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Minimal Cooperation and Shared Agency

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Chapter 12
From Collective Memory … to Collective Metamemory?

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Abstract Our aim in this chapter is to delineate the form of shared agency that we take to be manifested in collective memory. We argue for two theses. First, we argue that, given a relatively weak conception of episodicity, certain small-scale groups display a form of emergent (i.e., genuinely collective) episodic memory, while large-scale groups, in contrast, do not display emergent episodic memory. Second, we argue that this form of emergent memory presupposes (high-level and possibly low-level) metamemorial capacities, capacities that are, however, not themselves emergent group-level features but rather strictly individual-level features. The form of shared agency that we delineate is thus revealed as being minimal in three senses. First, the relevant groups are themselves minimal in terms of their size. Second, the form of memory in question is minimally episodic. And finally, the cognitive capacities attributed to the relevant groups are minimal, in the sense that they need not themselves be capable of metacognition.

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12.1 Introduction

Philosophical research on agency has focused primarily on agency as manifested in bodily action. Agency is, however, manifested equally in *mental* action. Whereas bodily action aims to effect change with respect to the agent's body or material environment, mental action aims to effect change with respect to his mind or knowledge. This chapter considers one particular manifestation of mental agency, that involved in *remembering*, which, we will assume, qualifies as a variety of mental action insofar as the rememberer aims to retrieve or reconstruct a past episode in a controlled manner (Arango-Muñoz and Bermúdez 2018).[1] Each of us is, of course, capable of remembering on his own, but we are also capable of remembering together with others. There is a growing body of research on this kind of *collective* remembering, and it is the minimal form of shared mental agency that is manifested in collective—as opposed to individual—memory that is our concern in the chapter.

The nature of the groups at issue in collective memory research varies significantly, with some researchers, especially those based in the social sciences, investigating remembering in groups composed of very large numbers of widely dispersed individuals, including whole nations and societies (see Barash 2017; Olick et al. 2011), while others, especially those based in psychology, investigate remembering in groups comprising much smaller numbers of more intensely interacting individuals, such as mother-child dyads and married couples. We will have something to say here about both large-scale and small-scale groups, but, reflecting a tendency in recent philosophy of memory (e.g., Theiner 2013; Huebner 2016; Kirchhoff 2016) to build on the results of empirical research on transactive memory (see Ren and Argote 2011 for an overview), our interest is primarily in groups of the latter sort.

We will defend two theses regarding collective memory, which we understand as exemplifying a form of shared mental agency that is "minimal" in three senses. The first thesis is that transactive memory systems, which, as Wegner (1987: 191) defined them, arise under certain conditions through "the operation of the memory systems of the individuals and the processes of communication that occur within the group", enable the emergence of a genuinely collective form of memory. Although we will argue that it is unlikely that such emergence occurs in large-scale groups, given the relative lack of cohesion of the latter, we maintain that findings on collaborative inhibition (Rajaram and Pereira-Pasarin 2010) and both quantitative (Meade et al. 2009) and qualitative (Harris et al. 2017) varieties of collaborative facilitation suggest that transactive memory does give rise to genuinely collective memory—specifically, to genuinely collective episodic memory—in some long-married couples and potentially in other small-scale groups. This is a first sense in which the form of shared mental agency with which we are concerned is minimal: it pertains to groups that are themselves minimal in terms of their size, typically consisting of only two

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[1] In addition to this sort of voluntary (or deliberate) memory, memory is often involuntary (or spontaneous) (Mace 2007). Involuntary memory may not qualify as a form of mental action, and our discussion here pertains to voluntary memory only.

individuals. The claim that this form of shared mental agency is involved in collective episodic memory presupposes a relatively weak characterization of episodicity, and this is a second sense in which the form of shared agency in question is minimal: it pertains to a form of memory that is only minimally episodic.

Given Wegner's definition, a transactive memory system necessarily includes a metacognitive or metamemorial level at which "who knows what" in the group is tracked. The claim that transactive memory enables the emergence of genuinely collective memory thus leads us to pose the question whether the form of metacognition at work in collective memory is to be understood as an individual-level capacity or whether it is, instead, itself an emergent group-level capacity. Our ultimate aim in the chapter is thus to determine whether *collective memory* implies *collective metamemory*, and the second thesis that we defend is that metacognition is, in the relevant groups, a strictly individual-level capacity. This is a third (and final) sense in which the form of shared mental agency with which we are concerned is minimal: it is minimally demanding in terms of the sophistication of the cognitive capacities that are attributed at the group level.

12.2 Episodic Memory

It is easy enough to give a rough operational definition of memory: memory refers to the modification of an agent's behavioural tendencies on the basis of its past experience. This rough definition, however, encompasses a number of very different kinds of memory, and a group capable of one of these might or might not be capable of the others. We therefore begin by singling out the particular kind of memory in which we are interested here.

