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The Nature and Purpose of Belief

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This paper reviews intellectualistic, dispositional, and feeling or occurrent theories of belief. The feeling theory is favored. The purpose of belief is to guide action, not to indicate truth. Decisions about actions often have to be made quickly in the absence of evidence. Belief gives speed and economy to inquiry and counterfactual thinking. The feeling theory explains this role of belief and suggests mechanisms for overconfidence of correctness, confirmation bias, wishful believing, vacillating belief, the difficulty with multifactorial reasoning, the inability to withhold judgment, the delusions of mental illness, and the relations between belief, opinion, and knowledge. The intellectualistic theory of belief fails because it gives undue weight to evidence as the most salient or available factor concerned with belief, which leads to the mistaken conclusion that the purpose of belief is to indicate truth.

Keywords: belief, counterfactual, delusion

This inquiry into the purpose of belief begins by deciding which of the competing theories about the nature of belief seems most likely to be true. The paper assumes that mental events exist and that they cause behavior, though neither of these things is really understood and epiphenomenalism has never been disproved. Nevertheless, I assume that a woman goes to the medicine cabinet and takes a headache tablet because she is aware of her subjective unpleasant pain and aware of her belief that the tablet may help.

The Intellectualistic Theory of Belief

The intellectualistic theory is perhaps the first theory of belief that comes to mind. John Locke held the intellectualistic theory, and gave this definition of belief: "Belief is the admitting or receiving of any proposition for true, upon arguments or proofs that are found to persuade us to receive it as true, without

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certain knowledge that it is so" (Locke, 1690/1976, book 4, chapter 15, section 3; his assumption that there is a fundamental difference between knowing knowledge and believing opinion is set aside till the end of this paper). Belief is defined in terms of its cause, or what the intellectualistic theory supposes is its cause. The theory holds that belief is the result of cognitive appraisal of evidence, and says that belief is the state or attitude that results when appraisal concludes that a proposition is true or probably true. The theory implies that the purpose of belief is to indicate truth.

The most obvious difficulty for the intellectualistic theory is the high prevalence of irrational beliefs and of beliefs that the believer cannot justify with evidence (for convenience called here unjustified beliefs). These beliefs are often taken to include religious faith, myths and some other beliefs shared by a community, and the delusions of people with severe mental illness. A common response to this difficulty is to exclude these three classes of belief as special cases. These exclusions limit the range of applicability of the theory, which is unfortunate. Shared beliefs are excluded on the ground that they can be believed on authority without the need for evidence. Delusions are sometimes excluded by the presumption that schizophrenia and severe depression are physical diseases and delusions are pathological products of a diseased brain. Berrios (1991) excluded delusions a little differently by showing convincingly that they fell far short of satisfying Price's authoritative operational definition of belief. Berrios concluded that delusions are "empty speech acts that disguise themselves as beliefs" (p. 8). But Price's definition is founded on the intellectualistic theory and stands or falls with that theory. If the definition is wrong then delusions may be beliefs, as they seem to be and as patients say they are.

Many irrational beliefs and unjustified beliefs are not covered by these exclusions. Gallup and Newport (1991), in their respected poll of adult Americans, found that one person in four reported some belief in ghosts, one in four believed in telepathy, one in six believed they have communicated with a dead person, one in ten believed they have seen or been in the presence of a ghost, one in ten believed they have talked to the devil, one in seven believed they have seen a UFO, and one in four say they have some belief in astrology. Some very intelligent people hold some odd beliefs. Throughout his life Tolstoy (1906/1961, p. 365) believed Shakespeare's plays were "insignificant" and "empty." Freud, despite the dissuasion of his friends, believed the Earl of Oxford wrote Shakespeare's plays (Jones, 1974, pp. 459–462). Kant never retracted his belief that all the planets are inhabited and the farthest planets have the "best" inhabitants (Paulsen, 1902, p. 77). Sir Fred Hoyle, the eminent astronomer, believed Darwin was wrong and evolution occurs because life forms that fall to Earth from space cause mutations (Obituary, 2001). Lenard, a Nobel Prize winning physicist, after he became a Nazi, believed Einstein's

physics was "mathematically botched-up . . . ancient knowledge and a few arbitrary additions . . . that now gradually falls to pieces" (Bernstein, 1991, p. 170). These may be aberrations, but they require explanation. A much longer list could be made.

Everyone holds many beliefs that may be true but for which they cannot provide any proper evidence (Kuhn, 1991). Some of these are shared beliefs that the believer has accepted on authority, but many are unjustified personal beliefs. The believer can often offer reasons for the belief that she does not stop to realize are inadequate. Often the reasons amount to no more than an elaborated restatement of the belief. Often they are unwarranted inductions based on only a few instances, or a single personal experience. Sometimes one reason is chosen on no valid basis from several possible reasons. Kuhn (1991) asked people to state and then justify their beliefs about what causes prisoners to return to crime after their release, what causes children to fail in school, and why some people don't get steady employment. Less than half her subjects could give any genuine evidence for their beliefs, even their firmly held beliefs. College graduates did little or no better than people with only basic schooling.

