

What is so special about episodic memory: Lessons from the system-experience distinction*

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ABSTRACT

Compared to other forms of memory, episodic memory is commonly viewed as special for being distinctively metarepresentational and, relatedly, uniquely human. There is an inherent ambiguity in these conceptions, however, because “episodic memory” has two closely connected yet subtly distinct uses, one designating the recollective *experience* and the other designating the underlying neurocognitive *system*. Since experience and system sit at different levels of theorizing, their disentanglement is not only necessary but also fruitful for generating novel theoretical hypotheses. To show this, I first argue that accepting the phenomenally conscious contents of episodic remembering as metarepresentational does not necessitate a metarepresentational conception of the episodic memory system. In its stead, I sketch an alternative account on which the metarepresentational character of episodic remembering is generated through the interaction of first-order outputs of the episodic memory system with other neurocognitive components of the brain. Complemented with a first-order account of the memory system, the system-experience distinction further supplies a novel understanding of the human uniqueness of episodic recollection, one that is compatible with there being an evolutionarily conserved episodic memory system. Overall, by distinguishing the two equivocal senses of “episodic memory” in our theorizing, we unearth an opportunity to understand how the distinctive phenomenology of *our* episodic recollection is related to and implemented in the cognitive architecture.

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1. Introduction

When the psychologist Endel Tulving (1972) first introduced the term “episodic memory”, he had in mind a form of declarative memory specialized in storing information about temporally-dated events and their spatio-temporal relations.¹ As such, episodic memory was intended to contrast with semantic memory, then conceived of as a mental thesaurus for general factual knowledge. But such a *content*-based distinction turned out to be inadequate. For what-where-when information can certainly be represented in a purely semantic format. It makes sense to say, for example, that information pertaining to where and when one was born is encoded in semantic memory.

Later on, Tulving (1983, 1985) proposed a *consciousness*-based distinction instead, according to which episodic memory is to be characterized in light of its distinctive self-related phenomenology. In terminology now standardly employed in the literature, episodic memory involves *autonoetic* (self-knowing) consciousness, for it affords an awareness of re-experiencing one’s own past. Thus, in episodic recollection, one does not merely know that such-and-such happened, but is further aware of the event remembered *as* part of his or her life. As we shall see, this is an intuitive idea, but one that carries subtle consequences. By contrast, retrieving semantic information is accompanied by Tulving’s *noetic* (knowing) consciousness, without implicating any phenomenologically salient subjectivity. Notably, this is so even when the information retrieved is explicitly about oneself. In recalling *that* I spent my second birthday at the hospital, I remember something true of myself. Still, in this case my memory consists solely of impersonal what-where-when information, and its phenomenology differs from that of autonoetically remembering *how* I spent my tenth birthday at home (Gardiner & Richardson-Klavehn, 2000).²

It bears emphasis that in characterizing episodic memory in terms of auto-noesis Tulving was not merely making a phenomenological observation. Rather, it was an attempt, under the memory systems framework (Squire, 1992), to characterize a neurocognitive system which underlies subjective experience of a distinctive sort and, relatedly, which subserves behavior with a particular function. To be sure, a phenomenological *approach* to memory was not exactly novel. Prefiguring Tulving, William James (1890, p. 239) regarded episodic memory as “suffused with a warmth and

¹ This is now commonly referred to as “what-where-when” information.

² Auto-noesis is more generally associated with mental time travel, which includes event constructions in both the past and future directions. As Tulving (1985, p. 1) puts it, auto-noesis “mediates an individual’s awareness of his or her existence and identity in subjective time extending from the personal past through the present to the personal future”. My concern in this paper is with episodic memory only, and for our purposes, of most relevance is the unique sense of self rather than the temporality of auto-noetic consciousness. For general discussions of auto-noesis and mental time travel, see Perrin (2016), Perrin and Rousset (2014), and Vandekerckhove and Panksepp (2009).

intimacy to which no object of mere conception ever attains”. The crucial contribution of Tulving’s work lies rather in placing the rememberer’s experiential self-awareness to the front and center of an empirical inquiry.³ Consequently, possession of episodic memory has been experimentally operationalized as a matter of possessing a certain experiential state of awareness, standardly measured via the remember/know paradigm (Gardiner, 1988; Tulving, 1985).

Tulving’s seminal work has proved fruitful for subsequent empirical research on memory and beyond (see, e.g., Irish et al., 2011; Lind & Bowler, 2008; Markowitsch & Staniloiu, 2011; Perner & Ruffman, 1995; Piolino et al., 2006). But, in this paper, I shall take up two theoretical positions that have risen to prominence under Tulving’s influence in both the philosophical and empirical literature. The first is what I call the *metarepresentation thesis*, or the claim that episodic memory has a metarepresentational structure (Mahr & Csibra, 2018; Owens, 1996; Perner, 2000, 2001; Perner & Ruffman, 1995; Redshaw, 2014; Wheeler et al., 1997). In the second place, the *human uniqueness thesis* contends that episodic memory is a uniquely human phenomenon (Keven, 2016; Klein, 2014; Suddendorf & Corballis, 2007; Tulving, 2002, 2005). Both theses, I shall argue, are more problematic than have been realized. For both their advocates and opponents have under-appreciated the question of how the episodic memory *system* should be characterized in light of the celebrated auto-noetic character of episodic recollective *experience*. As I will argue in the following pages, if construed as claims about episodic remembering qua experience, both the metarepresentation thesis and the human uniqueness thesis are well-motivated but are of lesser theoretical interest than they have been granted; yet if construed as claims about the memory system, they are substantive and interesting positions but are less motivated than standardly assumed.⁴

³ Some recent phenomenological characterizations do not *explicitly* put the emphasis on experiential self-awareness as Tulving does. Thus, Dokic (2014) characterizes the phenomenology in terms of what he calls an “episodic feeling of knowing”. Likewise, Fernández (2019) and Perrin, Michaelian, and Sant’Anna (2020) propose that central to episodic remembering is a certain “feeling of pastness”. Note that these characterizations are nevertheless Tulvingian, in that they share a commitment to the unique sense of self as characteristic of episodic remembering. For instance, the notion of the feeling of pastness in recent literature is grounded in the rememberer’s own subjective past, not the past in general (cf. B. Russell, 1921).

⁴ The system-experience distinction advocated here is not a controversial one, even though I will say a bit more in §2 to bring out its significance for our purposes. In her assessment of the (dis)continuism debate, Robins (2020) calls attention to what is essentially the same distinction between episodic remembering, as an occurrent mental state, and the episodic memory system. Why has this distinction been largely overlooked, however? My suggestion is that the two uses of the term “episodic memory”—one designating a conscious state with a distinctive phenomenology, the other designating a neurocognitive system—are both perfectly natural and closely connected. Notwithstanding their connection, they sit at different levels of theorizing, and the exact way in which they are connected is an open and empirical question.

An overarching goal of this paper is thus to make the case that real progress on exploring whether episodic memory is metarepresentational and uniquely human requires first disambiguating the question itself. Specifically, in §2, I will argue that advocates of the metarepresentation thesis do not carefully distinguish the claim that the phenomenally conscious contents of episodic remembering have a metarepresentational structure, from the claim that the contents stored within the episodic memory system are metarepresentational.⁵ After these two claims are distinguished, though, it may still be natural to suppose that if the phenomenology of episodic recollection is best characterized in metarepresentational terms, then the underlying memory system must be specialized to store metarepresentational contents as well. But this is by no means mandatory. Quite the contrary, I will argue that there is good reason to characterize the episodic memory system in purely first-order terms.⁶ Attention will then be given in §3 to develop a non-metarepresentational account of the episodic memory system. With an eye to the phenomenology in particular, my goal is to show how the celebrated auto-noetic character of episodic recollection can be plausibly explained when we look *outside* the episodic memory system—specifically, via the system’s interaction with other neurocognitive components of the brain.

