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Memories as Data: The Case of Radical Reuse

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Abstract

Evidence, in ordinary English, denotes a kind of object: something you could put in a box, or at least on a hard-drive. But recent epistemologists prefer to think of evidence as part of a thinker's mental state, her knowledge, beliefs, or the way things appear to her. This paper argues in favor of the objectual view, by showing that in the case of memory, the very feature thought to be a weakness of this conception is in fact a strength: roughly, that the very same object can support an endless range of inferences, including mutually contradictory ones. Just as objects are shared between different people, the causal relationship we have to our memory allows us to share access to the very same memory over time. By drawing a parallel with the use of legacy data in science, I show how one kind of memory success is only explicable if we think of memories as evidential (mental) objects.

Keywords: mnemonic justification, data in science, causation, evidence

Kamal Aljafari's film *Recollection* (2015) is built out of fragments of Israeli and American films from the 1960-90s that were filmed in Jaffa. In each fragment, the actors and props in the foreground are made to disappear, and we zoom in on the Palestinians in the background who just happened to be captured by the camera – for instance a little girl hiding behind a pole. The original films are sometimes set in a different time and place such as Ancient Egypt or the 'Wild West', and the moments of visibility for the people we glimpse in *Recollection* are unintentional with respect to the original filmmakers. In a sense, it is surprising that these glimpses could be reconstructed at all, let alone brought to life in the way they are when brought together and accompanied by music and voice-over. The film, which takes representations generated for the purpose of entertainment and finds in them a new use for the purpose of glimpsing the lives of the people in Jaffa, illustrates a use of memory that I will explore in this paper.

Our memories are formed in a context and for a purpose. As we can see with the "testing effect" (Roediger III and Karpicke, 2006), where items that are indicated as important are more likely to be remembered, the encoding of memory is selective in part based on current priorities and information. However, we live long and changing lives, and must rely on earlier memories after our priorities and information change. At this point, we need to be able to reuse memories for a new purpose. This parallels the example of *Recollections*, where old film clips are reused for a new purpose.

My presumption in this paper is that this kind of radical reuse is one of the ways we learn from and rely on our memories. The question I will ask is: how is this possible? In particular, I argue that if we take evidence to be too closely tied to a thinker's current state of mind, radical reuse is hard to understand. However, radical reuse fits nicely with an intuitive, though often dismissed, notion of evidence: the view that evidence is a class of objects. In the case of memory, the kind of object in question is not a physical but a mental object. Seeing a memory's epistemic role as that of an object changes the causal relationship we have to our memories, as well as to the things they represent. In particular, I analyze the relationship to memory in radical reuse as a relationship with a kind of data, rather than with phenomena (Bogen & Woodward, 1988). In

other words, treating evidence as an object rather than a proposition broadens the scope of who can be related to that piece of evidence: in the case of science, this allows for shared evidence across researchers who have major disagreements, and in the case of personal memory, this allows for shared evidence across time and major changes in view.

The structure is as follows. First, I survey the debate about evidence and some of the objections to the evidence-as-object view. These will turn out to be relevant, as some of the purported weaknesses become strengths in the context of radical reuse. Then, I set out a core motivation for the object view: interpersonal coordination. In the next section, I draw on the philosophy of science to develop a parallel between the evidential role of mental objects in memory and material objects as data in science. Finally, I argue that the best treatment of memory reuse comes from the evidence-as-object theory. I conclude with implications for the nature of evidence more generally.

1 The Ontological Debate about Evidence

Is evidence a type of thing, thought, or content? A prominent set of theories hold that evidence is propositional. Propositional views of evidence come in many varieties: for instance, we could take evidence to be known propositions (Williamson, 2002), learned propositions (in Bayesian approaches, for instance Brössel, 2024), believed propositions (Audi, 2019), reasons (Kearns and Star, 2009), basic propositions (Comesaña, 2020) or potentially known propositions (Simion, 2024). These views can be externalist (Williamson), internalist (Audi), or fallibilist (Brown, 2018). Alternatives often take evidence to consist in non-propositional mental states such as seemings (Huemer, 2007), experiences (Conee and Feldman, 2004), or even sense data (Russell, 1912/2001).

The view that evidence refers to objects fits with ordinary English usage, but is philosophically unpopular. Why? A classic case is given by Williamson in *Knowledge and its Limits*. In order to avoid a merely semantic debate about the word 'evidence', Williamson ties evidence to its functional roles, including that evidence is *explained* by hypotheses:

> One can use a hypothesis to explain why A only if one grasps the proposition that A. Thus only propositions which one grasps can function as evidence in one's inferences to the best explanation. By this standard, only propositions which one grasps count as part of one's evidence

This argument could be set out as follows:

1. One function of evidence is to be explained by hypotheses
2. We can only explain things which are propositions
3. We can only explain things we grasp
4. So all evidence must be propositions we grasp

Thus the role of evidence in explanation cannot be played by objects.

