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THEORIA

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SPECIAL ISSUE ON THE PHILOSOPHY OF
F. P. RAMSEY, EDITED BY MARIA CARLA
GALAVOTTI

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Volume LVII 1991 Part 3

Obtained by a reliable process and always leading to success

by

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THERE IS A tradition within epistemology taking knowledge to be an unanalysable mental state. Any attempt to give an analysis of what it means to have knowledge in terms of our beliefs is, it is argued, based on a mistake. If we know that something is true there is no room left for doubt. To have a belief, the argument goes, is, on the one hand, to know something that supports this belief and, on the other hand, to know that this piece of information is inadequate. Thus, to elude circularity, knowledge has to be a mental state which guarantees truth.¹

Taking this view of knowledge very few mental states would count as knowledge and those that remain are not exactly interesting. However, the argument seems to be based on a mistake. There is, for example, an obvious difference between having information in favour of one's beliefs, and knowing that this information is true. A state of knowledge simply does not need to be a guarantee for truth. To me this kind of argument shows, not that knowledge is unanalysable or undefinable, but rather the opposite, i.e. if we want to say anything interesting about, for example, the dynamics of mental states or some particular problems in evolutionary epistemology, the concept of knowledge has to be analyzed and defined. The same goes for the sceptic's argument, it may well be true, but regardless of its truth value it is crucial that we have a clear and

¹ See A. J. Ayer, *Philosophy in the Twentieth Century*, Unwin, London 1982, for a discussion and for references to, for example, Cook Wilson and H. A. Prichard.

workable definition of knowledge telling us what it means to possess knowledge under certain conditions.

What might be called the traditional theory of knowledge equates knowledge with true justified belief, i.e. a person is said to have knowledge if a truth condition, a belief condition and a condition of sufficient evidence are satisfied. It is well-known that this definition leads to serious problems. The so-called Russell-Gettier problems, for example, show that the traditional conditions are not sufficient for knowledge. Thus an alternative to the traditional theory has to be sought. In his 1929 note 'Knowledge', Frank Ramsey provides us with such a theory. This essay, which was written shortly before his death, strikingly anticipates much of recent debate, and his theory has recently been advocated by several philosophers, who have not always given him credit for it.

Ramsey is readily pictured as one who wrote a number of brilliant essays on a number of disparate subjects. This is not wholly true. Ramsey's essays all contain the same view of philosophy—a method of analysis—merging a sound portion of realism with Ramsey's brand of pragmatist philosophy; therefore his theory of knowledge cannot be completely understood outside the general framework of, for example, his theories of belief, truth and probability. My aim is to show how Ramsey's one and a half page long paper 'Knowledge' is not simply a short note, but a complete theory of knowledge.²

True

At the very beginning of 'Knowledge' Ramsey puts forth his theory. He says that he has 'always said that a belief was knowledge if it was (i) true, (ii) certain, (iii) obtained by a reliable process.'³ On the surface this definition of knowledge looks very much the same as the traditional, true-justified-belief theory, but working out the

² For a discussion of the traditional theory of belief, the Russell-Gettier problems, and for further references, see *The Philosophy of F. P. Ramsey*, Cambridge University Press, Cambridge 1990.

³ Page 110. All references to F. P. Ramsey's *Philosophical Papers*, edited by D. H. Mellor Cambridge University Press, Cambridge 1990.

details of this theory one discovers that it diverges significantly from that account of knowledge. To prove my thesis it is necessary to put Ramsey's note in the context of his general pragmatist philosophy and give a more detailed analysis of the three conditions than he himself does.

In 'Facts and propositions' (hence **FP**) Ramsey uses his pragmatist philosophy to outline a theory of truth. Ramsey's theory has been misunderstood in later philosophical literature. The reason for this is, I take it, that we have not clearly comprehended the intimate connection between his theories of truth, partial belief (subjective theory of probability) and knowledge.

