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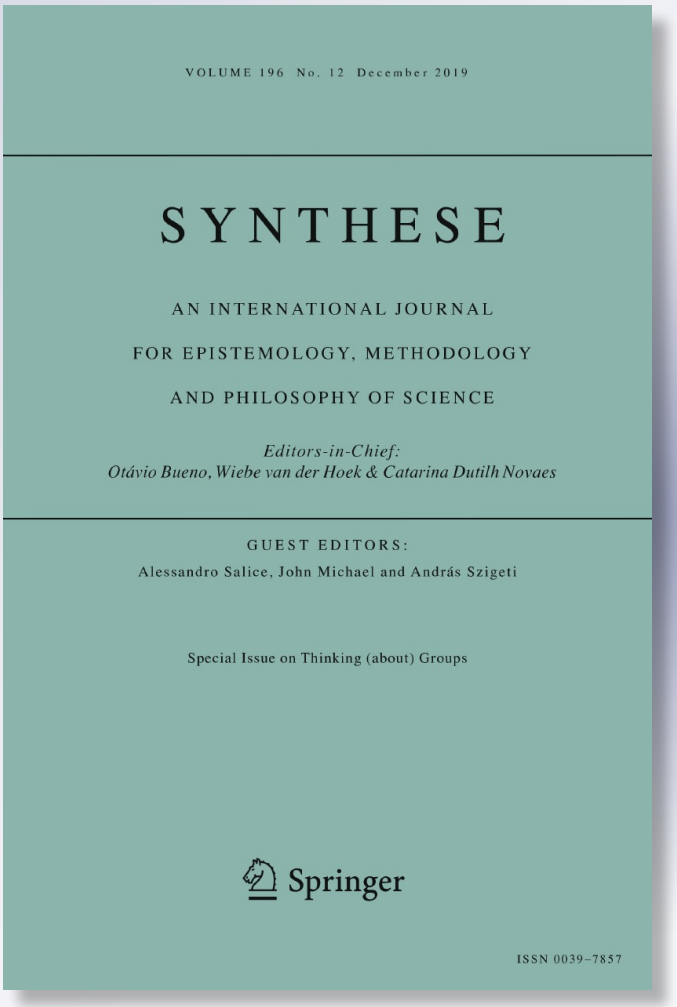

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S.I. : GROUPS

Collective mental time travel: remembering the past and imagining the future together

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Abstract Bringing research on collective memory together with research on episodic future thought, Szpunar and Szpunar (Mem Stud 9(4):376–389, 2016) have recently developed the concept of collective future thought. Individual memory and individual future thought are increasingly seen as two forms of individual mental time travel, and it is natural to see collective memory and collective future thought as forms of collective mental time travel. But how seriously should the notion of collective mental time travel be taken? This article argues that, while collective mental time travel is disanalogous in important respects to individual mental time travel, the concept of collective mental time travel nevertheless provides a useful means of organizing existing findings, while also suggesting promising directions for future research.

Keywords Memory · Episodic future thought · Mental time travel · Collective memory · Collective future thought · Collective intentionality · Intentional stance

1 From collective memory to collective mental time travel

One guiding idea of the booming interdisciplinary literature on *collective memory* is that groups may remember the past in much the sense in which individuals do so

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(e.g., Anastasio et al. 2012). One guiding idea of the booming psychological literature on *episodic future thought* is that episodic memory (remembering past events) can only be understood in relation to episodic future thought (imagining future events) (e.g., Szpunar 2010). Bringing these two ideas together, Szpunar and Szpunar (2016) have recently proposed the concept of *collective future thought*, suggesting that a tight relationship between remembering the past and imagining the future may obtain not only at the level of individual memory but also at the level of collective memory. (Individual) episodic memory and (individual) episodic future thought are increasingly seen as two forms of (individual) *mental time travel* (MTT) (see Perrin and Michaelian 2017), and it is therefore natural to see collective memory and collective future thought as forms of *collective mental time travel*. But how seriously should the notion of collective MTT be taken?

We approach this question by breaking it down into two components: Is collective MTT a genuinely *collective* phenomenon? If so, is it a genuinely *mental* phenomenon? We will argue for positive answers to both of these questions, but our discussion of the latter, in particular, will lead to the conclusion that collective MTT is in an important sense disanalogous to individual MTT. This conclusion, in turn, suggests that only a relatively weak concept of collective MTT may be workable and consequently that caution will be required when attempting to transfer insights derived from research on individual MTT to the domain of collective MTT. But this should not be taken to suggest that collective MTT is not a promising area for future research. Indeed, while our discussion here is primarily conceptual in character, our hope is that is that it will feed back into empirical research on collective future thought and collective MTT as a whole, and we will make a number of concrete suggestions for how such research might proceed. Both these concrete suggestions and our more general conclusions are, we emphasize, quite tentative. In particular, we do not aim to demonstrate the existence of collective MTT. But the project is not thereby either unmotivated or overly speculative: since the idea of individual MTT is extremely well-established in both philosophy and psychology, and since productive investigation into shared or collective versions of many related individual capacities has borne ample fruit (both conceptually in social ontology and collective intentionality, and empirically in the cognitive sciences of joint action, collaborative recall, and the like), an initial exploration of collective MTT is clearly warranted. So the primary goals of this article are, more modestly, to introduce a new concept—that of collective MTT—into the literature and to make a case for its potential utility to researchers by showing how it can organize existing research findings and suggest potentially fruitful directions for future research. The article thus inevitably touches on a broad range of issues, each of which can be treated only briefly. We hope that any lack of rigor which this approach entails is compensated for by the novelty of the "big picture" exploration that it permits.

In the remainder of Sect. 1, we briefly review the concept of collective memory and the concept of memory as MTT, showing how these come together in the concept of collective MTT. In Sect. 2, we make a case for viewing collective MTT as a genuinely collective phenomenon. In Sect. 3, we make a case for viewing it as a genuinely mental phenomenon but one which lacks certain features characteristic of individual MTT. Throughout, we note potential directions for future interdisciplinary research on

collective MTT; in Sect. 4, we conclude by singling out some questions of specifically philosophical interest.[1]

1.1 Collective memory

Research on collective memory focuses primarily on how groups, especially large-scale groups, such as nations and classes, construct shared representations of the collective past. There is now an enormous body of literature describing different instances of collective memory, and it is impossible for us to review even its broad outlines here, but one representative example is the work by Anastasio et al. discussed below, which investigates the ways in which political struggles associated with the Chinese cultural revolution shaped shared representations of the recent history of Chinese literature. In addition to this applied question, Anastasio et al. deal with important theoretical questions, and our focus here is on questions of the latter sort. While we cannot hope to provide an overview of the range of theories that have emerged in the now-vast literature on collective memory (see Olick et al. 2011; Kattago 2015; Tota and Hagen 2015; Barash 2017), we do want to highlight two points that will be particularly relevant to our discussion.