It is standard, when describing kinds of memory, to distinguish between *procedural* and *declarative* memory (see, e.g., Werning and Cheng 2017). The former, which aligns—perhaps approximately—with what epistemologists refer to as "knowledge how", is the kind of memory that is at work when an agent remembers how to perform an action of a given type and as such need not involve representations, or at least representations with consciously articulable content. The latter, which aligns—again, perhaps approximately—with "knowledge that", is the kind of memory that is at work when an agent retrieves or reconstructs a representation with consciously articulable content. There are certainly interesting questions to be asked about procedural memory in groups, but the idea of collective procedural memory remains largely unexplored (see Manier and Hirst 2008 for a preliminary exploration), and our argument here builds on extant work on *collective declarative memory*.

Given that it is declarative memory that is at issue, the modification of the agent's behavioural tendencies to which the operational definition given above refers amounts to the acquisition of an ability to entertain a representation of one or another sort. But the definition, so understood, still encompasses different kinds of memory. It is standard to distinguish, within declarative memory, between *semantic* and *episodic* memory. The former is the kind of memory that is at work when an

agent retrieves a representation that does not essentially refer to the occasion on which learning occurred. For example, when one remembers that Kiev is the capital of Ukraine, one need not represent the occasion on which one learnt that Kiev is the capital of Ukraine. The latter is the kind of memory that is at work when the agent retrieves a representation that does essentially refer to the occasion on which learning occurred. For example, when one remembers visiting Kiev, one necessarily represents one's visit to Kiev. Given that it is episodic memory that is at issue, the modification of the agent's behavioural tendencies to which the operational definition refers amounts to the acquisition of an ability to represent a particular past event. Competing accounts of this ability are available, but episodic memory is, on any account, a more demanding capacity than semantic memory. Thus, if a group is capable of episodic memory, it is also likely to be capable of semantic memory. The focus of our argument will therefore be on *collective episodic memory*.

There is, as just noted, a choice to be made among competing accounts of episodic memory. In fact, there are two distinct choices to be made here, corresponding to the distinction between *mnemicity* and *episodicity* (Michaelian and Sutton 2017a). The first is between competing conceptions of the nature of declarative memory in general. The second is between competing conceptions of the distinguishing feature of episodic memory in particular. We take these choices in turn.

12.2.1   Mnemicity

The two main conceptions of the nature of declarative memory are the archival conception and the constructive conception (Robins 2016). The *archival* conception aligns roughly with preservationism in the philosophy of memory, the core claim of which is that remembering is essentially a matter of the transmission of content—through stages of encoding, consolidation, storage, and retrieval—from the original experience to the retrieved representation. The *constructive* conception, in contrast, aligns with generationism, the core claim of which is that, while remembering may involve the transmission of content, it is essentially a matter of the construction of a representation that is more or less adequate with respect to the original experience (see Michaelian and Robins 2018).

It has sometimes been suggested that there is no fundamental incompatibility between the archival and the constructive conceptions, as the construction of a retrieved representation would seem necessarily to draw on content transmitted from past experience. If so, there is room here for a *compromise* conception, the core claim of which would be that both transmission and construction are essential to remembering. A detailed version of the compromise conception has yet to be developed (see Robins 2016 for an initial attempt), but it is nevertheless with such a conception that we will work here, as taking into account both the features of remembering emphasized by the archival conception and those emphasized by the constructive conception will enable us to develop a treatment of collective memory that speaks to partisans of both conceptions.

12.2.2   *Episodicity*

Regardless of the conception of mnemicity with which one works, one must choose between competing conceptions of episodicity. The two main conceptions of the distinguishing feature of episodic memory are what we will refer to as the content-based conception and the phenomenological conception (see Perrin and Rousset 2014).

According to the *content-based* conception, episodic memory is to be distinguished from semantic memory in terms of its content: episodic memory is memory for the "what", the "when", and the "where" of experienced past events. Though Tulving, in his foundational work (1972), initially adopted the content-based conception, he soon abandoned it in favour of the phenomenological conception (Tulving 1985). According to the *phenomenological* conception, episodic memory is to be distinguished from semantic memory in terms of its phenomenology: episodic memory, unlike semantic memory, involves autonoetic consciousness—a sense of the self in subjective time. Tulving's adoption of the phenomenological conception was motivated in part by the observation that semantic memory, too, sometimes provides information about the what, the when, and the where of past events, including experienced past events, and, as this observation has gained wider recognition, the phenomenological conception has become increasingly popular (e.g., Klein 2015; Mahr and Csibra 2018).

