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THE COHERENCE THEORY OF EMPIRICAL KNOWLEDGE

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In a paper written for a commemorative symposium on the philosophy of C. I. Lewis, Roderick Firth remarks that Lewis liked to confront his Harvard epistemology students with a fundamental choice between a foundation theory of knowledge based on 'the given', like that advocated so ably in Lewis's own books, and "a coherence theory like that of Bosanquet".[1] As Firth notes, there are many different philosophical views which have been called 'coherence theories', including theories of truth and of meaning; but what Lewis seems to have had primarily in mind is a coherence theory of *epistemic justification*: the view that the epistemic warrant or authority of empirical statements derives *entirely* from coherence and not at all from any sort of 'foundation'.[2] Since Lewis's strong version of foundationism is by now everywhere in eclipse, it seems appropriate to examine the Bosanquetian alternative.

The purpose of this paper is to explore, and tentatively defend, a view of the Bosanquetian sort, which I shall call "the coherence theory of empirical knowledge" (hereafter CTEK). As discussed here, the CTEK is not to be identified with any specific historical view, though it has obvious affinities with some. It is intended rather as an idealized reconstruction of a relatively pure coherence theory, one which avoids all versions of foundationism.[3]

Views like the CTEK, though often employed as dialectical bogeymen, have rarely been treated as serious epistemological alternatives, since they have been thought to be subject to obvious and overwhelming objections. Thus the essential first step in a defense of such a view is to provide a sketch of its overall shape and rationale and show on this basis that these supposedly fatal objections can be answered. Such a preliminary defense of the CTEK, aimed at establishing its epistemological viability, is the goal of this paper.

I

The main watershed which divides the CTEK from opposing epistemological

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views is a familiar problem which I shall call "the regress problem". This problem arises directly out of the justification condition of the traditional explication of knowledge as adequately justified true belief.[4] The most obvious way in which beliefs are justified is *inferential justification*. In its most explicit form, inferential justification consists in providing an argument from one or more other beliefs as premises to the justificandum belief as conclusion.[5] But it is obviously a necessary condition for such inferential justification that the beliefs appealed to as premises be themselves *already* justified in some fashion; that a belief follows from unjustified premises lends it no justification. Now the premise-beliefs might also be justified inferentially, but such justification would only introduce further premise-beliefs which would have to be justified in some way, thus leading apparently to an infinite, vicious regress of epistemic justification. The justification of one belief would require the *logically antecedent* justification of one or more other beliefs, which in turn would require the logically antecedent justification of still further beliefs, etc. The result, seemingly inescapable so long as all justification is inferential in character, would be that justification could never even get started and hence that no belief would ever be genuinely justified.[6] Any adequate epistemological position must provide a solution to this problem, a way of avoiding the skeptical result – and the character of that solution will determine, more than anything else, the basic structure of the position.

One can find in the epistemological literature three main strategies for coping with the regress problem as it applies to empirical knowledge.[7]

(i) The historically most popular solution has been what may be called 'strong foundationism', one version of the basic foundationist approach to epistemological issues. The basic thesis of foundationism in all of its forms is that certain empirical, contingent beliefs have a degree of epistemic warrant or justification which is non-inferential in character, i.e. which does not derive from other beliefs via inference in a way that would require those other beliefs to be antecedently justified. Strong foundationism is the view that the non-inferential warrant of these beliefs if sufficient *by itself* to satisfy the adequate-justification condition of knowledge and to qualify them as acceptable premises for the inferential justification of further beliefs. Thus these 'basic beliefs' constitute the 'foundation' upon which the rest of our empirical knowledge is based; the regress of justification terminates when such beliefs are reached.

Strong foundationism has many variants in recent philosophy which differ from each other in important ways, and many recent attacks on strong foundationism really apply to only some of these variants. One issue which divides these variants, is whether basic beliefs are, or need be, infallible, indubitable, and/or incorrigible, i.e. whether and to what extent they are subject to subsequent rejection in the way in which non-basic beliefs are.[8] A second issue is whether basic beliefs are always about subjective experience or whether they may sometimes be about ordinary physical objects. A third issue, perhaps the most important, is whether and how basic beliefs are themselves justified. The traditional view is Lewis's: they are justified by reference to 'given' experience (so that their justification is derivative from other cognitive or at least quasi-cognitive states, but not from further *beliefs*). But other proponents of strong foundationist theories have appealed instead to facts about language-learning or about the causal antecedents of the belief (facts which need not be known to the person for whom the belief is justified – on pain of further regress); and some philosophers have seemed to hold, paradoxically, that basic beliefs need not be justified at all in order to constitute knowledge and provide suitable justifying premises for further beliefs, that the issue of their justification 'does not arise'.[9] What all such views have in common is the idea that basic beliefs, if justified at all, are not justified via any sort of inferential appeal to further beliefs that would require those further beliefs to be justified and would thus unleash the regress.

(ii) The main traditional alternative to strong foundationism is the CTEK. In first approximation, the CTEK involves two main theses. The first is that *all* epistemic justification for individual empirical beliefs is inferential in character and hence that there are no basic beliefs and no foundation for knowledge. The second is the twofold claim (a) that the regress of justification does not go on forever, which would involve an infinite number of distinct beliefs, but rather circles back upon itself, thus forming a closed system; and (b) that the primary unit of epistemic justification is such a system, which is justified in terms of its internal coherence. The main historical proponents of the CTEK were the absolute idealists, though they tended at times to conflate (or confuse) the CTEK with a coherence account of *truth*. A similar view was also held by certain of the logical positivists, especially Neurath and Hempel.[10] Among contemporary philosophers views resembling the CTEK to some extent have been held by Quine, Sellars, and

others.[11] To most philosophers, however, the CTEK has seemed to be afflicted with insuperable difficulties.

(iii) The third view, a relative newcomer to the philosophical scene, amounts to an interesting hybrid of a foundation theory of knowledge with the CTEK; it may be called 'weak foundationism'. On this view, certain empirical beliefs ('initially credible beliefs') have a modicum of epistemic warrant which is non-inferential in character. But these beliefs are not basic beliefs, as that phrase was understood above, since their degree of non-inferential warrant is insufficient by itself to satisfy the adequate-justification condition of knowledge or to qualify them as acceptable justifying premises for other beliefs; this initial modicum of justification must be augmented by a further appeal to coherence before knowledge is achieved. Thus the solution to the regress problem is presumably (though this is seldom spelled out) that the regress moves ultimately in a circle, as in the CTEK, but that the warrant for the coherent system of beliefs which results derives *both* from coherence and from the non-inferential warrant of certain of its component beliefs. Versions of weak foundationism have been suggested by Russell and Goodman, and developed by Scheffler and, much more extensively, by Rescher.[12]

It is the regress problem which has provided the main motivation and much of the argumentative support for foundationist views. Most philosophers have thought that the CTEK was obviously incapable of providing an adequate solution to the problem and hence that some version of foundationism must be true. This argument by elimination has led them to overlook serious problems which pertain not only to particular versions of foundationism, but to the overall foundationist position itself.

II

The underlying motivation for the CTEK is the conviction that all foundationist accounts of empirical knowledge are untenable. The crucial problem is much the same for both versions of foundationism: what is the source or rationale of the non-inferential epistemic warrant which allegedly attaches to a basic belief (in strong foundationism) or to an initially credible belief (in weak foundationism)? If an empirical, contingent belief *B*, one which is not knowable *a priori*, is to have such warrant for a given person, it seems that he must have some *reason* for thinking that *B* is true or likely to

be true (the degree of likelihood required depending on whether *B* is held to be basic or only initially credible). And it is hard to see what such a reason could consist in other than the justified beliefs both (a) that *B* has some property or feature Φ, and (b) that beliefs having the property or feature Φ are likely, to the appropriate degree, to be true. Such justified beliefs would provide the basis for a justifying argument for *B*, and reliance on them would of course mean that *B* was not basic or initially credible after all. But how can a person be justified in accepting a contingent belief if he does not believe, and *a fortiori* does not know, anything about it which makes it at all likely to be true? A standard of epistemic justification which yields this result would seem clearly to have severed the vital connection between epistemic justification and truth, thus leaving itself without any ultimate rationale. It is for reasons of this sort that the CTEK holds that the justification of particular empirical beliefs is always inferential in character, and that there can in principle be no basic (or initially credible) empirical beliefs and no foundation for empirical knowledge.[13]

This picture of the CTEK, however, though accurate as far as it goes, is seriously misleading because it neglects the systematic or holistic character of the view. The best way to see this is to return to the regress problem.

