

# Remembering Beliefs

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## Abstract

**Optimal decision-making requires us to accurately pinpoint the basis of our thoughts, e.g. whether they originate from our memory or our imagination. This paper argues that the phenomenal qualities of our subjective experience provide permissible evidence to revise beliefs, particularly as it pertains to memory. I look to the source monitoring literature to reconcile circumstances where mnemonic beliefs and mnemonic qualia conflict. By separating the experience of remembering from biological facts of memory, unusual cases make sense, such as memory qualia without memory (e.g. déjà vu, false memories) or a failure to have memory qualia with memory (e.g. functional amnesia, unintentional plagiarism). I argue that a pragmatic, probabilistic approach to belief revision is a way to rationally incorporate information from conscious experience, whilst acknowledging its inherent difficulties as an epistemic source. I conclude with a Bayesian defense of source monitoring based on C.I. Lewis' coherence argument for memorial knowledge.**

**Keywords:** remembering; belief; source monitoring; Bayesian; qualia; Bayesian rationality; decision making, self knowledge, memory.

## Introduction

Optimized decision-making requires us to track the origins of our mental experiences as accurately as possible. While normal subjects can be quite reliable at distinguishing, say, memories from imaginings, they are also susceptible to false memories (Loftus, 1997). Participants who report a false memory not only find the fiction familiar and have strong beliefs about its veracity, but they also claim to re-experience vividly the details of its prior occurrence. Conversely, psychogenic amnesias have been reported in patients with multiple personality disorder, dissociative fugue or post-traumatic stress disorder—e.g. rape victims (Kihlstrom & Schacter, 2000). Individuals with psychogenic amnesia respond to stimuli associated with an instigating event without any familiarity or sense of connection to this past. In light of this evidence that subjective judgment is a poor guide to the true origin of our thoughts, one might wonder whether consciousness has any functional use in cognition at all. Perhaps consciousness is epiphenomenal?

In this paper I argue that consciousness is not epiphenomenal. I elucidate how the subjective experience of memory (mnemonic qualia) and our remembering beliefs contribute to decision-making. More specifically I argue for a Bayesian coherence-based method of deciphering between memories and imaginings.

## Remembering

Anything learnt by an organism and held in memory is remembered when it affects subsequent behavior. The many systems of memory are divided by cognitive psychology into two main categories: implicit and explicit memory. Implicit memory systems are grouped as those that operate beneath the level of conscious awareness or reflection regardless of their underlying structure (Schacter, 1987). The most basic sort of implicit memory is habituation, where the body's systems adapt to environmental stimuli, e.g. becoming oblivious of background noise. Some memories are formed as simple associations to stimuli, such as Pavlov's (1927) salivating dog in response to a bell. Others result in cognitive maps and representations (e.g., Tolman, 1948; Morris, 1981), as is hypothesized to explain celestial bird navigation. Philosophers describe implicit processes as 'procedural' or 'knowledge-how' when they refer to skill-based or embodied memories and 'tacit knowledge' when they refer to representational memories beneath the level of awareness (Fodor, 1968; Lycan, 1986). Although there is immense debate about the use of these terms, it is sufficient for my purposes that representational and procedural memory systems exist without need for introspective access.

In contrast to implicit memory, explicit memory requires an agent to be conscious of its own thoughts; that is, capable of second-order thoughts about first-order mental states. Explicit memory is divided into two types: episodic and semantic (Tulving & Donaldson, 1972). The former is brought to bear when we consider the particulars of a past event and experience the feeling of 'being there' (Baddeley, 2002). Recollection can elicit emotions, mental imagery, sounds or other cross-modal phenomenology. On the other hand, semantic memory is the source of abstracted, more generalized knowledge of the world, e.g., that  $5 \times 7 = 35$ . Semantic memory does not necessitate that the agent mentally time travel to the occasion of learning. Explicit memory is propositional in a way that implicit memory need not be.