The phenomenological conception of episodicity tends to be endorsed by those who endorse the constructive conception of mnemicity—especially by those who view episodic memory as a form of mental time travel (e.g., Suddendorf and Corballis 2007)—but it does not appear to be entailed by the latter. Indeed, there are views available on which, while autonoesis is indeed characteristic of episodic memory in healthy human subjects, it is not, strictly speaking, essential to episodic memory even in such subjects (Michaelian 2016). One motivation for such views is provided by the need to accommodate cases in which subjects appear to be able to remember normally despite having an impaired capacity for autonoesis (Klein and Nichols 2012). Another motivation is provided by research pointing to a capacity for "episodic-like" or what-when-where memory in nonhuman species despite a lack of evidence for a capacity for autonoesis in such species (see Malanowski 2016).

While a compromise between the archival and the constructive conceptions of mnemicity may be available, there can be no compromise between the content-based and the phenomenological conceptions of episodicity: either autonoesis is required for episodic memory or it is not. We acknowledge that the debate between the partisans of these conceptions is ongoing, but we nevertheless opt here for the content-based conception, for, as we will see below, opting for the phenomenological conception would all but trivially rule out the possibility of collective episodic memory. Partisans of the phenomenological conception are therefore likely to see any discussion of collective episodic memory as being simply misguided, and this chapter will make no attempt to convince them otherwise.

12.3   Emergence

Before turning to the evidence for the existence of genuinely collective—i.e., emergent—episodic memory, we set out the conception of emergence that we will employ.

12.3.1   Levels and Intensity of Interaction

As noted at the outset, there may be important differences between groups of different sizes with respect to whether they are capable of a given kind of memory. In principle, a group of any given size might be capable of any given kind of memory. In practice, however, the size of a group imposes constraints on the sorts of interactions that occur among its members and hence on its capacity for collective memory.

We begin by drawing a rough distinction among three levels of social interaction. The first is the level of the *individual*—the zero level of social interaction. At this level, the researcher investigates cognition as it is manifested in individual behaviour. The individual level is perhaps a theoretical idealization, but researchers nevertheless often build theories and models with this level in mind. The second level is that of the *small-scale group*. At this level, the researcher investigates cognition as it unfolds in relatively tight-knit, intensely interacting groups of two or a handful of individuals. Cognitive scientists working in the tradition of distributed cognition (Hutchins 1995) are often concerned with this level, as are cognitive psychologists working on collaborative remembering in mother-child dyads (Reese et al. 1993) or married couples (Harris et al. 2014), and it is with this level that we ourselves are primarily concerned here. The third level, finally, is the level of the *large-scale group*. At this level, the researcher investigates cognitive processes in loose-knit, weakly interacting groups on the scale of whole societies, that is, groups consisting of many thousands or millions of individuals. Memory at this level has so far been the province primarily of social scientists and historians but has recently begun to attract the attention of psychologists (Roediger and Abel 2015) and philosophers (Barash 2017), and we are to a lesser extent concerned with this level as well.[2]

Small-scale and large-scale groups characteristically differ not only in terms of their size but also in terms of the intensity of the interactions that take place among their members. Employing the vocabulary of the archival conception of mnemicity, Michaelian and Sutton (2018) have attempted to flesh out the intuitive notion of the

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[2] The boundary between the small-scale group level and the large-scale group level may, of course, be vague, in the sense that there are intermediate cases, involving groups consisting of dozens, hundreds, or thousands of more or less intensely interacting individuals. Similarly, the boundary between the individual level and the small-scale group level may be vague, in the sense that individual behaviour always involves at least some degree of indirect interaction with others. The foregoing distinctions are thus meant only to be approximate; in our view, the development of a serious typology of the groups investigated in collective memory research is a promising area for future research in social ontology, though we will not attempt to make a case for this view here.

intensity of interactions in remembering groups. Both encoding and retrieval, they observe, might be either *parallel*, in the sense that group members encode/retrieve on their own, or *interactive*, in the sense that they encode/retrieve together, giving us four possibilities.[3] First, some groups are characterized by parallel encoding and parallel retrieval. The "nominal groups" employed in the collaborative recall paradigm (discussed below), for example, interact neither at encoding nor at retrieval and thus are not groups in any robust sense. Second, some groups are characterized by parallel encoding and interactive retrieval. This pattern of interaction is responsible for, inter alia, the influence of post-event misinformation on individual memory investigated by eyewitness memory researchers (see Loftus 2005). Third, some groups are characterized by interactive encoding and parallel retrieval. This pattern of interaction is illustrated by the case of a group of friends who experience an event together but later remember it individually (Sutton 2008). Groups characterized by parallel encoding and interactive retrieval or by interactive encoding and parallel retrieval are groups in a relatively robust sense, but it is the fourth pattern of interaction—interactive encoding and interactive retrieval—that is characteristic of the groups constituting transactive memory systems, durable groups whose members have established responsibilities for encoding and retrieving different kinds of information.