Having rejected foundationism, the CTEK must hold that the regress of justification moves in a circle (or at least a closed curve), since this is the only alternative to a genuinely infinite regress involving an infinite number of distinct beliefs. But this response to the regress problem will seem obviously inadequate to one who approches the issue with foundationist preconceptions. For surely, it will be argued, such an appeal to circularity does not solve the regress problem. Each step in the regress is an argument whose premises must be justified *before* they can confer justification on the conclusion. To say that the regress moves in a circle is to say that at some point one (or more) of the beliefs which figured earlier as conclusions is now appealed to as a justifying premise. And this situation, far from solving the regress problem, yields the patently absurd result that the justification of such a belief (qua conclusion) depends on *its own* logically prior justification (qua premise): it cannot be justified unless it is *already* justified. And thus neither it nor anything which depends on it can be justified. Since justification is always finally circular in this way according to the CTEK, there can be on that view no genuine justification and no knowledge.

The tacit premise in this seemingly devastating line of argument is the idea

that inferential justification is essentially *linear* in character, involving a linear sequence of beliefs along which warrant is transferred from the earlier beliefs in the sequence to the later beliefs via connections of inference. It is this linear conception of inferential justification that ultimately generates the regress problem. If it is accepted, the idea that justification moves in a circle will be obviously unacceptable, and only *strong* foundationism will be left as an alternative. (Even weak foundationism cannot accept a purely linear view of justification, since its initially credible beliefs are not sufficiently justified to serve as first premises for everything else.) Thus the basic response of the CTEK to the regress problem is not the appeal to circularity, which would be futile by itself, but rather the rejection of the linear conception of inferential justification.[14]

The alternative is a holistic or systematic conception of inferential justification (and hence of empirical justification in general, since all empirical justification is inferential for the CTEK): beliefs are justified by being inferentially related to other beliefs in the overall context of a coherent system. To make this view clear, it is necessary to distinguish two levels at which issues of justification can be raised. Thus the issue at hand may be merely the justification of a particular belief, or a small set of beliefs, in the context of a cognitive system whose overall justification is taken for granted; or it may be the global issue of the justification of the cognitive system itself. According to the CTEK it is the latter, global issue which is fundamental for the determination of epistemic justification. Confusion arises, however, because it is only issues of the former, more limited, sort which tend to be raised explicitly in actual cases.

At the level at which only the justification of a particular belief (or small set of such beliefs) is at issue, justification appears linear. A given justificandum belief is justified explicitly by citing other premise-beliefs from which it may be inferred. Such premise-beliefs can themselves be challenged, with justification being provided for them in the same fashion. But there is no serious danger of a regress at this level since the justification of the overall epistemic system (and thus of at least most of its component beliefs) is *ex hypothesi* not at issue. One thus quickly reaches premise-beliefs which are dialectically acceptable in that context.

If on the other hand no dialectically acceptable stopping point is reached, if the premise-beliefs which are offered by way of justification continue to be challenged, then the epistemic dialogue would, if ideally continued,

eventually move in a circle, giving the appearance of a regress and in effect challenging the entire cognitive system. At this global level, however, the CTEK no longer conceives the relation between the various particular beliefs as one of linear dependence, but rather as one of mutual or reciprocal support. There is no ultimate relation of epistemic priority among the members of such a system and consequently no basis for a true regress. The component beliefs are so related that each can be justified in terms of the others; the direction in which the justifying argument actually moves depends on which belief is under scrutiny in a particular context. The apparent circle of justification is not vicious because the justification of particular beliefs depends finally not on other particular beliefs, as in the linear conception of justification, but on the overall system and its coherence.

Thus the fully explicit justification of a particular belief would involve four distinct steps of argument, as follows:

1. The inferability of that particular belief from other particular beliefs, and further inference relations among particular beliefs.
2. The coherence of the overall system of beliefs.
3. The justification of the overall system of beliefs.
4. The justification of the particular belief in question, by virtue of its membership in the system.

According to the CTEK, each of these steps depends on the ones which precede it. It is the neglecting of steps 2 and 3, the ones pertaining explicitly to the cognitive system, that is the primary source of the linear conception of justification and thus of the regress problem. This is a seductive mistake. Since the very same inferential connections between particular beliefs are involved in both step 1 and step 4, it is fatally easy to conflate these two, leaving out the two intermediary steps which involve explicit reference to the system.

Of the three transitions represented in this schematic argument, only the third, from step 3 to step 4, is reasonably unproblematic, depending as it does on the inferential relations that obtain between the justificandum belief and other beliefs of the system; in effect it is this transition that is made when an inferential justification is offered in an ordinary context. But the other two

transitions are highly problematic, and the issues which they raise are crucial for understanding and assessing the CTEK.

The transition from step 1 to step 2, from the inference relations obtaining between particular beliefs to the coherence of the system as a whole, is rendered problematic by the serious vagueness and unclarity of the central conception of coherence. It is clear that coherence depends on the various sorts of inferential, evidential, and explanatory relations which exist among the members of a set of propositions, expecially upon the more systematic of these. Thus various detailed investigations by philosophers and logicians of such topics as explanation, confirmation, etc., may be taken to provide some of the essential ingredients of a general account of coherence. But the main job of giving such a general account, and in particular one which will provide a basis for *comparative* assessments of coherence, has scarcely been begun.[15] Nevertheless, while the absence of such an account represents a definite lacuna in the CTEK, it cannot provide the basis for a decisive or even a very serious objection to the theory. This is so because coherence (or something very closely resembling it) is, and seemingly must be, a basic ingredient of rival epistemological theories as well. We have already seen that weak foundationism makes an explicit appeal to coherence. And it seems that even strong foundationism must appeal to coherence if it is to make sense of knowledge of the past, theoretical knowledge, etc. In fact, all of the leading proponents of alternatives to the CTEK employ the notion of coherence (sometimes by other names[16]) in their accounts.

Thus the problem of giving an adequate account of coherence is one which may safely be neglected by the sort of preliminary defense of the CTEK which is offered here. There are, however, some essential points concerning the concept which should be noted. First, coherence is not to be equated with consistency. A coherent system must be consistent, but a consistent system need not be very coherent. Coherence has to do with systematic connections between the components of a system, not just with their failure to conflict.[17] Second, coherence will obviously be a matter of degree. For a system of beliefs to be justified, according to the CTEK, it must not be merely coherent to some extent, but more coherent than any currently available alternative.[18] Third, coherence is closely connected with the concept of explanation. Exactly what the connection is I shall not try to say here. But it is clear that the coherence of a system is enhanced to the extent that observed facts (in a sense to be explicated below) can be explained within it

and reduced to the extent that this is not the case. Since explanation and prediction are at the very least closely allied, much the same thing can be said about prediction as well.

The problems relating to the other problematic transition in the schematic argument, that from step 2 to step 3, are more immediately serious. What is at issue here is the fundamental question of the connection between coherence and justification: why, if a body of beliefs is coherent, is it thereby epistemically justified? The force of this question is best brought out by formulating three related objections to the CTEK, centering on this point, which are usually thought to destroy all plausibility which it might otherwise have:

(I) According to the CTEK, the system of beliefs which constitutes empirical knowledge is justified *solely* by reference to coherence. But coherence will never suffice to pick out one system of beliefs, since there will always be many other alternative, incompatible systems of belief which are equally coherent and hence equally justified according to the CTEK.

(II) According to the CTEK, empirical beliefs are justified only in terms of relations to other beliefs and to the system of beliefs; at no point does any relation to the world come in. But this means that the alleged system of empirical knowledge is deprived of all *input* from the world. Surely such a self-enclosed system of beliefs cannot constitute empirical knowledge.