As we'll see in Section 4, while (1) is true of some classes of evidence, it's common in the philosophy of science to hold that some forms of evidence, i.e. data, are not typically explained by hypotheses. Putting that aside for now, (3) seems hard to dispute, though the notion of 'grasp' is somewhat vague. In defending (2), Williamson draws attention to the looseness of the connection between an object and a hypothesis:

> Even in the courts, the bloodied knife provides evidence because the prosecution and defense offer competing hypotheses as to why it was bloodied or how it came into the accused's possession. The knife is a source of indefinitely many such propositions

This point echoes one made by McDowell (1996) in his argument for the conceptual nature of perception; roughly, were perception to be non-conceptual, there would be a gap between perception and conceptual states like belief and understanding that could not be bridged. Where Williamson writes that there are 'indefinitely many' propositions associated with the knife, McDowell holds that there are no properly connected propositions associated with non-conceptual perception. But in either case, these arguments against non-propositional evidence both point to the lack of a strong connection between non-propositional contents and subsequent propositional states that they should ground.

I will eventually argue that while Williamson is right that objects give rise to indefinitely many propositions, this does not support the propositional view of evidence. In fact, the way in which objects can be a source of many propositions to different people, or to the same person over time, will turn out to be an essential feature to describe the epistemic role of evidence on my account.

One significant clarification about this debate. The question of whether evidence is propositional should not be conflated with the question of whether the mental states in question are propositional, non-propositional, or hybrid in format. That is, the evidential relation is about more than just format. As an analogy, imagine I am looking over a pile of papers with mathematical proofs that I've written. One way to characterize my relationship to the papers is a relationship to the content of the proofs, which we might call a *transparent* connection. This is the relationship we rely on when we assert that I am the author of the proofs, that the proofs are why I am puzzled by infinity, and so on. When we take this stance, the proofs might as well have been realized in a totally different way, so long as they have the same content. On the other hand, we can also draw on my relationship to the papers as objects, in saying that I finished up the first page yesterday morning or that I put the papers on the left hand side of the desk. These two stances correspond to two ways of taking the proofs to be evidence: do we mean merely the content of the proofs, or also the physical, spatiotemporal instantiation of the stack of papers? In this case, the fact that the proofs are themselves propositional in format does not settle the question of whether my evidence is the papers themselves (an object), the state of affairs of having the papers (a proposition) or their content (a grasped proposition).

That is, the question of the nature of evidence is a question of which guise best captures my epistemic situation.Suppose some class of content-bearing states are designated as the source of evidence. The format of these states does not determine whether or not evidence is propositional except in the special case that evidence is identified with the *content* of those states. Even for the extreme view that we have no propositional mental states at all, a theorist could still hold that evidence is propositional due to evidence relating thinkers to states of affairs in the world. Thus the debate about whether evidence is propositional is not settled by the debate about whether the format of any kind of mental state is propositional.

The objectual theory of evidence is currently unpopular, due in part to the looseness of the justificatory connection between objects and beliefs. I will now draw out a motivation for the objectual view that turns out to be crucial for the case of memory: the role of causal connection in coordinating evidence.

2 Causation and Objects

What can be said in favor of the objectual view? I will argue that the objectual view is the only reasonable way to capture a commonsense and theoretically useful feature of evidence:

Interpersonal coordination Two thinkers in roughly the same external situation with the same perceptual capacities typically possess the same evidence.

Intuitively, the jury in a legal case all have access to the same evidence (Rosen, 2001, for a dissenting view, Goldman, 2010). Likewise, when you and I read an advice column and argue about who is to blame, we share the same evidence. This ordinary English rationale is also supported by theoretical utility. In epistemology, we sometimes want to contrast sameness of situation with difference in judgment and other internal factors. This contrast requires having a term for the epistemically relevant features of the external situation, into which we can place different agents with different dispositions. The separation between agent and situation allows us to determine whether a thinker has made a mistake, or whether she's just in an unfortunate situation. It also allows us to theorize about properties of thinkers that result in success across situations, or properties of situations that have similar impacts across thinkers.

Evidence, then, can serve this function of designating the features of an epistemic situation that would be shared by any thinker in the same circumstances. Of course, there is nothing to say we need to use the word evidence for this concept – but we arguably do need this concept, and the ordinary use of the term evidence lines up reasonably well.