In this paper I claim that the minimal conditions required for remembering are a causal connection to the learning event and the retention and subsequent impact of this learnt material on behavior, regardless of our conscious awareness or attribution. On the other hand, the minimal requirement for episodic memory—recollection—requires remembering with belief and mnemonic qualia.

## Belief

Beliefs are a representational state that plays a particular functional role in the cognitive architecture of the mind, and, along with desires, provide causal explanations for actions (Nichols & Stich, 2003). Beliefs are truth-evaluable, so having a belief constitutes a judgment about some matter of fact. These judgments affect behavior, decision-making and other beliefs. This is true, even if one takes a probabilistic view to belief (e.g. Bayesian) thresholds. Beliefs fit into a computational structure of the mind without the need for the “experiential qualitative character of conscious experience” (Strawson, 2004). Beliefs must operate flexibly and be influenced by other beliefs and competing thoughts such as hopes or desires, affective information or biological desires such as thirst.

In a sense, all beliefs are memories because they are formed and carried forward in time. However, memories aren't necessarily beliefs. When 'remember' is used in relation to non-representational sorts of memories (e.g. conditioning), belief is not involved. On the other hand, when we consider remembering as a cognitive activity, then belief plays a greater role. It seems likely that animals such as dolphins have beliefs regardless of any explicit capacity to communicate them. Reflective agents generate explicit memories with associated beliefs about them. However, I will argue that only episodic memory requires a belief that it is indeed a memory. Semantic memory does not require belief for the following reason: we can explicitly state facts that we've learnt about the past without conviction that we are right and the act remains classified as 'semantic memory'. Of course, simply because we can have semantic memory without correct beliefs, this should not be taken as a normative claim.

## Mnemic Qualia

In addition to belief, remembering involves qualia. Mnemic qualia is the qualitative, experiential aspect of remembering, including what Bertrand Russell (1921) described as 'a feeling of familiarity'. For certain sorts of memory such as conditioning, mnemic qualia may be limited to familiarity, such as the comforting sensation of remembering how to ride a bicycle or how to knit after a long absence from the activity. The quality and quantity of qualia increases when it comes to episodic memory and may include vivid mental imagery, sounds and emotions in addition to recognition. The familiarity of mnemic qualia should be kept distinct from the phenomenal aspect as they are not necessarily experienced together, for example, one might experience a mental image informed by our memory, yet we do not find it familiar or one might experience a sense of familiarity of a purely imagined image.

I argue that of all the types of memory, only episodic requires belief and mnemic qualia. Consider the following circumstance: Mary's parents found an old photo album in the attic that Mary has never seen before. Her parents show Mary a photo of herself riding a mechanical pig with wings at a county fair that she does not recognize. Her parents

enthusiastically tell Mary a detailed story of her experience; i.e. how happy she was, what she was wearing, that she ended up at the hospital with two stitches after falling off. Suppose Mary goes on to recount this story in detail to her friends at a later time. My question is: When she repeats the story, is she recollecting it? She certainly has correct beliefs and she did indeed experience the events in question, however, I claim that because her qualia was caused by her parents description and the photo, rather than the event itself, then she cannot be said to be recollecting it. Recollection requires a sense of familiarity and qualia caused by the event itself, not via testimony or other means.

The qualities of our qualia can be a guide as to whether our experiences are imaginary or remembrances, perhaps because the latter tend to be more detailed, coherent or colorful than make-believe. Hume (1777) noted that unlike imaginings, memories seem more vivid or convincing. He supposed that the way we distinguish between the two states was entirely qualitative. However, qualia can trick us. If we put too much weight on how memories feel, rather than whether it is rational to believe them, we can make mistakes about the origins of what we are experiencing, leading to false beliefs, e.g. imaginary stories can gain familiarity if they are repeated often and memories can fade into obscurity as they age.