In **FP** Ramsey argues that 'if we have analysed judgment we have solved the problem of truth'.⁴ To carry out such an analysis successfully one has to say what the content of a belief is without falling into a regress by appealing to the meaning of sentences, understood as truth conditions. For Ramsey the solution to the problem can be found within the framework of his pragmatist philosophy. For him the essence of pragmatism is 'that the meaning of a sentence is to be defined by reference to the actions to which asserting it would lead, or, more vaguely still, by its possible causes and effects'.⁵

There is an important paragraph in **FP** where Ramsey clearly indicates how an analysis can be carried out: '... it is, for instance, possible to say that a chicken believes a certain sort of caterpillar to be poisonous, and mean by that merely that it abstains from eating such caterpillars on account of unpleasant experiences connected with them. The mental factors in such a belief would be parts of the chicken's behaviour, which are somehow related to the objective factors, viz. the kind of caterpillar and poisonousness. An exact analysis of this relation would be very difficult, but it might well be held that in regard to this kind of belief the pragmatist view was correct, i.e. that the relation between the chicken's behaviour and the objective factors was that the actions were such as to be useful if, and only if, the caterpillars were actually poisonous. Thus any set of actions for whose utility p is a necessary and sufficient condition

⁴ Page 39.

⁵ Page 51.

might be called a belief that p , and so would be true if p , i.e. if they are useful'.⁶

In a note connected to this passage Ramsey adds: 'It is useful to believe aRb would mean that it is useful to do things which are useful if, and only if, aRb ; which is evidently equivalent to aRb '.

Ramsey says that he does not want to depreciate the importance of this kind of belief but that the beliefs he wants to discuss are the ones expressed in words or possibly images or other symbols, consciously asserted or denied.⁷ But whatever we may think of the mental powers of chickens, the example is in fact excellent, and we may deflect irrelevant criticism by assuming the chicken to be both reflective and intelligent. Mother Nature now offers our chicken a choice between the following two actions:

- (a) Eat the caterpillar
- (b) Refrain from eating the caterpillar.

If the chicken chooses to eat the caterpillar, this choice will lead to one of two consequences, depending on whether the caterpillar is poisonous or edible. If the caterpillar is poisonous, the chicken gets an upset stomach; if it is edible, the chicken gets a good dinner. If, on the other hand, the chicken refrains from eating the caterpillar, this means that it has either avoided an upset stomach or missed its dinner.

This information about the chicken's decision problem can be summarized in a decision matrix.

	Poisonous	Edible
Eat	Upset stomach	Excellent dinner
Refrain	Avoids upset stomach	Missed dinner

⁶ Page 40.

⁷ This idea seems to me closely related to what is today referred to as a language of thought; cf Jerry A. Fodor, *Representations: Philosophical Essays on the Foundations of Cognitive Science*, Harvester Press 1981.

To this well-defined decision problem we can easily apply Ramsey's theory of subjective probability and his theory of decision, as they are developed in 'Truth and probability' (hence **TP**). This theory tells us that if a chicken does not know whether the caterpillar is poisonous or not, he should act in a way that maximizes his subjective expected utility. However, our present problem is not one of degrees of belief, but of full belief. We are not interested in measuring, for example, the chicken's degree of belief in the caterpillar being poisonous. Our concern is what is meant by saying that the chicken believes fully, i.e. believes, that the caterpillar is poisonous. In the above example, this would definitely mean that the chicken refrains from eating the caterpillar: an action that is useful if and only if the caterpillar is poisonous. This general idea is, of course, reinforced if it is put in an evolutionary perspective. A chicken that eats poisonous caterpillars will not have that many offspring. If this behaviour is true of the whole species, it has a fair chance of rapidly becoming defunct.

This is the gist of Ramsey's idea and presented in this way one sees clearly how dependent his sketch of a theory of truth and belief in **FP** is on his **TP** written one year earlier. The same line of thought is also present in his unpublished and far from completed book manuscript on truth.⁸

Ramsey obviously thought that the logical form of a belief determined its causal properties. The mental factors are connected in the chicken's mind and accompanied by a feeling of belief. A belief is 'a map of neighbouring space by which we steer'.⁹ The difference between the chicken's belief that the caterpillar is poisonous and its belief that it is edible lies in their causal properties. Compare, for example, two possible mental states of our intelligent chicken. The

⁸ *Truth*, ed by N. Rescher and U. Majer, Reidel 1990. Reading the manuscript one gets the feeling that 'Facts and propositions', 'Knowledge' and 'Truth and probability' are simply condensed versions of what would have been two or more chapters in the final book. I believe that **FP** contains most of what would have become a complete theory of belief and truth. The book manuscript is rather secondary in this context and Ramsey was himself not satisfied with it (as he indicates in a letter to C. K. Ogden).