(III) An adequate epistemological theory must establish a connection between its account of justification and its account of *truth*; i.e., it must be shown that justification, as viewed by that theory, is *truth-conductive*, that one who seeks justified beliefs is at least likely to find true ones. But the only way in which the CTEK can do this is by adopting a coherence theory of truth and the absurd idealistic metaphysics which goes along with it.

Of these three objections, (III) is the most basic and (I) is the most familiar. It is (II), however, which must be dealt with first, since the answer to it is essential for dealing with the other two objections. Fundamentally, the point made in (II) must simply be accepted: there must be some sort of input into the cognitive system from the world. Thus the answer to (II) must consist in

showing how the CTEK can allow for such input. I shall attempt to lay the groundwork for this in the next section by offering a schematic account of how the crucial concept of *observation* fits into the CTEK, following which I shall return in the final section to the objections.

III

It may be thought that the suggestion that there is room in the CTEK for an appeal to observation involves an immediate contradiction in terms. For surely, the argument might go, it is essential to the very conception of observation that observational beliefs are *non-inferential* in character; and it is equally essential to the conception of the CTEK, as explained above, that *all* justified beliefs are *inferential*. Thus the CTEK can accord no significant epistemic role to observation (which surely constitutes an immediate *reductio ad absurdum* of the theory).

But this argument is mistaken. It rests on a confusion between two quite different ways in which a belief may be said to be inferential (or non-inferential). In the first place, there is the issue of how the belief was arrived at, of its *origin* in the thinking of the person in question: was it arrived at via an actual process of reasoning or inference from other beliefs or in some other way? In the second place, there is the issue of how the belief is *justified* or *warranted* (if at all): is it justified by virtue of inferential relations to other beliefs or in some other way? Thus there are two distinct senses in which a belief may be inferential (and corresponding senses in which it may be non-inferential). And the immediate force of the above objection rests on a failure to distinguish these senses, for it is in the *first* sense (inferential or non-inferential *origin*) that an observational belief is paradigmatically non-inferential; while it is in the *second* sense (inferential or non-inferential *warrant*) that the CTEK insists that all justified beliefs must be inferential. And there is nothing absurd about the idea that a belief might be arrived at in some non-inferential way (e.g., as a hunch) and only subsequently justified, via inference.

Proponents of the foundation theory will no doubt argue that this distinction at best only momentarily staves off the force of the objection, since observational beliefs are in fact non-inferential in both senses, even if somewhat more obviously so in the first sense, so that the contradiction remains. The CTEK, on the other hand, holds that observational beliefs are

non-inferential in only the first sense, that their epistemic authority or warrant derives from inferential relations to other beliefs and thus ultimately from coherence, in the way outlined above. The immediate task here is to elaborate this latter view by showing in some detail how the justification of observational beliefs might be plausibly viewed as deriving from inference. In doing so I shall neglect, for the moment, the systematic dimension of coherence and concentrate more narrowly on the inferential relations which pertain immediately to observation, according to the CTEK.

It is best to begin by considering some examples before attempting a more general account. Consider, as a first example, the following simple case. As I look at my desk, I come to have the belief, among many others, that there is a red book on the desk. This belief is *cognitively spontaneous*: it is not arrived at via any sort of conscious ratiocinative process, but simply occurs to me, strikes me, in a coercive manner over which I have no control; thus it is clearly non-inferential in the first of the two senses distinguished above. Let us suppose, as would ordinarily be the case, that this belief is indeed an instance of knowledge. The question now becomes: how it is justified or warranted? The strong foundationist will claim either that the belief is itself a basic belief, or else that it is justified via inference from a further belief, presumably about my experience, which is basic. But what account can the CTEK offer as an alternative? What sort of inferential justification might be available for such a belief?

Once the question is put in this way, the main elements of the answer are, I think, readily discernible. First, the belief in question is a visual belief, i.e. it is produced by my sense of sight; and I am, or at least can be, introspectively aware of this fact. Second, the conditions of observation are of a specifiable sort: the lighting is good, my eyes are functioning normally, and there are no interfering circumstances; and again, I know or can know these facts about the conditions, via other observations and introspections. Finally, it is a true law about me (and indeed about a large class of relevantly similar observers) that my spontaneous visual beliefs in such conditions about that sort of subject matter (viz., medium-sized physical objects) are highly reliable, i.e. very likely to be true; and, once more, I know this law. Putting these elements together, I am in a position to offer the following justification for my belief:

(i) I have a spontaneous visual belief that there is a red book on the desk.

(ii) Spontaneous visual beliefs about the color and general classification of medium-sized physical objects are, in (specified) conditions, very likely to be true.

(iii) The conditions are as specified in (ii).

Therefore, my belief that there is a red book on the desk is very likely to be true.

Therefore, (probably) there is a red book on the desk.[19]

There are two points which may be noted quickly about this justifying argument. First, all of the premises are empirical. Second, instead of assuming a listing of the conditions, I could have spoken instead in (ii) and (iii) of 'standard conditions'; this would have had the effect of reducing the empirical content of (ii) and packing this content instead into (iii), but would have a altered nothing of any real significance.

Consider now, more briefly, some contrasting examples. In all of the following cases I fail to have knowledge, despite the presence of a spontaneous visual belief. According to the account offered by the CTEK, the reason that I fail to know is that in each case one of the essential premises for an analogous justifying argument is unavailable to me. (a) Far on the other side of the campus a figure is coming toward me. I spontaneously believe that it is my friend George, and in fact it is; but the belief is not knowledge, because beliefs produced under those conditions (i.e. at very great distance) are not generally reliable, i.e. not likely enough to be true. (b) Watching the traffic, I spontaneously believe that the car going by is a Lotus, and in fact it is; but the belief is not knowledge, although the conditions of observation are excellent, because I am not very familiar with cars and my perceptual beliefs about them are not very reliable. (I am apt to think that almost any fancy sports car is a Lotus.) (c) Peering into the darkness, I spontaneously believe that there is a man in the bushes, and in fact there is; but the belief is not knowledge, both because the conditions are poor and because I am a bit paranoid and quite apt to imagine people in the bushes who are not there. (d) In a fun house (a house of mirrors), I spontaneously believe that there is a little fat man directly in front of me, across the room, and in fact there is; but the belief is not knowledge, because I do not know the conditions of perception (which are in fact quite normal) and hence am unable to supply the appropriate premise.

I submit that the contrast between these latter cases where I fail to have knowledge and the former one where I do have knowledge, and between analogous cases of the same sort, provides good evidence that arguments like the one sketched above are indeed involved in the justification of observational knowledge. It is an interesting exercise to attempt to give an account of the difference between such cases in strong foundationist terms.

There is one other sort of case which needs to be discussed. Looking at my desk, I come to know that there is no blue book on it. This knowledge clearly results from observation, but the sort of account sketched above is inapplicable, since I do not have a spontaneous visual belief that there is no blue book on the desk, I do not somehow see the absence of such a book; rather I simply fail to see its presence, i.e. I fail to have a spontaneous visual belief that there *is* a blue book on the desk, and my belief that there is not is an inference from my failure to spontaneously believe that there is. What this example illustrates is that spontaneous visual beliefs are reliable in two distinct senses: not only are they (in specifiable circumstances, about specifiable subject-matter) very likely to be true; but they are also very likely to be produced (in specifiable circumstances, about specifiable subject matter[20]), if they would be true if produced. It is this second sort of reliability that allows me to reason, in the case in point:

(i) I have no spontaneous visual belief that there is a blue book on my desk.

(ii) If there were a blue book on my desk, then, in (specified) conditions, it is highly likely that such a belief would be produced.

(iii) The conditions are as specified in (ii)

Therefore, (probably) there is not a blue book on my desk.

Clearly knowledge justified in this way is closely connected with observation, whether or not it should itself be called observational. (It is also an interesting question, which I shall not pause to discuss here, whether all negative observational or observation-related knowledge must be justified in this indirect fashion.)