In this section I have introduced implicit, pre-conscious memory and more explicit types. Each of these different memory systems have a unique connection with belief and qualia. Part of this paper aims to clarify philosophical problems that arise from confusing these different memory systems and their relationship to belief. For example, the discrepancy between belief and remembering leads to the following two scenarios: 1) suppose that we are in the right causal connection to an event and have memory-driven qualia, yet we do not believe that it is memory? And 2) suppose we're having imagination-driven qualia and have a belief that an experience is a memory, yet we do not have the right connection to an event? What should we make of these cases? When are we truly remembering? In the next section I will address these questions by examining the philosophical literature on remembering and belief.

## Remembering Requires Belief

Although philosophers have considered implicit memory in their discussions, the focus is generally on explicit memory; either declarative memory for facts (semantic) or events (episodic). Philosophers have typically argued that an act of 'remembering x' requires the 'belief that x has occurred'; for example, Aristotle states: “whenever someone is actively engaged in remembering, he always says in his soul in this way that he heard, or perceived or thought this before.” 449b22-24 (Sorabji, 2004).

Aristotle claims that our experience of remembering always involves the belief that we are thinking of a past thing. Because Aristotle speaks of the feeling of remembering and the active nature of the search, it is likely that he is referring to recollecting, rather than just semantic

recall or implicit memory. Locke (1689) makes a similar point: "...the mind has a power in many cases to revive perceptions that it has once had, with attached to them the additional perception that it has had them before" Essay, Bk II, Ch. X, Sec. 2. The way Locke speaks of re-experiencing past perceptions, suggests that he is referring to reviving particulars of the past, thus another case of episodic memory.

Like most pre-20th century philosophers, Aristotle and Locke thought that mental images played a central role in thought and sought to discriminate between imagined images and mnemonic images via one's attitude towards them. That is, in order to qualify as an act of remembering, the person must believe that the image is a copy of a past thing rather than simply an invention. To retain the gist of these writers and avoid talk of 'mental imagery' we can substitute 'phenomenal content'.

Many philosophers have continued this tradition into the 20th century. Russell (1921), Harrod (1942) and Furlong (1951) all argued that having the right beliefs about phenomenal content was a necessary component of a logical distinction between imagination and memory. In *Analysis of Mind (AOM)*, Russell says that "memory of past sensations seems only possible by means of present images" (IX). He is referring to the qualia of episodic memory. He goes on to say that "images without beliefs are insufficient to constitute memory; and that habits are still more insufficient". Russell indicates that simply having phenomenology and the right causal connection to an event will not ground an experience as a memory. What is required is conviction; the belief that one's reminiscences are in fact of the past and this conviction yields the feeling of familiarity. Therefore, believing that *x* has occurred is necessary for recollecting *x*.

### **Remembering Does Not Require Belief**

In opposition to Russell, C.B Martin and Max Deutscher (1966) argue that we can remember *x* without belief that *x* has occurred. From the framework outlined above it is non-controversial that the implicit memory systems, both embodied and representational, operate without any requirement for belief by the organism. What about the explicit memory systems?

M&D asks readers to imagine a painter who, when asked to create an imaginary scene, ends up painting a detailed picture of a farmyard that he visited as a young boy—as confirmed by his parents. M&D state, "although the painter sincerely believes that his work is purely imaginary, and represents no real scene, the amazed observers have all the evidence needed to establish that in fact he is remembering a scene from childhood." (168).

This is an instance where the painter's map-like, propositional representations are used to illustrate the scene, even though the painter's beliefs are in opposition to this fact. The conflict between mnemonic qualia and belief explain the painter's ability to sketch an accurate scene, to remember it, without realizing he is remembering. The

painter lacks recognition or a sense of familiarity though he has memory.

Circumstances such as these might be considered a mnemonic 'blindsight' effect. Blindsight is a phenomenon where patients with partial blindness are able to respond accurately to visual cues better than chance, even without visual phenomenology (Stoerig & Cowey, 1997). In the case of memory, 'blindsight' occurs when a person utilizes remembered information without awareness that it is remembered.