First, a central theoretical question in this literature since Halbwachs (1992) has been whether collective memory is reducible to individual memory (Olick 1999; Wertsch 2009). Consider a society's memories of its past. Is there anything to these over and above what the individual members of the society remember of its past? Many have been inclined to deny that there is. Attributions of *memory* to groups recall attributions of *mind* to groups, and, in view of the checkered history of the latter (Wilson 2005), a healthy scepticism is in order with respect to the existence of robustly collective forms of memory. But there are patterns and phenomena in collective remembering that are—perhaps inevitably—obscured if we focus our attention exclusively on what happens at the individual level, and, coinciding with renewed philosophical sympathy for the legitimacy of attributions of mentality to groups (Theiner 2014), the general trend has therefore been in the direction of nonreductionist or emergentist views. Thus,

[1] In order to clarify the relationship between our approach and that taken by Szpunar and Szpunar, we note that, whereas Szpunar and Szpunar focus on collective future thought, understood as the future-oriented counterpart of collective memory, we focus on collective mental time travel as a whole. This difference might at first seem to be purely verbal, but employing the concept of collective mental time travel in fact leads us to ask questions that are not suggested by the concept of collective future thought. Many of these concern the (potential) mentality of collective mental time travel, including matters—such as the possibility of group-level phenomenal consciousness—that tend not to be treated by researchers outside of philosophy. More generally, since Szpunar and Szpunar are based in psychology and social science, rather than philosophy, their focus is less conceptual than ours. Hence we take the question of the (potential) collectivity of collective mental time travel much more seriously than they do. The payoffs of this approach include the bringing into focus of the relevance of the literature on collective intentionality—which has not previously been discussed in this connection—and encouraging a clear distinction between collective future thought and individual thought about the collective future, a distinction which is somewhat obscured in Szpunar and Szpunar's approach. In addition to its more conceptual focus, our paper brings in new resources from the interdisciplinary literature both on large-scale collective mental time travel and on small-scale collective mental time travel. Thus, while we build on Szpunar and Szpunar's approach, our approach goes beyond theirs.

whatever misgivings we might have about the legitimacy of attributions of mentality to groups—and we concur with newer views (e.g., Huebner 2014) that such attributions must meet rigorous conditions—we will take seriously the possibility that collective memory in particular and collective MTT in general are robustly collective, strongly emergent phenomena, something other than the mere sum or aggregate of group members' individual memories.

Second, while research on collective memory in the humanities and social sciences has focused primarily on remembering at the level of large-scale groups, there is a distinct tradition of research in psychology on remembering at the level of small-scale groups. The focus in this tradition is on remembering in married couples (e.g., Harris et al. 2014), mother–child dyads (e.g., Reese and Fivush 2008), and other groups consisting of just a few individuals, as opposed to the whole societies, consisting of thousands or millions of individuals, that are at issue in studies of large-scale collective memory. Again, we cannot hope here to provide an overview of the range of theories and findings that psychological research on collective memory has to offer (see Barnier et al. 2008; Hirst and Echterhoff 2012; Michaelian and Arango-Munoz forthcoming), but we can point out that the question of reducibility arises for small-scale collective memory just as it does for large-scale collective memory. Consider a married couple's memories of their shared past. Is there anything to these over and above what the husband remembers and what the wife remembers? Again, there are patterns and phenomena here that are visible only at the collective level, such as the quite different balances of episodic recall and semantic recall found when long-married couples remember shared past events together rather than individually (Harris et al. forthcoming). So the possibility that small-scale collective memory is strongly emergent should be taken just as seriously as the possibility that large-scale collective memory is strongly emergent. Nevertheless, while we can ask similar questions about small- and large-scale groups, there is no guarantee that these are to be answered in similar ways, and it will often be useful to distinguish between small- and large-scale collective MTT. In other words, while it is natural to group small-scale and large-scale collective MTT together, there is no guarantee that the only important difference between them is one of scale. Given that the members of small-scale groups interact with each other more frequently, more directly, and more intensely than the members of large-scale groups, in particular, many of the mechanisms that plausibly underwrite remembering in small-scale groups are likely to be inapplicable to large-scale groups.

1.2 Memory as mental time travel

Philosophers have so far paid relatively little attention to collective memory, but they have long been interested in the form of individual memory which they have referred to as recollective or personal (among other terms; see Brewer 1996; Nikulin 2015) and which they now, adopting psychological terminology, frequently refer to as *episodic*. Philosophical approaches to episodic memory, memory for events, have often distinguished it from semantic memory, memory for facts, in phenomenological terms (Klein 2015; Michaelian 2016b). The core idea of phenomenological approaches is that episodic memory necessarily involves a feeling of familiarity or pastness (e.g.,

Russell 1921; Broad 1925), a feeling which is not involved in semantic memory. Early psychological definitions (Tulving 1972), in contrast, distinguished episodic from semantic memory in informational terms. The core idea here was that episodic memory is memory for information about the "what", "when" and "where" of particular past events. Psychological definitions have, however, evolved dramatically over time. This is not the place for a detailed discussion of the relationship between early and recent definitions, but we do want to highlight two important differences between early psychological definitions and the definitions that are most widely accepted today.

First, psychologists investigating episodic memory quickly came to recognize that there is more to remembering an event than simply remembering information about it (Tulving 1983). Semantic memory, too, is capable of retaining information about the what, when, and where of events; thus early definitions, by reducing episodic memory to what-when-where memory, failed to say what it is that makes episodic memory *episodic*. Various criteria for episodicity have been proposed (Perrin and Rousset 2014), but, recalling earlier philosophical approaches, the most widely accepted is a phenomenological criterion. According to contemporary phenomenological definitions, episodic memory is distinguished from semantic memory by the fact that, when one episodically remembers an event, one necessarily has a subjective sense of re-experiencing it, a sense that is absent when one merely semantically remembers facts about it. This sense of the self in subjective time, which maps roughly onto the philosophical notion of a feeling of familiarity or pastness, has come to be known as *autonoetic consciousness* (Wheeler et al. 1997; Tulving 2002; Markowitsch and Staniloiu 2011; Droege 2017).

Second, early psychological definitions (like most philosophical definitions) typically disregarded the relationship between the ability to remember past events and the ability to imagine future events. Intuitively, the act of remembering the past would seem to have much in common with the act of imagining the future, and recent research has indeed provided overwhelming evidence for extensive overlap between them at the neural, cognitive, and phenomenological levels (see Schacter et al. 2007, 2012). The relationship between remembering the past and imagining the future is complex (Debus 2014; Perrin 2016; Michaelian 2016a), but the precise details do not matter here. What does matter is that, as a result of this research, many psychologists have come to define episodic memory as a form of past-oriented mental time travel, in contrast to future-oriented mental time travel—i.e., episodic future thought (e.g., Szpunar 2010). The act of remembering the past thus appears as a mirror image of the act of imagining the future. Remembering the past is a reconstructive process, just as imagining the future is a constructive process (Michaelian 2016b; Robins 2016). And imagining the future involves a subjective sense of "pre-experiencing" it, just as remembering the past involves a subjective sense of re-experiencing it (D'Argembeau and Van der Linden 2004; Vandekerckhove and Panksepp 2009).

1.3 Collective mental time travel

Individual future thought is now a major focus of research in psychology (Michaelian et al. 2016). Szpunar and Szpunar argue that it is time for collective memory researchers

to begin to focus on *collective* future thought. Noting that, just as individuals often think about their own futures, they often think about the futures of groups of which they are members, they define one form of collective future thought as "the act of imagining an event that has yet to transpire on behalf of … a group", where the groups in question may range in size from small-scale groups, such as family units, to large-scale groups, such as nations (Szpunar and Szpunar 2016). Noting that individuals likewise often think about the pasts of groups of which they are members, we might generalize to define a corresponding form of collective MTT as the act of remembering a past event or imagining a future event in the life of a group of which one is a member.

Intuitively, this individual form of collective MTT would seem to have much in common with more familiar forms of individual MTT, but Szunar and Szpunar point out that there is good evidence that they have importantly different underpinnings. In particular, patients with damage to the hippocampus, a brain structure vital to episodic memory, are impaired in their ability to remember and imagine the personal past and future (Hassabis et al. 2007; Buckner 2010; Mullally and Maguire 2014) but unimpaired in their ability to remember and imagine the collective past and future (Klein et al. 2002; Szpunar et al. 2014, 2016). Moreover, thinking about the future of a group and thinking about one's own future differ in phenomenological terms. Remembering and imagining the personal past and future, as noted above, are characterized by autonoetic consciousness, a subjective sense of re-experiencing or pre-experiencing events. Remembering and imagining the collective past and future, in contrast, need involve no such sense of the self in time. This first form of collective MTT should thus not be assimilated to more familiar forms of individual MTT.