The examples given above are of remembering in small-scale groups, and the groups constituting transactive memory systems do indeed typically include at most a handful of individuals. Large-scale groups may involve indirect forms of interaction, but, due simply to the greater numbers of individuals involved, these groups are presumably always characterized by parallel encoding and parallel retrieval, since there is no way in practice for group members to interact directly with one another. We come back to this point below.

12.3.2 Criteria for Emergence

It is by no means obvious what conditions need to be satisfied before we are entitled to attribute emergent collective memory to a more or less intensely interacting small- or large-scale group. Nor is it obvious what such an attribution would mean.

Regarding the latter question, Wilson (2005; see also Barnier et al. 2008) has distinguished between three related but importantly different theses about the social or collective character of remembering. According to the *triggering thesis*, individual remembering is sometimes triggered by social interactions without strictly depending on those interactions. According to the *social manifestation thesis*, remembering is a social process in the sense that one person's remembering some-

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[3] A more thorough treatment of intensity of interaction in groups would consider consolidation and storage in addition to encoding and retrieval, but Michaelian and Sutton's approach is sufficient for present purposes. Note that, while this approach begins from the archival conception rather than the constructive conception, it is intended merely to provide a way of zeroing in on the relevant types of interaction, and the constructive dimension of collective memory is considered below.

times depends for its occurrence on the presence of other people. According to the *group mind thesis*, remembering is a social process in the sense that groups themselves may sometimes remember. The triggering and social manifestation theses are relatively weak and should therefore be relatively uncontroversial. The group mind thesis is much stronger and correspondingly more controversial; our aim here is to explore the evidence for the thesis as it pertains to small- and large-scale collective memory. As Wilson remarks, philosophers have often been sceptical with respect to the group mind thesis, preferring to embrace one or another form of reductionism about collective memory, and the same goes for researchers in other disciplines. While many of the arguments in favour of reductionism about collective memory are persuasive, we will not respond directly to them here. Given the complexity of the relationship between emergence and reduction——both in general (O'Connor and Wong 2015) and in the special case of social entities (Zahle and Kaidesoja 2019)—doing so would simply take us too far afield. Rather than developing negative arguments in response to reductionism, therefore, we focus on making a positive case for the existence of emergent group-level memory.

Regarding the former question, we will adopt stringent criteria for the existence of group-level memory, in the hope that our argument will persuade even sceptics that some forms of collective memory are indeed an emergent property of the "social integrate" (Pettit 2003). In previous work (Michaelian and Arango-Muñoz 2018), we followed Theiner (2013) in applying Wimsatt's (1986) *mechanistic* criteria for emergence to the case of collective memory. On Wimsatt's approach, a property of a system is emergent to the extent that it fails to satisfy the following criteria. First, the property in question does not vary when some components of the system are replaced with others or with similar components from outside the system. Second, the property does not qualitatively change when components are added to or subtracted from the system. Third, the property does not vary when the system is disassembled or reassembled. Finally, the property is not affected by cooperative or inhibitory interactions among components of the system.

In virtue of its inclusion of this final criterion, Wimsatt's approach converges with a distinct mechanistic approach recently developed by Huebner (2014). On Huebner's approach, which both Huebner himself (2016) and Michaelian and Sutton (2017b) have applied to the case of collective memory, we are not to attribute collective mental states where, first, the relevant collective behaviour results from a top-down mechanism ensuring that the groups acts in accordance with the intentions of certain of its members, second, the collective behaviour straightforwardly results from simple rules governing individual behaviour, and, third, the members of the group have a mental capacity of the same kind as the mental capacity attributed to the group but the computations performed by the group are no more complex than those performed by its members. Huebner makes clear that what this final criterion requires is that the performance of the group be shaped by interactions among its members. Ultimately, then, both Wimsatt's approach and Huebner's emphasize *interaction* as a prerequisite for emergence, leading us to suspect that there may be grounds for attributing a capacity for memory to groups characterized by interactive encoding and interactive retrieval.

The two sets of mechanistic criteria considered so far are already fairly demanding, but the *rational* criteria proposed by Szanto (2014) are even more so. On Szanto's approach, the group mind thesis is plausible in a given case to the extent that the relevant group has a rationally unified point of view, where a group must satisfy three requirements in order to qualify as having such a point of view. First, it must be able to "form, hold and robustly entertain intentional states […] with representational and propositional content", and its behaviour must be explainable in terms of these states. Second, the group mind "holds holistically construed, relatively consistent, non-contradictory beliefs". Finally, the group mind must "integrate intentional states so as to constitute on overall rationally unified point of view, i.e., a unified set of reasons, in the light of which the group assesses its given beliefs, preferences, and intentions". What Szanto's approach adds to the two approaches considered above is a set of further criteria: *intentionality*, *coherence*, and *integration*. In the case of memory, we note, a group's rationally unified point of view is plausibly understood as being not the starting point for contemplating the past but rather a possible end point of an interactive process in which the members of the group draw on the information that each of them stores in order to construct a shared representation of the shared past. In what follows, we will make use of both Wimsatt's and Huebner's mechanistic approaches and Szanto's rational approach.