A critic might object that M&D's painter example has no basis in fact, however, there are intriguing examples in the empirical literature. Lyon (1985) describes a patient who was unable to explicitly retrieve any autobiographical information, yet dialed their mother's phone number when asked to randomly dial numbers. A patient of Gudjonsson's (1979) had heightened electrodermal responses to some items of personal relevance at a time when she was amnesic for them. Similar inconsistencies between remembering and belief have been reported for multiple personality disorders, dissociative fugue and post-traumatic stress disorder subjects such as rape victims (for a review see Kihlstrom & Schacter, 2000).

M&D give another case where they claim belief plays no role in whether one is remembering, they state:

"Surely people say, "I don't know whether I am remembering this or imagining it," suggesting that they could be remembering something though they neither believe nor disbelieve that it happened...It is quite common in ordinary life to describe some past event, and then to be uncertain whether the description was from memory, or was founded on something one was told after the event... If it were impossible to remember while believing one is not remembering, one would be saved the embarrassment of thinking that one is originating a tune or an argument when one is not" (167).

In this example, a person is suspicious of her own judgment and is unsure whether her phenomenal content is a memory or an imagining. She is certainly remembering something—because even memories of testimony or imagined episodes are memories—but she cannot pinpoint the source of her memory. While her implicit memory is informing her current qualia, her beliefs are undecided about the origin of the qualia. This uncertainty might be because the qualia is not sufficiently familiar or detailed, or that other beliefs make the probability of memory seem unlikely. Whatever the cause, skeptical concerns are raised sufficiently high to withhold judgment.

M&D's examples illuminate the difference between remembering and recollecting. The minimal conditions required for remembering are a causal connection to the learning event and the retention and subsequent impact of this learnt material on behavior, regardless of our conscious awareness or attribution. Where as the minimal requirement for recollection, as Russell considers it, requires remembering with belief and mnemonic qualia.

In the final analysis, instead of Russell and M&D positions being at odds, their ideas are compatible within a sophisticated view of memory. With the constitutive questions laid to the side, we are ready to tackle the epistemic concern of how we evaluate our mental experiences and beliefs so that we more reliably identify exactly what sort of remembering we're engaged with. In the next section I outline a Bayesian explanation of the role of memory qualia on belief based on evidence from the source monitoring literature.

### Source Monitoring

Much of the time, our thoughts are tracked effortlessly and accurately. However, our confidence can waiver such that we question our attributions. How do we rationally negotiate our own experiences given the inherent uncertainty in our phenomenology? Russell suggested that the way we distinguish the mental images we trust is via the feeling of familiarity that accompany them. He states:

"Some images, like some sensations, feel very familiar, while others feel strange. Familiarity is a feeling capable of degrees. In an image of a well-known face, for example, some parts may feel more familiar than others; when this happens, we have more belief in the accuracy of the familiar parts than in that of the unfamiliar parts. I think it is by this means that we become critical of images, not by some imageless memory with which we compare them." AOM, IX.

Russell argues that the more familiar our experience feels, the more likely we believe that we are remembering. He supposes there is an intimate relationship between mnemonic qualia and our beliefs about the experience. In order to evaluate an experience as a memory rather than a fiction, we compare qualities of the image itself with beliefs and feelings about the image.

Psychologists call the reflective method we use to keep our memories and imaginings accurately separated 'source monitoring' or 'reality monitoring' (Hashtroudi, et.al. 1990; Johnson, et.al. 1993; Dobson & Markham, 1993). Source monitoring is an inferential process that requires people to examine and categorize their mental state based on qualitative features of the experience itself and coherence between relevant beliefs. The inferential contribution is evident in cases of 'déjà vu', where we first experience the familiarity of memory but subsequently rationalize that we are not remembering.

People have minor source monitoring difficulties every day regarding the time and context of information presented, e.g., confusing the source of a scholarly article. A less common source monitoring error (we hope) is cryptomnesia, when people not only forget that they encountered information before, but believe that they have invented it. This can lead to unintentional plagiarism, such as the case of Helen Keller. Helen Keller was a blind and deaf author. Her story "The Frost King," was first published in the alumni magazine of the Perkins Institute for the Blind, but was later discovered to bear a striking

resemblance to "The Frost Fairies" by Margaret T. Canby. It turns out that the latter story was read to Keller when she was a child using finger spelling. Nonetheless, she insisted that she had no memory of the story (Keller, 1905).