⁹ Page 146.

first state expresses a feeling of belief towards 'the caterpillar is not poisonous', i.e. towards 'the caterpillar is edible'; the second a disbelief towards 'the caterpillar is poisonous'. In the first case the chicken would eat the caterpillar, but this is obviously true even in the second case. Having a full disbelief that the caterpillar is poisonous cannot mean anything else than that a rational and hungry chicken eats the caterpillar. The two states of mind thus have the same causal properties. They express, as Ramsey puts it, really the same attitude: 'It seems to me that the equivalence between believing 'not- p ' and disbelieving ' p ' is to be defined in terms of causation, the two occurrences having in common many of their causes and many of their effects'.¹⁰ One of the advantages of this theory is that it avoids the ontological proliferation that Russell's theory, for example, results in. Negative facts are not needed.¹¹

But a causal property theory of this kind must also handle more complex beliefs, e.g. disjunctive or general beliefs. What precise differences are there between the various logical forms of a belief and its causes and effects? What about disjunctive beliefs?

Smith wants to talk to his friend Jones. He fully believes that Jones is either at work or at home. The causal properties of Smith's state of mind could then be that he decided to go and look for Jones at his work, at Jones's home, or (picking where to go first at random) both at Jones's work and at his home. But it would scarcely cause him to try to find Jones outside Torre Garisenda or at the tennis court. Or, as Ramsey prefers to express it: 'Thus, to believe p or q is to express agreement with the possibilities p true and q true, p false and q true, p true and q false, and disagreement with the remaining possibility p false and q false'.¹²

¹⁰ Page 44.

¹¹ Ramsey's contribution to this problem is very much dependent on his theory of universals. In 'Universals' he forcefully argued that 'the whole theory of particulars and universals is due to mistaking for a fundamental characteristic of reality what is merely a characteristic of language' (page 13). There are no negative or complex properties. Negative facts, like complex properties, are superstition and lead to a distorted view of reality. For Ramsey the solution of the problem is found in our attitudes of belief or disbelief. See Chapter 4 and 8 of *The Philosophy of F. P. Ramsey*.

¹² Page 45-6.

This causal property theory so far works quite nicely. It is to a great degree an extension of Ramsey's theory of partial beliefs as it is developed in TP, or, if one prefers so see it the other way around, his theory of probability and partial beliefs is a generalization of this theory of beliefs. However, turning to general propositions, universal quantification introduces new problems which are not that easily resolved.

In FP Ramsey follows Johnson and Wittgenstein and treats general propositions as the logical products and the logical sums of atomic propositions, 'All men are mortal' is to be interpreted as: A is mortal, B is mortal and C is mortal . . . and 'There is an x such that fx ' consequently is equivalent to the logical sum of the values of fx . With this analysis the causal property theory is easily extended to cover also the case of general propositions: 'Thus general propositions, just like molecular ones, express agreement and disagreement with the truth-possibilities of atomic propositions, but they do this in a different and more complicated way. Feeling belief towards 'For all x , fx ' has certain causal properties which we call its expressing agreement only with the possibility that all the values of fx are true'.¹³

What causal properties has my feeling of belief towards 'All men are mortal'? According to Ramsey, this means that one expresses agreement with the possibilities 'A is mortal', 'B is mortal', 'C is mortal', etc. But, is this really true? Couldn't it be argued that the proposition 'All men are mortal' cannot be identified by a countable conjunction of atomic propositions each expressing a particular person's mortality since we must add to the conjunction the rider 'and these are all the people there are'. This is basically Russell's argument against the analysis of general propositions in terms of logical products and sums and it led him to the acceptance of, so-called, general facts.