12.4   Emergent Episodic Memory

With a conception of emergence in place, we turn to the evidence for the existence of emergent collective episodic memory.

12.4.1   *Memory in Small-Scale Groups*

In view of the differences, highlighted above, between small-scale groups and large-groups, we treat these separately, beginning with the former.

12.4.1.1   Emergence

One key source of evidence regarding small-scale groups is provided by research demonstrating that *conversational remembering* can reshape the memories of both speakers and their audiences, with this reshaping being due in part to retrieval-induced forgetting (Hirst and Echterhoff 2008; Stone et al. 2012). *Within-individual retrieval-induced forgetting* occurs when retrieval of an item by a subject strengthens his memory for the retrieved item and causes forgetting of related items. *Socially shared retrieval-induced forgetting* occurs when retrieval of an item by a speaker similarly causes forgetting of related items in his listeners, an effect that appears to

occur primarily because listeners covertly retrieve the same information as the speaker, thus allowing the mechanisms that lead to within-individual retrieval-induced forgetting to reshape their memories. In groups—such as married couples—characterized by frequent, ongoing conversational remembering, socially shared retrieval-induced forgetting may lead to convergence on shared memory representations. However, though the mechanisms in question are activated by interactions among group members as they remember together, this convergence is ultimately driven by individual-level mechanisms. This form of shared memory thus appears not to satisfy mechanistic criteria for emergence, and it may lend support to the triggering thesis or the social manifestation thesis rather than the group mind thesis.

Another source of evidence is provided by research on *collaborative recall*, which has consistently identified two superficially opposed effects (Weldon 2000; Rajaram and Pereira-Pasarin 2010). On the one hand, the quantity of information recalled by a group is often greater than that recalled by any of its members individually. This first effect (not to be confused with the collaborative facilitation described below) occurs simply because group members recall nonoverlapping sets of items. On the other hand, the quantity of information recalled by a group of interacting individuals (a "real group") is often less than that recalled by a set of noninteracting individuals (a "nominal group"). This second effect—known as *collaborative inhibition*—occurs because individuals recall less when remembering together than when remembering alone, a tendency that appears to be due to retrieval disruption, in which incompatible retrieval strategies employed by different group members interfere with each other. Though retrieval disruption occurs only due to the interactions that take place among group members as they remember together, the retrieval disruption hypothesis ultimately appeals to the disruption of individual-level mechanisms. This form of shared memory thus likewise appears not to satisfy mechanistic criteria for emergence and may lend support to the triggering thesis or the social manifestation thesis rather than the group mind thesis.

The groups that figure in research on *transactive memory* (Wegner 1987; Wegner et al. 1991; Hollingshead et al. 2011), in contrast, appear to satisfy not only the mechanistic criteria but also the rational criteria for emergence reviewed above. Broadly speaking, a transactive memory system consists of two components (Theiner 2013). First, its representational component includes both the first-order (declarative and procedural) memories of its members and their metacognitive knowledge of each other's memories. Second, its procedural component includes the various (implicit and explicit) communication processes through which group members assign responsibility for and coordinate performance of the stages of the memory process. Crucially, transactive memory systems often perform better than individuals do on their own, at least when performing tasks that lend themselves to a division of cognitive labour. Theiner (2013) has argued that transactive memory system satisfy all four of Wimsatt's criteria. First, because the members of the system have nonoverlapping memories, they are not interchangeable and normally will not be interchangeable with individuals from outside the system. Second, if enough members of the system are removed, the system will fail, again due to its members'

non-overlapping knowledge. Third, the system's history makes a difference to its performance—in particular, teams trained together tend to perform better—so disassembly and reassembly may affect its ability to remember. Finally, since the system is welded together in part by its members' metacognitive knowledge of "who knows what" within the system, cooperative and inhibitory interactions among its members are critical to its functioning. Huebner (2016) has similarly argued that transactive memory systems satisfy his own mechanistic criteria, including the critical final criterion: since transactive memory systems outperform groups of noninteracting individuals, the interactions among the members of a transactive memory system are key to explaining its performance.