More importantly, for present purposes, as an act carried out by an individual, this form of "collective" MTT is not, in the sense with which we are concerned here, properly *collective* at all. We will therefore largely bracket it in what follows, focusing instead on group-level collective MTT. Just as individuals often think about their own futures, Szpunar and Szpunar note, so do groups, with the groups in question again ranging in size from the very small, as when "a couple ponders married life with a new child", to the very large, as when "a nation considers its future under a new occupying force"; they thus define a second, properly collective form of collective future thought as "the act of imagining an event that has yet to transpire … by a group" (Szpunar and Szpunar 2016). We acknowledge that the general debate about such group cognitive states remains open (Rupert 2005; Tollefsen et al. 2013). But for our current exploratory purposes, it is worth taking the collective memory literature seriously in its frequent attributions to groups of thoughts about their pasts; we can thus generalize Szpunar and Szpunar's points, to define a corresponding form of collective MTT as the act of remembering a past event or imagining a future event by a group. Our focus in what follows will be on collective MTT in this properly collective sense.

1.3.1 Small-scale groups

Defining individual memory as a form of individual MTT has opened up new directions for research on episodic memory. Defining collective memory as a form of collective MTT similarly suggests new directions for research on collective memory.

Beginning with small-scale collective memory, one possibility is to build on research on conversational remembering (see Hirst and Echterhoff 2012). Under the right conditions, individuals who remember together tend to converge on shared representations of the past. Research on retrieval-induced forgetting provides insight into how this occurs. In within-individual retrieval-induced forgetting, retrieval of a given item by a subject strengthens his memory for that item and weakens his memory for related items, causing forgetting of related items (e.g., items belonging to the same semantic category). In socially shared retrieval-induced forgetting, retrieval of a given item by a *speaker* causes forgetting of related items in his *hearers* (Cuc et al. 2007; Stone et al. 2012). The key mechanism that appears to be at work here is covert retrieval by hearers, which allows the same process that gives rise to within-individual retrieval-induced forgetting to give rise to socially shared retrieval-induced forgetting. Groups that imagine the future together may likewise tend to converge on shared representations of the future. If they do, a similar mechanism might in principle be at work. Since representations of possible future events are built up out of elements of memories of past events, imagining the future involves retrieval of elements of past events. Imagining the future may thus, via the mechanism of retrieval-induced forgetting, lead to forgetting of related elements, which may in turn influence how future events are imagined on subsequent occasions. When groups imagine together, this might lead, via covert retrieval, to convergence on a shared representation of future events. Other mechanisms, such as the presence of a dominant narrator, appear to contribute to the formation of shared representations of the past in conversational remembering (Cuc et al. 2006). Such mechanisms might also play a role in conversational future thinking.

A second, compatible possibility is to build on research on collaborative recall (see Rajaram and Pereira-Pasarin 2010). This research has typically found that, while collaborative groups (groups of interacting individuals) remember more than individuals on their own, they remember less than nominal groups (groups of non-interacting individuals) (Weldon 2000; Betts and Hinsz 2010). According to the retrieval disruption hypothesis, such collaborative inhibition occurs because incompatible strategies for retrieving information used by group members interfere with each other (Basden et al. 1997). Collaborative groups may likewise generate less detailed representations of future events than nominal groups. If they do, one potential explanation for this form of future-oriented collaborative inhibition might be a sort of generation disruption, in which incompatible strategies for generating representations of future events interfere with each other. While the typical finding is that collaborative recall results in collaborative inhibition, it has also been found that, when group members employ complementary retrieval strategies, collaborative recall can result in collaborative facilitation, with collaborative groups remembering more than nominal groups (Meade et al. 2009; Harris et al. 2014). A further possibility that might be investigated under the heading of collaborative future thought is whether collaborative groups employing complementary generation strategies similarly generate more detailed representations of future events. Some evidence suggests that certain dyads or small groups may employ more effective collaborative strategies to benefit prospective memory (memory for to-be-performed tasks; Margrett et al. 2011). In Sect. 2 below, we offer some suggestions regarding the conditions under which such a form of future-oriented collaborative facilitation is likely to be found.

1.3.2 Large-scale groups

In addition to these possibilities for research on small-scale groups, defining collective memory as a form of collective MTT suggests new directions for research on large-scale collective memory.

Research on episodic future thought grew out of research on episodic memory, but recent research has to some extent treated episodic memory as being secondary to episodic future thought. From one point of view, future thought is clearly based on memory, in that memory provides the raw materials out of which representations of future events are constructed. In this sense, episodic memory remains primary. From another point of view, however, accurate anticipation of future events may be more important than accurate representation of past events, and what and how we remember may consequently be driven to a great extent by our need to imagine the future (Tulving 2005; Boyer 2008; Suddendorf and Corballis 2007; Schacter 2012). In this sense, episodic future thought may be primary. This suggestion can seem somewhat counterintuitive, but it begins to seem less so if we distinguish between *memory* and *remembering*. The suggestion is that memory, understood as a system or capacity, is more basic than *both* future thinking, understood as a process of constructing representations of future events, *and* remembering, understood as a process of constructing representations of past events, in that it provides the raw materials out of which our representations of both future and past events are constructed. But if our capacity to remember the past is derivative of our capacity to imagine the future, future thinking may nevertheless, in a functional sense, be more basic than remembering (Michaelian 2016a).

A similar reorientation may be in order with respect to collective future thought and collective memory. To date, Szpunar and Szpunar (2016) suggest, the emphasis in research on collective memory has been on how memory is constructed "in and for" the present. Such an emphasis, they argue, is misplaced. They grant that collective future thought is based on collective memory, in that the latter provides the raw materials for the former, in much the way individual memory provides the raw materials for individual future thought. But this does not necessarily imply that collective future thought is secondary to collective memory. Indeed, Szpunar and Szpunar argue that the workings of collective memory cannot be adequately described without taking collective future thought into account. First, one of the primary roles of collective memory is to strengthen collective identity, shaping and reinforcing individuals' sense of belonging to a group (Assmann 1995; Olick and Robbins 1998; Erll et al. 2008). A key lesson of research on "collective continuity" is that imagining threats to the *future* of a group can trigger remembering of its collective *past* (Sani et al. 2007; Herrera et al. 2011). Second, while collective continuity may be relevant primarily to the individual form of collective future thought that we bracketed above, Szpunar and Szpunar also argue that properly collective future thought may reshape the contents of collective memory. For example, depending on a group's current situation, one and the same past event might be represented in its collective memory either as a decisive defeat for the group or as one battle in an ongoing struggle with its enemies.

The claim that collective memory cannot be adequately described without taking collective future thought into account is plausible, but it may be possible to go fur-

ther. Collective memory, again, functions to shape and reinforce collective identity. But the contribution of collective future thought to collective identity may be just as vital as that of collective memory. For example, a group's failure to imagine an attractive future (or any future at all) for itself may lead its members to disidentify with the group, contributing to the group's eventual disintegration; conversely, a group that succeeds in imagining an attractive future for itself may strengthen feelings of group membership, prolonging its own existence. In other words, collective future thought contributes to collective identity not only indirectly, by triggering collective remembering or reshaping the contents of collective memory, but also directly, by increasing or decreasing the strength of group ties. From a functional point of view, then, it is plausible that collective future thinking is, if not more basic than collective remembering, no less basic than it.

This is a mere sketch of an argument, and much more work would have to be done to turn it into a full argument, but we will not attempt to do this work here. The remainder of our argument does not depend on the claim that collective future thought is on a par, in a functional sense, with collective memory. Nor does it depend on Szpunar and Szpunar's weaker claim that an adequate description of collective memory must take into account the way it is triggered and shaped by collective future thought. In order to motivate our questions, all that we need is the very weak claim that the concept of collective MTT is legitimate to the extent that groups construct representations of their pasts and futures in ways that are at least roughly analogous to those in which individuals construct representations of their pasts and futures. If the concept of collective MTT is legitimate in this sense, how closely analogous is it to individual MTT? Is collective MTT genuinely collective? Is it genuinely mental? In principle, these questions might be approached by looking at the more familiar, less general category of collective memory. In practice, looking at the less familiar, more general category of collective MTT will remind us that remembering is (normally) understood as a *mental* process and thus bring to the fore potential connections with theories of collective mentality that might otherwise be overlooked.