I will then, in §4, apply the lessons from the previous two sections to the human uniqueness thesis. The extant case against ascribing episodic memory to nonhuman species, I will argue, is likewise predicated on a failure to carefully distinguish the challenge of identifying markers of episodic recollective *experience* from that of identifying markers of the episodic memory *system*. This matters not just because by itself absence of evidence for a certain phenomenology of remembering does not constitute absence of

⁵ Note that while both claims can be understood as a metarepresentation thesis about episodic memory, only the latter is strictly about the episodic memory *system*. Here the notion of metarepresentation is that of a representation *of* a representation *as* a representation (Perner, 1991), and Tulving himself is ultimately concerned with whether the episodic memory system is metarepresentational in this sense. In proposing an explanation for childhood amnesia, for example, Tulving and colleagues argue for a subtle but what they consider crucial distinction between encoding personally experienced events and encoding events *as personally experienced*: “[to] episodically remember a prior happening, the episode must have been originally encoded *as a subjective experience* and *integrated into the personal perspective* of the rememberer” (Wheeler et al., 1997, p. 346; emphasis added).

⁶ I take the representational structure of the memory system to be specified by the contents the system is *specialized* to store. The qualification “specialized” is important, since, after all, everyone should allow that *some* contents stored within the episodic memory system are metarepresentational. Some experiences have a metarepresentational structure to begin with (e.g., seeing oneself as dancing, assessing one’s subjective certainty) and will be remembered as such. Moreover, remembering is itself an experience which may be recursively embedded in future remembering states (e.g., remembering oneself remembering). Occasionally storing such metarepresentational contents is compatible with a memory system specialized to store first-order contents.

evidence for the memory system. More importantly, the system-experience distinction requires that we open ourselves to the possibility that what may indeed be uniquely human about episodic recollection may not have much to do with the episodic memory system we possess. If this is right, then we will need to reconsider the role played by phenomenology in our conception of episodic memory more generally. In particular, it may be that phenomenology is not, as many have thought, the insurmountable challenge to comparative psychology research on memory. This last point calls for a revision of how we should view memory research overall: there are, it turns out, two neighboring but distinct research programs—one concerning episodic recollection, the other concerning the memory system—and they should be kept apart not despite but because of their close connection.

2. *Episodic memory: system versus experience*

Our first order of business is to motivate the system-experience distinction. We do so in part by putting the distinction to work: I will argue that the metarepresentational structure of episodic recollective *experience* does not presuppose a metarepresentational structure of the episodic memory *system*.⁷ I shall begin, however, by clarifying two important assumptions I make throughout what follows. The first is reductive representationalism about consciousness, the view that the phenomenal characters of experiences can be reductively explained by their representational contents (Dretske, 1995; Lycan, 1996; Tye, 1995). This is a widely-held, albeit seldom articulated, methodological assumption both for a naturalistic approach to the phenomenology of episodic recollection and for any phenomenologically-informed inquiry into the episodic memory system (see, however, Fernández, 2006, 2019). One reason to state it explicitly here is that it helps us to see clearly the two different senses of the term “episodic contents”, namely the representational contents of the phenomenology on the one hand and the contents stored within the episodic memory system on the other. Under reductive representationalism, the phenomenology is fully explained by episodic contents in the first sense, but not necessarily the second.⁸

⁷ For the sake of the argument, I take for granted that auto-noetic episodic remembering does have a metarepresentational structure, effectively accepting the metarepresentation thesis construed as a claim about episodic recollective experience. To be sure, this is an assumption that some have called into question (see, e.g., Carruthers, 2018; Conway, 2001; Ganeri, 2017). But my goal here is to make the case that even accepting it does not lead to the conclusion that the episodic memory system is metarepresentational.

⁸ While not specifically focusing on episodic memory, Kriegel (2015) suggests that the phenomenology may be better explained under *non*reductive representationalism. His idea is that when we episodically remember an event and experience it as past, this pastness is not part of *what* is represented (i.e., a conceptual ingredient of the content), but rather an aspect of *how* the remembering represents what it does (i.e., an irreducible mode of presentation). Additionally, an anonymous referee suggests that another option would be to consider how the

Secondly, I will also assume that the episodic memory system is a natural kind, by which I mean that there is a psychologically real division between episodic memory and other forms of memory, corresponding to discrete neurocognitive systems. While not without dissenting voices, sympathies towards and tacit endorsements of the natural kind assumption are rather common in the literature (for further discussions, see Cheng and Werning 2016; Michaelian 2011). For our purposes, though, there is a further, dialectical reason for taking the system to be a natural kind. It is that doing so resists operationalizing “the episodic memory system” as a placeholder for *whatever* gives rise to the distinctive phenomenology of episodic recollection. To be clear, it may well turn out to be the case that what we have independent reason to view as the episodic memory system *is* wholly responsible for the distinctive what-it-is-likeness of episodic recollection. But such an outcome, as natural as it may seem, should be something to be established empirically, not via stipulation. Otherwise, it would trivialize not only the system-experience distinction, but possibly the whole memory systems framework.

Notice, then, that to draw the system-experience distinction is to observe the different levels at which a mental phenomenon can be studied. As such, the distinction is already recognized in much of cognitive science research, and can seem hardly worth emphasizing. In vision science, for example, the point of experimentally manipulating subjects’ visual *experience* is precisely to tap into the inner workings of the visual *system*. However, attentional influences on visual information processing and cross-modal interference have also been known and investigated for decades now (Maunsell, 2015; Spence, 2011). Hence one should not assume that a phenomenological difference between two visual experiences, even in a controlled experimental setting, is always due to differences in the operations of the visual system alone. Conversely, it is also a familiar point by now that conscious experience of a specific cognitive capacity may not always be the most helpful guide to, and certainly not the ultimate arbiter of, determining the inner workings of the underlying system. This is the general lesson to draw from, *inter alia*, masked priming (Bachmann & Francis, 2013) and the ventral-dorsal split of the visual system (Goodale & Milner, 1992; Sheth & Young, 2016). All this is to say that the system-experience distinction, while intuitive, is by no means trivial.⁹

phenomenology might be explained in a non-representationalist approach to consciousness. In what follows, I will have to set these intriguing suggestions aside. The literature by and large assumes a reductive representationalist approach, so I will not circumvent a methodological commitment shared by my interlocutors.

⁹ Here I choose two general findings from vision primarily because vision science is arguably one of the more mature branches of cognitive psychology, the lessons of which may be reasonably expected to generalize. Masked priming occurs when certain target stimuli are presented for short durations and then masked by other stimuli, such that participants will report not having seen the target stimuli, even though the influence of the target stimuli can be observed in downstream behavior. Initial findings in support of the ventral-dorsal split come from blindsight patients, who, despite their lack of conscious experience within an area of

When it comes to episodic memory in particular, there is good reason to pay extra attention to the system-experience distinction. It is that by all accounts, episodic recollection is phenomenologically rich and multi-faceted. This *prima facie* requires that we open ourselves up to the possibility that contributing to the overall experience may by default be more than one distinct neurocognitive system. As a concrete and relevant example, recall the unique sense of self characteristic of episodic remembering. In Tulving's (2005, p. 14) words, this reflects a conceptual truth vindicated by the phenomenology of auto-noetic remembering, namely that "there can be no [mental time] travel without a [mental time] traveler". But while a phenomenologically salient self manifests in *experience*, whether some self-representation needs to be stored within the episodic memory *system*—and if so, how—is yet an open question. Indeed, we can frame this as an overarching question to guide our inquiry from now on:

(Overarching Question) Is the distinctive phenomenology of episodic recollection—most notably, its auto-noetic character, the unique sense of self—fully explainable by the episodic memory system?