Different people often form different beliefs from the same evidence. Differences in past experience, present circumstances, personality, temperament, mood, and emotional state cause people to apprise evidence differently. Prisoners and ex-prisoners are likely to apprise a controversial decision by the parole board differently from the general public and the victim's family. Optimists and pessimists often reach opposite conclusions, as do doves and hawks. The beliefs of a woman with bipolar illness alter radically as she swings between depression, remission, and hypomania. A man may believe one thing when he feels angry and another the next day when he feels forgiving. The *appraisal theory* (Arnold, 1960, p. 189) accounts for these observations within the intellectualistic theory, provided the beliefs are within the bounds of reason. But the appraisal theory compromises the intellectualistic theory, since it acknowledges that other factors than evidence contribute importantly to the causes of some beliefs, and it does not explain irrational beliefs and unjustified beliefs.

Another suggestion to explain irrational beliefs within the intellectualistic theory is called the *intentionalistic theory*. This theory is associated with Donald Davidson. It proposes that the man who asserts a false belief is not irrational but intends to deceive himself, perhaps unconsciously, much as he might rationally intend to deceive another person by using deliberate lies. This explanation is claimed to apply to beliefs that concern issues that involve a conflict of values. It is plausible, for example, in some of the people who believe they have no feelings of racial prejudice, though the evidence of their behavior suggests otherwise. It does not seem applicable to most irrational beliefs (Lazar,

1999). It also compromises the intellectualistic theory, since it acknowledges that personal values, not evidence, contribute to the causes of some beliefs.

The simplest defence of the intellectualistic theory against the high prevalence of erroneous and unjustified beliefs is to suggest that people try to base their beliefs on evidence, but because this is a difficult task they do it poorly. In general people do evaluate evidence rather poorly, but this does not exonerate the theory, because people hold odd or unjustified beliefs about simple matters that are within their intellectual capacity.

There are several reasons why people apprise evidence poorly. One reason is over-confidence of correctness. In a general knowledge test about one quarter of the answers that college students were certain were correct were in fact wrong (Fischoff, Slovic, and Lichtenstein, 1977). Rapid and unwarranted induction is another common cause of false beliefs and unwarranted assumptions. For example, doctors often see patients who assume their recovery is due to treatment. The failure to raise all the relevant counterfactuals of a situation can lead to wrong conclusions and false beliefs.[1] Sometimes this happens because of the inherent fallibility of the largely unconscious process of raising counterfactuals (Maier, 1931). For example, solvers may not raise the answer to a simple crossword clue before they have the added cue of its first letter. Sometimes people leave out alternatives because they reach a wrong conclusion prematurely. Another cause of poor appraisal is that information that is irrelevant or unhelpful can masquerade as evidence and lead people into error. In an example from Kahneman and Tversky (1973) people were asked whether a man is more likely to be a lawyer or an engineer. Subjects who were told only that he lives in a town that has 70 lawyers and 30 engineers answered correctly. Other subjects were given the additional information that he is married and has no children, is a man of high capability and high motivation who promises to be quite successful in his field, and is well liked by his colleagues. Many of these subjects believed the man is equally likely to be an engineer or a lawyer. The fallibility of memory causes error. It is natural for people to believe their memories, but memories are often distorted by simplification or elaboration (Bartlett, 1932; Hyman and Loftus, 1998). People tend to misremember events so that they fit their current beliefs. Being ignorant of their ignorance leads people into error. This is common in children. When he was young one of my grandsons refused to believe that a photo of a small boy was of his father, because he knew his father was a man.

[1] "Counterfactual" as defined classically as an if *p* (then) *q* conditional where the antecedent *p* is or may be false. Thus defined, counterfactuals include forward-looking conditionals that are important in beliefs related to inquiry, prediction, and planning, such as "if you load one more suitcase on this cart it will tip over." These are excluded by the narrower definition of counterfactual used recently by some psychologists interested in the backward-looking emotions regret and remorse. I believe the classical definition is psychologically sound and it is convenient for expressing what I have to say.

Beliefs concerning complex multifactorial matters are often too simple (Gettys, Kelly, and Peterson, 1973). Even when many factors are considered they are considered serially, one by one. People often latch onto one or another aspect unduly, to form simplified constructs. For example, patients often offer simple reasons as complete explanations for strokes, for depression, and for other complex illnesses. When a good analysis of a complex issue would take time and effort people may resort to a quick rule of thumb, such as that consensus means correctness, or that the more detailed argument is the correct one (Chaiken and Stangor, 1987).

Finally, a number of unconscious biases frequently operate to distort appraisal and cause wrong beliefs (Kahneman, Slovic, and Tversky, 1982). Some of these biases will be considered later in this paper.

The high prevalence of irrational and unjustified beliefs is not the only difficulty the intellectualistic theory has to face. There are issues around the speed of belief and the inability to withhold judgment, and there is a difficulty about the uncanny ability to tell easily between believing a proposition and merely entertaining a proposition. There is the problem of how to explain the existence of beliefs that are not about propositions.

The intellectualistic theory allows for instant belief about familiar propositions, when belief can come from memory of the outcome of previous appraisal. With less familiar or more complex propositions the theory demands cognitive appraisal, which takes time. Yet belief often forms very quickly, faster than appraisal. When observing how medical students interpreted x-rays the education theorist Abercrombie (1960) noted that "the inferences the students made were not arrived at as a result of a series of logical steps, but swiftly and almost unconsciously. The validity of the inferences was usually not inquired into, indeed the process was usually accompanied by a feeling of certainty of being right" (p. 89). It is an interesting example. Radiologists interpret many x-rays almost instantly. They are trained to recognize the patterns and meaning comes directly from perception and memory. Medical students need to be more deliberate.