2 Is collective mental time travel collective?

If the approach sketched in Sect. 1 is on the right track, collective MTT may be roughly analogous to individual MTT. In fact, in Sect. 3, we will argue that there are in fact important disanalogies between individual and collective MTT—the analogy is rough at best. But the claim defended in the present section—namely, that collective MTT is robustly collective—does not depend on the claim that there is an analogy between the two phenomena. The value of the latter claim lies, rather, in the fact that it enables us to single collective MTT out as a phenomenon worthy of investigation in its own right.

In this section, we explore potential accounts of collective MTT as a robustly collective (genuinely group-level) phenomenon, i.e., of understanding groups themselves as being capable of literally remembering the past and imagining the future. In previous work (Michaelian and Sutton forthcoming), we have considered the prospects for understanding collective memory in terms of a variety of notions borrowed from

theories of collective intentionality. Here, we consider the prospects for understanding collective MTT as a whole in terms of two such notions. Collective MTT might be collective either in the sense that the the process or activity of remembering or imagining is collective or in the sense that the representation that is the outcome of remembering or imagining is collective. Corresponding to the former possibility, we consider the prospects for understanding collective MTT in terms of the notion of joint action. Corresponding to the latter possibility, we consider the prospects for understanding it in terms of the notion of collective belief.

2.1 Joint action

The definition of collective MTT offered above referred to remembering the past and imagining the future as *acts* performed by groups. This definition was intended informally, but we might take it literally and attempt to understand collective MTT, or at least certain key forms of collective MTT such as occurrent remembering and occurrent imagining or prospective thinking, as a form of joint action (see Tollefsen 2015).

Joint actions are usually treated as actions performed by groups as the result of joint intentions. Different accounts of joint action are thus generated by different accounts of joint intention. Purely summative accounts—on which joint intentions are simply aggregations of individual intentions, perhaps with an additional requirement that each individual be aware of the others' intentions—are available (Quinton 1975), but most theorists reject these in favour of nonsummative accounts, on which joint intentions cannot be reduced to mere aggregations of ordinary individual intentions. In an oft-referenced illustration of the inadequacy of summative accounts, Searle (1990) contrasts a group of individuals spontaneously running for shelter with a group running for shelter as part of a prepared artistic performance. The latter scenario provides us with an instance of genuinely joint action; the former, contrary to summative accounts, does not. In Searle's own view, the difference between the two scenarios lies in the nature of the group members' intentions. In the former, each individual's intention makes no reference to the other members of the group. In the latter, each individual intends to run to shelter as part of the group. This account may describe a minimal form of joint action, but, because it does not require that anything actually be shared across group members, it does not describe a very robustly collective form of action.

Bratman's (2014) influential alternative view, which requires that each individual himself intends the action of the group, is not subject to this particular limitation, since it does require that an intention be shared across group members. Moreover, group members' intentions must "mesh"—they need not be identical, but they must be compatible, and may require some mutual responsiveness in interaction. Bratman's account may succeed in describing a more robustly collective form of action, but, because the intentions to which it refers remain individual intentions, it still does not describe a strongly emergent form of action. Thus, if some forms of collective MTT were to be understood as joint action of a certain kind, the idea that collective MTT is a strongly emergent group-level process could only be developed by working with stronger accounts of joint action than these standard nonsummative accounts. But,

for several reasons, it is unlikely that all cases and forms of collective MTT can be adequately understood in terms of such accounts.

First, an understanding of collective MTT as a form of joint action is bound to be inadequate due to simply to its reliance on the notion of joint intention. The problem here is not with the idea that collective MTT results from *joint* intentions but rather with the more basic idea that it results from *intentions*. To see this, note that a similar problem prevents us from understanding individual MTT as in every case a form of intentional action. At the individual level, remembering the past and imagining the future need not be the outcome of intentions to remember or imagine, but instead often occur spontaneously, in the absence of any relevant intentions. In many cases, individual MTT is triggered by cues in subject's environment. But it can also unfold in the absence of external cues, and much individual MTT takes the form of mind-wandering (Dorsch 2014; Smallwood and Schooler 2015; Irving 2016): absent a decision to devote one's cognitive resources to a particular task, one often finds oneself reliving past events or imagining possible future events.[2] While we cannot directly infer anything on this basis about collective MTT, something similar indeed seems to hold at the group level, where remembering the past and imagining the future are often not the outcome of intentions to remember or imagine but instead occur spontaneously, in the absence of any relevant intentions, whether intentions to remember/imagine as part of a group or intentions that the group itself remember/imagine. In many cases, collective MTT is triggered by cues in the group's environment. Collective MTT can also unfold in the absence of external cues, and it may often take the form of what we might think of as collective mind-wandering: absent an agreement to devote its attention to a particular topic, a group's conversation often turns to events from the shared past or possible shared futures.[3]

Second, even if we restrict our attention to cases in which collective MTT is intentional, an understanding of collective MTT in terms of standard accounts of joint action is bound to be inadequate due to the cooperative character of the latter. Standard accounts of joint action are cooperative in that they require that the intentions of group members mostly coincide or align with each other. Bratman (2014), for example, allows group members' subplans to diverge to some extent, but still requires that they mesh, i.e., that group members adopt harmonious strategies for achieving a common goal. Such accounts do not naturally account for the possibility of joint action in cases where the relevant intentions do not coincide or align—where there is conflict, rather than cooperation (Baier 1997). Since conflict plays an important role in collective

[2] We also often find ourselves engaging in episodic counterfactual thought (Van Hoeck et al. 2013; De Brigard 2013; Schacter et al. 2015)—reliving past events not as they did in fact occur but as they might have occurred had something gone differently. For the sake of simplicity, we will for the most part abstract away from episodic counterfactual thought here, but a fuller treatment would consider collective counterfactual thought, in addition to collective memory and collective future thought.

[3] In previous work (Michaelian and Sutton forthcoming), we were optimistic about the prospects for understanding collective memory in terms of Tollefsen and Dale's alignment-based analysis of joint action, on which coordination among group members can be achieved through a spontaneous, bottom-up process of dynamic matching of behaviours (Tollefsen and Dale 2012; Tollefsen et al. 2013). This approach may avoid worries about the possibility of collective memory without intentions to remember. But it does not avoid worries about the role of conflict in collective remembering, to which we turn next.

memory and future thought, this in turn means that these accounts are unable to accommodate many cases of collective MTT, in particular. Consider large-scale collective memory. Anastasio et al.'s (2012) treatment (to which we return below) emphasizes that the process of collective remembering is shot through with conflict, as different groups of opinion leaders vie to shape the dominant narrative of the past. Despite the conflictual character of collective remembering, they argue that it is a genuinely collective process which often gives rise to shared representations of the past. Or consider small-scale collective future thought. Some level of cooperation is necessary to enable a group to imagine the future together (at minimum, group members need to be willing to carry on a conversation with each other). But collective future thought need not be a wholly cooperative process. A married couple planning their next holiday together, for example, may have real disagreements about where they will take the holiday, but a shared representation may nevertheless emerge from the conversation. Moreover, even when collective future thought is broadly cooperative, there may be important disagreements among group members. For example, the members of a married couple might agree on where they will take their next holiday even while disagreeing about what they will do on the holiday or when they will take it. Of course, there can be considerable conflict or fragmentation within the individual mind, too. Genuinely intentional individual actions, including some cases of individual remembering or prospective thinking, may be the emergent outcome of multiple parallel and competing urges, wishes, or goals. So further work might explore mechanisms of future-related conflict-resolution and action-production in groups exhibiting heterogeneity or dissension. The processes by which real human groups reach resolution or come to take action typically rely neither on simple majority nor on a straightforward pooling of individual members' action plans (compare List and Pettit 2013; Sutton and Tribble 2014).