The Overarching Question serves to clearly separate the sense in which episodic recollective *experience* may be metarepresentational, from that in which the episodic memory *system* has a metarepresentational structure. Now, there are theorists who do not take auto-noesis as a phenomenological feature, and for them the Overarching Question may not seem as pressing. Mahr and Csibra (2018), for example, characterize auto-noesis in terms of a metarepresentational epistemic attitude that grounds the epistemic generativity of episodic memory.¹⁰ But, still, a similar question can be raised: is this epistemic generativity fully explainable by the stored contents within the episodic memory system? It is quite possible that it is. Yet epistemic generativity is first and foremost a feature of the consciously-experienced remembering states, and for that reason does not strictly *require* that the episodic memory system store metarepresentational contents to begin with. Therefore, even though the Overarching Question is formulated

their visual field, were able to appropriately control their motor actions. The phenomenon has since been investigated in neurological and neural network-based studies as well (Fang & He, 2005; Goodale, 2014; Milner & Goodale, 1995; Weiskrantz, 1999). Notably, the ventral-dorsal split fits a general pattern that many cognitive tasks can be performed in the absence of conscious awareness (for a review and discussion, see Shea & Frith, 2016). As a relevant further example, recent evidence shows that individuals with *aphantasia* (who self-reportedly lack voluntary visual imagery) can perform just as well as typical individuals on imagery-related memory tasks, likewise suggesting a dissociation between conscious experience and cognitive function (Keogh et al., 2021; Pounder et al., 2021).

¹⁰ Epistemic generativity is a technical notion first introduced in epistemology (Lackey, 2005). For our purposes, the basic idea behind it can be illustrated by the observation that in remembering something episodically one does not merely know that such-and-such happened, but also knows *why one knows*, viz. on the basis of remembering (see also Dokic, 2001; Fernández, 2016). On the account offered by Mahr and Csibra (2018), this is because episodic recollection comes with a representation of its own origin.

vis-à-vis phenomenology, its basic format has general applicability. This highlights an important payoff of drawing the system-experience distinction, namely a framework to explore how, and the extent to which, features of episodic remembering can be mechanistically implemented in the underlying memory system.

It is also worth noting that the Overarching Question can be seen as a natural extension of the constructive character of episodic memory in psychology (Alba & Hasher, 1983) and, relatedly, the increasingly popular generationism in philosophy of memory (Michaelian, 2016a). According to these perspectives, episodic remembering is reconstructed in use. Yet if, as Schacter and Addis (2007, p. 773) put it, episodic remembering is a matter generating a representation via “a [re]constructive process in which bits and pieces of information from various sources are pulled together”, it will then make sense—indeed, it will be of urgency—to ask from whence the phenomenologically salient auto-noetic component (which will be referred to as “ME content” henceforth) is generated. There are importantly different theoretical positions to explore, which lead to different conceptions of the episodic memory system. One natural thought is that the ME content is part of what is stored within the episodic memory system. Alternatively, the ME content may be stored outside the memory system proper, but still somewhere to which the system has procedural access—perhaps analogous to how semantic information is accessed and utilized in the reconstruction process. Yet a different possibility is that the ME content is an “add-on” to the memory representation well after it is reconstructed to completion, in which case further questions are invited regarding the nature and mechanism of such a post hoc operation. These are all real possibilities that follow from the fact that an episodic remembering state is itself an experiential state *of* a previous experience. It is, then, an open and empirical question as to whether, and if so how, the ME content characteristic of the remembering state inherits what is included in the original experiential state.¹¹

With that being said, in what follows I will not proceed from a strictly generative framework. For not only does the Overarching Question not require that we approach it that way, my goal in this section is also more modest. It is to explore, in fairly high-level and non-partisan terms, what *sorts* of answers to the Overarching Question are available. Given the system-experience distinction and the phenomenological richness of episodic recollection, neither a “yes” nor a “no” answer is obviously to be preferred. Each,

¹¹ It is somewhat surprising that theorists working in the generative framework have not said more to flesh out these different and potentially other possibilities. But there are two exceptions. McCarroll (2018) proposes that observer memory involves an *implicit* representation of the self via a particular mode of presentation of the past event. Likewise, Cheng, Werning and Suddendorf (2016) suggest that auto-noesis may be grounded in either the perspectival character or the phenomenological transparency of the constructed scenario. I have some reservations about these proposals, which will become clear shortly.

therefore, must be developed and motivated on a principled basis, and then the logical next step will be to compare their relative strengths.

Suppose first that we answer “yes” to the Overarching Question. Effectively, this amounts to supposing that, in addition to what-where-when information, the episodic memory system stores some sort of ME content directly, which can be retrieved as such and become phenomenologically salient. In more concrete terms, given reductive representationalism, whereas the stored what-where-when information, comprised of sensory-perceptual event details, contributes to the quasi-perceptual character of episodic recollection (*replaying* a prior experience), the stored ME content is responsible for the distinctive auto-noetic character (*reliving* a prior experience). Thus the phenomenology is fully accounted for by the contents stored within the memory system. Note that we have not said anything about what the ME content consists in, beyond what explanatory role it is supposed to play. Even so, this already begins to constrain the representational structure of the episodic memory system. More to the point, it requires that the system be metarepresentational in character.

To see why, note first that for the proposed explanation to work, the postulated ME content must not be equated with a specific kind of self-representation already contained in sensory-perceptual event information. Some argue that the phenomenal character of perceptual experience constitutively involves what can be called the “egocentric sensitivity” or “first-personal givenness” of experience (Burge, 1998; Zahavi, 2005). The basic idea is that the what-it-is-likeness of experience is strictly speaking a kind of what-it-is-like-*for-me*-ness, where the “for-me” component corresponds to some minimal, nonconceptual form of self-representation.¹² Note that for the stored what-where-when information to contain self-representation in this sense, it only *implicitly* represents the self in the perspectival and sensory-specific contents of the original experience. Indeed, self-representation of this sort is arguably better referred to as “self-related information”, for which no conceptual repertoire is required (Musholt, 2013). Plainly, self-related information is not the relevant kind of ME content that we are looking for. For the auto-noetic character of episodic recollection involves a more robust, conceptual understanding of the self, one that allows us “to mentally represent and to become aware of [our] protracted existence across subjective time” (Wheeler et al., 1997, p. 335). This highlights the fact that episodic recollection is not only phenomenologically but also conceptually rich, involving explicit self-awareness of one’s past experiences and one’s participation in them.

¹² Consider, for example, how in *seeing something as being a certain distance away in that direction*, the organism’s internal representation of the object constitutively involves information associated with the organism’s egocentric perspective. It is relative to this perspective that the location of the object is specified, but the perspective itself need not be represented as such. This is the sense in which perceptual experience involves minimal self-representation.

So the ME content must be conceptual in nature, it seems. But it might be replied that this is too hasty, and that the episodic memory system can do fine with storing only nonconceptual ME content, insofar as we allow an additional process which functions to insert some suitable *conceptual* ME content post retrieval. This is an intriguing suggestion, and we may grant that it is capable of doing justice to the auto-noetic character of episodic recollection (for a proposal broadly along the lines of this suggestion, see Klein, 2013). The problem, however, is that in the current context it would mean giving up the original “yes” answer to the Overarching Question. After all, this suggestion commits one to the idea that an additional process external to the episodic memory system would *also* contribute to the distinctive phenomenology. In fact, it would arguably make *the* contribution. For this reason, this is not a viable suggestion at the moment.