However, *interpersonal coordination* has immediate consequences for the nature of evidence. Thinkers can be very different from one another, in ways that are rationally permissible and ways that aren't. When presented with a bloody knife, I can fail to believe the knife is present, perhaps thinking to myself that I am having a hallucination, or just failing to think of the knife at all. I might have convincing but misleading evidence that the knife is a hallucination, or I might simply believe it is for no good reason. For every property of the situation, agents might in principle disagree, failing to believe, grasp, attend, or conceptualize the relevant propositions.

This leads us to a dilemma. To maintain interpersonal coordination in the face of persistent disagreement, we must either give up on a notion of evidence that depends on mental states, or accept a trivial notion of evidence. Take Williamson's evidence as knowledge (E=K) view, for example. If two thinkers are looking at the same knife, and even have the same lifetime experience, but differ in terms of their mental states, only one of the two may know propositions such as "there is a knife" and "the knife is bloodied". Thus either interpersonal coordination fails, or there are some much more modest propositions held in common between the two. This latter possibility cannot be dismissed outright. However, we are looking for candidates of what knowledge will be shared between two thinkers who have seen all the same visual scenes given the same perceptual capacities. Because I can fail to know just by failing to accept or endorse, it will be very hard to identify any propositions that I cannot fail to know. Perhaps we might appeal to some form of perceptual appearance that must be shared, but a bare appearance stripped of content about the world will not serve as evidence for many other non-appearance related propositions. Thus the shared evidence between any two thinkers will be vanishingly small, or at least small enough to have no meaningful justificatory force.

How can we avoid triviality but maintain interpersonal coordination? Drawing on the same strategy used in the case of interpersonal coordination in reference (Evans et al., 1982), we can see that two thinkers in the same external situation with the same discriminatory capacities will be causally related to the same objects. This is true even if they disagree about the interpretation

or conceptualization of those objects, just as when I see the knife and think it's a hallucination, and you see it and think it's on the table, we are both forming these impressions in response to the very same object. This is true even though I, believing there is no object, would not describe the situation as one of coordination: from the outside, we can observe the causal connection, even if the agents themselves are unaware or in denial about it. Thus interpersonal coordination can be accommodated with either triviality or a version of the objectual view:

Causal connection Thinkers share evidence if they stand in the same causal relation to the same evidential object.

Note that this is a sufficient but not necessary condition for having the same evidence, since there will be many other ways to share evidence, and some forms of evidence may not require any causal connection whatsoever[1]. However, sameness of causal relation leading to sameness of evidence is enough to validate interpersonal coordination, given that causal relations are fixed by the external situation and the agent's discriminatory capacities. To describe this claim from the inverse perspective: merely by thinking, you cannot sever your causal relationship with your environment. By contrast, relationships between thinkers and propositions are less robust to change, due to the nature of propositions themselves: these are descriptive, rather than causal, relations (since propositions cannot be efficient causes), and the proposition in question specifies a content which must be present for the relationship to hold. In Section 3, I consider further the possibilities for a propositional view of mnemonic evidence.

In conclusion, interpersonal coordination says that two agents in the same external situation with the same discriminatory capacities share the same evidence. This claim fits with ordinary use of the term 'evidence' and allows evidence to serve a useful role in separating out a thinker's epistemic situation (her evidence) from her response to that situation (her knowledge). However, interpersonal coordination contradicts any non-trivial knowledge, appearance, or belief-based theory of evidence. To accommodate interpersonal coordination, we can draw on the fact that sameness of circumstance and capacities entail shared causal connection. When two thinkers face the same situation, the most substantial thing they must have in common is that they are both causally related to the same objects. The cost of this view, as noted above, is indefiniteness – a causal connection to an object can be the source of an indeterminate range of propositions.

Thus the view that evidence just is the shared object is the best way to accommodate interpersonal coordination. This, to my mind, is a good but not conclusive reason to accept the objectual view. In what follows, I want to show how an application of the objectual view to memory allows us to understand radical reuse, and provides further reasons to accept this theory of evidence both in the case of memory and more broadly.

3 Memories as Evidence

Two friends had an argument last year, and are now discussing what happened. In making their assertions, each relies on his memory in some way to justify his claims: e.g., "you couldn't have been tired from work, because I remember you telling me you'd just quit your job". Given that each friend's memory is part of his overall epistemic situation, we can ask more precisely: in what sense is the memory evidence?

According to the E=K theory, each friend's evidence are the propositions he knows. We might treat memory as a *way* of knowing. In this sense, memory provides evidence by being the vehicle

[1] For instance in the case of mathematical or self-evident propositions.

for propositions which the thinker knows. If we assume the factivity of memory, then we can think of memory as providing true propositions. Remembered propositions may not all meet the conditions for knowledge, however, if the thinker either does not grasp or does not endorse them in the right way. But a subset of remembered propositions are known, and these would be evidence on this version of the E=K theory.