Finally, some standard accounts of joint action are ill-suited to describing collective MTT due to their static character. These accounts are static in that they do not take the dynamics of interaction among group members during the performance of a joint action into account. But interaction is often critical to joint action. This point is related to the previous two: collective action often emerges spontaneously, rather than as the result of an intention to act together, from ongoing cooperative and conflictual interaction among group members. Many cases of collective MTT, in particular, answer to this description. What determines whether a group succeeds in converging on a shared representation of the past or the future is not so much whether they set out to do so but the way their ongoing interactions unfold over time. A more dynamic framework is thus necessary to enable us to describe the ways in which groups remember the past and imagine the future together.

2.2 Collective belief

If it is not feasible to understand collective MTT as a form of joint action, we might instead attempt to understand it as a form of collective belief. An initial worry about this approach is that the notion of collective belief is, like the notions of joint action reviewed above, insufficiently dynamic to enable us to make sense of collective MTT. An analysis of MTT in terms of belief would imply that the individual or group arrives

at a settled representation of a past or future event, but this need not and in general does not occur. An individual can engage in MTT without settling on a representation of the target event. Again, we cannot directly infer anything on this basis about collective MTT, but something similar holds at the group level. This obviously applies to future-oriented MTT, which is by nature open-ended. But it also applies to past-oriented MTT, in which episodic memory often shades imperceptibly into episodic counterfactual thought (De Brigard 2013). A group can likewise engage in MTT without settling on a definite representation of the target event. Indeed, in view of the role of conflict, it is appropriate to see collective MTT as an ongoing process of negotiation and renegotiation in which shared representations of the past and future are constantly modified, updated, and replaced.

Even if we disregard this point, it is likely not feasible to understand collective MTT as a form of collective belief. Just as most theorists reject summative accounts of joint action, most reject summative accounts of collective belief, which treat a group as believing a given proposition just in case all (or most) of its members believe it (and perhaps if they know that each other believes it). Nonsummative accounts of collective belief, similar in spirit to the nonsummative accounts of collective intention reviewed above, are motivated in part by apparent counterexamples to both the necessity and the sufficiency of shared individual belief for collective belief (Tollefsen 2015). Against the sufficiency of shared individual belief, for example, Gilbert (1989) argues that two groups might count as having different beliefs despite having the same members (and thus the same shared individual beliefs). Against the necessity of shared individual belief, she argues that a group might count as having a given belief even if few or none of its members have that belief. If shared individual belief is neither necessary nor sufficient for collective belief, there may be cases in which a group can legitimately be treated as having a given belief even if none of its members has the belief in question. It is plausible that a similar divergence can arise between what a group remembers or imagines and what its members remember or imagine, but, for several reasons, it is unlikely that collective MTT can be adequately understood in full in terms of nonsummative accounts of collective belief.

To begin with, the standard examples of (nonsummative) collective belief are cases in which committees or other bodies with formal voting procedures adopt views that diverge from those of their members. Such cases have little in common collective MTT. Where divergences arise between what a group remembers or imagines and what its members remember or imagine, these will normally be the outcome not of formal procedures but rather of informal negotiations among group members. In exceptional cases, a group might be said to have adopted an official representation of the past. This has occasionally happened, for example, with respect to the occurrence of certain politically important events. But even in such cases, the process leading to the adoption of the representation will rarely be reducible to a formal vote. And to the extent that it is reducible to a formal vote, we no longer seem to be dealing with collective remembering at all, but rather with a different sort of process.

More fundamentally, the notion of belief itself (along with related notions such as acceptance; Tuomela 2000) seems to be inapplicable to the ways in which we remember and imagine events. There are two aspects to this problem, which arises for individual MTT and is only more acute for collective MTT. First, the representations at issue

in belief are not of the same sort as those involved in MTT: the former are propositional, whereas the latter are not, or not entirely. The nature of the representations involved in individual episodic memory and episodic future thought is a complex question, but it is fairly clear that these are not (or not wholly) propositional. On the one hand, they include sensory detail; when one remembers/imagines an event, one often remembers/imagines its sights, sounds, and so on (Conway 2001; Teroni 2017). Moreover, one often remembers/imagines these aspects of the event from a certain perspective (Sutton 2010). On the other hand, they often have an internal temporal structure; when one remembers/imagines an event, one remembers/imagines it as unfolding in time (Hasselmo 2012; Cheng et al. 2016). Propositions can accommodate neither sensory detail nor temporal structure. It seems arbitrary to restrict the content of such memories to propositions, while treating non-propositional elements as contributed by the mode of presentation. Thus the representations involved in individual MTT do not seem to be solely propositional in character, and the attitude that one adopts towards them is ill-described as belief. While it is not clear whether the representations involved in collective MTT are characterized by anything analogous to sensory detail or perspective, it is clear that they often have an internal temporal structure. Thus the representations involved in collective MTT likewise are not solely propositional in character, and the attitude that groups adopt towards them cannot aptly be described as collective belief.[4]

Second, even a notion of belief modified to accommodate episodic representations will be inapplicable to MTT. We sometimes remember past events without believing that the events in question actually occurred—it is possible to reject or disbelieve one's own memories (Michaelian 2012; Otgaar et al. 2014). Philosophers occasionally disregard this point, but few will dispute the claim that we sometimes imagine future events without believing that the events in question will occur. Individual MTT, then, cannot be understood as a form of individual belief. The same thing seems to go for collective MTT. A group can clearly imagine a future event without believing that it will occur. And it is not unusual for a group to construct a representation of a past event but to conclude that the event did not occur (or did not occur in the way it was represented); indeed, history is replete with cases in which societies reject previously-accepted representations of the past without the representations in question thereby ceasing to circulate.

2.3 The intentional stance

Overall, the prospects for understanding collective MTT completely in terms of the notions of joint action or collective belief do not appear strong, though we do not rule

[4] It might be objected here that, since collective MTT is necessarily an outcome of communication, and since communication presupposes propositional contents, the representations involved in collective MTT must after all be propositional in character. But this objection depends on an overly restrictive view of the underpinnings of the representations at issue in collective MTT. While collective MTT is certainly in part an outcome of communication, it emerges from a much broader range of interactions among group members, including the negotiation of shared narratives of the past. Thus, while the representations at issue in collective MTT may emerge in part from purely propositional communication, they should not be taken to be entirely propositional in character.

this out entirely. With further work, it may be possible to construct a hybrid account which treats some aspects of collective MTT as joint actions, and others as collective beliefs. This approach would still need to find ways around the problems we have identified above: while we do not consider this impossible, we do think the challenges are sufficiently great to warrant consideration of an alternative approach. In the remainder of this section, therefore, we explore the prospects for understanding collective MTT in terms of the notion of the intentional stance (Dennett 1987). One advantage of this approach is that it does not require us to choose between understanding collective MTT in terms of processes and understanding it in terms of representations, though for the sake of convenience we will focus on memories and future thoughts understood as representations, as opposed to remembering and future thought understood as processes.

Scepticism with respect to the existence of genuinely collective memory is motivated in part by what we can think of as the "where" worry. Nonreductionist accounts see collective memory as being in some sense distributed across individual group members. If collective memories are something over and above individual memories, *where* are they? But interestingly, an analogous "where" worry can arise for individual memory (though it does not usually lead to the same sort of scepticism). It is sometimes useful to treat memory as involving the encoding, storage, and retrieval of discrete records of events (memory traces), but memory is in fact distributed across the brain (Sutton 1998; De Brigard 2014).[5] Where, then, are *individual* memories?