The intellectualistic theory requires that when a person does not have evidence about a proposition he or she should withhold judgment, which is to withhold belief. Also, while apprising a proposition a person should withhold judgment until appraisal is complete. People often fail to do this. There is something involuntary about believing that does not always follow the dictates of the intellectualistic theory.

All our perceptions and feelings are vetted by the belief–disbelief system. This is normally unnoticed and taken for granted. Evidence that it occurs comes from the effect of unexpected perceptions, which arouse doubt or disbelief that is noticed. Bertrand Russell (1921) commented: "Beliefs of this class are what are called 'judgments of perception.' . . . Such beliefs display themselves when

the expectations they arouse fail in any way" (pp. 237–242). Judgments of perception come by a direct process, which is independent of propositions or cognition.

The final difficulty concerns how people tell a belief from a mere thought. How are we able to distinguish so easily believing, or disbelieving, that the world might be flat from merely entertaining the assertion that the world might be flat? The intellectualistic theory has found this difficult to explain. The simplest suggestion is to propose that belief is signaled by some mental occurrence, perhaps a feeling. Most authors who hold the intellectualistic theory reject this suggestion for reasons presented below in the section on the difficulties faced by the feeling theory of belief. If there is no signal then the intellectualistic theory can easily lead to the eliminativist view that belief is not real, since it makes belief a theoretical construct (Churchland, 1981). Belief becomes a theoretical construct used by folk psychology to explain behavior: a hypothetical station in the uncertain cerebral processes between stimulus and response.

The Dispositional Theory of Belief

The dispositional theory holds that beliefs underlie regularities in a person's behavior and are recognized by observing these regularities. A dog's beliefs are inferred from its actions. Other people's beliefs are inferred from their actions and assertions. The key point of the dispositional theory is that it says a person recognizes his own beliefs in the same way, by observing his own actions. Wittgenstein (1953) wrote: "Believing . . . is a kind of disposition of the believing person. This is shewn me in the case of someone else by his behaviour; and by his words . . . how do I myself recognize my own disposition? — Here it will have been necessary for me to take notice of myself as others do" (pp. 191–192).

The dispositional theory defines belief in terms of its effects. It implies that the purpose of belief is to cause or to control behavior. It suggests how people can distinguish beliefs from mere thoughts. The fact that beliefs have duration, which has been a major difficulty for the feeling theory of belief, poses no problems for the dispositional theory. Almost all adherents of the dispositional theory have held the intellectualistic theory. They have held that beliefs are caused by appraisal of evidence and recognized by the actions they cause.

There are major problems with the dispositional theory. It is so counterintuitive that it is paradoxical. Did I really know that I believed it was raining because I noticed that I had put my umbrella up? Surely I believed directly from perception, and the belief or the knowledge caused the action. This is an example of a general rule. A person is usually aware of her belief before she asserts it or acts on it. The possible exception is when she seems to act on a

tacit belief; an issue considered later among the difficulties faced by the feeling theory of belief.

The dispositional theory implies that beliefs are the only cause of behavioral dispositions. Important though they are, beliefs are not the only cause of actions. Actions can stem from desire, anger, fear, and other emotions, from urges, appetites, addictions, conditioned responses, reflexes, unconscious processes, and cognition (cognition perhaps acting indirectly by causing beliefs). There is often a problem with detail. When I raise my umbrella, do I believe it is raining lightly or heavily? There is a difficulty with acts that seem contrary to habit or disposition. If I ignore the rain does that really mean I believe it is not raining? Taking account of context often solves this difficulty. Perhaps I had left my umbrella at home. But the difficulty is real, behavior is not as predictable as the theory requires. There are beliefs that cause no actions apart from statements that amount to assertions of the belief. Such assertions do not count, because they are circular (Griffiths, 1963). How does one know that one believes Sirius is farther away than Saturn? Because one said so. This is circular, whether it is asserted aloud to others or silently to oneself. Finally, many people report that they do get a mental occurrence or feeling that accompanies and signals their believing.

The Feeling Theory of Belief

Also known as the occurrent theory, the feeling theory of belief holds that belief is a feeling that occurs and signals to the person that he or she believes the proposition or matter being considered. Disbelief is a different feeling that signals disbelief. Hume (1739/1925) expressed the theory well in the following passages. "When I give the preference to one set of arguments above another, I do nothing but decide from my feeling concerning the superiority of their influence" (book 1, part 3, section 8). "Belief is more properly an act of the sensitive, than of the cogitative part of our natures" (book 1, part 4, section 1). "An idea assented to feels different from a fictitious idea . . . tis impossible to explain perfectly this feeling . . . but its name is belief" (book 1, part 3, section 7). Hume would have done well to leave it at that, since all feelings are ineffable, they can be named but not described. But he did try to describe the feeling attached to the believed idea, writing "this different feeling I endeavour to explain by calling it a superior force, or vivacity, or solidity, or firmness, or steadiness" (book 1, part 3, section 7) and "belief in general consists in nothing but the vivacity of an idea" (book 1, part 4, section 2). He has been roundly criticized for this endeavor and his theory of belief has probably lost credence on this account.

There are two misconceptions about the feeling theory that I have met with in discussions and correspondence about the subject. The first mistake is to

think the theory means that belief is signaled by some combination of our ordinary emotions and feelings. The theory says that belief and disbelief are specific feelings. Beliefs about emotionally charged matters often arouse emotions, but these emotions are not the belief, they are effects of the belief. The second mistake is to think that the theory proposes a different feeling for every different belief. The feeling of belief does not signal what is believed. It only signals that belief is occurring. The feeling somehow becomes attached to the matter that is being believed. As Russell (1921) explained: "In all these cases the believing is just the same, and only the believed contents are different" (pp. 232–233), the feeling "is attached to the content believed" (p. 250). "A man is believing at a given moment . . . the contents of his mind at that moment" (p. 234): that is, those contents at the center of his attention in working memory at that moment.