The crucial point, for present purposes, is that all of the premises of this justifying argument (as of the earlier one) are empirical premises, including

most especially the crucial general premise (ii) in each argument. It is not an *a priori* truth, but rather an empirical discovery, that certain sorts of cognitively spontaneous beliefs are epistemically reliable and others are not; that waking visual beliefs are reliable and that visual beliefs produced in dreams, though similar in other respects, are not reliable. There are possible worlds in which the positions of these two sorts of experience are exactly reversed, in which reliable visual beliefs occur during sleep and unreliable ones while awake. (In such worlds, of course, the causal genesis of dreams, and of waking visual beliefs as well, will no doubt be different in important ways, but this difference need not be reflected in the subjective character of the beliefs or in the known conditions.) Thus the reason that visual perceptual beliefs are epistemically justified or warranted is that we have empirical background knowledge which tells us that beliefs of that specific sort are epistemically reliable. This is the basic claim of the CTEK for *all* varieties of observation.

On the basis of these examples, I offer the following tentative sketch of a concept of observation compatible with the CTEK. According to this view, any mode of observation must involve three essential elements.

First, there must be a process of some sort which produces cognitively spontaneous beliefs about a certain range of subject matter. The process involved may be very complicated, involving such things as sense organs; the state of the mind and/or brain as a result of previous training or innate capacities; perhaps also the sorts of entities or events which philosophers have variously referred to by such terms as 'immediate experience', 'raw feels', and 'sensa'; instruments of various kinds; perhaps even occult abilities of some sort (such as clairvoyance); etc.

Second, the beliefs thus produced must be *reliable* with respect to the subject matter in question in the two distinct ways discussed above (under specifiable conditions): on the one hand, it must be very likely that such beliefs, when produced, are true (if the requisite conditions are satisfied); and, on the other hand, if the person is in a situation in which a particular belief about that range of subject matter would be true (and if the requisite conditions are satisfied), then it must be very likely that such a belief will in fact be produced. This second sort of reliability is crucial; on it depends, in large part at least, the possibility of negative observational knowledge.

Third, and most importantly from the standpoint of the CTEK, the person must *know* all of these things, at least in a rough and ready way. He must be

able to recognize beliefs which result from the process in question (though he need not know anything about the details of the process). He must know that such beliefs are reliable in the two senses specified. And he must know in a given case that any necessary conditions for reliability are satisfied. He will then be in a position, in a particular case, to offer the following justification for such a spontaneous belief:

(i) I have a spontaneous belief that P (about subject-matter S) which is an instance of kind K.

(ii) Spontaneous beliefs about S which are instances of K are very likely to be true, if conditions C are satisfied.

(iii) Conditions C are satisfied.

Therefore, my belief that P is (probably) true.

Therefore, (probably) P.

And he will also be in a position to argue for a negative conclusion on the basis of observation, in the following way:

(i) I have no spontaneous belief that P (about subject-matter S) which is an instance of kind K.

(ii) If P, then if conditions C are satisfied, it is very likely that I would have a spontaneous belief that P which was an instance of K.

(iii) Conditions C are satisfied.

Therefore, (probably) not-P.

These two schematic arguments are the basic schemata for the justification of observational knowledge, according to the CTEK.

The foregoing account of observation is obviously highly schematic and would require much more discussion to be complete. For present purposes, however, it will suffice to add five supplementary comments, by way of clarification, elaboration, and anticipation of possible objections, following which I shall return to a discussion of the main objection to the CTEK.

First. It needs to be asked what the exact status of the various inferences outlined above is supposed to be, relative to the actual cognitive state of a

person who has observational knowledge. For it is only too obvious that such a person need not go explicitly through any such process of inference in order to have observational knowledge (on pain of making actual instances of observational knowledge vanishingly rare). But it is equally obvious that the inferences in question, in order to be a correct account of the observational knowledge of such a person, must be somehow relevant to his particular cognitive state and not merely an account which could be added, totally from the outside, by a philosopher. Thus the claim of the CTEK here (and indeed the analogous claim of foundation theories for the inferences which they typically postulate) must be that such inferences are in some way tacitly or implicitly involved in the cognitive state of a person who has observational knowledge, even though he does not rehearse them explicitly and indeed might well be unable to do so even if challenged. It is not necessary that the belief actually originate via inference, however tacit or even unconscious; but it must be the case that a tacit grasp of the *availability* of the inference is the basis for the continuing acceptance of the belief and for the conviction that it is warranted. It has to be claimed, in other words, that such inferences are indeed an adequate philosophical unpacking or explication of what is really involved in the observational knowledge of an ordinary person, even though he may never be explicitly conscious of them. Such a claim on the part of the CTEK, as also on the part of foundation theories, is obviously very difficult to establish. Ultimately, it must simply be asserted that careful reflection on actual cases of observational knowledge will reveal that something like this is tacitly involved, though ultimately it may have to be conceded that any philosophically adequate account of knowledge is an idealization which is only loosely approximated by ordinary cognition. (It is worth remarking, however, that the inferential apparatus postulated by the CTEK, on the above account, is surely more common-sensical and less esoteric than is the analogous apparatus typically postulated by the foundation theories.)

Second. It is obvious that the knowledge represented by the third premises of the illustrative and schematic justifying arguments set out above, viz. the knowledge of the conditions of observation, will itself normally be largely or wholly based on observation and must be justified in the same way. This means that the element of coherence enters in immediately – with many observational beliefs, which may be from the same sense or from different senses, serving (directly or indirectly) as premises for each other's justification.

Third. As was emphasized above, the second premises of the various arguments are empirical premises. More specifically, each such premise is an empirical *law* about certain classes of beliefs. But it is obvious that such laws cannot be viewed in general as having been arrived at inductively, since no inductive argument as ordinarily construed would be possible unless one was *already* in a position to make warranted observations. Confirming evidence *is* available from within the coherent system for such laws, and any such law can be empirically tested within the context of the others; but the cognitive system as a whole could not have been developed piecemeal from the ground up.[21]

Fourth. A more difficult problem is how the first premises of the various arguments are to be justified. It is obvious that such premises, for the most part at least, are to be regarded as the products of introspection, but how is introspective knowledge to be understood within the CTEK? It is tempting to treat introspection as just one more mode of observation, which would then be justified along the lines of the justification-schemata set forth above (p. 189). Unfortunately, however, this will not quite do. Justifying an introspective belief along those lines would require as a first premise the claim that one had a spontaneous introspective belief of a certain sort. Thus, to return to the original example of my perceiving a red book on my desk, if premise (i) of the justifying argument for the claim (p. 186) is taken as the introspective belief to be justified, the first premise of the justifying argument would have to be:

(i) I have a spontaneous introspective belief that I have a spontaneous visual belief that there is a red book on the desk.

This is all right by itself. But now if justification is demanded for this premise, and one attempts to give it along similar lines, the first premise required for the new justifying argument will be:

(i) I have a spontaneous introspective belief that I have a spontaneous introspective belief that I have a spontaneous visual belief that there is a red book on the desk.

And since the challenge can be repeated again and again, we are seemingly off on a new regress, one which cannot be handled by the strategy set forth above, since the chain of arguments clearly does not move in a circle. I am

not convinced that this regress is logically vicious, but it does not represent a plausible account of our actual introspective knowledge.[22]

How then is introspective knowledge to be handled by the CTEK – that is if it is to avoid collapsing back into the foundationist view that introspective beliefs are basic? The key to the answer is that although an introspective belief *could* be justified along the lines of the earlier justification-schema (p. 189), only one of the three premises of such an argument is really indispensable for the work of justification. Thus premise (iii), concerning conditions of observation, can be dispensed with because introspection, unlike other modes of observation, is almost entirely impervious to conditions. And premise (i), the premise which produced our current difficulty, can also be dispensed with. It is a fact about human perceivers that their beliefs about introspective matters are in accord with and reflect their spontaneous introspective beliefs. This is a weak and unproblematic version of privileged access, which is traceable to the fact that in introspective matters we are always in the proper position to have spontaneous beliefs; and thus, unlike the situation with other modes of observation, there is no chance for a disparity between our potential spontaneous beliefs and our other beliefs about the same introspective subject matter to develop. Consequently the reliability which attaches to spontaneous introspective beliefs also attaches to beliefs about introspective subject-matter generally, whether spontaneous or not, and there is thus no need for premise (i) which stipulates that I have such a spontaneous belief.