But if the episodic memory system stores the ME content in terms of some conceptual, explicit self-representation, important work is then needed to explicate how such ME content relates to the stored what-where-when information. It is not enough to simply postulate that the system stores conceptual ME content alongside the relevant what-where-when information. For in episodic recollection, the sense of self and the event in which the self is remembered to engage are integrated into a single, coherent mental episode. Herein too lies the “warmth and intimacy” of remembering rightly observed by James (1890). The sense of self, in less metaphorical terms, is not a *separate* mental state that happens to co-occur with the remembered event. Rather, it is *part of* the phenomenology that the sense of self manifests in an unmediated, non-inferential manner. When I recall what it was like having dinner at my parents’ last Christmas, I am readily aware that it was *my* experience. As Klein (2014) vividly puts it, such an awareness requires “no additional mental gymnastics”. This, then, sets a further constraint on the episodic memory system: as far as stored contents go, the remembered event and my participation in it must stand in some appropriate logical connection, such that when retrieved what I episodically remember is felt as immediately and meaningfully *mine*.

These considerations imply that the contents stored within the episodic memory system must be metarepresentational: specifically, with the ME content being a metarepresentation, having the what-where-when event information as its first-order content. No other logical relations between the two seem adequate in explaining why episodic remembering is auto-noetic in the relevant sense. This is, of course, quite often how advocates of the metarepresentation thesis motivate their view. Thus Tulving and colleagues emphasize that the remembered event “must have been encoded as a subjective experience and integrated into the personal perspective of the rememberer” (Wheeler et al., 1997, p. 346). Likewise for Perner (2000, p. 300), who contends that the stored contents have an explicitly self-referential format: “I have information (that ‘pear’ was on the list and that I have *this information* because I have seen ‘pear’ in the list)”.

So our original supposition that the episodic memory system is wholly responsible for the distinctive phenomenology of episodic recollection has led us to conclude that the system has a metarepresentational structure. Yet this conclusion too might be resisted by the suggestion that the episodic memory system could do fine with merely first-order ME content, insofar as we allow an additional process combining the simultaneously retrieved (first-order) ME content and what-where-when information into an integrated whole via some metarepresentational embedding. In response, as before, the problem is that such a suggestion gives up the original “yes” answer to the Overarching Question. For, once again, an additional process external to the memory system would make the main contribution to the auto-noetic character of episodic recollection. For this reason, this suggestion is not viable either.¹³

Taking a step back, it is important to clarify that the preceding considerations are put forth *not* as an attempt to develop a genuinely explanatory metarepresentational account of the episodic memory system. Such work has already been done by some of the authors quoted above. What I mean to highlight here is rather the fact we arrived at a metarepresentational conception of the memory system as a result of eliminating unviable hypotheses under the supposition of a specific answer to the Overarching Question. It is not, in other words, so much of an obviously straightforward position. It would appear obviously straightforward, perhaps, only if one were already committed to answering “yes” to the Overarching Question, or if one failed to recognize that there was such a question admitting of different answers in the first place.

But now suppose instead that we attempt a “no” answer to the Overarching Question. We are, in other words, working towards an account to the effect that the auto-noetic character of episodic recollection is *not* exhausted by the episodic memory system. This is already a promising path to pursue for two reasons. First, as indicated earlier, given the system-experience distinction and the phenomenological richness of episodic recollection, what explains the distinctive phenomenology may well lie outside the memory system proper. Additionally and more specifically, what we are also able to see now is that, for our goal of explaining the phenomenology, there turns out to be an abundance of theoretical resources at our disposal for postulating separate processes

¹³ What if we locate metarepresentational embedding strictly at the stage of retrieval, thus within the bounds of the episodic memory system? In this case, the contents stored within the episodic memory system can be purely first-order—including both the what-where-when information and self-representation. But they are not merely retrieved *alongside* each other; rather, when retrieved they are *combined* into metarepresentations before becoming available to downstream “consumer” systems. This, then, may be another way for a first-order memory system to give rise to auto-noetic episodic remembering. While such an organization of the episodic memory system is certainly possible, it seems rather mysterious as to why the retrieved-as-metarepresentational contents are not instead encoded as metarepresentational and stored as such in the first place. There is certainly more to be said here, but fleshing out the proposal and its implications would go beyond the scope of this paper.

external to the episodic memory system. This is because the reason to resist postulating these processes dismissed earlier no longer applies now, since we are no longer under the supposition that the episodic memory system is wholly responsible for the distinctive phenomenology. As a result, we now have significantly fewer constraints on the structure of the episodic memory system, and furthermore are not under any pressure to postulate a metarepresentational memory system to begin with.

It is important to be clear about the scope of this conclusion. What we have established is the unnecessary of the metarepresentation thesis about the episodic memory system. Its alternative, a non-metarepresentational account, is not yet developed in any detail; to do so will be the task of the next section. But there are two general lessons that are starting to emerge. The first is that features at the content level of episodic recollection do not, by themselves, necessitate features of the episodic memory system. Upon reflection, this follows from a more general point, namely that functional specialization of the brain by no means entails that discrete neurocognitive systems work in isolation. Features of a cognitive capacity that show up in conscious experience, then, may or may not be due to operations of the corresponding neurocognitive system alone. To further illustrate with a nearby example, note that in virtually all instances, the contents of episodic recollection will involve a certain amount of information stored in the semantic memory system (Irish & Piguet, 2013). Indeed, it is widely accepted that episodic recollection can be semantically scaffolded, and that semantic retrieval can be episodically enriched (Renoult et al., 2019). Yet no one thinks—nor should anyone think—that on this basis we ought to incorporate the semantic memory system within the episodic memory system, or vice versa. By parity of reasoning, then, we are not forced to postulate a metarepresentational structure to the episodic memory system either, simply on the basis that the consciously-accessed contents of episodic recollection are metarepresentational.¹⁴

In the second place, we can now see that there is a sense in which the metarepresentation thesis when construed as a claim about the episodic memory system is in fact a rather unmotivated view. For it postulates sophisticated representational abilities and conceptual resources *within the memory system* in order to account for a distinctive phenomenology. As I have argued, however, to account for this phenomenology, it is not obviously preferable to appeal to a sophisticated, possibly over-intellectualized memory system alone, when we can utilize appropriate capacities already existing in other neurocognitive systems. To be more specific, we know that for human beings there are other systems capable of metarepresentational embedding, most notably the mindreading system. A possibility is thus that the mindreading system can be recruited to interact with

¹⁴ We may call such temptations to conflate features of representational content of conscious experience and features of discrete neurocognitive systems “feature internalizing”. This is analogous to what Millikan (1991) calls “content internalizing”, a mistake that projects representational content to the vehicles of representations.

what can be purely first-order outputs of the episodic memory system. If this idea pans out, then with regard to the distinctive phenomenology of episodic recollection, a metarepresentational memory system will fare no better than a non-metarepresentational one. Other things being equal, then, we ought to favor the latter over the former.

3. *Towards a first-order account of the episodic memory system*

I have argued that it is promising to explain the distinctive phenomenology of episodic recollection by taking into account the ways in which the episodic memory system interacts with other neurocognitive systems, without presupposing that the memory system has a metarepresentational structure. The goal of this section is to turn this broad idea into a concrete and genuinely explanatory proposal. There is, however, an immediate worry that must be dealt with before progress can be made. Recall that the auto-noetic character of episodic recollection manifests in experience in an unmediated, non-inferential manner. But wouldn't the appeal to something—or, rather, anything—external to the episodic memory system with which it interacts introduce further inferential processes, hence failing to do justice to the auto-noetic character thus characterized? And if so, wouldn't that mean a metarepresentational episodic memory system is necessary after all?

