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CONVERSATION THEORY AND COGNITIVE COHERENCE THEORIES

L. Johnson

The Man-Computer Studies Group, Post-graduate Division of Cybernetics,
Brunel University, Uxbridge, Middlesex UB8 3PH, (UK)

and

R.T. Hartley

Department of Computer Science, Kansas State University,
Manhattan, Kansas 66506 (USA)

An argument is presented to show that Conversation Theory can accommodate an important distinction between cognitive coherence theories.

1. INTRODUCTION

If we view knowledge as a resource for inquiry and deliberation it (knowledge) is often in need of improvement. An account of the improvement of knowledge ought to explain in as systematic a fashion as is acceptable how revisions of knowledge may be brought under critical control for the purpose of improving them as cognitive resources for deliberation and inquiry. This perspective is implicit in Pask's Conversation Theory [1],[2],[3] and [4] (A brief outline is given below, but a fuller introduction is given in [5]). Traditional theories of knowledge, theories that have been the professional concern of philosophers, do not, and it can be argued can not, help us with this perspective.

Traditionally, knowledge is taken to be a matter of pedigree: to qualify as knowledge, beliefs must be both true and justified. Sometimes justification is alleged to require tracing biological, psychological or social causes of belief to sources which guarantee the beliefs legitimacy and hence give them the status of knowledge. Another view denies that causal antecedents of beliefs are crucial; their view is that beliefs are knowledge only if they (the beliefs) can be derived from impeccable first principles.

Those who care little for the pedigree of knowledge ask instead what a person, should do, given his or tier knowledge to render that knowledge more efficient in performing its function. This question does not eradicate questions of justification but instead refocusses the questions concerning knowledge away from pedigrees.

The Traditional Analysis and Pedigree Theories still exert an influence that makes it difficult to refocus on questions of knowledge, for the traditional account confuses questions of knowledge and questions of psychology. The objective of this paper is to clarify some philosophical positions in the hope that it will become easier to refocus on the questions of knowledge and get a clearer insight into Conversation Theory.

2. CONVERSATION THEORY

Gordon Pask's Conversation Theory is partially concerned with the notions of concepts and understanding as public or objective entities with an "interviewee" as an expert source of knowledge. A pre-requisite for understanding is that the thing understood become a shared notion, a public entity. It is here that Pask's approach becomes immediately relevant.

Pask, working in the field of cybernetics, developed Conversation Theory as a way of explaining human cognition. He begins with a basic aim of trying to explain the most human and least mechanical aspects of human activity. From his earliest work, Pask has concentrated more on describing the necessary structural form of an organism capable of learning and less on giving a description of the steps involved in learning a particular skill as might be expected from standard learning theory. A Conversation is the most basic, stable cognitive structure possible.

For a Conversation to take place in which A (the analyst) attempts to find out what E (the expert) knows, E must agree to be a participant in the role of interviewee. A and E must contract to play the same game. They must decide on the area of discussion (the domain) and on the medium of conversation, verbal, written or doing something. The expert establishes **the** content of the domain. This content is expressed in terms of Relations. There are two levels of activity in the Conversation: Level 0 and Level 1 (L_0 and L_1). A Concept is an L_0 entity defined as the procedure which brings about a specified Relation. Notice this is not a category or class definition. So when E is asked 'What's this

multiplication thing all about?' he may describe how to multiply two numbers and this procedure is evidence for him having the Concept of multiplication. L answers are often explanations of how to do an algorithm. Memory is a L1 activity defined as the reconstruction of a Concept -- how one remembers or recollects how to do the procedure. An examples of L1 questions is: How do you know multiplication always works? L 1 answers are often explanations of why algorithms work. They are explanations of explanations.

In a 'conversation' E will describe a procedure to A. A will teach it back to E in E's terms and to E's satisfaction. When they agree that A is doing the procedure E's way then it can be said that they share the same Concept. This 'Teach back' procedure is a checking device where E is the final judge. Notice that A and E do not necessarily have the same thought processes. (In Pask's work A would be a machine.) They just agree that the same thing has been done. Then A asks E to give a LI explanation of how he reconstructed that Concept and the Teachback procedure continues until E is satisfied with A's version. Then we can say that A has Understood E.

Briefly then

At L_0 procedures define Concepts which, through Teachback, lead to shared Concepts.
At L_1 reconstructions define Memories which, through Teachback, lead to Understanding.