Developing a suggestion first made by Westbury and Dennett (2000) and De Brigard (forthcoming) has recently developed a promising response to the "where" worry for individual memory. On De Brigard's view, "memories do not exist as physical brain structures encoding particular intentional contents, but rather as intentional phenomena only accessible from the intentional stance". Remembering does not amount to the preservation of a simple record or trace of the subject's experience of an event; at best, what is preserved is a capacity or disposition to generate a representation of the event (Matthen 2010; Vosgerau 2010; Michaelian 2011). In view of the generative or constructive character of memory, De Brigard argues that "[t]o remember that p is not to possess a sub-personal memory belief carrying the relevant intentional content from encoding to retrieval, but rather to exhibit the kind of behavior that is optimally described and predicted by ascribing the memory that p, that is, from the intentional stance". The proposal is, in short, that we are entitled to attribute a given memory to a given subject when, from the intentional stance, his behaviour can be appropriately explained and predicted by doing so—what determines whether or not the subject has the memory is not the presence or absence of a stored trace but rather whether or not we may legitimately treat him as having the memory. When we can do so, what grounds and explains the patterns of behaviour which legitimate us so treating him may be highly labile, dynamic, and distributed processes rather than any unique dormant state.

[5] If embodied and extended views of cognition are right, memory is also distributed across the body and features of the environment (Sutton 2006), but we set this aside here.

If this response succeeds in defusing the "where" worry for individual memory, it should be a straightforward matter to extend it to individual future thought.[6] There are, of course, well-known objections to Dennettian approaches to mentality in general, and many of these will apply to De Brigard's Dennettian approach to memory in particular. Rather than revisiting old debates over the intentional stance, however, we prefer to devote our efforts here to extending the approach in a novel direction.[7] De Brigard suggests that the intentional stance is what licenses us to attribute memory to individuals. Given the parallel between the "where" worry for individual memory and the "where" worry for collective memory, we want to ask whether it might similarly license us to attribute memory to groups (cf. Tollefsen 2006).

It is clear *that* we often adopt the intentional stance with respect to groups, applying the concepts of belief, desire, and other mental states—including memory—to them. It is much less clear *when* it is legitimate to do so (Tollefsen 2015). What we need, in order to determine when it is legitimate to adopt the intentional stance with respect to groups, is an account of the conditions under which the utility of adopting the stance with respect to a given group entitles us to conclude that the group genuinely has a mind. Various sets of conditions might be proposed, but Huebner (2014) has recently offered a sensibly conservative set. First, he argues, we are not entitled to attribute collective mentality where the relevant collective behaviour results from a mechanism that simply transmits the intentions of certain group members to other group members in a top-down fashion (as, e.g., when a committee is empowered to decide for a larger organization). Second, we are not entitled to attribute collective mentality where the collective behaviour results from simple rules governing individual behaviour. Third, we are not entitled to attribute collective mentality where (1) the mental capacity attributed to the group is of the same kind as its members' mental capacity and (2) the computations performed by the group are no more complex than those performed by its members. We will take all three conditions into account here, but the most interesting, for present purposes, is the third. Since individuals have the capacity for MTT that we are interested in attributing to groups, this amounts to the following condition: we are entitled to attribute a capacity for MTT to a group only if some new

[6] It may be a less straightforward matter to extend it to collective mind-wandering, which may sometimes lack observable effects on behaviour and so be difficult to attribute from the intentional stance. There are two points to note in response to this concern. First, as long as mind-wandering sometimes has observable effects on behaviour, we will sometimes be able to attribute it from the intentional stance. Second, if collective mind-wandering sometimes does not have observable effects on group behaviour, the same things presumably goes for individual mind-wandering and individual behaviour, in which case the worry turns out to be a special case of the well-known general worries about the Dennettian approach that we set aside below.

[7] One might be worried here by an apparent asymmetry between in our treatment of the Dennettian approach and our treatment of the joint action and collective belief approaches discussed above, since we are prepared to set aside well-known worries about the intentional stance even while taking the fact that joint action and collective belief do not adequately capture the collectivity of CMTT to be reason to set those approaches aside. But the asymmetry is only apparent. When we choose to set joint action and collective belief aside, we do so not because we take them to be inadequate in any general sense but simply because we take them to be ill-suited to provide insight into the collectivity of CMTT. When we choose to set aside well-known worries about the intentional stance, we do so not because we take those worries to be unimportant but rather because we take the approach to have the potential—despite the fact that it is subject to important worries—to provide insight into CMTT.

mnemonic phenomenon emerges in virtue of the interactions that take place among group members.

It might be objected here that, given that we adopt a Dennettian approach, our talk of groups "genuinely" having minds is out of place, especially since adopting the intentional stance can in principle license us to attribute mental states to all sorts of entities, including entities of which it is highly implausible to say that they have mental states. In response, we point out, first, that, given the Dennettian approach, what it is for an entity to have a mental state simply is for its behaviour to be optimally explainable from the intentional stance—this goes both for individual and for collective entities. We point out, second, that the qualifier "optimal" in the preceding formulation is important. By adopting the intentional stance, we can indeed attribute mental states to all sorts of entities, but not all of these attributions should be taken seriously. An attribution of mentality to a given entity should be taken seriously only when it provides the optimal means of explaining its behaviour. Some means of determining when a set of explanations is optimal is thus required, and it is here that we invoke Huebner's conditions. In effect, what we argue is, first, that we can explain the behaviour of certain groups by ascribing a capacity for MTT to them and, second, that we should think that the groups in question are genuinely capable of MTT because those explanations are the best available.

2.4 Transactive memory and future thought

A likely place to look for cases of small-scale collective memory which satisfy these conditions is in research employing the transactive memory framework (Wegner 1987; Wegner et al. 1991). Transactive memory refers to the sharing across group members of responsibility for different aspects and stages of the memory process. Such sharing of responsibility is most often observed in stable, continuing groups, such as work teams or married couples (Harris et al. 2011). A husband and wife, for example, might share responsibility for remembering past social interactions, with the husband having primary responsibility for remembering where and when the interactions occurred, while the wife has primary responsibility for remembering who was involved and what was said. Transactive memory systems have a metacognitive component: individuals are responsible not only for keeping track of items of information but also for keeping track of who is responsible for keeping track of a given item of information. Thus, in order for their division of cognitive labour to be effective, the husband and wife must each know what sorts of information each of them is responsible for remembering. If they do, the transactive memory framework predicts that, when they remember together, they may remember more about past social interactions than either would remember on his own, or they may remember different sorts of information than either would remember on his own.[8]

[8] One might wonder here whether, if each member of a transactive memory system must know not only what the others are responsible for knowing but also that each of them knows what the others are responsible for knowing, transactive memory will not be subject to the same sort of infinite regress to which certain accounts of shared knowledge fall prey. While this is an important question, space does not permit us to deal with it in detail here, and we simply note that the large body of empirical research employing the

We often adopt the intentional stance with respect to the sorts of groups studied in transactive memory research, and there is good reason to think that this is legitimate. There is now a large empirical literature on transactive memory in a variety of domains (see Ren and Argote 2011). On the basis of a review of this literature, Theiner (2013) argues that transactive memory systems satisfy plausible conditions for emergence (Wimsatt 1986). While Theiner's discussion is somewhat technical, his core claim is that transactive memory systems are, in virtue of the interactions among their members, capable of performing memory tasks that individuals or groups of noninteracting individuals are incapable of performing. In other words, transactive memory is an organization-dependent phenomenon: the power of transactive memory systems derives not just from the pooling of the resources of individual rememberers but also from the ways in which they interact with each other. A complementary perspective is offered by Harris et al. (2014), who argue that we can observe both quantitative and qualitative forms of emergence in transactive memory systems. Focusing on remembering in married couples, they argue that transactive memory systems may display emergence of information that neither individual is capable of remembering on his own, greater emotional richness and episodic detail, and new forms of understanding (e.g., recontextualizing the significance of an event).