Thus the only premise that is essential for a justification of introspective beliefs along the lines of the CTEK is the one corresponding to premise (ii) of the schematic argument, with the references to conditions of observation and to cognitive spontaneity excised:

(*) Introspective beliefs (of certain sorts) are very likely to be true.

Here the phrase "introspective beliefs" is to be taken to mean simply "beliefs about introspective subject matter"; such beliefs need not be cognitively spontaneous. It is premise (*) that underlies introspective knowledge, according to the CTEK.[23]

The appeal to premise (*) may perhaps give the appearance that the CTEK is only verbally distinct from foundationism, for it might be taken to be equivalent to treating introspective beliefs as basic or at least as initially credible. This would be a mistake. The basic difference is that premise (*),

according to the CTEK, is an *empirical* premise, which must and does receive justification from within the rest of our cognitive system and which is subject to being reassessed and modified in light of that system. This fact about (*) is reflected in the parenthetical clause; all instances of introspection are not equally reliable, and the distinction among them must be made empirically. When an introspective belief is justified by appeal to premise (*), the appeal is still ultimately to coherence. Therefore, according to the CTEK, although introspective beliefs do play a unique and pivotal role in empirical knowledge, they do not constitute a foundation for that knowledge, as that notion has traditionally been understood; the basic thesis of foundationism (above p. 176) can still be consistently rejected. (Indeed the CTEK does *not* insist that some premise like premise (*) must be maintained by any acceptable cognitive system. It is logically conceivable that no such premise might be true, that no variety of introspection might be consistently reliable, so that *any* premise of this sort would fail to yield coherent results in the long run. This point will be considered further below together with its bearing on the possibility of empirical knowledge.)

Fifth. It is worth noting explicitly that the conception of observation advanced here is implicitly much broader than the standard conceptions of sense-perception and introspection. On this view any process of empirical belief-production whose results are epistemically reliable counts as a mode of observation, whether or not it involves the traditional senses. Thus, for example, if there are people who have spontaneous clairvoyant or telepathic beliefs which are reliable, then for such people clairvoyance or telepathy is at least a potential mode of observation (though they must *know* that the beliefs in question are reliable if they are to have knowledge on this basis). Or, more interestingly, if (as often seems to be the case) a scientist who masters the use of an instrument such as a geiger counter or cloud chamber develops the capacity to have reliable spontaneous beliefs about theoretical entities and processes such as radioactivity or subatomic particles,[24] then these beliefs count as observational on the present account and can be justified directly, without reference to sense-experience, along the lines sketched above.

IV

This schematic account of the role of observation in the CTEK provides the

essential ingredient for answering the three objections to that theory that were set out in Section II, above. The first two objections can be dealt with very simply and directly, while the third will require a more extended discussion and even then must be dealt with here in a less conclusive fashion.

I begin with objection (II), which alleges that a consequence of the CTEK is that empirical knowledge has no *input* from the world. In light of the discussion of observation, it should now be clear that the CTEK can allow for input into the cognitive system from the world, while insisting that this input must be understood in *causal* rather than epistemic terms. The world impinges upon the system of knowledge by causing cognitively spontaneous beliefs of various sorts, but these beliefs are epistemically justified or warranted only from within the system, along the lines set out above. And, in principle at least, any sort of causal impact of the world that is capable of producing such beliefs in a reliable way is capable of being justified as a species of observation.

Moreover, such observational beliefs need not merely augment the overall system, but may force the alteration or abandonment of parts of it – either because the observational belief is directly inconsistent with one or more other beliefs in the system or because such alteration will enhance the overall coherence of the system. (Of course the observational belief could itself be rejected for a similar reason, though if this is done very often the law which specifies the degree of reliability of that sort of observational belief will also have to be revised.) In this way, the CTEK provides an account of how a system of beliefs can be tested against the results of observation.[25]

Thus the CTEK clearly allows for the *possibility* of input from the world into the cognitive system, a possibility which is in fact realized in our cognitive system. But does it not also admit the possibility of empirical knowledge without such input? Suppose that a cognitive system either fails to attribute reliability to any observational beliefs at all, or else fails to attribute reliability to those introspective beliefs which are needed for the reliable recognition of other reliable observational beliefs. Such a state of affairs might be built into the system from the outset, or might result gradually from repeated revision of the system if conflicts between putative observations and other component beliefs were always adjudicated by rejecting the observation. Clearly such a system would fail to have any effective input from the world. And yet on the account of the CTEK given so far, it seems that such a system (or rather the contingent part thereof) might

constitute empirical knowledge if only it were sufficiently coherent. And surely this is an absurd result.

This point is essentially sound. Any adequate account of empirical knowledge must *require*, not merely allow, input from the world into the cognitive system – for without such input any agreement between the system and the world would be purely fortuitous, and thus the beliefs of the system would not be knowledge. Thus the CTEK must require that for a cognitive system to be even a candidate for the status of empirical knowledge, it must include laws attributing a high degree of reliability to a reasonable variety of kinds of cognitively spontaneous beliefs, including those kinds of introspective beliefs which are required for the recognition of other sorts of reliable cognitively spontaneous beliefs. Call this 'the observation requirement'. It provides the basic answer to objection (II).[26]

It is important to understand clearly the status of this requirement within the CTEK. The need for the requirement is *a priori*: it is an *a priori* truth, according to the CTEK, that a cognitive system must attribute reliability to cognitively spontaneous beliefs to the degree indicated *if* it is to contain empirical knowledge. But it is *not* an *a priori* truth that the antecedent of this conditional is satisfied and hence also not an *a priori* truth that its consequent must be satisfied. Whether any cognitively spontaneous beliefs are in fact reliable is an empirical issue to be decided within the cognitive system purely on the basis of coherence. It is logically conceivable, according to the CTEK, that no variety of cognitively spontaneous belief is sufficiently reliable and hence that any system satisfying the observation requirement would become incoherent in the long run, so that coherence could be preserved only by denying reliability to enough cognitively spontaneous beliefs to violate the observation requirement. The observation requirement does *not* say that such a result must be incorrect, but only that if it were correct there would be no empirical knowledge.

Thus the observation requirement functions within the CTEK as a regulative meta-principle of epistemological assessment. It does not impinge directly on the operations of the coherence machinery, but rather provides a partial basis for categorizing the results of that process. This is the main difference between the CTEK and that very weak version of weak foundationism which would attribute initial credibility to all cognitively spontaneous beliefs and then require the preservation of a reasonably high proportion of them. For such a version of foundationism, it is true *prior* to

the workings of coherence that cognitively spontaneous beliefs have this minimal degree of credibility – for which no empirical justification is thus ever offered. Whereas for the CTEK *all* epistemic warrant for empirical propositions is ultimately a matter of coherence.[27]

What then is the status of those contingent and seemingly empirical beliefs which appear within a cognitive system that violates the observation requirement? I would suggest that their status is quite analogous to, if not indeed identical with, that of imaginative or fictional accounts. It is a consequence of the holism advocated by the CTEK that the distinction between the category of empirical description and these other categories is not to be drawn with respect to particular beliefs but only with regard to systems of beliefs. And the empirical thrust of a cognitive system is precisely the implicit claim that its component beliefs will agree, in general at least, with those classes of cognitively spontaneous beliefs which it holds to be reliable. Thus the observation requirement might be viewed as a weak analogue of the old positivist verifiability criterion of empirical meaningfulness, now transposed so as to apply to systems rather than to individual statements.