The feeling theory postulates what belief is and how it is recognized. It does not define or constrain the causes of belief. It thus avoids difficulties with irrational and unjustified beliefs, provided that causes can be found to explain these beliefs. It has no difficulty in accepting the existence of beliefs that are not about propositions. Nor does the theory define the effects of beliefs. It has no difficulty with beliefs that cause no actions or no actions other than assertions of the belief. It is comfortable with the notion that belief is one of several causes of behavior. It is compatible with the intellectualistic theory. It pre-empts the dispositional theory. It denies eliminativist theories, since it makes belief a real thing in the world, albeit a subjective thing, not just a theoretical construct.

The most direct evidence for the theory comes from introspection: from people who, like Hume, who report feelings that accompany belief and disbelief. When these people entertain the proposition that France is a country in Western Europe they are aware of a gentle feeling of assent that they call belief. When they entertain the proposition that Mount Everest is in the Canadian Rockies they get a different and more noticeable feeling that they call disbelief. C.S. Peirce (1877/1957) wrote: "We generally know when we wish to ask a question and when we wish to pronounce a judgment, for there is a dissimilarity between the sensation of doubting and that of believing . . . . Doubt is an uneasy and dissatisfied state from which we struggle to free ourselves and pass into a state of belief; while the latter is a calm and satisfactory state which we do not wish to avoid" (pp. 10–11).[2]

The general and justified distrust of introspection might be used as an argument against the feeling theory. But introspection is the only way to know

[2]In Peirce, doubt, as here, sometimes means disbelief, and at other times means indecision about a proposed course of action. Peirce emphasized strongly that beliefs cause dispositions to particular actions, so for him the two meanings were related.

what mental events we have, or even that we have mental events. This is all the feeling theory asks of it.

If belief and disbelief are feelings then they should share some properties with other emotions and feelings. They do: they share with emotions that they vary in intensity of feeling, that in large measure they are not under voluntary control, that they are ineffable, and that they have valence — belief being slightly pleasant and disbelief slightly unpleasant.

Like other emotions, belief sometimes occurs with pathological intensity, when it may be free floating and attached to everything in consciousness. This occasionally happens during epileptic seizures arising from limbic areas. One patient reported: "Each time this happens, these thoughts occur very clear and bright to me, they seem as if this is what the world is all about — this is the absolute truth" (MacLean, 1990, p. 449). Abnormally intense belief sometimes occurs under the influence of mind-altering drugs. William James (1890) wrote of nitrous oxide intoxication "in which a man's very soul will sweat with conviction, and he will be all the while unable to tell what he is convinced of at all" (p. 284). Similar abnormally-intense beliefs may occur in schizophrenia. One patient reported that "It struck me I knew everything; everything was revealed to me, all the secrets of the world were mine during those spacious hours" (Jaspers, 1923/1962, p. 115). Another patient said of his delusional perception: "Everything is so dead certain that no amount of seeing to the contrary will make it doubtful" (p. 100).

Belief and disbelief are not accompanied by any definite change in facial expression or body language. Recently, characteristic facial expressions and body language have been used to identify emotions, with less emphasis on the subjective feelings that were once regarded as the essence of emotions. Their absence in belief could be considered a difficulty for the feeling theory. It is one of the reasons that led the anthropologist Needham (1972), who was used to working with exotic cultures, to his eliminativist conclusion that belief probably does not exist. (His other reason was that he found that no society had described belief.) But facial expression and body language, as their names imply, are non-verbal communications. As with the communications of animals and birds, they are signals to send messages to others. I suggest that subjective emotional feelings are signals to the person experiencing them. When evolution has found there is nothing to gain by signaling an emotion to others there will be no definite facial expression or body language. Hope and envy are examples, as are slight intensities of many feelings, and, I suggest, belief and disbelief.

The most obvious difficulty faced by the feeling theory is that some people report that they are not aware of feelings of belief. There are two responses to this difficulty. I believe each accounts for some instances. The first is to argue that much of the time belief is a weak feeling at the periphery of attention

that we often do not notice and may fail to identify. Belief in perceptions is of this type, as are many instances of taking things for granted, for example, that the kettle is where we expect (believe) it to be when we make tea. Skill in introspection varies from person to person and can be increased by training (Boring, 1953). In an analogy with another feeling, some patients with chronic depression fail to identify their mood until they look back after successful treatment. The second response is related to the fact that many people report feelings that accompany belief, but which they say cannot be belief. Feelings of conviction, confidence, assent, and certainty have been regarded in this way. Similarly, people have argued that their feelings of doubt and dissent cannot be disbelief. For example, Braithwaite (1933) and Price (1935, 1969) denied that there was such a thing as a feeling of belief, but Braithwaite was aware of the feeling of conviction, and Price was aware of feelings of doubt and confidence. There have been three objections to regarding these feelings as belief or disbelief. Some people, for example Braithwaite, report that their feeling is not noticed with every act of believing. I suggest that they only notice the feeling when it is strong. The second objection is that the feelings are too coarse-grained to serve belief. This is the second of the misconceptions discussed above. The third objection is the more general objection to the feeling theory on the ground that beliefs have duration, which is countered below. I submit that these feelings are belief and disbelief, but given different names. When a person believes any item that item feels true to him. This may be the same belief feeling. Ironically, it may be one source of the intellectualistic theory.