Having established Understanding of a particular relation, E chooses another to discuss. Any topic to be discussed must originate from E. The criterion for acceptance is that E must be able to specify at least one link between this topic and some other. His knowledge must be systematic. A must name the topics consistently in terms which E accepts or at least the terms and links must be translated into a form which E can and does appreciate.

3. ANALYSES OF THE CONCEPT OF KNOWLEDGE

3.1 Preliminary

In the following sections we shall speak of "propositions" and of persons believing or knowing propositions. There are a variety of complications that arise from using the notion of proposition and of saying that what a person knows or believes are propositions. We need not consider these complications but we should note how we intend to be understood when using these notions: A proposition, for example, "It is raining" is the same proposition whoever asserts it on whatever occasion and it is either true or false when asserted. A proposition is not tied to a given language or form of words: any sentence synonymous with "It is raining" expresses the same proposition. The schema "X (a person) believes (or knows) that p" is to be read as, for example "Joe Bloggs believes that it is raining", where "p" is understood to indicate a proposition.

3.2 The traditional analysis

On the traditional analysis, for a person X to know that p (e.g for Bill to know that it is raining) three conditions must be satisfied:

(1) p is true (it is raining).
(2) X believes that p (Bill believes that it is raining.)
(3) X is justified in believing that p (Bill is justified in believing it is raining).

3.3 The traditional alternative

Alternative to the Traditional Analysis is the analysis as follows:

For a person X to know that p, three conditions must be satisfied: (1) X believes that p. (2) X is justified in believing that p. (3) X is coherent.

There is a more trimmed version where only conditions (1) and (3) must be satisfied.

Both the Traditional Analysis and its Alternative tend to bring questions of knowledge and questions of psychology very close; indeed the trimmed alternative diminishes the difference between belief (a state of persons) and knowledge to almost vanishing point.

Pedigree theories (inspired by the Traditional Analysis) vary on two questions concerning justification:

1) What is to be epistemologically basic, and what is the epistemic status of the epistemologically basic (for example, is it the case that if X believes that p, then p is true as a matter of logic? That is, are the epistemologically basic incorrigible?).

2) How is pedigree inherited by non-basic propositions from basic propositions?

On this latter question there is a tradition which requires that in order for a set of basic propositions to support p, that set must logically entail p. The history of epistemology has shown such an inheritance mechanism to be implausible. A more plausible account of inheritance would proceed in terms of reasons, where it is recognized that a good reason need not be a Logically conclusive reason. The admission of defeasible (or controvertible) reasons (see [6]) then gives the epistemic justification something like a coherence structure for the structure is then essentially nonlinear and in principle everything is relevant to everything else. (As we cannot examine all possible combinations we need to cultivate principles of relevance where contingently we find everything is not relevant to everything

else). Thus an inquiry into the notions of good reasons and justifications would bring closer the Traditional Analysis and its alternative, and also could take us, by other route, to the same conclusion of this paper. The concern here is with the psychological status of knowledge and so we shall leave the question of the nature of justification and examine only coherence.

4. COGNITIVE COHERENCE THEORIES.

one can identify two basic kinds of cognitive coherence theories; one we shall call "WHY?" theories and the other "WHY NOT?" theories. On the WHY NOT theories all propositions are taken to be prima facie justified. Thus, if one believes a proposition p, one is justified in so doing unless one has sufficient reason to reject the belief. According to these sorts of theories, reasons function essentially to reject beliefs. At the other extreme we have WHY theories which demand that one actually have 11prepared" reasons for holding each of one's beliefs; usually a holistic view of reasons is taken according to which, in order to have a reason, there must be a relation between p and the set of all the propositions one believes.

Both WHY NOT? and WHY? theories have been criticized from grounds which were originally grounds for criticism of coherence theories of truth: viz, that the theories unjustly ignore the relationship between what is said and what is the case (the world). This line of criticism is not applicable if one takes the view that what one believes is causally influenced by the way the world is, and so the world is not unjustly ignored. (On the other hand, we do not have "direct access" to the world independently of our beliefs. See 'The growth of knowledge' in [71). Hence we will not pursue this mistaken line of criticism. Our criticism relates to the objective of this paper.