Thus, while there is no guarantee that this will generalize to other forms of small-scale collective memory, transactive memory systems are likely to satisfy Huebner's conditions. Transactive memory does not require a top-down organization of group members, nor does it result from a simple aggregation of individual memory capacities. And, most tellingly, transactive memory systems are capable of remembering both more than their members remember on their own and something different from what their members remember on their own. In transactive remembering, new mnemonic phenomena thus emerge in virtue of the interactions that take place among group members. Huebner (2014, 2016) has come to a similar conclusion. Emphasizing that the transactive memory framework allows (as in the hypothetical case of the husband and wife described above) for a metamemory about the location of a given first-order memory to be stored by someone other than the subject who stores the first-order memory, he argues that the computations performed by a transactive memory system are indeed more complex than those performed by its members. In short, it seems that our adoption of the intentional stance with respect to transactive memory systems is legitimate, and we may take our attributions of memory to the relevant groups literally.

More speculatively, we might look to small-scale collective future thought for cases of emergent, robustly group-level MTT. There is, as far as we are aware, no empirical work on transactive future thought, but it would not be surprising were such work to identify forms of emergence similar to those that have been identified in transactive memory. Groups capable of remembering the past together are, in general, also capable of imagining the future together. Since imagining the future

Footnote 8 continued
transactive memory framework demonstrates that transactive memory systems emerge in practice, even if it is not obvious, in theoretical terms, how a regress is avoided.

involves constructing representations of future events from remembered information, we should expect to find a similar division of labour at work in both cases. A husband and wife, for example, might share responsibility for planning their trips together, with the husband having primary responsibility for considering the logistics, while the wife has primary responsibility for determining which activities they are likely to enjoy. Their collaboration may thus result in representations of possible trips that neither would have constructed on his own. Huebner (forthcoming) has recently made a similar suggestion: "when couples plan together, they can retrieve and broadcast individually stored representations, using a process of cross-cuing to construct a shared plan that doesn't need to be represented prior to conversation". And just as the metacognitive states of one member of a transactive memory system may refer to memories stored by another member of the system, the metacognitive states of one member of a transactive future thought system may refer to states and capacities of another member of the system. Transactive future thought thus represents one promising way of developing the notions of collaborative future thought and future-oriented collaborative facilitation introduced in Sect. 1.

2.5 Collective consolidation

We are naturally more reluctant to attribute a literal capacity for memory to large-scale groups, such as whole societies, than we are to attribute such a capacity to small-scale groups, such as married couples. We nevertheless regularly adopt the intentional stance with respect to such groups, attributing a capacity for memory to them, and there is a case to be made for taking such attributions literally.

One recent approach which takes attributions of collective memory literally is that of Anastasio et al. (2012). Anastasio et al. provide a detailed model of memory consolidation—the process that transforms short-term memories into long-term memories—and argue that their model applies not only at the individual level but also at the (large-scale) collective level. The model includes a buffer, responsible for short-term storage of labile, local representations, a generalizer, responsible for long-term storage of stable, distributed representations, and a selector-relater, responsible for selection and association of items for consolidation. At the individual level, these components are realized by working memory, the neocortex, and the hippocampus, respectively. At the social level, Anastasio et al. argue, they are realized by short-term external memory stores, society as a whole, and groups of opinion leaders. If this model (or something like it) is right, then large-scale collective memory involves a form of emergence like that involved in forms of small-scale collective memory such as transactive memory. The key point, again, is about interactions among group members. Just as individual memory emerges from interactions among the components of the individual memory system (working memory, the neocortex, and the hippocampus), collective memory emerges from interactions among the components of the collective memory system (short-term external memory stores, society as a whole, and groups of opinion leaders). For example, Anastasio et al. emphasize the role of conflict among groups of opinion leaders, which may give rise to new representations of the collec-

tive past, representations that differ dramatically from those that would have been produced by noninteracting individuals remembering on their own.[9]

More speculatively, we might look to large-scale collective future thought for cases of emergent, robustly collective MTT. There is, as Szpunar and Szpunar (2016) emphasize, little research on how societies imagine the future, but it is clear that they are capable of imagining the future in roughly the sense in which they remember the past. Collective representations of the future undergo a process of stabilization analogous to the consolidation process at work in collective memory, and it may therefore be feasible to extend Anastasio et al.'s account of collective memory consolidation to provide an account of the ways in which societies come to form shared representations of the future. Anastasio et al. test their account by looking at historical instances of the formation of narratives of the collective past, and, in line with Szpunar and Szpunar's (2016) suggestion that studies of representations of the future in literature and journalism might serve as a starting point for research on collective future thought, an extended account might similarly be tested by looking at historical instances of the formation of narratives of the collective future. There is an analogy between such work and what is sometimes known as "retrofuturism". Retrofuturism usually refers specifically to (present) engagement with past artistic representations of the imagined collective future, often focusing specifically on the impact of predicted future technologies. We envisage studies of past representations, artistic and otherwise, of the imagined collective future, focusing not only on technological but also on cultural, social, and political dimensions. Such studies might search for patterns in the way representations of the future are constructed over time and seek to identify the mechanisms responsible for their stabilization. If such work were to identify a process similar to the collective consolidation process identified by Anastasio et al, we would have additional reason to take the notion of large-scale collective MTT literally.

The consolidation approach also illustrates the benefits of understanding collective MTT in terms of the intentional stance, rather than in terms of joint action or collective belief. Above, we noted that an attempt to understand collective MTT in terms of joint action or collective belief will face a number of problems. In particular, standard accounts of joint action and collective belief have difficulty accommodating important features of collective MTT, including its spontaneous, conflictual, dynamic, and informal nature, as well as the nature of episodic representations and the existence of rejected representations of the past and future. Understanding collective MTT as something that becomes visible to us from the intentional stance allows us to accommodate these features of collective MTT by permitting us to apply to groups the full range of mental concepts that we ordinarily apply to individuals. Rather than considering these features one by one, we illustrate the point by considering the dynamic character of

[9] We have referred to interactions among *individuals*. In fact, Anastasio et al. assign an important role in collective consolidation to various external memory technologies. The interacting components of the relevant systems thus include not only human individuals but also the *technological resources* of which the latter make use. In other words, the systems at issue in large-scale collective memory are not purely social systems but rather hybrid sociotechnical systems. This does not necessarily represent a disanalogy between large-scale and small-scale collective memory, for (as we have argued elsewhere; Michaelian and Arango-Munoz forthcoming) the systems at issue in small-scale collective memory are themselves often hybrid sociotechnical systems.

remembering. From a Dennettian perspective, what entitles us to say that individual memories, rather than being fixed entities, undergo a process of consolidation shaped by interactions among the individual buffer, selector-relater, and generalizer is that that doing so enables us to successfully explain and predict the behaviour of individuals. What entitles us to say that collective memories, rather than being fixed by explicit agreement among group members, undergo a process of consolidation shaped by interactions among the collective buffer, selector-relater, and generalizer is precisely the same thing: doing so enables us to successfully explain and predict the behaviour of groups. If a static notion such as belief is not appropriate here, we need not apply it.

3 Is collective mental time travel mental?

We have been arguing that collective MTT is a genuinely *collective* process, i.e., that groups themselves are capable of literally remembering. In principle, this claim need not commit us to the further claim that collective MTT is a genuinely *mental* process, i.e., that groups capable of remembering therefore have minds. We have argued elsewhere that the concept of memory is considerably more specific and better-understood than the concept of mind, and attributions of *memory* therefore do not necessarily commit us to attributions of *mind* (Sutton 2008). The nature of the argument that we have been developing here, however, requires us to modify this position. An appeal to the intentional stance that licenses attributions of memory to groups will also license attributions of mind of a certain kind; indeed, our appeal to the intentional stance to license attributions of memory can be seen as a special case of the more general strategy of appealing to the intentional stance to license attributions of mind. The argument, in other words, suggests that (some) groups are literally capable of *mental* time travel. One possible response to this observation is to accept the conclusion that groups are literally capable of mental time travel. Another possible response, of course, is to abandon the argument, but a closer look at what is involved in attributing a capacity for literal mental time travel to groups undermines the appeal of the latter response.