On this picture, memories are evidence because their content is part of the thinker's knowledge state. But this is not the only option. On other views, memories might be thought of as quite distant from the thinker's current knowledge state. The most exaggerated form of these views is that on which relying on memory is just like relying on a diary, library book, or archive. That is, when you visit an archive, you base new knowledge on what you've discovered. These discoveries involve incorporating external information. By the same token, we can treat memories as external to the agent's knowledge or doxastic state. This could be done through propositional content as well, but content of a different kind: in this case, the experience of remembering provides propositions as a record which we can decide how to use ('I have a memory of the house from the very bottom of the hill'), rather than directly about the event, which we already have taken up ('The house was at the top of the hill').

So theories of how memory provides evidence can be placed on a spectrum that represents how close a thinker is to her memories. On the one extreme, memories are straightforwardly part of her knowledge state, and provide evidence in the sense that (some) memories constitute evidence. On the other extreme, memories are at enough distance to the agent to be considered on a par with external sources of information. We can articulate a version of the propositional view at either end of the spectrum, but as I'll show, both versions get something wrong. This points to a flaw in the propositional conception.

Let me briefly illustrate the consequences of each end of the spectrum. One friend might remember the fight being in Krakow. In order to know that this is true, it seems odd to expect him to reflect, make an inference, or even bring this detail explicitly to mind. Rather, by remembering, he knows. This description fits with the internal end of the spectrum, but is inconsistent with the external extreme. A reader of a diary has no default entitlement to believe its contents, and can adopt them only by thinking them through and accepting them. Further, if there was a piece of information contained in a diary but the reader did not attend to it, we would not say that the reader believed that information. But when it is our very own memory system, we neither need to attend to a memory nor to correctly recall it to be related to its content, and this relation is plausibly strong enough to count as knowledge under some conditions.

However, imagine that one of the two friends reasons as follows: I remember my friend as being angry during the fight, however at that time I felt very guilty and expected him to be angry, moreover I was often projecting my emotions at that time, so he was likely not angry. Further, suppose the friend actually was angry. This form of reasoning fits better with the external end of the spectrum: I am considering my own memory as I would consider someone else's diary entry, and using what it says to undermine the way it represents the past (Barnett, 2015). This form of reasoning is not consistent with the idea that memory provides evidence by being part of the thinker's knowledge, since what supports the conclusion the friend draws is not the proposition that the person was angry. In principle, some beliefs can be self-undermining. But in this case, the way the friend reasoned was based on the premise that *he remembered the friend being angry*, not that *the friend was angry*.

The spectrum I've been describing ranges from treating the evidential role of memory as part of the thinker's knowledge state to treating it as an external information source. The propositional view asks us to choose between these two extremes by making the evidence provided by memory a matter of a definite proposition. This is not yet a knock-down argument

against the propositional view, but it suggests an opening for an alternative: a view of evidence on which we can articulate a stance towards memory that is neither fully internal nor fully external.

Neither the internal nor the external extreme can deal with features of everyday memory reliance: the external view cannot handle the way in which memories provide evidence before they are explicitly attended to or retrieved, and the internal view cannot handle the way we draw information from our memories from a critical perspective. Next, I'll make a more comprehensive case for the need for a view of memory that is neither fully internal nor external, and connect this aim to the objectual view of evidence.

4 Radical Reuse

This paper began with an analogy to film, where original footage was reused in a way that changed (and in a sense, reversed) its significance. In this section, I'll first provide a closer and more technical parallel to the case of memory reuse, before tackling the memory case head-on. This is the use of legacy data in archeology, which I base on the discussion in Chapman and Wylie (2016). This work, in the philosophy of science context, provides a paradigm for the account I develop in the individual psychological context. I refer to these phenomena, whether in film, science, or psychology, as radical reuse. This is an epistemic success term for the use of older evidence, once used to support a set of propositions P, but now used to support a substantially different and in some sense conflicting set of propositions $P*$.

4.1 Legacy data in archeology

Legacy data refers to the use of information and artifacts that was initially collected earlier and by a different team of researchers. Not all use of legacy data will qualify as radical reuse, since in principal one can return to old data and use it to support the same conclusions, but many of the most interesting instances involve supporting new and conflicting hypotheses. Chapman and Wylie discuss, among other examples, Sissel Schroeder (2005)'s analysis of maps, diagrams, and other data gathered from 1940s excavation of the Mississipean mounds at Jonathan Creek in Kentucky.