Why, Ramsey asks in 'General propositions and causality' (1929), can, for example, 'All men are mortal', not be analyzed as a conjunction? He gives four arguments for this. Firstly, 'All men are mortal' cannot be written out as a conjunction. Secondly, it is never

¹³ Page 49.

used as a conjunction. The statements are different as a basis for action. This is emphasized in the third argument which states that 'All men are mortal' exceeds by far what we know or have knowledge of. What we know is, to take another example, that a particular copper rod expands if it is heated, that a particular iron rod expands if it is heated, that a particular silver rod expands if it is heated, . . . , etc. But this is quite different from stating that 'All solid bodies expand if heated'. The latter sentence is a hypothesis which goes far beyond the experimental knowledge that may be the basis for the generalization. Finally, he argues that what we can be certain about is the particular case, or a finite set of particular cases. Of an infinite set of particular cases we could not be certain at all.

Thus, 'All men are mortal': '... expresses an inference we are at many times prepared to make, not a belief of the primary sort. A belief of the primary sort is a map of neighbouring space by which we steer. It remains such a map however much we complicate it or fill in details. But if we professedly extend it to infinity, it is no longer a map; we cannot take it in or steer by it. Our journey is over before we need its remoter parts'.¹⁴

Russell's analysis of general propositions resulted in his acceptance of general facts. General facts are needed as well as particular facts if general propositions are to be assigned any truth value. Ramsey did not want to accept general facts. Wittgenstein was correct in stating that the world can be described entirely using particular or atomic facts. But as conjunctions are constructed out of atomic propositions, propositions about atomic facts, we see that 'All men are mortal', not being a conjunction, cannot be a proposition. If it is not a conjunction and thus not a proposition, how then are we to look upon sentences of this type? What status do they have; in what way can they be right or wrong?

Ramsey gives a pragmatic answer to this question. The fact that general propositions are neither true nor false, that they carry no truth value, does not imply that they are meaningless. In our day-to-day dealing, this type of sentence is the foundation of the expectations that direct our actions. If I accept that all men are mortal,

¹⁴ Page 146.

this means that when I meet a man, I believe I have met a mortal. As Ramsey puts it, a general proposition is *not a judgement but a rule for judging*: it cannot be negated but it can be disagreed with.

Ramsey's theory of truth and belief, as it is sketched in FP, is thus in this respect a somewhat different theory from the one we get if we also take account of his theory of general propositions in 'General propositions and causality'. Personally I believe that the blended version is a far more interesting and accurate theory. In what follows it is the blended version of Ramsey's theory that I shall take to give the correct analysis of the concept of truth.

Certain

How is Ramsey's second condition of knowledge to be interpreted? What does he mean by saying that in order to be knowledge a belief has to be *certain*? Let us call this second assumption of Ramsey's the certainty condition. One way to interpret this condition is to identify it to some extent with the true-justified-belief account's condition of sufficient evidence; a *belief* is knowledge if it among other things is certain, i.e. backed up by a sufficient amount of reliable evidence. However, I strongly believe that this interpretation is false. This is obvious if we note that, if it is interpreted in this way, the second condition will be redundant given Ramsey's third condition. What the certainty condition says is simply that the belief must be *full* belief, i.e. the agent is certain that *p*.

One reason for interpreting the certainty condition as 'X has full belief in *p*' is that the whole of Ramsey's philosophy is largely derived from a conviction that it is important to formulate a human logic, a logic of rational action. His philosophy of probability is only one example of the importance he attaches to understanding the rational elements of individual decision making. If X states that he knows that the bank is open until six o'clock today, Thursday, he does not need to telephone the bank to have this confirmed. If he believes that the bank is open until six o'clock and this belief is to be considered as knowledge he might just as well go to the bank after work as rush there during the lunch hour, and thus we could expect him to act accordingly. In this case, it means that he ought to act as

if the proposition, the bank is open until six o'clock today, Thursday, has a probability of 1 (or sufficiently close to 1). A phone call would be quite unnecessary, a sheer waste of time and money. Such a phone call is therefore to be interpreted as meaning that X does not assign probability 1 to the proposition in question, that X is after all not certain that *p*. Perhaps X does not know that the bank is open in the evening he is only expressing a probable opinion.

