quarters: surely Quine showed that there is no such thing as analytic knowledge, knowledge by grasping the meanings of expressions, concepts or whatever? A full review of Quine's arguments would be out of place here, but let us spell out the objection. Any sentence we take to be true[22] might come to be rationally rejected as false in the light of experience, and there would be nothing which would make such an event a mere change of language and not also a change of theory. This applies to the sentence I used to express θ. It might get swept into the bin of falsehood in a systematic revision of our assignment of truth values to sentences in making best sense of experience. Thus the acceptability of our currently assigning it truth does depend on that assignment's compatibility with a total assignment which fits well with experience. In short, justifiably believing it depends on experience. So, the objection runs, our coming to believe θ in manner described earlier does not result in *a priori* knowledge or even *a priori* acceptability.

This objection involves an equivocation about *dependence*. One can say that justifiably believing something depends on experience, having in mind that it is rationally revisable in the light of experience. But one could also mean that justified acquisition of the belief must be based on experience, that there must have been some experience which was used as evidence in reaching the belief. The former means that the acceptability of holding on to the belief depends on the *absence* of countervailing experience; the latter means that the acceptability of getting the belief depends on the *presence* of supporting experience.[23] We could mark the distinction by saying that if a belief is rationally revisable in the light of future experience, its retention is *negatively dependent* on experience; and if a belief cannot have been justifiably acquired unless some experience was used as grounds in the process, its acquisition is *positively dependent* on experience. The final inference of the objection is, in effect, an inference from the negative experience-dependence of retention to positive experience-dependence of acquisition. Why should we accept this inference? Why assume that a belief which is vulnerable to experience cannot have been justifiably acquired in an *a priori* manner?

If a belief can be justifiably acquired without the use of experience as evidence for it, as is claimed here, it can also be justifiably retained without the use of experience as evidence for it, as long as the believer has no reason to question it. In such cases neither acquisition nor retention is positively dependent on experience. Thus there may be justified *a priori* retention as well as justified *a priori* acquisition of a true belief. If in addition the belief was reliably acquired it would be *a priori* knowledge, on some accounts of knowledge. All this is consistent with the claim that the belief is rationally revisable in the light of possible future experience.

You may still feel that conceptual knowledge would be analytic knowledge, and that as there is no such thing as analytic knowledge there cannot be the kind of conceptual knowledge purportedly illustrated here. But if one recalls the account of the conceptual way in which θ can be acquired, it is clear that no analysis of meanings, no deduction from definitions and no other type of intellectual operation on linguistic input is involved. If we may characterise broadly the type of input to the thinking suggested in my account, it is visual rather than verbal. It is true that the thinking depends on possession of concepts, but concepts on the view presented here are not linguistic entities. This is not to deny that one can use a word or phrase to express a concept, just as one can use a whole sentence to express to thought. But a concept is not essentially something expressed by a phrase in a language, and concept possession is not a linguistic ability or disposition. So the conceptual thinking described as a way of reaching θ cannot be assimilated to analysis of meanings. One can consistently accept this thinking *and* Quine's salutary warnings against the possibility of discovering non-linguistic truths by investigating linguistic usage.

7. CONCLUSION

If a non-perceptual belief in the seemingly obvious is epistemically acceptable (knowledge), what makes it so? It is not enough that we cannot imagine a counterexample, or cannot understand how a counter-example is possible, for this situation can arise when counterexamples are possible but beyond our current powers of comprehension. Extrapolating from the case studied here, what makes a non-perceptual belief in the seemingly obvious acceptable is that it issues from the activation of reliable belief-forming dispositions, dispositions due to the possession of concepts contained in the thought believed, when defeaters are absent and when the route to belief, if made explicit, would provide a justifying argument. That is my hypothesis about the epistemology of the obvious.

NOTES

[1] I would like to thank Paul Horwich, Michael Martin, Michael Resnik, Barry Smith and Jerry Valberg and an anonymous referee for helpful comments on earlier versions of this paper. I would also like to acknowledge a considerable debt to work of Christopher Peacocke.

[2] *Meno* (82b9–85b7). See Plato (1985) for the text with an excellent parallel translation and useful notes by R. Sharples.

[3] For defence of this claim see Giaquinto (1993).

[4] Henceforth I take this qualification as read.

[5] I am using the expression 'obvious' non-technically. On this use something that one understands but does not find obvious can later become obvious to one; also one may want to find a justification for believing something one finds obvious e.g. to make it rational for someone else to believe it.

[6] See Peacocke (1992), Chs. 3, 4.

[7] For a useful discussion of non-conceptual content see Crane (1992).

[8] Peacocke (1992) Ch. 3.

[9] Palmer (1982) §3.5.1. Michael Martin has suggested that perceiving something as a diamond involves perceiving one of its corners as an object-centered top. This may be an additional feature due to perceiving one of the angle bisectors as a vertical axis with an upward direction.

[10] Evidence comes from experiments done on perception of 'figural goodness'. See Garner (1974).

[11] This should not be confused with a similar component of the *conceptual* content of experience also called 'aspect'.

[12] Recall: an object appears square to one when it occupies a square region of the scenario that one's experience represents as instantiated around one, and one experiences that region as having equal sides and as symmetrical about the bisectors of its sides.

[13] Michael Martin suggests that *perfect squareness* might be better explicated in terms of focal squareness than maxima of perceptual acuity.

[14] You find some proposition *primitively* compelling for certain reasons just when your finding it compelling for those reasons is not in turn reason-based. In particular, if your believing A primitively compels you to believe B, then no intervening reasons are involved in your inferring B from A.

[15] These frame phenomena can be explained with reference to the following facts. Vertical and horizontal symmetries are more readily detected than diagonal symmetries; and those symmetries of the figure which coincide with vertical and horizontal symmetries are more readily perceived than those which do not. When

the figure is set within another figure, the symmetries of the inner figure most readily perceived are those which coincide with (the most readily perceived) symmetries of the containing figure. See Palmer (1983), §3.5.1.

[16] It would be unnecessarily wearing to work through possession conditions for these concepts here. All I am assuming about these concepts is that if their possessors have a concept of restricted universal quantification and can represent the constitutive inference forms they will have a couple of dispositions. These are (a) when the thinker perceives F as a perfect square perfectly symmetrical about its diagonals, she will find it immediate that a line through a perfect square x is a diagonal of x if it would correspond to a diagonal of F were F as it appears, and (b) she will find it immediate that the parts either side of a diagonal of a perfect square are perfect triangles.

[17] This would not appear to be a square separated from (and competing with) the seen square. Rather it would be a representation whose activation is involved in recognising the perceived figure as a square. See Kosslyn (1994), Ch. 5.

[18] Sometimes sub-personal transitions between information bearing mental states (which need not be thoughts) are described as inferences. Here the word 'inference' and its cognates are reserved for personal-level attention-directed moves between thoughts, moves taken by the thinker to be truth preserving.

[19] This account of reliability works for the dispositions under consideration, but not for all belief-forming dispositions. The basic idea is the same in other cases; the complications need not detain us.

[20] Perhaps the second grade of justification not internalist. But the first grade, involving coherence conditions on items the believer is current aware of, is internalist. So the view of knowledge assumed here mixes internalist and externalist requirements.

[21] The referee's comments on an earlier version of this section were particularly helpful.

[22] The intended sentences are those we might use individually; a conjunction of sentences composing an encyclopaedia of established beliefs would clearly not count here.

[23] What counts as countervailing and supporting experience for a claim is not determined by that claim alone. On a Bayesian response to Duhem's lesson, the degrees of confidence we have in other claims will be a factor.

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