The answer to objection (I), the alternative coherent systems objection, is already implicit in the foregoing discussion. For once it is clear that the CTEK involves the possibility that a system which is coherent at one time may be rendered incoherent by subsequent observational input, and once the requirement is accepted that any putative system of empirical knowledge must allow for this possibility, objection (I) in effect divides into two parts. Part one is the claim that *at a given moment* there may be many equally coherent empirical systems among which the CTEK provides no basis for decision. This claim is correct, but does not provide any basis for a serious objection, since the same thing will be true for any theory of knowledge imaginable. The important issue is whether these equally coherent systems will remain equally coherent and still distinct under the impact of observation in the long run.[28] Thus the second and crucial part of objection (I) will be the claim that even in the long run, and with the continuing impact of observation, there will be multiple, equally coherent empirical systems among which it will not be possible to decide. But, once the role of observation in the CTEK is appreciated, there seems little if any reason to accept this claim. The role of observation undercuts the idea that such alternatives can be simply constructed at will: such systems might be coherent at the beginning, but there is no reason to think that they would

remain so as observations accumulate. This point is obvious enough if the observational components of the different systems involve the same concepts. But even if the observational components, or even the entire systems, involve different concepts so that they are not directly commensurable, there is no reason to think that one objective world will go on providing coherent input to incompatible systems in the long run.[29]

This brings us to objection (III), surely the most penetrating and significant of the three. Objection (III) contends that the CTEK will be unable to establish the vital connection between justification and truth, will be unable to show that its account of justification is truth-conducive, unless it also adopts the coherence theory of *truth*. It is certainly correct that a connection of this sort must be established by any adequate epistemology, even though this issue is rarely dealt with in a fully explicit fashion. Truth is after all the *raison d'etre* of the cognitive enterprise. The only possible ultimate warrant for an account of epistemic justification must therefore consist in showing that accepting such an account and seeking beliefs which are in accord with it is likely to yield the truth or at least more likely than would be the case on any alternative account. And the objection is also right that one who adopts a coherence theory of justification is in danger of being driven dialectically to espouse the coherence theory of truth as well. For the easiest and most straightforward way to establish a connection between a coherence account of justification and truth itself is to simply identify truth with justification-in-the-long-run, i.e. with coherence-in-the-long-run. Essentially this move was made by the absolute idealists and, in a different way, by Peirce. I assume here that such a coherence theory of truth is mistaken, that truth is to be understood at least roughly along the lines of the traditional correspondence theory. But if this is right, then the only way finally to justify the CTEK and answer objection (III) is to provide an argument to show that following the epistemic standards set by the CTEK is, in the long run, *likely* at least to lead to correspondence.[30]

I believe that it is possible to give such an argument, though I cannot undertake to provide a detailed account of it here. The main difficulty is an extrinsic one: no one has succeeded so far in giving an adequate account of the correspondence theory of truth,[31] and such an account is an indispensable ingredient of the envisaged argument. It is possible, however, to provide a rough sketch of the way in which the argument would go, given a very rough and intuitive conception of the correspondence theory: a proposition is true

if it accords with an actual situation in the world, and otherwise false. (The argument is relative to the assumption that the observation requirement can be satisfied; if there were no possibility of reliable input from the world, then no set of epistemic standards would be likely to yield the truth.)

Suppose then that we have a hypothetical cognitive system which is coherent and satisfies the observation requirement as stipulated above, but fails to accord with reality. Our task is to show that such a system is unlikely to *remain* coherent (and continue to satify the observation requirement) unless it is revised in the direction of greater accord with reality. The way in which such revision *might* take place is obvious enough. If the lack of accord between the system and reality involves observable matters, then if the appropriate observations are actually made, they will produce inconsistency or incoherence within the system and force its revision. If the observations themselves are not rejected by such a revision, then the effect is to bring the system more into accord with reality. And this process *might* be repeated over and over until complete accord with reality is achieved in the very long run.

This, as I say, is what *might* happen. But is it *likely* to happen? The best way to show that it is likely to happen is to consider in turn each of the various seemingly plausible ways in which it might fail to happen, despite the lack of accord between system and reality stipulated above, and show that these are all *un*likely.

First. The process described above, whereby the system is revised in the direction of greater accord with the world, depends essentially on the occurrence of observational beliefs which conflict with other parts of the system and thus force the revision of the system. But any such revision involves a choice as to which of the conflicting beliefs to retain, and the system will come to accord more closely with reality only if this choice results in the retention of the observational beliefs and the exclusion of their competitors. Thus the most obvious way in which such revision in the direction of truth might fail to occur is that the choice be made consistently in favor of the non-observational beliefs in question, rejecting the observational beliefs. In the short run, it is quite likely that such a revision would produce a more justified result than would the alternative choice in favor of observation. But this could not happen in the long run. For if an inquirer or community of inquirers were to follow in the long run such a policy, deliberate or not, of resolving most such decisions in favor of the antecedent

system and against the observational belief, this would inevitably have the effect of undermining the law that such observations are reliable and thus eventually violating the observation requirement. Thus this first possibility may be ruled out.

Second. Another way in which the envisaged revision in favor of truth might fail to take place is that, although the situations in the world which conflicted with the system were in fact observable, it might be the case that the inquirer or inquirers in question were simply never in the proper position to make the requisite observations, and so the conflict between the system and world would never be discovered. This possibility cannot be completely ruled out. But the longer the period of inquiry in question becomes, the more unlikely it is that this situation would continue, and this unlikelihood is increased as the supposed discrepancy between system and world is made larger.

Third. So far the assumption has been that the lack of accord between system and world involves aspects of the world which are observable. But suppose that this is not the case, that the aspects of the world in question are unobservable. There are various ways in which this might be so. First, and most basically, it might be the case that the aspects in question simply had no causal effects which were detectable by the sense organs or sensitive faculties of our community of inquirers, so that there would be no way that such inquirers could learn to observe those aspects. Second, it might be the case that, although the aspects in question did have causal impact on our inquirers, these inquirers simply had not learned to make observations of the appropriate sort. Third, it might be the case that although the aspects in question were in principle observable by our inquirers, there were barriers of some sort which prevented them from actually making the observations. Such barriers would include distance in space or time, impossibly hostile environments of various sorts, etc.

This sort of situation must be acknowledged as possible and even likely. The question is whether it could be overcome, given only the resources allowed by the CTEK, and if so, how likely it is that such an overcoming would occur.[32] The answer to the first part of the question is that it *could* be overcome, in either of two ways. In the first place, the unobservability of the aspects of the world in question might be overcome: the barriers might be transcended, the inquirers might learn to make the requisite observations, and/or new instruments might be developed which would create an

appropriate causal linkage between these aspects and the sense organs of our observers. (See the remarks about instrumental observation at the end of Section III.) All of these things could happen, but there is no way to show that they are likely to happen in general. Thus the more important way in which the situation of unobservability might be overcome is by the development of *theories* concerning the unobservable aspects of the world. It is via theory construction that we come to know about the unobservable aspects of the world.

But is there any reason to think that such theory construction is likely to take place? The only possible answer on behalf of the CTEK, as indeed on behalf of any theory of knowledge, is that if enough aspects of the world are observable and if the unobservable aspects of the world have enough causal impact on the observable ones, then a fully coherent account of the observable aspects will in the long run lead to theories about the unobservable aspects. The main consideration here is that coherence essentially involves both prediction and explanation. An account of the observable world which was unable to predict and explain the observable effects of unobservable entities and processes would be to that extent incoherent. Thus to suppose that an ideally coherent account could be given of the observable aspects without any mention of the unobservable aspects would be in effect to suppose both that the world divides into two parts with no significant causal interaction between the two, and that this division coincides with that between the observable and the unobservable. And this is surely unlikely, even if one does not bring in the fact that the observable/unobservable line is not fixed once and for all.[33]

Fourth. There is one other apparently possible way to be considered in which there could be a lack of accord between one's cognitive system and reality without revision in the direction of truth being likely to take place. This alleged possibility is difficult to make fully clear, but it goes at least roughly as follows. Suppose that the conceptual picture which is given by the cognitive system, though failing to accord with the world, is isomorphic with it in the following way: for each kind of thing K, property of things P, etc., in the world there is a corresponding but distinct kind of thing K^*, property of things P^*, etc., in the conceptual picture, and analogously for other kinds, properties, and whatever other categories of things are found in the world. The observational dispositions of the community of inquirers are such that they have observational beliefs about K^*'s when what they are actually

observing is K's, etc. Under these conditions, the conceptual picture of the world would be fully coherent and would be in no danger of being rendered incoherent by observations, and yet *ex hypothesi* it would fail to accord with the world.[34]

Notice, however, that for this situation to occur, the laws, conceptual connections, etc., which pertain to the conceptually depicted kinds, properties, etc., must exactly mirror those which pertain to the actual kinds, properties, etc., of the world. If it is a true law in the world that instances of K_1 are always accompanied by instances of K_2, then it must be a law in the conceptual depiction that instances of K_1* are always accompanied by instances of K_2*, etc. For any discrepancy in such inferential patterns between the conceptual depiction and the world would be a basis for a potential conflicting observation. But despite this exact mirroring of all inferential patterns, it must still be the case that the kinds, properties, etc., of the world are not identical with those of the system. Thus one possible response by a proponent of the CTEK would be simply the denial that this sort of situation is indeed possible, on the grounds that the associated inferential patterns determine the kinds, properties, etc., completely, so that if these are the same there is no room left for a difference between the conceptually depicted world and the actual world. I think that there is merit in this claim, but a defense of it is impossible here.[35] In any case, it will suffice for present purposes merely to make the weaker claim that this sort of situation in which the inference patterns match but the kinds, etc., are still different is very unlikely, i.e. that the fact that one set of inference patterns mirror the other is a very good reason for supposing that the kinds, etc., are identical.