In this case, to gloss over many interesting details, the researchers doing the initial excavations had thought they had collected evidence that supported a set of conclusions about the use and dating of the site. These conclusions were based on the assumption that the site was used only by one group of people at each period, and among their conclusions was that the site was likely used for burials. These mounds were later closed to archaeologists, and so Schroeder's analysis used the original data to re-open the question of how the site was used and by whom. In contrast to the earlier team, she argued that the sites were likely used seasonally by several different groups, and that there was no data that supported the original theory that they were used as grave sites.

This case is a scientific success: it seems that the assumptions that lead the original team to the conclusions of single-occupancy and burials were flawed, and the later analysis was able to correct these mistakes and make progress in understanding the history of Jonathan Creek. But it's easy to imagine a failure instead, where the original archeologists collected and described their findings in such a way that made it impossible for the later team to uncover the truth. Or the later team could have only been able to discover that the original findings were likely wrong, without being able to advance any positive hypotheses about the site. The success of this case depended on both sets of archaeologists, the first gathering data in a way that made reinterpretation possible (perhaps inadvertently), and the second for carrying out the reinterpretation.

Chapman and Wylie (p206) take themselves to be establishing that there is *something* importantly conserved between the two cases that is necessary to explain the successful use of legacy data:

> Therein lies the paradox of interpretation; enigmatic though they are, the surviving material traces of past actions and events, lives and contexts have a capacity to resist 'theoretical appropriation' (Shanks and Tilley 1989: 44), and it is this that, at its best, archaeological inquiry successfully exploits.

Their ambition is to account for this reuse of data without adopting a naive view on which archeological findings are fully objective. The details of their anti-realist alternative picture are complex, and not relevant for this paper. But their work also provides examples and theoretical justification for the need for an account of legacy data that explains how it can be part of the story of later epistemological success, despite vast differences in framework, background assumptions, and motivation. The use I want to make of these cases is simpler, but draws on the same theoretical thread. Legacy data, when used like the Jonathan Creek case to undermine earlier conclusions, is a case of radical reuse. It shows that it's possible, and even practical, to collect information in a way that enables reuse, as well as to perform the later analysis. We can understand radical reuse, whether individual or collective, as requiring a changing stance towards data at two time-points:

- $t0$: data is observed and taken to be in support of a certain proposition p
- $t1$: the same data supports an incompatible proposition $p*$

This framing makes it clear that two forms of coordination are assumed in the case of legacy data. First, scientists at the first time-point share evidence between themselves. However, we assume that they draw the same or similar conclusions, so not only the object but also belief, knowledge, and other mental states are coordinated. Second, and more importantly, the use of legacy data involves coordination over time and in the face of a lack of coordination between mental states.

Legacy data is not a fringe use of scientific data. In fact, the reusability of data is central to the notion of data itself. I'll now briefly situate coordination, both interpersonal and intertemporal, as a critical part of the concept of data as used in the philosophy of science. This idea of data as distinct from phenomena will be the basis of a novel perspective on memory evidence in Section 5.

4.2 Data and phenomena

In their influential 1988 paper, Bogen and Woodward argue that scientific data and phenomena should be sharply distinguished. In their example of the boiling point of mercury, measurements in experiments are data, whereas the proposition that the boiling point is 356 degrees is a

phenomenon. In their words, "Data are public records produced by measurement and experiment that serve as evidence for the existence or features of phenomena. " Data and phenomena both serve as evidence, but have different functional profiles: phenomena are the things explained by scientific theories, whereas data are the measurements we directly observe that support the existence of phenomena.

Working in this tradition, Chapman and Wylie are clear that legacy data are data, and not phenomena. In the example of Jonathan Creek, the data include measurements of the dimensions of sites, maps of the grounds, and measurements of the composition of the soil. It is these observed measurements that are used to support phenomena such as the dating and structure of the dwelling, which in turn are explained by theories of the function and significance of the site. The two groups of scientists disagree not just at the level of theory, but also about phenomena, where the earlier group had different ideas about dating, dimensions, and so on which were linked to their assumptions about the use of the sites.

While I don't have space to survey the broader debate about data in the philosophy of science, I will draw on a recent account by Sabina Leonelli (2015) to illustrate two crucial features. First, Leonelli is explicit that data are material objects, not propositions. This is controversial, but the data/phenomena distinction at a minimum supports the idea that data are linked more closely to objects than phenomena are: they are the things that are observed and shared. Second, Leonelli argues that the function of data is transport – data are packaged and prepared to be used across time and context, and the purpose of these artifacts is precisely to "travel" in this way.

If data are objects, can they still be thought of as representational? This brings us back to the distinction between the question of the nature of evidence and the question of whether thought is propositional. Objects, mental or otherwise, are sometime also representations, and when they are, they have different representational formats. If an object O is a representation (say, a photograph), it has a description qua representation which captures all and only the features of that object relevant to determining the content and manner in which it represents. For instance, these would include the resolution of the photograph but exclude the position of the photograph on a desk. But when we take an object itself, qua object, to be data, we take the whole object and not just the narrower set of representational features. Thus when discussing how data are packaged for transport, Leonelli's account captures both to representational features, such as the use of standardized statistical techniques, and non-representational ones, such as the material methods of storage of artifacts.