Reliable process

Ramsey's first two conditions of knowledge have resemblances with the traditional analysis. But his third condition diverges considerably from the three conditions of the true justified belief approach. Ramsey requires X's belief (that *p*) has been obtained by a reliable process. It is not sufficient that X has evidence for believing that *p*, the way in which we acquire our beliefs should be reliable. We see the importance of Ramsey's view if we envisage a situation in which a seemingly reliable witness who has not seen a particular incident manages all the same to pull off the feat of recounting the correct sequence of events. Probably one can then say, according to the true-justified-belief analysis, that the judge has knowledge of the incident, i.e. on the condition that he thinks he has evidence for accepting the witness's account. But this would seem to be unacceptable from another point of view. It is doubtful whether the judge can be considered to have any actual knowledge. The witness's account admittedly reflects reality, but it has no connection with the actual sequence of events. Something more is needed. The witness's account which, if he is lying, is based on his belief ought to keep a record of reality. The process leading to the witness's memory of the incident and thus also to the judge's attitude must be reliable.

It must be by having pondered over this kind of problems that Ramsey came to realize the importance of the reliable process. His brief discussion of memory and how our memories may be obtained by means of reliable processes speaks in favour of this. Ramsey's idea that such a process perhaps ought to be specified as a causal chain is extremely important.

It is interesting to note that for Ramsey the certainty condition

and his third condition of a reliable process are connected: 'We say 'I know', however, whenever we are certain, without reflecting on reliability. But if we did reflect then we should remain certain if, and only if, we thought our way reliable.'¹⁵

Firstly, this means that the certainty condition and the condition of a reliable process are not allowed to be simultaneously but independently satisfied. Whatever number of favourable and concurring pieces of evidence we might have, they are worthless if they are not obtained by a reliable process. Secondly, that full belief in *p*, to avoid some theoretical problems connected with the updating and dynamics of probabilities, should be interpreted as ascribing *p* a probability sufficiently close to 1.

By emphasizing that a reliable process is necessary for knowledge, a belief being knowledge if it is obtained by such a process and is true, i.e. always leads to success, Ramsey sidesteps many of the difficulties of the traditional theory.¹⁶ It is easily noted, for example, that Russell-Gettier examples are no problem to a theory of knowledge like Ramsey's. Ramsey's theory as it is presented here may be considered to give both necessary and sufficient conditions for knowledge. The theory constitutes a superior alternative to the traditional model of knowledge and to the variations on that theme.

The reliability condition thus tells us that the provenance of knowledge is of decisive importance. To have full belief is not enough, not even if the belief is supported by loads of evidence. But as important as the provenance of the beliefs we call knowledge is their future use. A belief, being a map by which we steer, must guide our future actions. A mental state of full belief, obtained by a reliable method, is definitely not knowledge if it leads us on the wrong track; to be knowledge it must help us to avoid errors. Thus,

¹⁵ Page 110.

¹⁶ Richard Grandy, in discussing Ramsey's theory, has shown that the reliability idea can be found in theories of knowledge of later date. See R. E. Grandy, 'Ramsey, reliability and knowledge' in *Prospect for Pragmatism*, (ed. by) D. H. Mellor, Cambridge 1980, D. Armstrong, *Belief, Truth and Knowledge*, Cambridge 1973, P. Unger, 'Analysis of factual knowledge', *Journal of Philosophy* 65, (1968), 157—169, and J. Watling, 'Inference from the known to the unknown', *Proceedings of the Aristotelian Society* 55, (1954), 83—108.

knowledge is simply not true justified belief but rather: *A belief is knowledge if it is obtained by a reliable process and if it always leads to success.*