Transactive memory systems thus appear to satisfy both Wimsatt's and Huebner's mechanistic criteria for emergence. They appear, moreover, to satisfy Szanto's more demanding rational criteria. Each individual takes the other as a potential source of information concerning the aimed memory and both aim at retrieving or reconstructing the same intentional content; thus, they satisfy the intentionality criterion. Moreover, they aim to retrieve or reconstruct a representation that is consistent, coherent and non-contradictory; that is, if there are conflicts among the retrieved information, the subjects are committed to resolve it; thus, they satisfy the coherence criterion. These features of the transactive group interaction ensure the fulfilment of the integration requirement, according to which the group should share a unified point of view. However, this unified point of view is not the starting point of the reconstructive memory process, but the arrival point after joint construction. That is, starting from different points of view (different perspectives or versions about the past episode), and trying to reach a coherent version of the past episode out of the different versions, the subjects negotiate the details of a version of the past in which all then should agree. Wegner's experiments on transactive remembering clearly illustrates this aim at a unified point of view: when members of the group retrieve conflicting memories, they negotiate till they arrive to a version that is endorsed by all (Wegner 1987; Wegner et al. 1991). We consider an example in detail below.

We do not pretend that this brief review of the evidence is decisive (see Michaelian and Arango-Muñoz 2018 for a more detailed review), but we do take it to be sufficient to establish that there is a prima facie case to be made for emergence in small-scale groups, particularly in transactive memory systems. If transactive memory systems satisfy plausible criteria for emergence, however, it remains to be seen whether the emergent activity that they perform satisfies criteria for episodicity and mnemicity.

12.4.1.2 Episodicity and Mnemicity

It is useful, in this connection, to consider research on *collaborative facilitation*. Under conditions in which group members are likely to employ similar or complementary retrieval strategies, collaborative inhibition can be overcome or even reversed, enabling real groups to recall more than nominal groups. Thus collabora-

tive facilitation has been found with groups of experts in a given domain, such as airline pilots (Meade et al. 2009). In addition to the *quantitative* collaborative facilitation that has been the focus of research on groups of experts, Harris et al. (2014, 2017) have investigated what might be thought of as *qualitative* collaborative facilitation in married couples. Whereas, in quantitative collaborative facilitation, the members of the group are able to recall more items from a given domain when remembering together than when remembering alone, in qualitative collaborative facilitation they are able to recall more or different information about specific items. Harris et al. have demonstrated, in particular, that couples—specifically, long-married couples—have a tendency to "go episodic" when remembering together, in the sense that they tend to recall additional details of events that they experienced together, even when they have been explicitly instructed to recall as many events as possible. Interestingly, qualitative collaborative facilitation does not presuppose quantitative collaborative facilitation: with respect to the task instruction, the couples studied by Harris et al. experience collaborative inhibition, but in an important sense they nevertheless benefit from remembering together.

In line with our suggestion above that emergence depends on interaction and that intensity of interaction can be understood in terms of interactive vs. parallel encoding and retrieval, transcripts of couples' conversations indicate that qualitative collaborative facilitation occurs due to interactions that take place during collaborative recall—i.e., at the time of retrieval—and that the relevant interactions are only possible because the members interacted at the time of encoding. Consider the following representative case (Harris et al. 2014: 290–291).

> Interviewer: And how many more trips did you do? There's the Greek Islands.
> Wife: South America.
> Husband: We did South America, yes, we did Peru and Brazil and Argentina and Bolivia and The Andes. We went up to …
> H: Do you remember munching the coca leaf to try …
> W: Oh yes.
> H: We went up to The Andes at 5000 m, and munching coca leaf, and [wife] decided that she needed to have a pee.
> W: So we were on the road here, you see, but the little latrine was up on the top.
> H: It was about 50 m higher.
> W: So we had to climb up from the road.
> H: So I said, alright, I'll take you up there. By the time I got down, which at 5000 m climbing, I'd just about had it.
> W: Yes, we thought we were going to faint, but we didn't. But those coca leaves were very good, I rather liked them.

The emergent activity performed by this and similar couples would appear to satisfy our criteria for both episodicity and mnemicity.

Beginning with episodicity, what this couple does as it "goes episodic" would, given the content-based conception of episodicity, which characterizes episodic memory in terms of what-when-where information, appear to qualify as episodic. There is clearly representation of episodic details—information about the what, the when, and the where of the event in the Andes—at the level of the husband and wife taken individually. But there also appears to be representation of episodic details at the level of the couple taken as a group. The husband and wife agree on a representa-

tion about what happened when they were in the Andes, but they do not merely agree on the representation; that is, this is not a case of merely shared episodic thought. Instead, the representation on which they agree is itself the product of their interaction as they remember together; that is, this is a case of properly collective episodic thought. What we witness, in this transcript and in others provided by Harris et al., is the unfolding of a process in which additional episodic detail emerges as husband and wife each draw on their metacognitive knowledge of what the other knows in order to provide the other with cues that elicit new information and encourage agreement, allowing them to converge on a shared representation of a shared experience.