This worry can be dealt with easily enough. It is certainly true that postulating an additional component external to the episodic memory system in our explanation will entail additional inferential processes. But, once again, we need to keep in mind the system-experience distinction. After all, the unmediated, non-inferential character of auto-noesis is a phenomenological feature of the experience. Hence, the relevant question is whether there will be additional inferential processes that make a difference in *undermining this phenomenological feature*. I think not. For all else being equal, in most cognitive domains including perception, language comprehension, motor control, and certainly memory, most of the system-level computations and inferential processes leading up to a conscious experience are not themselves consciously experienced. Absent independent reason to think otherwise, then, we should expect the current case to be not any different. Of course, often times all else is *not* equal. Hence a satisfactory response to the present worry will depend on the details of exactly what additional inferential processes are postulated. It is to this issue that we now turn.

Let's begin by stipulating that the episodic memory system is not metarepresentational in character and that it stores first-order contents only. We can be more specific. Let's say that the contents stored within the episodic memory system comprise representations which are spatio-temporal, perspectival, modality-specific, and sensory-perceptual in nature. As discussed above, these representations already contain some minimal, nonconceptual form of self-representation. More speculatively, there may also be some sort of nonconceptual content encoding the events' pastness or temporal distance in an analogue magnitude, "unit free" manner (Peacocke, 1986). But the

important point to keep in mind is that these representations are not metarepresentationally embedded whatsoever. We are, that is, committing ourselves to the idea that there is no metarepresentational ME content within the episodic memory system: or, equivalently, the stored contents are not metarepresented *as belonging to me, as experienced by me, as having resulted from my past, as having obtained in my past*, or anything of the sort. This is strictly speaking an unrealistic stipulation, since, as suggested above, any memory system will at least occasionally have to deal with contents that are metarepresentational. Nevertheless, including this strong stipulation and exploring how far we can go will prove helpful for the sake of an intellectual exercise.

With this setup, what we are looking for is a mechanism that is suitably responsive to the operations of the episodic memory system and one that reliably labels its outputs under the conceptual embedding of I REMEMBER (recall that episodic remembering is both conceptually and phenomenologically rich). It bears emphasis that *some* sensitivity to either the outputs of the episodic memory system or the manner in which the outputs are generated is an uncontroversial part of our cognitive architecture, irrespective of what the episodic memory system is like. This is the insight from the memory monitoring framework (Koriat et al., 2000; Koriat & Goldsmith, 1996), and the need for memory monitoring within the cognitive architecture is motivated by perfectly general considerations having to do with, *inter alia*, memory accuracy and distinguishing episodic remembering from other forms of episodic thinking (Dokic, 2014; Michaelian, 2012, 2016b). For our purposes, suffice it to say that memory monitoring is standardly understood to involve automatic, implicit, and heuristics-based metacognitive processes. For example, processing fluency as a sensory cue is known to have an impact on the subjective experience of remembering, through unconscious inferential processes (Kurilla & Westerman, 2008).

Will memory monitoring together with the heuristic cues it relies on be what we need in order to account for the distinctive phenomenology of episodic recollection? I believe so, but not without borrowing additional theoretical resources. For to satisfactorily account for this distinctive phenomenology, the relevant monitoring mechanism must be involved in making a phenomenologically *and* conceptually rich contribution in its interaction with the episodic memory system. One worry, then, is that since memory monitoring is implicit and heuristics-based, by itself it appears to be a poor candidate for generating the needed conceptually rich outcome.

This worry too can be dealt with. While it is true that some familiar cases of heuristics-based metacognitive monitoring—such as the tip-of-the-tongue phenomenon, déjà vu experiences—do have a certain *je ne sais quoi* to them, and while metacognitive feelings themselves may be affective states (Arango-Muñoz, 2019), in principle there is no reason why as a category heuristics-based metacognition cannot give rise to or become

associated with conceptually rich experiences.¹⁵ The question is how to make a positive case that they do. The hard work in what follows will thus be developing an account that plausibly connects memory monitoring with conceptual richness suitable for explaining the auto-noetic character of episodic recollection. For this, we turn to Carruthers' (2011) interpretive sensory-access theory of self-knowledge, and I will argue that it is an inferential rule of the mindreading system, with the help of memory monitoring, that embeds appropriate first-order contents supplied by the episodic memory system under I REMEMBER.

The interpretive sensory-access theory will take some unpacking, as will the utilization of the mindreading system, which can seem surprising. For mindreading is often conceived of as a capacity for gaining knowledge about other individuals. But one central claim of Carruthers' theory—the sensory-access part—is that the mindreading system automatically utilizes many of the same sensory cues for other-knowledge in gaining self-knowledge. Another central claim—the interpretive part—is that both self- and other-knowledge in the form of propositional attitudes are inherently interpretive on the basis of sensory-perceptual information. Thus, Carruthers (2011) proposes that self-knowledge comes from our turning our mindreading capacities on ourselves. Specifically, we routinely interpret the relevant sensory-perceptual evidence available in working memory so as to attribute mental states to ourselves, in exactly the same way that we do when it comes to attributing mental states to others.¹⁶

Crucially, this interpretive nature of self- as well as other-knowledge entails that the mindreading system has access to more than just sensory-perceptual information, even though the interpretive processes only utilize sensory-perceptual cues. This is as it should be. For, in general, the appropriate conceptual information, once acquired and stabilized, is bound into the sensory-perceptual states with which it is associated. Thus in perception we do not simply see shapes and colors; we see *a tomato*. And instead of only hearing phonemes and syllables, one hears someone *calling one's name*. Furthermore, the outputs of the mindreading system themselves are bound into the contents of consciously-experienced sensory-perceptual states. It is for this reason that we do not

¹⁵ Indeed, Perrin, Michaelian and Sant'Anna's (2020) metacognitive account of the phenomenology of episodic recollection is one in which the feeling of pastness is developmentally enriched by other acquired concepts such as SELF and CAUSALITY.

¹⁶ A consequence is that, in the same way that we do not have direct, privileged access to others' minds, the interpretive sensory-access theory contends that we do not have direct, privileged access to our own minds either. In my view, the interpretive sensory-access theory is well-supported by behavioral, imaging, and neuropsychological evidence (see also Carruthers, 2013; Cassam, 2014; Rimkevičius, 2020). But a full defense is beyond the scope of what can be accomplished in the space available. Hence, I will instead motivate utilizing this theory with the uncontroversial idea that memory is, after all, a form of knowledge and that episodic memory in particular is viewed as a form of self-knowledge. Developed to explicate the nature of self-knowledge, the interpretive sensory-access theory is thus well-suited for our purposes.

merely hear someone asking about the address of the courthouse; we automatically hear them *as wanting to know the way to the courthouse*. Herein lies the needed link, I submit, between memory monitoring and the conceptual richness required by auto-noetic episodic recollection.