Reliability and induction

A contemporary counterpart to Ramsey's theory is Alvin Goldman's well-known causal theory of knowledge.¹⁷ Goldman suggests that there is a causal connection between what we have knowledge of and our beliefs. More precisely he argues that a person *X* knows that *p* if and only if the fact *p* is causally connected in an 'appropriate' way with *X*'s believing *p*. Goldman gives the following list of so-called 'appropriate' knowledge-producing causal processes: (1) perception, (2) memory, (3) some types of causal chains. Compare this idea with the following lines from 'Knowledge': 'Can we say that a memory is obtained by a reliable process? I think perhaps we can if we mean the causal process connecting what happens with my remembering it'.¹⁸ Ramsey explicitly mentions (2) and (3) as examples of knowledge-producing reliable processes. Why he prefers to discuss memory instead of the more obvious alternative, perception, I cannot say. Goldman's theory shows that it may prove difficult, but tempting, to interpret the reliable processes Ramsey mentions exclusively in terms of causality. Why such an interpretation may be useful on occasion is evident but it may result in unnecessary complications. Let me briefly mention one of the major ones.¹⁹

There are propositions that do not fit into Goldman's analysis, thus questioning its generality. We say, for example, that we know that all men are mortal. But exactly how is our belief in this universal proposition connected with the fact that all men are mortal? Can the fact that all men are mortal be the cause of anything? Goldman's solution to the problem is to argue that logical

¹⁷ 'A causal theory of knowing', *The Journal of Philosophy* 64, (1967), 355—372.

¹⁸ Page 110.

¹⁹ See the introduction (page 24) to *Essays on Knowledge and Justification*, (ed. by) G. S. Pappas & M. Swain, Cornell University Press, Ithaca 1978.

and inferential connections should be included as parts of the appropriate causal chains. Since Goldman's aim is to give a causal analysis of 'X knows that *p*' this solution is rather ad hoc. For Ramsey's theory this type of example causes no problem since among the reliable processes we can count causal as well as inferential processes (i.e. all aspects of what might be called "sound reasoning" can and should be counted as a reliable process). Thus mathematical knowledge can easily be handled. However, for quite a different reason, which was mentioned above, discussing his theory of truth, Ramsey would have argued that we do not know that all men are mortal. In his later theory of law and causality he argues that general (universal) propositions are not truth value bearing. Thus the truth condition cannot be satisfied; we cannot be sure that our belief that all men are mortal will always lead to success.²⁰

Another theory that closely mirrors Ramsey's theory is Robert Nozick's recent theory of knowledge. Nozick's idea that to know is to have a belief that tracks the truth is but a development of Ramsey's third condition in terms of subjunctive conditionals.²¹ The difference, for example, between the historian writing a book on Guiseppe Garibaldi and the author writing a novel based on a nineteenth-century theme is simply that the historian has to find the tracks of the past, whereas the author is in no way committed to this; he or she is free to neglect the reliable processes that exists—he or she is allowed to break any causal chain they like.

It can be argued that reliability, regardless of how it is developed, has nothing to do with epistemic justification. Theories introducing, for example, causal chains or subjunctive conditionals cannot be right simply because they develop Ramsey's condition of a reliable process, which is based on a series of mistakes. John Pollock, having collected arguments against 'process reliabilism', asks us to consider the old problem with the brain in the vat. A person is

²⁰ See 'General propositions and causality', and Chapter 4 of *The Philosophy of F. P. Ramsey*.

²¹ See N-E Sahlin, 'How to be 100% certain 99.5% of the time', *Journal of Philosophy*, 83 (1986), 91–111.

assumed to have had his brain removed and been connected to a computer that directly stimulates the visual cortex so that the person has what seem like normal sensory experiences although they are totally unrelated to the brain's surroundings.²² It is now argued that perception has become an unreliable cognitive process and that this shows that accepting Ramsey's third condition forces us also to accept that the brain-in-the-vat's beliefs are unjustified. Furthermore, it is argued that if this person sees red under what to it appears as normal circumstances, it is justified, but if the brain makes the same judgement under circumstances in which the perceived object is bathed in coloured light, it is not justified. We want to be able, the argument goes, to make discriminations between such situations, but the reliable process does not give us that possibility; the brain's perceptual judgments are always unreliable.