Indeed, Harris et al. (2014) argue that the qualitative collaborative facilitation revealed by their studies includes more than one kind of emergence. First, they identify emergence of *new details*, in which information that neither individual could recall alone becomes available due to interaction during retrieval. This is the kind of emergence that we have been emphasizing so far. Second, they identify emergence of *quality*, in which remembering is emotionally richer and more vivid when members remember together than when they remember alone. Finally, they identify emergence of *understanding*, in which members' interpretations of a given event are transformed when they remember together. It is important to note that not all couples go episodic or go episodic to the same degree, and, in line with Wegner's definition of transactive memory systems as being constituted by both "the operation of the memory systems of the individuals" *and* "the processes of communication that occur within the group" (1987: 191), Harris et al. (2014) observe that these differences between couples appear to be due to differences in interaction style, including differences in intensity and style of communication. The tendency of long-married couples to go episodic thus provides particularly clear evidence for a form of collective thought that is both emergent and, given the content-based conception of episodicity, episodic.

It is also important to note that we do not witness, in Harris et al.'s transcripts, the emergence of *phenomenology*. The phenomenological conception of episodicity would therefore classify the emergent activity performed by couples when they "go episodic" as not being genuinely episodic. Indeed, we suggested above that the phenomenological conception of episodicity all but trivially rules out the possibility of collective episodic memory. As Michaelian and Sutton (2017b) have argued, our reluctance to attribute mental states to groups may be explained in part by our reluctance to attribute phenomenal consciousness to groups. Some have suggested that this reluctance is unfounded, arguing that materialists are bound to admit that collective phenomenal consciousness is possible in principle (Schwitzgebel 2015). Others, however, have pointed out that there is no reason to think that any actual groups are organized in a manner sufficient to give rise to collective phenomenal consciousness in practice (List 2018). This certainly goes for the groups in question here: we have offered no reason to take the notion of collective autonoetic consciousness seriously, and we do not imagine that such a reason might be offered. Thus, given the phenomenological conception of episodicity, even couples who go episodic will not qualify as engaging, at the group level, in a form of episodic thought.

Turning to mnemicity, the activity performed by the couples in question would, given the compromise conception of mnemicity, which incorporates both the archival and the constructive conceptions, appear to qualify as memory. According to the archival conception, on the one hand, remembering is essentially a matter of the transmission of content from experience to retrieval. It is clear that transmission occurs at the level of the husband and wife taken individually; assuming that they are remembering, which is not at issue here, we know this simply because we know that remembering involves transmission. But transmission also appears to occur at the level of the couple taken as a group, in the sense that group-level mechanisms are responsible for the production of a portion of the content that was available at the time of experience. As Harris et al. stress, the couple is able to produce details that neither of its members is able to produce on his own; in other words, while the individual members of the group transmit information, they are able to transmit some of the information that they transmit only insofar as they are members of the group. According to the constructive conception, on the other hand, remembering is essentially a matter of the construction of a representation that is more or less adequate with respect to the original experience. It is clear that construction occurs at the level of the husband and wife taken individually—again, assuming that they are remembering, we know this simply because we know that remembering involves construction. But construction also appears to occur at the level of the couple taken as a group, in the sense that group-level mechanisms are responsible for the emergence of episodic detail, emotional richness, and understanding that were not available at the time of experience. Regarding episodic detail, it is likely that some of the details present at the time of retrieval were not present at the time of encoding. Regarding emotional richness, it will often be the case that the emotional tone of the memory does not correspond to the emotions that either of the members of the couple felt at the time of experience. And regarding understanding, this is something that is negotiated between members and often continues to evolve even when the event is well in the past, as the couple renegotiates its interpretation of the significance of the event.

Overall, then, given the content-based conception of episodicity and the compromise conception of mnemicity, we can conclude that some small-scale groups—in particular, transactive memory systems of the sort constituted by some long-married couples—are capable of a form of collective thought that is emergent, episodic, and mnemic, i.e., that they are capable of genuinely collective episodic memory.

12.4.2 Memory in Large-Scale Groups

Once one has come to this conclusion, one may be tempted to jump immediately to the further conclusion that large-scale groups are also capable of collective episodic memory. A brief analysis, however, reveals that large-scale groups are unlikely to be capable of memory, never mind episodic memory.

Adopting Szanto's rational approach to emergence, on which intentionality, coherence, and integration are key, it is doubtful that large-scale groups display emergent mental states, whether mnemic or otherwise. Even if societies can be said to remember in a loose sense, their members do not actively interact and collaborate with the aim of reconstructing a particular past event; thus they do not satisfy the intentionality criterion. Nor do they satisfy the coherence criterion, since their members are in general not committed to the resolution of inconsistencies or contradictions, leading to situations in which different subgroups within a given society remember significantly different or even outright incompatible versions of the same event. When, for example, Brescó and Wagoner (2016) studied the peace process that took place in the Basque Country in 2006, they found that three versions of the same fact circulated in the society, varying according to the political view of the individual or group of individuals. There was no integration among the three narratives, and this case therefore also does not satisfy the integration requirement. While we cannot decisively show here that Szanto's criteria are never satisfied, the literature abounds with similar cases, and this would seem to be the safest bet.