In the scientific context, we see that radical reuse, and reuse more generally, are crucial functions of data. Moreover, many views take data to be material objects in part because of the constraints of reuse. This parallels the discussion of interpersonal coordination and causal connection in the broader debate about evidence: in both cases, the need for coordination drives us toward a view of evidence as objects. This is because a causal connection with objects is perhaps the only way to explain meaningful coordination in contexts of major disagreement. Disagreement is central to science: when, as Leonelli brings out, a team of researchers is investigating a system, they aim to produce results that can be used by other teams, for other purposes, and for a long time. As I'll now discuss, some but not all of the features of data sharing in the face of disagreement translate to the context of memory.

5 (Some) Memories as Objectual Evidence

To see the similarities and dissimilarities between legacy data and radical reuse in memory, let's start with a simple example:

Detective Inspector Jane witnesses Mrs. Barnes and her sister drinking tea in the dining room at noon on Tuesday. On Wednesday when investigating the murder of Dr. Sheppard, she remarks to her side-kick that Mrs. Barnes couldn't have been the murderer since the murderer was injured on Tuesday morning in the confrontation whereas Mrs. Barnes was comfortably drinking tea on Tuesday afternoon. However, after new evidence of Mrs. Barnes' motive comes to light on Thursday, Inspector Jane thinks back to her memory of the original incident, attending to the layout of the dining room and the positions of the sisters, and realizes Mrs. Barnes was holding the cup in her non-dominant hand, so she must have been injured after all!

This is a case of radical reuse in memory: Inspector Jane's memory originally supported the claim that Mrs. Barnes was unharmed, and later the claim that she was injured. Further, note that the data that are being reused are in this case mental, rather than material, objects[2]. While I've created an artificial case for the sake of clarity, it seems safe to assume this kind of experience is reasonably common – we at least sometimes go back to our memories and pull out something new. One domain where this happens especially frequently is with childhood memories: as we change our underlying concepts and expectations, there are many opportunities to think back and understand what we remember differently.

On an E=K analysis, we would have to say that Inspector Jane originally did not know Mrs. Barnes was drinking with her non-dominant hand, and later came to know it. After all, even if it's correct to say that she *saw* Mrs. Barnes drinking with her non-dominant hand on Tuesday, on Wednesday Inspector Jane clearly did not know Mrs. Barnes had been drinking with her nondominant hand. Thus she acquired new evidence when consulting her memory on Thursday.

A parallel to interpersonal coordination would suggest that Jane has the same mnemonic evidence on Wednesday and on Thursday due to sameness in circumstance. However, it cannot be formulated as a strict parallel, since Jane on Thursday is in a different external evidential circumstance than on Wednesday. After all, she's observed all kinds of things in the intervening time, and in fact these things may have led her to rethinking the memory. In the interpersonal case, sameness of circumstance guaranteed sameness of causal connection. But in the memory case, we seem to have sameness of causal connection, i.e. Jane on Wednesday and Thursday is accessing the very same memory, without sameness of circumstance.

So if we take the original argument to have established causal connection:

Causal connection Thinkers share evidence if they stand in the same causal relation to the same evidential object.

We can then take a different route to causal connection that is suitable for memory:

Memorial Coordination (strong) When a thinker accesses the same memory at different times, she stands in the same causal relationship to the same memory object.

However, this may be too strong. At different times, Jane is related to a memory object, her mental representation, in different ways. She pulls up different parts of the representation at various times, she is unable to access certain details at others, and her relationship with her memory is mediated by environmental cues. The memory itself also changes: it degrades in content through forgetting, and is also enriched through new information and reconstruction. These are not unusual or defective changes, but are both ubiquitous and arguably part of a well-functioning memory system (De Brigard, 2014; Aronowitz, 2019).

[2] Of course, the substrate of memory is a physical object, but the thing being reused is not the physical material.