Another variant of source error stems from subjects being manipulated into believing false memories about themselves that were suggested by an experimenter, or other manipulative means (Loftus, 1997; Brainerd & Reyna, 2005). In these circumstances subjects not only find fictions familiar and have strong beliefs about their veracity, but they also claim to re-experience vividly the details of their prior occurrence. Finally, schizophrenic subjects suffer from particularly debilitating deficits in reality-monitoring, consistently failing to distinguish their delusions from reality. Clearly our ability to manage our lives depends on our capacity to accurately introspect the origins of our mental states.

The source monitoring literature has found that when people are in doubt about their thoughts, they tend to introspect their mental state and evaluate the quality of self-generated perceptual information (e.g. colour), contextual data (e.g. spatial information), affective cues (emotional reactions) and sometimes memories of cognitive operations (e.g. records of thoughts and mental elaboration) to evaluate them. Psychologists argue that the more these features cohere, the greater the likelihood an experience is actually a memory and we revise our beliefs accordingly (Johnson et. al. 1993). Still, perhaps our feelings of familiarity, the level of detail in our mental imagery or our subjective reports are not reliable sources for belief revision? In the next section I will argue that a pragmatic, probabilistic approach to belief revision is a way to rationally incorporate information from conscious experience, whilst acknowledging its inherent difficulties as an epistemic source.

### Bayesian Rationality

One might think that the source monitoring researchers were overly optimistic, yet the coherence view can be defended by a probabilistic account of human reasoning: Bayesian rationality.

Bayesian rationality is a calculus of uncertain reasoning (Oaksford & Chater, 2007). It is a theory that thrives on the equivocality of informal, every day thought, using both verification and falsification in its method. Bayes theorem predicts that the more common a phenomenon, the more probable, the less useful each instance is as evidence in evaluating a hypothesis; that is, common signals provide less information. With the introduction of novel stimuli, our brains immediately respond to evaluate its relevance to a hypothesis. For example, an individual who consistently experiences strong mental imagery whether dreaming, imagining or remembering should not take the existence of a mental image to be much evidence of the origin of a thought, where as their recollection of a smell or texture could trigger a dramatic belief revision.

C.I. Lewis (1946) (reviewed by Olsson & Shogenji, 2004) proposed that the congruence between independently

generated beliefs can raise the probability of what is remembered to the level of practical certainty in a way analogous to that in which agreement of independently given testimonies can eventually make us convinced that what is being testified is true. His theory works on the basis that there is initial credibility (i.e. a non-zero prior probability) for the memory in question.

“If...there were no initial presumption attaching to the mnemically presented; no valid assumption of a real connection with past experience; then no extent of congruity with other such items would give rise to any eventual credibility. The coherence of a novel, or of the daydreams we are aware of fabricating as we go along, can never have the slightest weight toward crediting the content of them as fact, no matter how detailed and mutually congruent such items may be.” (Lewis, 357)

Lewis emphasizes that coherence alone is not sufficient to impact belief. One must already have a degree of belief in the memory before coherence can play a role. Therefore it would not be useful in cases such as cryptomnesia or functional amnesia where the subject believes that their experiences are not in any way related to memory.

In addition to the non-zero prior, Lewis’ theory requires both a positive and a negative thesis: The positive thesis is that coherence increases the posterior probability that  $x$  occurred with the number of consistent beliefs. This supports the findings from the source monitoring literature (Johnson et. al. 1993). The negative thesis is that the coherence of independent items of evidence has no impact on the probability of a conclusion unless each item has some credibility of its own; just as a person with poor eyesight would be unwise to consider their mental images as informative as their tactile ones. The outcome of this thesis is that the degree of congruence is inversely related to the prior probability of the supported hypothesis, so agreement on something antecedently improbable gives rise to a high degree of congruence and should lead to notable belief revision.