The duration of beliefs has been a major difficulty because the feeling theory has been taken to deny that beliefs can continue beyond the brief time that they are felt in consciousness. For example, Ginsberg (1972, p. 5) wrote that Hume's theory implies that a quietly sleeping person has no beliefs. The truth, of course, is that people have a huge store of beliefs. If the feeling theory really did deny this fact it would be untenable. Influential writers who have turned away from the feeling theory because of the fact that beliefs have duration include Wittgenstein (1953), Scheffler (1965, p. 96), Price (1969, p. 244), Needham (1972, p. 104), and Armstrong (1973, p. 7). Wittgenstein wrote "One feels conviction within oneself . . . . Believing is a state of mind. It has duration . . . so it is a kind of disposition of the believing person" (p. 191).

I believe that the rejection of the feeling theory on this ground has been a mistake. The problem of the duration of belief can be explained by the ordinary operations of memory. People's beliefs that they are not in the act of believing are a subset of their memories that they are not in the act of recalling. Anything being entertained and believed is a content of working memory at that time. As with other memories, many beliefs are transient. They serve the purpose of the moment and do not outlast the duration of working

memory. I believe that a bird chirped outside the window. As with other memories, some more significant beliefs enter long term memory stores and are recalled by cues from certain situations if these arise. (The fact that the matter has been believed before is recalled. Whether the feeling of belief is recalled or whether instead it is felt afresh is more difficult to be sure about.) The situation seems similar to that with other feelings and emotions. For example, a woman who is afraid of spiders has an enduring fear and a disposition to avoid spiders, though each recurrent feeling of fright is transient.

The existence of tacit or unconscious beliefs fits easily with the dispositional theory but looks like a problem for the feeling theory (and the intellectualistic theory). All unconscious mental events are revealed by the behavioral dispositions they cause and are named after the conscious mental events that cause similar behaviors. There are tacit memory, desire, fear, guilt, anger, knowledge, and belief. Tacit belief is invoked when one explanation for something a person has done is to suppose that she has a belief that she is unaware of. Tacit memory seems the least problematical. There is something paradoxical about unconscious guilt, unconscious desire, and unconscious belief. Yet the behaviors exist. Perhaps the names for them are inadequate. The names may be metaphors, just as the computer's "memory" is a metaphor. The feeling theory accepts that some behavior has unconscious causes.

The Nature and Purpose of Belief

The feeling theory of belief makes no definite presumptions about the causes, effects, and purposes of belief. It invites an inquiry into these. It suggests that belief did not evolve to be a guide to abstract truth, as belief is such an unreliable guide to truth. It is more likely that the purpose of belief is to guide practical action. This may explain why beliefs often form quickly and in the absence of much appraisal of evidence, since decisions about action often have to be made quickly and in the absence of useful evidence. The feeling theory has a different paradigm from the intellectualistic theory. When the criterion of indicating truth is discarded and the criterion of guiding action is adopted many of the puzzling observations about belief fall into place.

The Causes of Belief

Many factors may contribute to causing a person to form a particular belief. These factors include appraisal of evidence for the believed proposition, acceptance of authority, acceptance of assertion, the prior beliefs, the emotional state, the personality, the wishes, and the previous experience of the believer, the shared beliefs of the community, the way language and non-verbal communication are used, and the power of repetition. Direct experience

has a stronger effect than testimony has on the formation of beliefs. Finally, there is probably natural credulity or an innate tendency to believe. The appraisal of evidence was considered above, but some of the other factors deserve further comment.

The conservative effect of prior beliefs is particularly strong when the new item demands a conceptual revision, a smaller or greater paradigm shift. This is much harder work than adopting or discarding a simple discrete belief. It is also especially hard to challenge a core belief about values in which the believer has an emotional stake.

The members of a community, on the whole, share the same traditions, freedoms, education, media, information, propaganda, government, social structure, war or peace, wealth or poverty, secular or religious outlook, and loose or strict code of conduct. It is not surprising that they share beliefs. For example, Becker (1932, pp. 1–32) contrasted the worldview of Thomas Aquinas's circle with that of his own academic group. The saint's group believed that each man and woman is a central part of God's purpose and that the world is a probationary dwelling place to test each soul's merit for a better afterlife. The academics believed that the universe is a mass of indifferent physics, that humankind's existence is a brief fluke, and there is no soul and no god. Both sets of shared beliefs are internally coherent, and the issue between them cannot be settled beyond dispute by evidence. The acceptance of authority, the bias to conform, and the power of repetition would have affected both groups.