Given the changeable nature of both memories and our relations to them, is there a meaningful sense of intertemporal coordination in memory? I follow Aranyosi (2021) in thinking that there must be. While he cites the intuitive sense of returning to the same memory, we can appeal to a scientific rationale for positing some kind of identity in memories over time. Perrin (2024) does this for semanticization, and so following a similar line, let's look broadly at the functional effects of repeated retrieval. Cuing participants to recall the same memory multiple times results in enhanced and durable recollection (Karpicke and Roediger III, 2007), and also changes the content represented in predictable ways (Roediger III and Abel, 2022). In addition, phenomenologically, repeated recall of the same memory can lead to a kind of loss of meaning, which Vladimir Nabokov described in *An Affair of Honor* (2011) as follows:

> The man who busies himself overmuch with the workings of his own soul cannot help being confronted by a common, melancholy, but rather curious phenomenon: namely, he witnesses the sudden death of an insignificant memory that a chance occasion causes to be brought back from the humble and remote almshouse where it had been completing quietly its obscure existence. It blinks, it is still pulsating and reflecting light - but the next moment, under your very eyes, it breathes one last time and turns up its poor toes, having not withstood the too abrupt transit into the harsh glare of the present. Henceforth all that remains at your disposal is the shadow, the abridgment of that recollection, now devoid, alas, of the original's bewitching convincingness.

These scientific theories, as well as the phenomenological phenomenon, cannot be understood as merely recalling the same *event*, but are about the same *memory*. If I recall different snippets of the same event, I would not have the same sense of the dead memory, and likewise the dynamics of information change and strengthening appeal not just to the target event but to the mental object that represents the event, that is, the memory. See Perrin (2024) again for further challenges to the idea that sameness of memory could be attributed to sameness of the event to which the memory refers.

This suggests that we should interpret memorial coordination as calling for numerical, rather than qualitative, identity of the memory[3]. Recall that the strong version of coordination required the same memory and also the same causal connection. As to the causal connection, the most conservative option would be to drop sameness entirely. What is important is just that the (numerically) same agent is related to the (numerically) same memory, even if there are multiple relations between them at different times. So we have:

Memorial Coordination (weak) When a thinker accesses the same memory at different times, she stands in a causal relationship to the same (numerical) memory object.

This revised version captures the sense in which we stay connected to a memory over time, even though we and the memory both change. This memory object is not just the memory qua representation. Instead, just as in the case of data, we treat the memory as a real material object and can in principle appeal to all kinds of features including spatio-temporally specific ones such

[3]Perrin (2024) uses a similar move to dismiss the theory that memories are the same whenever they refer to the same event, and of the positive views he favors, the neural vehicle view is consistent with what I say here while the type/token view may not allow for all cases of reuse. This is because the type/token view appeals to coarse-grained content to individuate memories, and memories may change their content in reuse, as in the *Detective* case. While Perrin's type/token view is consistent with some changes in content, these cases may be pushing the boundaries of what is the same memory. On the contrary, no such content-based limit exists for the neural vehicle approach. Similarly, a psychological vehicle approach would also be consistent with my discussion here.

as when, where, and how it is encoded. Just like the strong version, this weaker memorial coordination condition treats the case of radical reuse as sameness of evidential object, allowing us to align these cases neatly with use of data in science.

5.1 Memory beyond Reuse

Having put forward the core of my positive picture, I now turn to its limits. All uses of memory are not functionally analogous to data in science. Take the following case:

Ordinary Detective On Tuesday, Jane sees that it is raining and that Dr. Sheppard is wearing a blue coat. On Wednesday and Thursday, she recalls both of these details.

In these unremarkable cases, Jane relies on her memory in an immediate and unreflective way, very different from the critical scrutiny she applies in the dominant hand case. Should we still understand these cases as relations to evidential objects? The aim of this paper is to understand the case of reuse, and support the claim that evidence is *sometimes* best thought of as a mental object, so I cannot provide a full picture of memory's evidential role in all cases. Instead, I'll suggest three extensions.

First, and most straightforwardly, we might just take the view I've proposed of memories as evidential objects to extend to all cases of memory, including the *Ordinary Detective*-type cases of automatic reliance. This view has parsimony in its favor. But one might object that the arguments presented here presupposed that we are talking about memories to which we take neither a fully internal nor external stance. On the contrary, in the *Ordinary Detective* case, Jane takes a fully internal stance to her memory: it presents a proposition which is part of what she already believes. To the extent that some memories fall in this category, and do so in a modally robust way, the argument against the propositional view does not apply to these cases. Thus while we might still extend the objectual view on parsimony considerations to these cases, it might be deemed under-motivated.

Second, we might think of Jane's memory in *Ordinary Detective* as providing access to phenomena instead of data. That is, where in the reuse case Jane was related through memory to an evidential object that serves as a measurement of the past, in the ordinary case she has access to proposition about the past itself. These propositions are the sort of things you might derive from data, but when there is no reason to scrutinize or doubt your memory, you can be said to be related to these phenomena directly. Further, combining Williamson's original argument with the Bogen & Woodward framework, propositions as phenomena (rather than data) are a good fit for the role of being explained by hypotheses. In these simple cases, there would seem to be no need to talk about measurement, coordination, or reuse to explain Jane's entitlement to believe that Dr. Sheppard wore a blue coat. This would be a hybrid propositional-objectual view: depending on the memory and stance we take, we have both kinds of evidence through memory.