The foregoing considerations are an attempt to make plausible the following conclusion: it is highly unlikely, though not impossible, that a cognitive system which failed to accord with the world and which satisfied the observation requirement would be coherent and remain coherent under the impact of new observation, unless it was gradually revised in the direction of greater accord with the world. This is so because all of the apparent ways in which such revision could fail to take place represent highly unlikely situations.[36] This is obviously only a sketch of a line of argument which would have to be greatly elaborated in various ways to be really adequate. Here it is intended only to suggest the sort of answer which the CTEK can make to objection (III), how it can establish the truth-conduciveness of its

view of justification, without resorting to the desperate expedient of the coherence theory of truth.

Thus the standard objections to views like the CTEK turn out to be in fact far less conclusive than has usually been thought, and it is reasonable to suppose that they can be successfully answered, once the role of observation in the theory is fully understood and appreciated. This in turn suggests that views like the CTEK are potentially viable accounts of empirical knowledge, worthy of far more serious attention than they have usually been given.[37]

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NOTES

[1] Roderick Firth, 'Coherence, Certainty, and Epistemic Priority', *Journal of Philosophy* **LXI** (1964); reprinted in R. M. Chisholm and Robert Swartz (eds.), *Empirical Knowledge*, (Englewood Cliffs, N. J., Prentice-Hall, 1973), p. 459.

[2] Firth, pp. 460, 463.

[3] Whether or not the view presented here is an entirely *pure* coherence theory is mainly an issue of taxonomy. As will be seen, it does *not* hold that the only factor which determines the acceptability of a set of propositions as putative empirical knowledge is its internal coherence. It does claim, however, that the epistemic justification attaching to an empirical propostition always derives entirely from considerations of coherence – and thus is never immediate or intrinsic, as the foundationist claims. See pp. 194–195 and fn. 27.

[4] That this cannot be a complete conception of knowledge is evident from the work of Gettier and those who have followed his lead. See Edmund Gettier, 'Is Justified True Belief Knowledge?' *Analysis* **XXIII**(1963), pp. 121–23. But none of this literature has seriously challenged the view that the traditional conditions are at least *necessary* for knowledge, and that is enough to generate the problem to be discussed here.

[5] The notion of an argument is to be taken very broadly here. Any sort of inferential relation between a belief (or set of beliefs) A and a further belief B which allows B to be justified relative to a justified acceptance of A will provide a basis for a justifying argument.

[6] Notice that the important regress here is *logical* or *epistemic*, rather than *temporal*, in character. If it were a requirement for a belief to be justified that the justifying argument be explicitly given (perhaps only in thought) by the person in question, then clearly there would be a vicious temporal regress of justification in which no stopping place was ever reached (so long as all justification is inferential). But there is no reason to assume in this way that an explicit process of justification must actually take place before a belief is justified. It is enough, it would seem, that there be a justification which could be supplied if demanded and which in fact is the reason for the holding of the belief; but this need not be made explicit (to others or even to oneself) until and unless the issue is raised.

[7] The restriction to empirical knowledge is to be understood throughout the discussion of this paper, even where not made explicit. In particular, it is clear that a coherence theory of *a priori* knowledge would be hopeless, since at least some *a priori* inferential connections must be presupposed by any account of coherence.

[8] On the distinction between infallibility, indubitability, and incorrigibility, see William Alston, 'Varieties of Privileged Access', *American Philosophical Quarterly* **VIII** (1971), 223–41.

[9] For Lewis's view, see his *Analysis of Knowledge and Valuation* (La Salle, III., Open Court, 1946), Chapters II, VII. An appeal to language-learning is made by Quinton in his paper 'The Foundations of Knowledge', reprinted in Chisholm and Swartz. An example of the view that the issue of justification does not arise is J.L. Austin, *Sense and Sensibilia* (Oxford, Oxford University Press, 1962). These are only examples of two positions which are widely held.

[10] The clearest specimen of this idealist view is Brand Blanshard, *The Nature of Thought* (London, Allen & Unwin, 1939). See also F. H. Bradley, *Essays on Truth and Reality* (Oxford, Oxford University Press, 1914); and Bernard Bosanquet, *Implication and Linear Inference* (London, Macmillan, 1920). For the positivists, see Otto Neurath, 'Protocol Sentences', translated in A. J. Ayer (ed.) *Logical Positivism* (New York, The Free Press, 1959), pp. 199–208; and Carl G. Hempel, 'On the Logical Positivists' Theory of Truth', *Analysis* II (1934–35), 49–59. The Hempel paper is in part a reply to a foundationist critique of Neurath by Schlick in 'The Foundation of Knowledge', also translated in *Logical Positivism*, pp. 209–227. Schlick replied to Hempel in 'Facts and Propositions', and Hempel responded in 'Some Remarks on "Facts" and Propositions', both in *Analysis* II (1934–35), 65–70 and 93–96, respectively.

[11] See W. V. O Quine, 'Two Dogmas of Empiricism', in his *From a Logical Point of View* (Cambridge, Mass., Harvard University Press, 1953); also his *Word and Object* (New York, John Wiley & Sons, 1960), Chapter I; and Gilbert Harman, 'Quine on Meaning and Existence II', *Review of Metaphysics* XXI (1967–68), 343–67. Sellars's writings on this subject are voluminous, but the most important are: 'Empiricism and the Philosophy of Mind' (especially Section VIII) and 'Some Reflections on Language Games', both reprinted in his *Science, Perception and Reality* (London, Routledge & Kegan Paul, 1963); 'Givenness and Explanatory Coherence', *Journal of Philosophy* LXX (1973), 612–24; and 'The Structure of Knowledge', his unpublished Machette Lectures, given at the University of Texas in the spring of 1971, especially Part 3, 'Epistemic Principles'. The view offered in this paper is closest to Sellars's and is, at certain points, strongly influenced by it, though I am very unsure how much of it Sellars would agree with. Others who have advocated somewhat similar views include Hall, Aune, Harman, and Lehrer. For Hall's view see his *Our Knowledge of Fact and Value* (Chapel Hill, University of North Carolina Press, 1961). Aune's views are to be found in his book *Knowledge, Mind, and Nature* (New York, Random House, 1967). For Harman, see his book *Thought* (Princeton, Princeton University Press, 1973). For Lehrer, see his *Knowledge* (Oxford, Oxford University Press, 1974).

[12] See Bertrand Russell, *Human Knowledge* (New York, Simon & Schuster, 1949), Part II, Chapter II, and Part V, Chapters 6 and 7; Nelson Goodman, 'Sense and Certainty', *Philosophical Review* LXI (1952), 160–67; Israel Scheffler, *Science and Subjectivity* (New York, Bobbs-Merrill, 1967), Chapter 5; and Nicholas Rescher, *The Coherence Theory of Truth* (Oxford, Oxford University Press, 1973). Despite the title, Rescher's position in the book just cited is not a version of the CTEK and still less of a coherence theory of truth. In a later book, *Methodological Pragmatism* (forthcoming from Basil Blackwell), Rescher seems to waver between a version of the CTEK and a version of weak foundationism. See my critical study, 'Rescher's Idealistic Pragmatism', forthcoming from the *Review of Metaphysics*. Firth, in the paper cited in note 1, also opts, rather tentatively, for a version of weak foundationism.