A second argument, and one which Pollock takes to be a fundamental difficulty for those believing in reliable processes, runs as follows. The reliabilist criterion entails that in order for a belief to be justified it must be true. The reliable processes must be irrefutable. Why? The argument runs as follows: 'If it makes any sense at all to talk about the reliability of the cognitive process "under the present circumstances" (in all their specificity); it seems that it must be the indefinite probability of producing a true belief, conditional on everything true of the present circumstances. But the present circumstances are infinitely specific and include, among other things, the truth value of the belief being produced by the cognitive process and the fact that is the belief being produced. Consequently, this indefinite probability must go the same way as objective definite probabilities and be either 1 or 0 depending upon whether the belief in question is true or false'²³.

None of these arguments are very convincing. We have to remember that there is a fundamental difference between saying that a reliable process is necessary for knowledge and how we determine if such a process is reliable or not, i.e. between the analytical and the methodological problem. Assume that the brain-in-the-vat sees

²² *Contemporary Theories of Knowledge*, Hutchinson 1986, page 116.

²³ *Contemporary Theories of Knowledge*, Page 118.

a beautiful landscape. Its belief that it actually sees a landscape is knowledge if it is caused or produced by a reliable process and if this belief always leads to success. Thus the answer to the sceptic's problem is straightforward; our brain does not know that there is such a landscape, the belief is false; qua basis for action its belief will not always lead to success. A process that tells us that something that does not exist exists is not all that reliable.

It is also readily noted that in order to give justified belief, a reliable process does not need to be infallible. I began this essay by mentioning the tradition of epistemology taking knowledge to be an unanalysable mental state. To have a belief is, it was argued, on the one hand, to know something that supports the belief and, on the other hand, to know that this piece of information is inadequate. Therefore, knowledge has to be a mental state which guarantees truth. This idea seems to turn on the same mistake as the argument that a reliable process has to be infallible. We cannot say that we know something when the object of our belief is in fact false. Nor can we reasonably say that we know the very same thing if our belief is obtained by a lucky fluke. But this doesn't show that a state of knowledge has to be in guarantee of truth or that the reliable process has to be infallible. A judge, for example, may argue that she is justified in believing that the defendant is guilty because a witness testifies that he saw the defendant commit the felony. There is a reliable process, the witness, which makes her belief justified. But if the defendant is innocent, we would not argue that infallible reliable processes are needed: rather we would say that in this case the belief was not knowledge because it was not obtained by a sufficiently reliable process (the witness simply told a lie).

The provenance of knowledge is important; our beliefs should be obtained by a reliable process. However, also the potency of our beliefs is important. Being a map by which we steer, the greater the possibility of success a belief has, the greater its utility. But the potency of a belief is directly related to the reliable processes on which it is founded.

You believe, and so do I, that all men are mortal. This general belief of ours is not what Ramsey means by a belief of the primary sort, and thus in itself not a map of neighbouring space. The reason

for this is that if we, as Ramsey puts it, 'professedly extend it to infinity, it is no longer a map; we cannot take it in or steer by it. Our journey is over before we need its remoter parts'.²⁴ General beliefs are not truth value bearing. But what status do they then have? Ramsey gives, of course, a pragmatic answer to this question. The fact that general beliefs carry no truth value does not entail that they are meaningless. It is in fact this type of general habits which are the foundation of the expectations that direct our actions. If I accept that all men are mortal, this means that next time I meet a fellow man, I am right in believing that he or she is mortal. I do not *know* that he or she is mortal, of course; the truth condition not being satisfied, there is no guarantee that my general inferential habits always lead to successful predictions.