Reluctance to attribute *minds* to groups is often linked to reluctance to attribute phenomenal *consciousness* to groups: we associate minds with consciousness, it seems absurd to attribute consciousness to groups, so it seems absurd to attribute minds to groups. Thus one way of lessening our reluctance is to lessen our resistance to the notion of collective consciousness. Schwitzgebel (2014), for example, has argued that materialists should be prepared to simply admit that groups such as societies are probably conscious. Most contemporary materialists adopt a functionalist approach to the mind. They are thus committed to the view that a system is conscious whenever it displays an appropriate functional organization, and societies, Schwitzgebel argues, have the relevant sort of organization. Schwitzgebel is certainly right that (functionalist) materialists must admit the possibility of group consciousness in principle, but it is far from clear that any actual groups are organized in a manner that would give rise to consciousness (List forthcoming). The conservative view here is thus that there is in fact no group consciousness, and it is this view that we endorse.

Rejecting group consciousness, however, need not prevent us from accepting group minds. While some have argued that minds entail consciousness, the existence of a necessary connection between mind and consciousness is controversial at best. A second way of lessening our reluctance to accept group minds is thus to sever the link between mind and consciousness: if mentality does not presuppose consciousness, viewing collective MTT as a genuinely mental process does not commit us to viewing it as a conscious process. The strategy of severing the link between mind and consciousness is not particularly novel, but it does have interesting implications for our view of collective MTT. Let us grant that groups are capable of MTT but not of phenomenal consciousness. If groups are capable of engaging in MTT despite lacking phenomenal consciousness in general, then they are capable of engaging in it despite lacking *autonoetic* consciousness (or its analogue) in particular—collective MTT does not involve a subjective sense of re- or pre-experiencing events. As we saw in Sect. 1, autonoetic consciousness is usually treated as a defining characteristic of individual MTT—individual MTT necessarily involves a subjective sense of re- or pre-experiencing events. Thus viewing collective MTT as a mental process but not as a conscious process would seem to make it importantly disanalogous to individual MTT: even if groups are capable of engaging in literal MTT, they are not capable of engaging in the same kind of MTT as individuals.

This disanalogy would seem to pose a threat to the utility of the concept of collective MTT, a threat to which we might respond in either of two ways. First, we might attempt to restore the analogy between collective MTT and individual MTT by arguing that, while individual MTT *often* involves autonoetic consciousness, it does not *necessarily* involve autonoetic consciousness.[10] There is certainly room for debate over whether autonoesis is essential to individual MTT, and researchers working on animal MTT (in which evidence for or against autonoesis is unavailable) often favour definitions of MTT which do not refer to its conscious dimension, sometimes suggesting that autonoetic MTT is functionally equivalent to simple what-when-where MTT (Eichenbaum et al. 2005; Crystal 2010; Eacott and Easton 2012; Sellers II and Schwartz 2013). It is unlikely, however, that autonoetic MTT is functionally equivalent to what-when-where MTT (Suddendorf and Corballis 2007; Michaelian 2016b), and, despite the methodological difficulties that this poses for research on animal MTT, we should not rush to abandon the phenomenological conception of (individual) MTT.

Second, we might continue to treat autonoesis as a necessary component of individual MTT, grant that this implies that there is an important disanalogy between collective MTT and individual MTT, but nevertheless refrain from abandoning the concept of collective MTT. One way of motivating this response is to note that episodic or autonoetic MTT might best be viewed as a special case of a broader category of MTT. Some researchers (e.g., Rubin and Umanath 2015; Mahr and Csibra forthcoming) have argued for a distinction between episodic memory and event memory, where event memory is like episodic memory but does not involve autonoetic phenomenology, and we might similarly distinguish between episodic future thought and event

[10] If autonoesis is not essential to individual MTT, an explanation is required of what role autonoesis plays and what happens when it is absent. This is not the place to attempt to provide such an explanation, but see Michaelian 2016 for one relevant discussion.

future thought. Event memory and and event future thought might then give us a non-autonoetic form of MTT, and collective MTT would turn out to be parallel to this form of individual MTT rather than to episodic MTT. If so, the parallel between individual (episodic) MTT and collective (event) MTT might not be as tight as the terminology suggests, but this need not prevent the concept of collective MTT from playing a useful role in research on how groups remember their pasts and, in particular, on how they imagine their futures. On the one hand, research on individual memory serves as a source of hypotheses for research on individual future thought, and research on collective memory might likewise serve as a source of hypotheses for research on collective future thought. On the other hand, research on individual memory serves as a source of hypotheses for research on collective memory (e.g., Anastasio et al. 2012), despite the phenomenological disanalogy between them, and research on individual future thought might likewise serve as a source of hypotheses for research on collective future thought. Moreover, given the phenomenological disanalogy, collective future thought may have much in common with the individual form of "collective" future thought that we bracketed in Sect. 1, and research on the latter (see Szpunar et al. 2014) might serve as an additional source of hypotheses. Many of these hypotheses will, of course, turn out not to be fruitful. But if a significant fraction bear fruit, the concept of collective MTT will earn its keep.[11]

4 The future of collective future thought

Given that our argument has covered a lot of ground, a recap may be helpful. One option would have been to attempt to infer the properties of collective MTT from those of individual MTT. But there would have been little warrant for such an inference, and this was not our approach. Instead, we looked to the literature on individual memory as MTT for inspiration. Since that literature links individual memory to individual future thought, we were led (in Sect. 1) to consider the possibility of linking collective memory to collective future thought, under the heading of collective MTT. The idea of collective future thought is, however, independently plausible. After illustrating the idea by means of a number of examples, we asked whether collective MTT as a whole is geninely collective. We argued (in Sect. 2) that there is good reason to think that it is. Finally, we argued (in Sect. 3) that, while it may be feasible to view collective MTT as a properly mental phenomenon, it nevertheless appears to differ in certain important respects from individual MTT.

Research on collective MTT will, of necessity, be just as interdisciplinary as research on collective memory already is. As noted above, philosophers have paid relatively little attention to collective memory so far. This is unfortunate, as collective memory raises many challenging conceptual questions, and the tools of philosophical

[11] This second response raises a terminological concern. If autonoesis is essential to individual MTT but plays no role in collective MTT, it might be suggested that the term "collective mental time travel" is misleading and should therefore be abandoned. We are sensitive to this worry and recognize that a term other than "collective mental time travel" might ultimately provide a better label for the relevant phenomenon. An appropriate substitute would, however, need to capture the relationship between remembering the past and imagining the future that is emphasized by the term that we have employed here.

analysis are particularly well-suited to dealing with questions of this sort. The same thing goes for collective MTT as a whole.[12]

In addition to a role for philosophy in interdisciplinary research, collective future thought raises questions which are of specifically philosophical interest. Many of these are broadly normative in character. There are epistemological questions about our knowledge of the future. For example, memory gives individuals and (more controversially) groups knowledge of past events; does future thought similarly give us knowledge of future events? An approach to this question might take existing discussions of individual knowledge of the future (Michaelian 2016a) and collective knowledge of the past (Michaelian and Arango-Munoz forthcoming) as starting points. And there are ethical questions about the moral status and role of collective future thought. For example, individuals and groups can arguably have duties to remember certain past events; can we likewise have duties to imagine future events? There is, as far as we are aware, no literature on the idea of an individual duty to imagine the future, but an approach to this question might take existing discussions of duties to remember the past (Margalit 2002; Blustein 2008, 2017) as starting points, along with the general literature on duties to future generations (e.g., Mulgan 2008). We will not explore these questions here; we note them simply in order to reinforce our claim that collective MTT, including collective future thought, is a promising area for philosophical research.

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[12] In addition to questions about collectivity and mentality of the sort we have dealt with here, collective MTT, like individual MTT, raises questions by suggesting a symmetry between our thought about past events and future events. Traditional versions of direct realism, for example, treat the objects of episodic memory as being particular past events. The objects of episodic future thought, in contrast, are arguably not particular future events. Whether this poses a threat to the validity of the concept of MTT is a subject of ongoing debate (Debus 2014; Perrin 2016; Michaelian 2016a).

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