To see how, it is instructive to begin by considering the question of what episodic remembering is most useful for. We will do this in several steps. Suppose first that after a deliberate memory search, I gather that I had Italian food for my birthday dinner last year. In this case, certain spatio-temporal, perspectival, modality-specific, and sensory-perceptual details may come to mind in an integrated manner, with a past temporal orientation. Or, I may simply have the relevant bits of information about the event stored in semantic memory, allowing swift and easy access (perhaps because it was a particularly memorable dinner). Through either way of having obtained the answer, I quickly move on to decide that I will have something different for my birthday this year. This is because, as it turns out, the memory search conducted was for the purpose of helping me with dinner decision for tonight. Note that, *for this purpose*, it does not seem to matter whether the information retrieved—either imagery-based or purely semantic—is consciously experienced with an auto-noetic character (i.e., represented *as my own, as having obtained first-hand*, etc.). For in this case the mental state that should conclude the memory search simply has first-order information about a specific dinner last year. The underlying processes, including memory monitoring processes, giving rise to the end state are doubtless complex, and they are known to be fallible. But in a non-reflective, non-critical context such as this one, it is reasonable enough to go along with the first-order information that one swiftly settles on.

Now consider a slightly different case, in which I am about to engage in a similar memory search but this time in response to my partner's inquiry about what we had for dinner for our anniversary last year. Suppose further that I too gather that we had Italian food. But there are two crucial differences between this case and the previous one that call for something additional in conducting the memory search. The first difference is that there are some important interpersonal goods at stake. I thus readily find myself conducting the memory search in a more reflective, critical context, which should raise the evidential threshold for what it takes to settle on an answer. Second, more importantly, there is now a sense in which it is explicitly my *knowledge* of the event in particular that is being inquired into, not least because my partner's question is directed at *me* and by extension *what I remember*. Through the mindreading system, I hear my partner *as wanting to know if I remember what we had for dinner for our anniversary last year*, even though the utterance may contain nothing metarepresentational (e.g., "What did we have for dinner last year?").

Note, then, that in this second case the mental state that should conclude the memory search is no longer purely first-order information, but instead *what I remember*, represented as such. Furthermore, due to the interpersonal goods at stake, I am motivated

to act more carefully and double-check the accuracy of the information retrieved before answering my partner's question regardless. One way to do this is by checking whether I can *really* see myself, through the mind's eye, enjoying an Italian dinner with my partner last year. Less metaphorically, if what *swiftly* comes to mind is a *vivid, sensory-rich* experience filled with *affectively salient* details, that will add to the evidence and lead me to judge that I did have Italian with my partner for dinner for our anniversary last year. By contrast, if I only seem to have some *vague* impression that we did, and if no corresponding mental imagery is forthcoming, then that will lead me to question the accuracy of my vague impression. These are, of course, among the very sensory cues that are utilized by implicit, heuristic-based memory monitoring in general.¹⁷ But the current suggestion is that, in this case, the interpersonal goods at stake together with the fact that it is my knowledge of the event that is being inquired into, make it so that I am consciously utilizing the indicative value of the heuristic cues and drawing explicit inferences about how the occurrent mental state relates to the target experience. In this second case, then, whether the information retrieved can be consciously experienced in a metarepresentational manner becomes crucial.

Now, as the final and most important step, suppose that I vividly remember the dinner with my partner for our anniversary last year. Having done so, I answer my partner's inquiry by reporting, in first-order terms, "We had Italian food last year". But because it was, once again, my knowledge of the event that was inquired into, naturally I will now be heard by my partner *as reporting remembering that we had an Italian dinner last year*. Likewise, if my partner is doubtful of the answer offered, he will be doubting the accuracy of the answer *as a representation*—in particular, *my* representation—of the event. Crucially, the interpretive sensory-access theory predicts that I should also hear myself *as remembering that we had Italian last year*, rendering my knowledge in this instance explicitly metarepresentational. This is because, once again, the mindreading system works towards ourselves as well as towards others, using the same sorts of sensory cues and following the same inferential rules.¹⁸

The general lesson to draw here is that, at least in a social context, others' inquiries into past events are routinely heard *as wanting to know what we remember*; in answering these inquiries, one's memory searches will benefit from engaging in auto-noetic mental time travel, which involves making explicit use of the heuristic cues

¹⁷ It is an ongoing debate as to what the types of heuristic cues are utilized by memory monitoring. For my purposes, I am not taking a stand on whether the cues are based on contents or procedural features. Hence here I include cues of both types.

¹⁸ This account assumes that REMEMBER is part of the conceptual repertoire of the mindreading system. Also assumed to be part of the mindreading system are implicit inferential rules such as "REMEMBERING entails KNOWING", "reporting that one remembers that such-and-such entails that one remembers that such-and-such". Whereas the development of the conceptual repertoire and inferential rules of the mindreading system is a matter of ongoing investigation, that the mindreading system in human adults is thus equipped is not in dispute.

typically utilized in implicit memory monitoring. Additionally, our answers are routinely heard by ourselves, as well as by others, not merely as reports of what happened but explicitly as reports of our knowledge of what happened. One prediction then is that this will have an impact on our cognitive architecture vis-à-vis episodic remembering in general, *even in non-social contexts*. Specifically, it predicts that all episodic memories, initially retrieved as purely first-order contents, should be experienced in a metarepresentational manner—thanks to the mindreading system, they will be routinely interpreted as representations of self-knowledge.

The interpretive sensory-access theory of self-knowledge thus provides us with an account of the distinctive phenomenology of episodic recollection, notably its conceptual richness. In motivating this account, the two contrast cases considered are of contemporary life. But that is only for ease of illustration, and it is not hard to imagine that similar social interactions might have been present in our ancestors' social environments as well. The hypothesis is then that the mindreading system has a built-in inferential rule that functions to routinely embed first-order outputs of the episodic memory system under I REMEMBER. And even though this inferential rule may have its evolutionary origin in social contexts, once established and stabilized it will apply broadly. The assumed first-order outputs of the episodic memory *system* will thus be routinely *experienced* as having a metarepresentational structure.

It bears emphasis that the results of this metarepresentational embedding are further bound into the consciously-experienced sensory-perceptual states in episodic recollection. The proposed interaction, in other words, supplies additional contents to the ones stored within the episodic memory system in producing the remembering state (recall the two different senses of “episodic contents”). As a result, what one consciously experiences includes *both* sensory-perceptual event details *and* a metarepresentation to the effect that these details are of a past experience. On my account, then, episodic recollective experience involves both sensory and propositional contents. But the latter does not render episodic memory a matter of propositional attitudes (cf. Fernández, 2019; Mahr & Csibra, 2018). Rather, the idea is that the auto-noetic character of episodic recollection in particular crucially depends on the workings of the mindreading system. My account thus captures the sense in which, and provides a mechanistic explanation of how, episodic memory is a form of self-knowledge with a distinctive phenomenology.¹⁹

This is an admittedly speculative account. It should be stressed, however, that my primary goal here is to show *that* a rabbit can be pulled out of a hat, so to speak, rather than a detailed demonstration of *how*. The rabbit is of course the distinctive phenomenology of episodic recollection, especially vis-à-vis its conceptual richness, and the hat is a purely first-order episodic memory system. I suspect that, for some time now, the metarepresentation thesis has remained dominant in part because of an inability to

¹⁹ I thank an anonymous referee for inviting me to further clarify my thinking on these issues.

appreciate that the presumed “trick” would not involve any magic whatsoever.²⁰ I should also add that, even though memory monitoring plays an important role in this account, by itself it is insufficient to explain the auto-noetic character of episodic recollection. Rather, it must work in combination with the conceptual enrichment and metarepresentational embedding of the mindreading system.