But why do we regard some general beliefs as better habits qua basis for action than others? It is not because they are backed up by more evidence; that they have proved successful in the past. It is because we believe that there are underlying reliable processes or mechanisms accounting for our habits. The regularities mirrored by our belief are not fictitious; they are real and caused or produced by a reliable process. Our habit of acting as if all men are mortal is successful simply because there is an underlying biological mechanism which more or less rapidly breaks down our bodies. The chicken's belief that all *Danaus plexippus* (black-white-yellow coloured caterpillar) are poisonous is effective because there is a causal connection between the eating of such a caterpillar and an upset stomach. There is an underlying reliable mechanism or process. If there had not been such a link, the belief would definitely proved unsuccessful at times when there is a considerable shortage of (edible) caterpillars. The chicken could, of course, systematize its experience in a rather capricious way, resulting in a policy leading to refraining from eating *Danaus plexippus*. It is also feasible that one, on the basis of available evidence, can make a case for the reasonableness of this policy. But the fact is that such a strategy of pure guesses will have a considerable chance of becoming defeated by a habit based on a reliable process. In the short run the species

²⁴ Page 146.

may survive and flourish; in the long run it has a greater chance of becoming defunct. Basing our actions on reliable processes or mechanism diminishes the possibility of error.

It is important to note that we do not need to assume that we can account for the underlying mechanisms or the reliable processes. No one has a clue to the enigma of aging. But this fact does not make our habit less successful; it is successful because there is an underlying mechanism, one which we eventually may come to understand far better. It has been argued that a fundamental problem for the type of externalist theory of knowledge and induction discussed is that a person must know that the reliable process is reliable in order for his or her beliefs to be knowledge. This is, as we have seen, not true. The chicken knows that the caterpillar is poisonous, but cannot account for its belief. Or as Ramsey puts it: 'We say "I know", however, whenever we are certain, without reflecting on reliability. But if we did reflect then we should remain certain if, and only if, we thought our way reliable'.²⁵

What we have discussed is in fact the classical problem of induction. Hume's problem is a problem of justification or validity. The premises of an inductive argument do not logically entail its conclusion. But what is it that has to be certified? The truth of the belief? Of course not! General beliefs carry no truth value; they 'are not judgments but rules for judging "If I meet a Φ , I shall regard it as a ψ "'.²⁶ What has to be certified is the effectiveness of our general inferential habits or beliefs. The only way in which this can adequately be done is, as we have seen, by assuming the existence of underlying reliable processes.²⁷

²⁵ Page 110.

²⁶ Page 149.

²⁷ A far more detailed a discussion of the general arguments just outlined can be found in D. H. Mellor, *The Warrant of Induction*, Cambridge University Press, Cambridge 1988. Taking some of Ramsey's general ideas as a basis, Mellor provides detailed argued for the reliable processes as a way of warranting induction. Historical links and related theories can be found in C. S. Peirce, *Chance Love and Logic*, London 1923; R. B. Braithwaite, *Scientific Explanation*, Cambridge University Press, Cambridge 1953; and S. Halldén, *The Strategy of Ignorance*, Thales, Uppsala 1986.

In TP Ramsey maintains that: 'We are all convinced by inductive arguments, and our conviction is reasonable because the world is so constituted that inductive arguments lead on the whole to true opinions. We are not, therefore, able to help trusting induction, nor if we could help it do we see any reason why we should, because we believe it to be a reliable process'.²⁸ That is, our conviction is reasonable because the world is so constituted, there are reliable processes, that inductive arguments on the whole lead to success.

The outlined externalist theory of induction and knowledge has many virtues. It analyses knowledge and induction in a similar way; the existence of reliable processes or mechanisms is central to both knowledge and induction. It is forward-looking as well as backward-looking, i.e. it explains why our habits have been useful in the past and tells us why they will be useful in the future. Thus, I can't see that any conclusive, or for that matter serious, argument exists which should force us to give up an externalist program, to give up arguing for process reliabilism, i.e. for a *ramseyian* theory of knowledge and induction.²⁹

²⁸ Page 93.

²⁹ Ramsey discusses the problem of induction in TP and in an unpublished paper on induction ('Paper to the Society, Autumn 1922, Frank Ramsey Collection, document number 007-06-02, Archives of Scientific Philosophy in the Twentieth Century, University of Pittsburgh), now in F. P. Ramsey, *Notes on Philosophy, Probability and Mathematics*, ed. by M. C. Galavotti, Bibliopolis, Napoli 1991.