Therefore, when presented with a M&D style confusion about whether our current experience is a memory or an imagining, we would be wise to review evidence for our judgments; i.e. seek cross-modal phenomenological support for supposed memories, checking our motivations for holding beliefs, our prior history of making mistakes etc.. We should take inconsistencies in the evidence as reasons to downgrade our belief that we are remembering using a Bayesian model of rational decision-making, so long as each sort of evidence had independent validity. Similarly, we should upgrade our convictions should a careful revision yield evidential coherence.

## Discussion

One problem for Lewis’ account is whether faculties of the mind are sufficiently independent to count as separate ‘witnesses’. Although our intellect may value truth, our emotions crave consistency. Our beliefs are validated by their relationship with existing beliefs (Quine, 1978). It is

possible that as we change one set of beliefs, we will subconsciously influence other modalities to fit into the new narrative. For example, when false memory experiment participants find an untested word familiar and then claim to be able to vividly see it as a true memory, their imagination may simply be constructing a conforming image.

Another problem is that whilst these theories might be true descriptions of how we do evaluate our memories, are they capable of giving guidance on how we *should* evaluate them? Though our use of mnemonic qualia may have some evolutionary or cultural explanation, it may not be objectively rational and thus should be systematically discouraged. Similarly, merely because we evolved a taste for sugar and fat, does not justify our consumption of them at current levels.

A third concern is perhaps the most devastating: What if the coherence of belief and qualia provide no information at all? Subjects implanted with false memories have a non-zero prior belief that their experience is a memory and their vivid imaginations can provide quite coherence recreations to back up these beliefs. In fact, individuals with a particular penchant for inventing detail and coherence could be most vulnerable to false memories.

There is no doubt that the source monitoring and Bayesian solution requires a ‘normal’ individual and a degree of normality in the circumstances when memories are formed and recollected. Is this a useful place to begin? I argue that knowing normal conditions of memory success is useful just as knowing normal conditions of perception is useful. Individual differences in source monitoring capacity require individual modifications to the model, just as poor eyesight requires extra evaluation of visual judgments for those affected. In fact, the exciting aspect of this model is that it goes some way in explaining *why* source monitoring is sub-optimal in false memory experiments, functional amnesia or schizophrenia. Thus, aberrant cases need not threaten my defense of mnemonic qualia to influence our beliefs.

## Conclusion

Assertions regarding the origin of our thoughts are evaluated by examining the quality of the mental experience, such as the level of detail in our mental images, the degree of emotional salience or even a sense of ‘being there’. People offer factual details of events they purport to remember. Thus, memories seem distinguished from imaginings partially by the way they feel and partially because of surrounding beliefs. In this paper, I have argued that the phenomenal qualities of our subjective experience provide permissible evidence to revise beliefs, particularly as it pertains to memory.

The philosophical defense of mnemonic qualia has empirical support within the source-monitoring literature from psychology. Successful source monitoring is an inferential process that requires people to examine and categorize their mental state based on qualitative features of the experience itself and coherence with other beliefs.

The coherence view in the source monitoring literature in psychology is supported by Bayesian rationality. This pragmatic account explains how normal memories are evaluated and successfully segregated from other mental phenomena. But, perhaps more impressively, it sheds light on circumstances when source-monitoring fails. Because we must already begin with a degree of belief in a particular memory, Bayesianism explains why psychogenic amnesia patients have no capacity to revise beliefs. It also shows how individuals who are unusually gifted at creating cross-modal phenomenology are particularly prone to false memories. Individuals who are fantasy-prone, or hypnotically suggestible are wise to remain skeptical of their qualia, because coherent subjective experiences are too easily constructed by their imaginations.

Regardless of the functional underpinnings of our cognitive architecture, consciousness impacts our reasoning and this is rationally explained by combining the empirically informed source-monitoring literature and a Bayesian probability calculus. This framework explains how we might evaluate memories in a skeptical context. With further research we may know more about how to judge our own feelings and beliefs during the experience of remembering.

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