It is instructive to contrast my account with some of the proposals in the literature that draw on similar considerations. First, Mahr and Csibra (2018) likewise emphasize the adaptive value of episodic memory as well as the importance of memory monitoring through the lens of social cognition. They contend that episodic memory is metarepresentational insofar as it involves a distinctive epistemic attitude taken towards what-where-when event information, (meta)represented as having been obtained firsthand. They explicitly pitch their position as a functional account of episodic memory *capacity*, however, and shy away from taking a definitive stance on the operations of the memory system involved. Hence it is not exactly clear whether their account should be read as making any definitive claims about episodic recollective experience or the episodic memory system in particular. They do speculatively suggest, however, that “the main achievements in episodic memory development occur as a consequence of the development of retrieval mechanisms” (Mahr & Csibra, 2018, p. 15). This indicates, it seems to me, that their functional account is friendly to the possibility that the contents stored within the episodic memory system are not themselves metarepresentational.

In the second place, McCormack and Hoerl (2001) compare what they call the “constitutive view” versus “causal view” about the role played by metarepresentation with regard to episodic memory. These authors suggest that episodic recollection may either *constitutively* involve representing oneself as the subject of certain experiences, or, alternatively, the development of episodic memory capacity may *causally* depend on the ability to represent oneself in certain ways. Opting for the causal view, McCormack and Hoerl’s position seems to me compatible with a first-order account of the episodic memory system as well. But their position is motivated in part by denying that episodic recollection is auto-noetic in the relevant sense. This is unnecessary. For there is not a forced choice, as McCormack and Hoerl seem to think, between the constitutive view and the causal view once we draw the system-experience distinction. Assuming that episodic recollection is metarepresentational (accepting the constitutive view), its developmental origin is still a question left entirely open. My argument in this section can be read as making the case that the mindreading system plays a causal role vis-à-vis the conceptual richness of episodic recollection (accepting the causal view). This is as it

²⁰ It is telling, in this regard, that the so-called minimalist approach to episodic memory and its development is motivated precisely by deference to the conceptual richness of auto-noetic remembering (J. Russell, 2014; J. Russell & Hanna, 2012). If what I have been arguing is on the right track, however, this deference is not really necessary.

should be, as the constitutive view is concerned with representational content and the causal view with neurocognitive systems.

In summary, even if the outputs of the episodic memory system are purely first-order, they can nevertheless be recruited and utilized by our sophisticated cognitive machinery so as to give rise to phenomenologically and conceptually rich episodic recollective experience. Importantly, to recognize and then flesh out this possibility requires that we separate in our theorizing features of episodic recollection from those of the underlying memory system in the first place.

4. Episodic memory: uniquely human?

So far, I have been primarily concerned with the question of how to understand the episodic memory system, specifically its representational structure, in light of the distinctive phenomenology of episodic remembering. I have also been making the case that the experience-system distinction and the Overarching Question are useful albeit under-appreciated tools when it comes to generating novel theoretical hypotheses and clarifying extant theoretical positions regarding the memory system. But the experience-system distinction has far-reaching implications for comparative psychology as well, so now I shift my attention to the hotly contested issue of demonstrating episodic memory in nonhuman species.

At the core of the issue is whether comparative psychologists are warranted to ascribe episodic memory to nonhuman animals based on evidence suggestive of what is now commonly called “episodic-like” memory (Clayton & Dickinson, 1998). The dominant view, namely the human uniqueness thesis, is motivated twofold.²¹ First, as we have seen, episodic memory presupposes sophisticated (meta)representational abilities and conceptual resources. Many thus understandably exercise extra caution when interpreting the animal data, taking as the default position that nonhuman animals are not thus endowed. Notably, to disprove this default position involves inferring conceptual thought in nonhuman animals from nonlinguistic behavioral evidence, a task that is by no means easy and straightforward (Beck, 2012). In the second place, the nonlinguistic nature of animal data also makes it particularly tricky to establish anything conclusive on the phenomenological dimension of the kind of memory that nonhuman animals

²¹ Charitably understood, the human uniqueness thesis is purely negative: extant evidence does not substantiate the proposition that nonhuman animals have episodic memory. In this sense, the human uniqueness thesis serves as a null hypothesis. But devising an apt null hypothesis in comparative cognition research is not as straightforward as it may seem (Andrews & Huss, 2014; Mikhalevich, 2015), and as I shall argue, the logical strength of the human uniqueness thesis is particularly strong even as a null hypothesis, especially when the system-experience distinction is not drawn.

possess.²² Indeed, when the notion of episodic-like memory was first introduced, it was intended by comparative psychologists to acknowledge the seemingly insurmountable challenge involved in demonstrating in nonhuman animals a phenomenologically rich remembering experience.

Methodologically, this separation of the phenomenological and behavioral dimensions of episodic memory was somewhat of a necessary strategic concession, in order to initiate a research program focused on a similar, if not the same, phenomenon that *can* be inferred by nonlinguistic evidence. A more recent strand in the literature, however, has begun to propose that the hallmark of episodic memory should be behaviorally defined anyway, focusing on the qualities that can be objectively assessed in humans and nonhuman animals alike (Eichenbaum et al., 2005). This stands in sharp contrast with Tulving's phenomenology-based conception, but it is motivated by an inference to the best explanation. Setting aside subjective experience for the moment, there has been an impressive accumulation of evidence for the similarities between recollective behavior in nonhuman animals and that of human beings (for a review, see Salwiczek et al., 2010). What to my mind appears to be the strongest evidence comes from studies done with Western scrub-jays, whose natural propensity to cache and recover perishable food items is experimentally exploited to measure their episodic-like recall. In Clayton and Dickinson's (1998) early work, scrub jays were shown to flexibly adjust their strategies for retrieving cached foods. After caching events, scrub jays were more likely to return to where mealworms—their preferred choice—had been cached, but only *before* they perished. A reasonable interpretation is that the birds' memory contained a representation of *what* they cached, *where* they cached it, and *when* they cached it—that is, they were not merely utilizing cues of familiarity or acting instinctively. In later studies, Clayton and colleagues found that the jays integrated what-where-when information with prior experiences to issue in strategic behaviors in novel contexts as well (Clayton et al., 2006; Dally et al., 2006). Such evidence suggests that certain nonhuman species can make use of what-where-when information in a way that is not only extremely flexible but also highly generalizable (see also Eacott & Norman, 2004; Hamilton et al., 2016; Kouwenberg et al., 2009). Furthermore, as it turns out, there is also a strong case for homology across various species of the underlying brain networks and neuronal populations implicated in human episodic memory (Allen & Fortin, 2013; Murray et al., 2018; Pastalkova et al., 2008; Umbach et al., 2020). It can thus be argued that one would need a strong, principled reason to maintain that the same memory system is *not* present in nonhuman animals.

²² Recall that for human beings, episodic memory is standardly assessed by the remember/know paradigm, wherein the subjects verbally report either remembering or merely knowing something. This paradigm plainly is not applicable to nonhuman animals.

As impressive as the existing evidence is, to insist solely on that basis a behavioral conception of episodic memory is bound to be dialectically ineffective, for the simple reason that the other side of the debate *does* have a strong, principled reason for thinking otherwise. Earlier we set considerations of subjective experience aside. But it is reasonable for advocates of the human uniqueness thesis to reply that these considerations should *not* be set aside. For we already know that it is possible to store and retrieve what-where-when information about a past event without subjectively re-experiencing it in the relevant sense. Indeed, this is precisely what has led Tulving to consider autoindexing a defining feature of episodic remembering, and this empirically validated insight should not be set aside simply because it is inconvenient for comparative studies.

There is a sense in which this back-and-forth consists merely of a terminological dispute, however. By this I do not mean that the dispute is empty; rather, it is just that the dispute is concerned with *how to fix the phenomenon of interest* by different groups of researchers with different interests to begin with. After all, there are no disagreements of an empirical sort at stake: advocates of the human uniqueness thesis do not deny that some nonhuman animal species make use of what-where-when information in a flexible and generalizable manner; comparative psychologists likewise generally accept that nonlinguistic behavioral evidence does not bear directly on the issue of animal phenomenology.