[13] Of course some of the justifying premises might be *a priori* in character. But the CTEK denies that this is ever the case for *all* of the premises which would be necessary to justify an empirical belief.

[14] The original critique of the linear account of inference was by Bosanquet in *Implication and Linear Inference*. A more recent version is offered by Rescher in 'Foundationalism, Coherentism, and the Idea of Cognitive Systemalization', *Journal of Philosophy* LXXI (1974), 695–708. Harman's account of inference in *Thought* is in many ways a modernized version of Bosanquet.

[15] A useful, though preliminary, account is contained in Hall, *op. cit.* See also Harman, *op. cit.*, and Lehrer, *op. cit.*, for further useful discussion.

[16] Thus Lewis calls it 'congruence' and Chisholm calls it 'concurrence'. See Lewis, *op. cit.*, Chapter 11, and Chisholm, *Theory of Knowledge* (Englewood Cliffs, N. J., Prentice-Hall, 1965), Chapter 3.

[17] This point might seem too obvious to be worth making, but it has occasionally been overlooked, e.g. by Scheffler, *op. cit.*, Chapter 5. And Rescher's very idiosyncratic account of coherence in *The Coherence Theory of Truth* in effect is based only on consistency.

[18] It is difficult to provide an exact gloss for the phrase 'currently available alternative'. The rough idea is that the currently available alternatives are those which would be considered by a reasonably careful and reflective inquirer. They do not include all of the theoretically possible alternative systems which might ideally be constructed; this would place justification as well as truth beyond our ken, since we could never in fact consider and certainly could never know that we had considered all such alternatives. On the other hand, the set of currently available alternatives may well include more than have actually occurred to a given inquirer or community of inquirers; there is an implicit epistemic obligation to seek out such alternatives.

[19] I take this to be an instance of what Sellars calls 'trans-level inference'. See, e.g., *Science, Perception, and Reality*, p. 88.

[20] The relevant conditions here need not be the same as for the other sort of reliability and indeed normally will not be.

[21] Here I am expanding on some suggestive remarks of Sellars in 'Givenness and Explanatory Coherence'.

[22] The reason for doubting that the regress is vicious is that in this special instance it seems possible to give the whole infinite series of arguments in a finite way. Thus premises (ii) and (iii) seem to be invariant for all the arguments in the series, and the various premises (i) can be recursively specified, since each is simply premise (i) of the previous argument with one more occurrence of the belief operator prefixed; thus the whole series of arguments can be recursively specified. Moreover, it might be argued on this basis that one who gives explicitly the first argument in the series thereby tacitly gives, or at least commits himself to, all the others: he has asserted in the invariant premises (ii) and (iii), and by asserting the first premise (i), he commits himself to all the other premises (i) by the principle of epistemic logic whose violation yields 'Moore's paradox'. Thus the main objection to construing the justification of introspection as involving this infinite hierarchy of arguments is not simply that it is infinite, but rather that it is highly questionable that people do in fact believe, even dispositionally, the infinite set of first premises. And if this is so, then the series of arguments cannot be taken as an account of how introspective beliefs are in fact justified, even though it is possibly acceptable as an account of how they *could* be justified. If, on the other hand, one finds it plausible, as does e.g. Lehrer (*op.cit.*, p. 229), to hold that anyone who believes that *P* also believes that he believes that *P*, then it becomes plausible to hold that the infinite series of first premises is believed whenever the first one is. In this case the infinite series of arguments would represent a possible alternative to the account of the justification of introspection given in the text.

[23] It might be thought that the justification of an introspective belief using premise (*) would still require the additional premise that the person indeed has the introspective belief in question – which would suffice to generate a regress. There is no doubt that the thesis that the person has the introspective belief in question figures in the justification. I would argue, however, that it does not figure as a *premise*, which would then require further justification, because the existence of that belief is *presupposed* by the very raising of the issue of justification in the first place.

[24] Of course such beliefs will still, in the normal case, be *causally* dependent on normal

sensory processes. My point is that the trained scientist, unlike the novice, need not *first* have an ordinary observational belief about the state of the instrument and *then* infer to the theoretical belief; instead the latter belief may itself be arrived at non-inferentially.

[25] A complete account here would have to discuss intentional action and how it relates to one's cognitive system, since such action is obviously needed in most cases in order to put oneself in the correct position to make a relevant observation. I shall neglect this additional topic here. For some useful discussion see Sellars, 'Some Reflections on Language Games'.

[26] The observation requirement, as stated, may seem too weak. It may be thought that at least two further requirements should be added: (a) that each of the kinds of cognitively spontaneous beliefs in question result from a unique causal process; and (b) that the various causal processes in question actually produce reliable beliefs. These additional requirements are indeed part of the notion of observation as set forth above. But they need not be made a part of this requirement, because failure to satisfy them will make it extremely unlikely that a cognitive system will both remain coherent and continue to satisfy the observation requirement as stated, in the long run. (A point worth adding is that the ability to have epistemically reliable cognitively spontaneous beliefs is presumably acquired via training, linguistic or otherwise, since it presupposes the grasp of a conceptual system. Such training, however, though presumably a causally necessary condition for the satisfaction of the observation requirement, is not a part of it.)

The observation requirement should also be understood to include the requirement, common to all adequate theories of knowledge, that a user of the system must make a reasonable attempt to seek out relevant observations if his results are to be justified.

[27] It may still be questioned whether the CTEK, even if not a version of foundationism, is truly a *pure* coherence theory. Would it not be a purer coherence view to say simply that the most coherent system is justified, without adding the observation requirement? But although such a view would superficially involve a purer appeal to coherence at the empirical level, it would – if the claim that input from the world is an *a priori* requirement for empirical knowledge is correct – be *a priori* mistaken, and thus incoherent at the meta-epistemic level of epistemological reflection. Thus the CTEK seems to be as pure a coherence theory as is defensible.

[28] I assume here, without discussion, that one can make sense of the notion of identity through change for cognitive systems.

[29] This point is elaborated from a slightly different perspective in the discussion of truth and objection (III) which follows.

[30] For an argument that this cannot be done, and hence that the CTEK cannot avoid a coherence theory of truth, see Blanshard, *op. cit.*, Chapters 25–26.

[31] Sellars's writings on truth, if I read him right, are an attempt to provide such an account of truth from an epistemological perspective which is similar to that offered here. See 'Truth and "Correspondence",' reprinted in *Science, Perception and Reality*; and also his *Science and Metaphysics* (London, Routledge & Kegan Paul, 1968), Chapter V. See also my 'Sellars on Truth and Picturing', *International Philosophical Quarterly* XIII (1973), 243–65.

[32] Notice, however, that exactly the same problem will afflict any foundation theory whose basic (or initially credible) beliefs are limited to those which can count as observational for the CTEK. Since the category of basic beliefs is usually more, rather than less, restricted than this, this will mean virtually all foundation theories. And since foundation theories have no appeal at this point other than coherence, they will be able to solve this problem only if a solution is also available to the CTEK.

[33] For a suggestive account of the rationale of theory construction in this spirit, see Sellars, 'The Language of Theories', in *Science, Perception, and Reality*.

[34] This argument was suggested to me by Richard Diaz.

[35] Sellars's views on meaning would provide a basis for such an argument. See especially his 'Inference and Meaning', *Mind* LXII (1953), 313–38. On Sellars's account the coherence account of justification thus rests on a coherence theory of meaning.

[36] There are of course other logically possible ways in which a lack of accord could exist between a cognitive system and reality without observation operating to correct the system in the ways suggested. The assumption operative here and in the earlier discussion of objection (I) is that a mechanism for producing cognitively spontaneous beliefs is unlikely to yield coherent results in the long run unless it genuinely reflects objective reality. It is certainly not necessary that this be so: coherent results might conceivably be produced by hallucination, by a Cartesian demon, or even by pure chance. The claim here is only that all of these things are unlikely to happen, that each would represent an improbable coincidence relative to the envisaged situation.

[37] Extremely helpful comments on an earlier version of this paper were offered by my colleagues Hardy Jones and Martin Perlmutter.