First consider WHY? theories. WHY? theories, we submit are best construed, roughly along the philosophers' traditional line, as theories about objective relations between propositions which lead to their being warranted. This construal is best for the following reasons:

According to Why? theories, a proposition p is justified for an individual if p coheres with the set of all that individual's beliefs. Being justified in believing a proposition p, one might postulate, consist in the belief that 1) arises from the causal efficacy of the coherence relation. But this postulate is not viable: we do not ordinarily believe p coheres with our beliefs when we justifiably believe p, and so the causal chain leading from coherence to belief cannot proceed via our (individually) coming to believe that p coheres with the set of all our beliefs. In this case, if the coherence relation is meant to be causally efficacious, it must be such that it cannot he the object of our opinion (doxastic). But only 12doxastic coher

ence relation, i.e. a coherence relation which could be the proper object of opinion, could constitute holistic warrant. Thus Why? theories are best construed as theories of holistic warrant, i.e. theories about objective relations between **propositions,** not as theories of cognitive mechanisms opperating causally through a cohence relation.

A person can, of course, come to believe a proposition p on the basis that the belief in p is warranted. In other words a person can come to believe a proposition on the basis that p has certain objective coherence relations with other propositions. And this coherence relation can be the object of opinion. Here the coming to believe is not based on the causal efficacy of the coherence relation, but on the coming to see (which, no doubt, involves unknown causes) that the belief is warranted. The criteria of warranted acceptance of a belief by coming to see that the belief has certain objective holistic relations with ones other beliefs is doxastic. (Indeed having mastered the criteria of acceptance can constitute what it is to have expertise.) Not all beliefs which we justifiable hold need be held on the basis of a holistic warrant.

on the other hand, WHY NOT? theories are plausible candidates for integration into theories of cognitive mechanisms, and more will be said of this in the conclusion. If an individual X believes that p, X is justified in believing p unless X's other beliefs support the rejection of p. X's beliefs cannot support the rejection of p by propositions simply standing in some objective relation to p; X must come to see that his beliefs stand in that relation. If X believed that p, there is just one kind of circumstance in which X would reject that belief, viz where X believes that he should. Objective relations between propositions can only be relevant to justification insofar as they have the contingent power to influence X's beliefs about what he should believe. People are, in fact, guided in their beliefs by reasons: if X believes that p and believes that Not p or q, then the argument "p, Not p or q, hence q" will be a reason for him to believe that q (in fact a logically conclusive reason). The reason why a valid argument is a good reason to believe the conclusion is because the premises of a valid argument are sufficient for the truth of the conclusion. This shows how objective relations between propositions can be reflected normatively as requirements imposed upon us by reason; it also shows how it is possible for the psychological states of people to contravene these requirements. Why Not? theories allow us to distinguish between what a person should believe, given what in fact are good reasons for believing thing,-;, and what a Person "Should" believe, given his possibly mistaken beliefs about reasons. We can construct 13principle that a person is subjectively justified in believing p if his beliefs do not

contain the proposition that he objectively should not believe that p. There are norms which constitute competence in this respect: for X to be competent in a certain branch of reasoning is for X to have beliefs which conform to the canons of what should be believed. When X's beliefs conform to the model of competence at issue, X knows. As mentioned previously, an expert's expertise might consist in precisely in having this competence.

A characterization of the norms of reasoning, criteria of acceptance and grasp of content which constitute competence we will call a competence model.

5. CONCLUSION

To return to the starting point. Knowledge is a resource for inquiry and deliberation; and that resource can be improved if we can bring revisions of knowledge under critical control and we can do this by examination of the models of competence implicit in a branch of knowledge. We can investigate these models without claiming that the models are models of psychological processes. This is the refocus we spoke about. We can separate issues and by separation put them into their proper frameworks. It seems clear that we can utilize computer technology to investigate competence models, and use competence models to control the operations of computers. (Indeed much of Pask's work can be considered to be, at least in part, just such an investigation). And yet, it also seems clear that these competence models, per se, can lay no claim to be psychological theories. We submit that much of Artificial Intelligence is competence modelling confused with psychology (See [8]). This is especially so in the field of Expert Systems which should properly be considered as an investigation into (or even a search for) competence models which can be engineered to satisfactory performance levels.

For a competence model A to enter psychological theory, there are psychological facts B which must be accommodated -if theory X explains A and theory Z explains B the theory that explains their relationship will not be theory X or theory Z. The only framework that we've come across that even begins to accommodate this understanding is Pask's Conversation theory.

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