Unjustified wishful belief is common. For example, after a rough football match between Princeton and Dartmouth the supporters of each team had quite different beliefs about the game. Influenced by loyalty to their own group they had observed, remembered, and believed wishfully (Hastorf and Cantril, 1954). Group psychology may cause wishful beliefs. It produces a bias to conform to the beliefs and actions of the group (Asch, 1952, pp. 450–501), and an innate bias to devalue out-groups (Premack and Premack, 1995). Rationalization, projection, suppression, denial, and identification are ego defenses that use wishful distortions of belief to maintain self-esteem. There is a bias to take credit and shed blame for outcomes in which the believer has had a role (Beckman, 1970). There is a bias to believe flattery even when we should realize it is unwarranted or insincere, and to disbelieve criticism even when we should realize it is justified (see review by Reeves and Nass, 1996, pp. 53–63, 266–267). There also is a hindsight bias (see review by Blank, Musch, and Pohl, 2007). Once an event has happened people often wrongly believe that they could have predicted it, or did predict it, and that others should have predicted it. High intelligence does not confer immunity from wishful belief. The unusual beliefs of Tolstoy, Freud, and Lenard, described above, look wishful. Tolstoy was envious of Shakespeare and Freud may have been. Lenard was affected by in-group psychology. With regard to expectation

or beliefs about the future, optimists are especially prone to believe what they would like to be true.

Concerning belief in testimony, the recipient makes judgments about the reliability of the source, that affect what he or she believes. These judgments can have an irrational element. Humans tend to believe people they like and to like people who believe them. When a man is an accepted expert on one topic there is a bias to believe him on other unrelated topics.

Some of the ways that language affects belief are fairly obvious, such as the choice of terms and mode of delivery in a communication. One less salient influence deserves comment. It concerns whether a person tends toward nominalism or realism in his approach to universals. There was an example of its power in the discussion above of Price's definition of belief. A nominalist orientation led to the conclusion that delusions are not beliefs, while a realist approach led to the opposite conclusion. The issue arises often. It nearly surfaced again in the analysis of the relation between facial expression and emotion.

The masters of propaganda stress the power of repetition. In *Mein Kampf* Hitler stressed the effect of repeating the same few simple points over and over "thousands" of times — "persistence is the most important requirement" (Hitler, 1925/1943, p. 184). I have had the following experience with the power of repetition. The winter Olympics at Salt Lake City got irreverent treatment on late night television in Australia at the hands of two humorists whose work I admire. Their program had some straight reporting and sincere tribute, but much that was tongue-in-cheek, satire, or plain nonsense. They were putting their full weight, so they said with straight faces, behind Australia's bid to host the 2010 winter games at Smiggins Holes. The humor is in the absurdity. None of Australia's ski fields is suitable for the Olympics. The short gentle runs at Smiggins are ideal for beginners. The joke continued, with a theme song, T-shirts, beer-can holders, a logo, and each night some new angle. One night Jacques Rogge, the Olympic chairman, was their guest. They gave him a T-shirt and showed him their promotional video of young women cavorting at Smiggins surrounded by peaks that looked like K2. He said it was interesting. And so on. I found that after three weeks of this the "bid" had lost its absurdity. I was starting to believe it. The feeling was definitely identifiable, a vacillating belief, depending on what was in working memory at that moment and whether or not I made the effort of appraisal. I was glad it did not go on for another month. It made me suspect that after enough skilful propaganda I would believe almost anything.

On some matters it is possible to use repetition to indoctrinate oneself. It is the least roundabout and perhaps the only way we have to deliberately believe something. Francis Galton (1908) described the temporary effect of repetition in two experiments on himself. Here is his description of one of them.

> An experiment to gain some idea of the commoner feelings of insanity. The method tried was to invest everything I met, whether human, animal, or inanimate, with the imaginary attributes of a spy. Having arranged plans, I started my morning's walk from Rutland Gate, and found the experiment only too successful. By the time I had walked one and a half miles, and reached the cabstand at Piccadilly, every horse at the stand seemed watching me, either with pricked ears or disguising its espionage. Hours passed before this uncanny sensation wore off, and I feel I could only too easily re-establish it. (pp. 276–277)

James Pratt (1920), in his study of the psychology of religion, cited a woman who was able to regain her faith to help her cope with a crisis. She reported:

> I deliberately set to work to recognize the sense of God's presence which I had not had for nearly twenty years. I reinforced my reason by reiterating my reasons for assuming such a personality, and I prayed constantly after the fashion of the old skeptic: "O God, if there is a God, save my soul if I have a soul." Then one night after a week of this sort of thing, the old sense of God's presence came upon me with overpowering fullness. (p. 221)

It is probable that self-indoctrination occasionally occurs unwittingly. I have seen this happen to several people during the long pursuit of unjustified compensation claims. I have met people who had persuaded themselves that they were unattractive. I suspect that some emaciated patients with anorexia nervosa who claim that they are still overweight have told themselves this so often that they believe it.

Why does repetition have this effect? When we disbelieve a proposition on first contact, why do we not doubt it more and more on hearing it again and again, but often begin to believe it? Perhaps disbelief, like horror, is a feeling prone to habituation when its provoking stimulus is repeated, while a natural tendency to assent gradually asserts itself with repeated exposure. A similar unconscious effect of repeated exposure is known to determine and increase preference (Zajonc, 1980).

The idea that there is a natural tendency to believe rather than disbelieve is old. Alexander Bain (1888) called it primitive credulity and argued strongly for it. He thought it was the original state of infancy, that doubt only began when the child was first confronted by contradiction or failed expectation. He thought credulity remained throughout life in most people and that even gifted people who were trained in analyzing evidence did not escape its influence completely (see Price, 1969, lecture 9). Gilbert (1991) offered further arguments for assent being our natural response. He supported Spinoza's view that belief occurs effortlessly as an integral part of understanding any perception or proposition, and disbelief, if it occurs, is a result of an effortful revision of the initial assent.[3]

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[3]The present author holds that disbelief can be as quick as belief and that it is already-felt disbelief that triggers inquiry or effortful revision.