In order to make progress, we would do well to bring in the system-experience distinction again.²³ That is, regarding the human uniqueness thesis, we ought to first distinguish the claim that episodic recollective experience is uniquely human from the claim that the episodic memory system is uniquely human, and then evaluate the cases for and against each in turn. The considerations in support of the human uniqueness thesis reviewed above—that episodic recollection is conceptually and phenomenologically rich—characterize first and foremost features of the consciously-accessed contents of the remembering experience. And as we have seen in §2, considerations at this level by themselves do not determine what the underlying memory system must be like. Therefore, even if we grant that autoindexing episodic *recollection* is uniquely human, it does not follow that the episodic memory *system* is likely unique to human beings. More to the point, the case made by advocates of the human uniqueness thesis is restricted to one

²³ Tulving's (2005) own suggestion to comparative psychologists is to look for evidence of future-directed mental time travel in nonhuman animals. But this likely only pushes the question one step back. For the same considerations that count against attributing episodic memory to nonhuman animals on the basis of non-linguistic behavioral evidence will likely count against attributing future-directed mental time travel to nonhuman animals as well (Suddendorf, 2013).

about episodic recollective *experience*, so it takes further argument to extend their conclusion to the episodic memory *system*.²⁴

Note that this changes not only the dialectic of the debate but also what the debate is *about*. For the system-experience distinction allows comparative psychologists to maintain that the aforementioned behavioral and neurological similarities between human beings and nonhuman animals constitute a strong abductive case for taking as the default position that the episodic memory system is widespread in the animal kingdom, while acknowledging the challenge to assess the phenomenology of remembering in nonhuman animals. This separation of theoretical focus is not just a strategic concession, but what we should expect insofar as we identify and recognize the different levels at which memory can be studied. Uniquely human episodic recollective experience does not require a uniquely human episodic memory system. Here is another way to put the point. Other recent attempts to move forward the debate on episodic vs. episodic-like memory tend to either downplay the phenomenological dimension (Buckner, 2013; van Woerkum, 2021) or contend that the phenomenological and behavioral dimensions of episodic memory are more evidentially connected than previously thought (Boyle, 2020). While these attempts are noteworthy, they assume that there is a univocal phenomenon, namely episodic memory, admitting of different dimensions to be investigated. It is, I suggest, better still to recognize at the outset that we are dealing with different albeit connected phenomena at different levels of theorizing, namely episodic recollective experience on the one hand, and the episodic memory system on the other, and then exercise caution in drawing out the implications of discoveries made at one level for those made at the other.

Furthermore, if, as suggested in §3, *in the human case* the auto-noetic character of episodic recollection turns out to not crucially rely on a metarepresentational memory system, comparative psychologists can further free themselves of the worries about attributing sophisticated (meta)representational abilities and conceptual resources to nonhuman animals. For it is quite possible that it is the auto-noetic character of episodic recollection in particular that is unique to human beings, due to our much more complicated social lives and, relatedly, due to our immense interest in *talking* about what we do (and do not) remember with one another. Plainly, neither of these two conditions applies to nonhuman animals. Seen through this lens, the human uniqueness thesis when construed as a claim about episodic recollection is something that comparative psychologists can and should happily accept. As to whether or not the episodic memory system is uniquely human, that is a question for which behavioral and neurological

²⁴ This point applies to cases involving neuropsychological patients and young children as well (see, e.g., Klein & Nichols, 2012; J. Russell, 2014), where the disputes in my view are not about different theoretical possibilities, but are instead due to different opinions regarding what the equivocal term “episodic memory” denotes.

evidence should take priority, in accordance with comparative research in other cognitive domains. Crucially, the question will now be an empirically tractable one.

But isn't this simply an ad hoc rejection of Tulving's phenomenology-based conception? Not so. To see why, consider the Overarching Question again. The Overarching Question invites us to consider, given that episodic recollection in human beings has a distinctive self-related phenomenology, the different contributions made by the episodic memory system and potentially by its interactions with other neurocognitive systems. This means that *already in the human case* there are in fact two neighboring but distinct research questions: one related to the episodic memory system, and the other related to episodic recollective experience. It is just that these two questions are so closely connected, that progress made on one of the questions not only significantly informs the other, but is sometimes viewed *as* progress made on the other. The system-experience distinction suggests, however, that this can at least occasionally be a mistake, since, once again, there are two distinct phenomena at different levels of theorizing. Separating research into episodic recollection from that into the episodic memory system is revisionary and yet liberating. For it encourages us to look beyond the memory system when accounting for, inter alia, the phenomenology of remembering, and invites us to approach the topic through the broader lens of cognitive architecture.²⁵

5. *Concluding remarks*

In this paper, I have been concerned with the question of *how* episodic memory can be metarepresentational and uniquely human. One important conclusion is that the question itself is in need of disambiguation. Failing to do so has obscured potentially fruitful areas of research in some cases, and turned what should be empirical matters into terminological disagreements in others. It is important to be clear about the scope of this conclusion, however. The twin theses that the episodic memory system has a metarepresentational structure and is uniquely human are *not* hereby refuted. Indeed, it would be naïve to think that in these areas mere philosophical argumentation can be decisive. But after disambiguation, the twin theses end up being less motivated than they have initially seemed. My arguments thus invite their advocates to be more cautious and explicit about the strengths of their positions, and encourage all to think more carefully

²⁵ This is related to a point recently raised by Craver (2020) regarding what he calls the “epistemic” versus “empirical” conception of episodic memory. While he is not concerned with the human uniqueness thesis in particular, Craver urges against assuming that the epistemic conception on which episodic remembering is an epistemic achievement can be reduced to the episodic memory system. One reason for this is that as an epistemic achievement, remembering as we know it is part of a much larger practice of communicating as well as tracking what we know about the world. It is thus likely to implicate more cognitive resources than a memory system specialized for storing and retrieving information.

and creatively about the ways in which the auto-noetic character of episodic remembering and possibly its human uniqueness are mechanistically implemented.

Throughout this paper, I have assumed that human episodic remembering does have an auto-noetic character, implicating a unique sense of self best understood in metarepresentational terms. In closing, I want to offer a skeptical thought against this seemingly innocuous assumption. For it may be that when *theorizing* about episodic memory, we tend to consider instances of episodic remembering in which we find ourselves in already-reflective contexts (e.g., *To answer that question, I have to think about what I did this morning before leaving*). This is perhaps due to the fact that episodic remembering is more phenomenologically salient in those contexts, and therefore they are the ones that individual theorists have converged on. Or, it may be that our folk-psychological notion of remembering—as a deliberate mental action that we perform—narrows our attention to voluntary episodic recollection, even though involuntary memories are just as common (Rasmussen et al., 2015; Rasmussen & Berntsen, 2011). But in either case, there is then a selection bias at work, and in those biased contexts, it is also natural to *think about* and *report* what we remember in metarepresentational terms already, irrespective of what episodic remembering may be like in other contexts. In other words, the auto-noetic character may be a contingent and context-dependent feature of human episodic recollection. Indeed, given the system-experience distinction, to the extent that there is an interesting feature of the recollective experience in any particular case, there will always be a further question as to whether this reflects some design feature of the episodic memory system, results from the system's standard interactions with other neurocognitive components of the brain, or—we should now add—is contingently dependent upon the context in which the organism engages in episodic recollection. To not consider these different possibilities would be to miss out on important opportunities.

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