Another option would be to think of both the reuse and ordinary cases as relations to data, but where the reuse case relates Jane to her own memories, the ordinary case relates her to the past event itself. On this way of thinking, we have a uniform objectual view, but the difference between ordinary and reuse cases is a difference in the nature of the object. This view fits well with the direct realist accounts of Debus (2016) and Aranyosi (2021), but is also compatible with that of Soteriou (2008) which combines direct realism about perception with a more distal view of the relation between thinker and event in memory. On this view, in simple cases like *Ordinary Detective*, our memories are part of the story of how we manage to remain connected to past events, but the epistemic relation itself connects us to events outside of ourselves, rather than to internal representations of those events.

However, this third extension raises an issue: might there be a way to maintain that memories relate a thinker to an event even in reuse cases? In other words, does this extension actually imply an alternative theory? This would amount to an objectual view in all cases where the objects are not mental objects but the external referents of the memories. This alternative picture would succeed in establishing memorial coordination (strong) since the referenced event presumably remains the same over time both qualitatively and numerically. As noted before, this form of coordination may be too strong, for instance if we want to allow the possibility of forming multiple distinct memories of the same event, representing them independently, and bearing a different relationship to each.

But more pertinent to the point at hand, this view would miss something important about the analogy with science. Data don't play the role of merely maintaining a connection to the deeper, more observer-independent facts. Our modes of scrutinizing them are modes of scrutinizing the world, but also of scrutinizing the original instruments and scientists who recorded them, as well as the chain of transmission. This stance we take to the data, holding them at arms length as artifacts rather than peering through them in a transparent sense as our window into the facts, parallels the scrutiny Jane applies to her memory in *Detective*, and it's part of what allows her to see at the end that she's gotten it right. On the contrary, direct realist theories of perception typically hold that we are related directly to the objects in front of us, rather than in a way mediated significantly by our representations, and one of the chief virtues of these theories is that they deliver a kind of use of perception that requires no inquiry into its reliability. In the case of radical reuse in science or memory, the epistemic success depends precisely on scrutinizing the intermediary mental objects (though not just as representations), and goes along with inquiry into the reliability of these objects. So I set aside the possibility that a pure realist view, on which memories relate us to external events as evidence, could fit radical reuse cases, though we can still consider this view as an extension applied only to *Ordinary Detective*-type cases.

Which way we go on this question determines the answer to broader questions about the epistemic role of memory. But in each case, the solution to the dilemma posed in Section 3 is to treat at least some memories as objectual evidence, and for the second and third extensions, to allow that we have a variety of evidential stances to our memories, whether these are best understood as the same relation to different object types, or different relations to more similar object types.

6 Conclusion

Recall that premise (1) of Williamson's argument characterized the epistemic role of evidence as to be explained by hypotheses. I've drawn on a body of literature in the philosophy of science to show that this is not the case for an important class of evidence: data. Data come from our observation, measurement, and experimentation in the world, and function as evidence not for hypotheses, but for phenomena. On many accounts, data are material objects that are passed between groups of scientists over time and space, and used and reused in radically different ways in different contexts.

Taking this picture on board, we can see that Williamson is both right and wrong. Not all forms of evidence function to explain hypotheses, even in principle – data has a distinct function in "traveling" between researchers (Leonelli) and providing evidence for phenomena (Bogen and Woodward). But when evidence is treated as objectual, as in the case of data, Williamson is right that each piece of evidence does not pick out a neat set of supported propositions. Objects have

no single semantic content, and so we cannot derive propositions from them in a single regimented way.

I've argued that the phenomenon of radical reuse in memory is a parallel to cases of legacy data in science that motivate this objectual picture. One of the consequences of the objectual view, in science and in memory, is a looser connection between evidence and warranted beliefs. This means that what is supported by an agents method may be fixed by her context, aims, resources, and other factors beyond agent-neutral inferential norms. It also means holding agents to a higher standard. Not forming any beliefs about what's in front of me, or forming the wrong beliefs, can't sever my evidential obligations.

Our memories, formed in the moment, have to last us for decades. Just like in the case of scientific data, this results in radical reuse: cases where memories that first supported a certain proposition are re-thought and re-used to support a different, contradictory proposition. In this paper, I've argued that the right way to understand the kind of evidence provided in reuse is as data. In this case these data are mental rather than physical objects. While this doesn't fully characterize our relationship to our memories, it brings us a step closer to appreciating the complexity of memory, and the way in which the same memory can deliver new knowledge at different times.

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