The Role of Belief in Inquiry

Methods of inquiry include asking an authority, finding a reference, examining more closely a surprising perception, making trials of action, and doing thought experiments. These different methods are all regulated in the same way by belief. Examples of trials of action include a laboratory rat solving a maze, a person doing a jigsaw puzzle, or trying to open a door with an obstinate key, or doing a laboratory experiment. Trials of action are like testing forward-looking counterfactuals. The actions are equivalent to "if I wriggle the key this way then the door might open." Humans have the ability to conduct many inquiries by thought experiments, which often involve raising and testing forward-looking counterfactual alternatives. Selecting a move in chess is a good example.

Inquiry is activated automatically when a person believes there is a problem that is important enough to be worth solving. It is the belief that counts, not what is true. If the person does not believe there is a problem then inquiry will not start. Problems that start inquiry include indecision about what to do, threatening situations, impediments to our goals, tasks and questions set by other people, perceptions and propositions that cause disbelief or surprise or curiosity, failed expectations, disappointments, unexpected or unexplained emotions, and bad outcomes. Bad outcomes automatically activate a new search for counterfactual alternatives. If this search suggests a better alternative but it is now too late then regret or remorse may follow, or consolation if it seems there was no better alternative.

Inquiry stops when the inquirer believes the question is answered, the problem solved, or the best alternative found. This belief stops inquiry. It is called reaching a conclusion. It is the belief that counts, not what is true. If subsequently the belief turns out to be wrong, and if what it was about still matters, the counterfactual process will automatically reactivate. Counterfactual thinking also stops when the thinker runs out of ideas and believes she has considered all the possibilities (Maier, 1931), or believes the problem is insoluble. Again it is the belief that counts, not the truth of the matter. Interruption, fatigue, and boredom are other things that may stop inquiry.

Much of our counterfactual thinking and inquiry is automatic and is regulated in an automatic way by belief. This process can be deliberately overruled. For example, a chess player may deliberately double-check and triple-check a crucial move. It is hard to do this conscientiously and it is impractical to attempt it for more than a small fraction of our thinking.

This role of belief gives speed and economy to inquiry. It confines inquiry to relevant matters. As soon as a belief forms, inquiry on that point ceases, freeing the mind to move on to the next point. Decisions about actions often have to be quick. They often have to be made in the absence of good evi-

dence. The nature of belief enables this. Mistakes occur, there is some sacrifice of accuracy for speed. That is how belief has evolved.

This important function of belief has not had much emphasis. C.S. Peirce (1877/1957, 1878/1957) described it, but his articles are remembered more for his pragmatics. Using a broad meaning of doubt, he wrote that doubt and belief were terms he used "to designate the starting of any question and the resolution of it" (p. 36). "The irritation of doubt is the only immediate motive for the struggle to obtain belief" (p. 12), and "as soon as a firm belief is reached we are entirely satisfied, whether the belief be true or false" (p. 13).

Other Observations about Belief

This understanding of the feeling theory of belief suggests explanations for a number of observations about belief. Perhaps the medical students described above felt strong belief directly from their perception of the x-rays and their feeling of certainty prevented logical appraisal. Confidence is strong belief. It stops inquiry. Overconfidence of correctness is simply an index of the fallibility of belief. Confirmation bias is one of the reasons for the conservative influence of prior beliefs. This unconscious bias causes a person confronted by new evidence on a matter about which he or she already holds a belief to tend to accept unquestioningly anything that supports the old belief but to make critical appraisal of anything that goes against the old belief (Lord, Ross, and Lepper, 1979). This bias may be an expression of the general rule that belief stops inquiry and disbelief triggers inquiry. Appraisal may begin by testing the new evidence for coherence with the old belief. The resulting initial belief or doubt in the new evidence determines whether appraisal proceeds further. When appraising complex multifactorial matters there are more factors or alternatives than can be held in the limited capacity of attention and working memory at one time. It is inevitable that the factors are appraised serially. Difficult proposals often involve finely balanced pros and cons. When for some reason a pro comes to attention it brings with it a feeling of belief for the proposal, when later a con comes to attention doubt comes with it. This vacillating state of belief is involuntary. It cannot be suspended until cold appraisal is completed, though it may be ignored during particularly deliberate appraisal.

In multifactorial matters there is a bias to give undue weight to the first factor that comes to attention. It is called the most salient or available factor (Sutherland, 1992, pp. 15–34). The feeling theory suggests that this bias occurs because belief felt about the most salient factor may stop appraisal or taint the selection and appraisal of less salient factors with confirmation bias. In the lawyer–engineer study described above the man's qualities caught attention and led to a belief that stopped appraisal. In job interviews the first

impression made by the applicant often colors the rest of the interview with confirmation bias (Sutherland, 1992). Salience is involuntary. It can be influenced by recent personal experience, by prior beliefs, by recent publicity, and by the way the issue is brought to attention. There are many factors involved in the complex matter of the nature of belief. The intellectualistic theory gives undue weight to the most salient or available factor, which is the part played by evidence, and so leads to the conclusion that the purpose of belief is to indicate truth.

There are other causes of vacillating belief. When engrossed in good theatre, film or written fiction there can be a feeling of belief in the story that lends to its effectiveness and is dispelled when the thought that it is fiction enters working memory. Fantasies have the same effect, the fantasizer being the author of his own fiction. Vacillating belief is one response to propaganda, as described above with my reaction to the Olympic bid. Some devout people have times when they vacillate with doubts about their faith. Some schizophrenic patients vacillate between belief in and doubt about their delusions.

Another curious fact about prior beliefs is that they can continue to have a vacillating effect even after the believer accepts that they have been proved wrong by clear evidence. Walter Bagehot (1871/1891) knew this from personal experience and it has since been confirmed by formal studies, reviewed by Ross and Anderson (1982). It is a vacillating belief that depends on what is in working memory. Bagehot recounted how he stood for election and was ahead for most of the day only to be narrowly beaten by a rush of late votes, and how for years after he would often feel the conviction that he was the elected member if he neglected appraisal. His example may be wishful; other examples are emotionally neutral.

The feeling theory allows some speculation about why evolution has produced humans who so often believe what they would like to be true. In some instances wishful beliefs promote self-esteem. This may be an advantage, since people who lack self-esteem tend to be ineffective. In other instances belief has a restraining influence on desire. The belief that something desired can't be done can prevent the attempt. It may be an advantage if this restraint is not too strong.

Delusions

There is an old and ongoing debate about the nature of delusions (Berrios, 1996). Delusions cannot be accommodated by the intellectualistic theory of belief. One side of this debate claims that delusions are not beliefs, but are pathological products of a diseased brain, presumably engendered by mechanisms different from those of belief. The argument is that because delusions are so manifestly irrational, so bizarre, so resistant to reasoned persuasion, and

so often not acted on they must be different in kind from beliefs. But some delusions vacillate and are not totally impervious to reason, and many delusions are acted on. Patients say their delusions are beliefs, and there is evidence that the differences of delusions from other beliefs are differences of degree (Blackwood, Howard, Bentall, and Murray, 2001; Garety and Freeman, 1999; Peters, Joseph, and Garety, 1999; Strauss, 1969). The feeling theory of belief offers suggestions about how delusions could result from the mechanisms of belief. The first symptom of a person developing schizophrenia is often intangible moody awareness that something mysterious and dreaded has begun to go wrong, and this mood often culminates in a delusion. Patients often say this delusion explains their mysterious malaise. For example, a patient of mine came to the belief that his distress was because a neighbor was beaming harmful rays through his bedroom window. Maher (1988) proposed that this "mood" is a puzzle for the patient who begins a search for an explanation, which the delusion provides. From the perspective presented here, the delusion is an irrational counterfactual the patient has raised during his inquiry into the problem and the feeling of belief becomes attached to it. It raises the question of how this can happen, as well as the suggestion that belief might be abnormally intense and quick in schizophrenia, perhaps as a direct consequence of the physical disease, or perhaps through the power of the putative unconscious processes of psychotic illnesses. Similarly, the failure to apprise and dispel the delusion, which is often called the failure to test reality, could be due to the intensity of the delusional belief. As Jasper's patient said: "Everything is so dead certain that no amount of seeing to the contrary will make it doubtful." Certainty has stopped appraisal, as it normally does. The patient's mind has moved on to the next problem. This may be how to explain the delusion or how to avoid or counter the dangers it threatens. This may lead to a series of secondary delusions. Neurologists have similar inability to dispel the beliefs of patients with neglect syndromes who deny their manifest blindness or hemiplegia. Likewise, it is usually unavailing to reason with a healthy fanatic. It is sometimes taught that delusions occur because patients fail to test reality. The feeling theory suggests that patients fail to test reality because of their delusions.

In a typical case of folie à deux a sane person with a submissive personality comes to share and believe the delusion of an older, dominant person with whom she lives closely and who has schizophrenia. Folie à deux is rare, but it shows that a belief with the same content as a delusion can arise in a sane person through the ordinary mechanisms of belief. The authority of the stronger person, the power of repetition, the bias to conform, and identification with the stronger person could be factors causing the submissive person to acquire the delusion. When the two people are kept apart the person with the acquired delusion usually recovers.

Belief, Opinion, and Knowledge

This paper began with Locke's definition of belief. Locke thought that belief is a state of mind that applies to opinion but not to knowledge. The feeling theory is unambiguous about this issue. Belief feeling attaches to the proposition that France is a country in Europe. People believe what they know. Locke's definition insists that knowledge must be of truth. There are mistaken beliefs and opinions but there cannot be false knowledge. This requirement came down to Locke from Plato and Hobbes and it still has currency. It causes a good deal of difficulty. This is because people at times assert that they know a thing that is in fact false. Hobbes (1650/1994) wrote:

> There are *two things* necessarily implied in this word *knowledge*; one is *truth* the other *evidence*; for what is not truth, can never be known. For, let a man say he knoweth a thing never so well, if the same shall afterwards appear false, he is driven to confession, that it was not knowledge, but opinion. (p. 27)

This is unsatisfactory. I believe the problems come because the word *knowledge* is used in two different senses but this is not made clear by the classical definition that knowledge is justified true belief. People use the word in one sense when they speak of common knowledge or say that people once believed the world was flat but we now know it is round. This *knowledge* refers to facts that are well verified by strong evidence, are agreed on by general consensus, and are as infallibly true as facts can be. This *knowledge* is not a matter of personal opinion, of individual minds, of belief, or of psychology. When a man asserts that he knows something he is using the word *knowledge* in its other sense. The feeling theory understands him to mean that he believes it strongly, that he feels convinced of it and is certain of it. It does not mean he is infallibly correct about it. He is not uncommonly wrong. This *knowledge* is a matter of strong personal opinion, of individual minds, of belief, and of psychology.

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