Adopting Wimsatt's and Huebner's mechanistic approach to emergence, large-scale groups may display a variety of emergent features, and possibly even emergent mental states, but there is, despite the ongoing "boom" in studies of large-scale collective memory (Blight 2009), little reason to take them to display emergent memory in particular. Some treatments of large-scale collective memory adopt purely archival conceptions of mnemicity. Such conceptions are, as noted above, inadequate, and we can therefore simply set these treatments aside. Others adopt a more constructive conception. The constructive conception is more promising, but, on closer inspection, the constructive activities performed by large-scale groups have little in common with those performed by individuals or small-scale groups. Michaelian (2014), for example, responding to Anastasio et al.'s (2012) argument for the existence, at the level of large-scale groups, of a form of collective memory consolidation analogous to individual memory consolidation, argues that, due in part to the role in large-scale collective remembering of external memory representations and in part to the role of the kind of conflict highlighted by Brescó & Wagoner (2016), collective consolidation differs dramatically from individual consolidation in that, while the latter is correctly understood as a transition from labile, short-term representations to stable, long-term representations, the former is more adequately understood as a transition from stable, long-term representations to labile, short-term representations.[4] While we cannot review the disanalogies between "memory" at the large-scale group level and memory at the small-scale group and individual levels in detail, the view that large-scale groups are not capable of memory would, again, seem to be the safest bet.

Thus while there may be merely shared memories at the level of a large-scale group—similar memories held by the individual members of the group—and while

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[4]There has been, as far as we are aware, no investigation of group-level consolidation in small-scale groups, and we grant that such investigation might turn up disanalogies between individual consolidation and small-scale group-level consolidation.

the individuals in question may have such memories in part due to the effect of group-level processes on what they remember, exemplifying the sort of triggering or social manifestation described by Wilson, we can conclude that it would nevertheless be a mistake to see the group itself as remembering. This conclusion echoes Wegner's remark that the concept of transactive memory cannot usefully be applied to large-scale groups such as societies, since treating societies as transactive memory systems would simply "make transactive memory into a synonym for culture" (Wegner et al. 1985: 257); our argument here suggests that this goes not only for the concept of *transactive* memory but also for the more basic concept of *memory*.

If large-scale groups are incapable of *remembering*, they are a fortiori incapable of remembering *episodically*. Even if we were willing to countenance the existence of memory in large-scale groups, however, Michaelian and Sutton (2018) have pointed out that "[m]emory in large-scale groups is typically memory for events which are of concern to the individuals who make up the group but in which those individuals did not necessarily take an active part and of which they often have only indirect knowledge". They thus observe that large-scale memory thus appears to be semantic rather than episodic: individual group members "may (episodically) remember personal experiences which are linked to the events in question, but, to the extent that remembering is concerned with large-scale, public events, it lacks the characteristic features of episodic memory". Putting this in terms of the intuitive notion of intensity of interaction outlined above, large-scale groups typically involve no interaction at the time of encoding and at most indirect interaction at the time of retrieval; remembering in such groups is thus unlikely to display emergent episodicity.

Overall, then, it is relatively unlikely that large-scale groups display emergent mental states; if they do display such mental states, it is unlikely that they are capable of remembering; and if they are capable of remembering, it is unlikely that they are capable of remembering episodically.

12.5   Metamemory

With our defence of our first thesis—that small-scale but not large-scale groups are capable of a form of shared mental agency through which genuinely collective memory emerges—we turn to the defence of our second thesis, namely, that metacognition is, in the relevant groups, an individual-level capacity, beginning with some brief background on the nature of metacognition. Many researchers argue that metacognition is a prerequisite for group-level memory. Shea et al. (2014), for example, see metacognition as establishing a communicative interface that regulates collaborative work. In a similar vein, Heyes (2016) understands social learning strategies as being based on metacognition: knowing who knows what. And, as already noted, Wegner (1987) claims that metacognition is necessary for transactive memory systems. The question thus arises whether the form of shared agency manifested in collective memory implies *group-level* metacognition or only *individual-level* metacognition.

Metacognition can be defined as the capacity to *monitor* and *control* cognitive processes (Nelson and Narens 1990). Monitoring can occur either before or after the occurrence of the relevant cognitive process; the former sort of monitoring is a matter of *self-prediction*, the latter a matter of *post-evaluation* (Proust 2013). Self-prediction, as it pertains to memory, refers to an assessment of the likelihood that one will be able to retrieve or reconstruct an item of information, whereas post-evaluation refers to an assessment of the accuracy of a retrieved or reconstructed item. Control, in turn, refers to actions taken on the basis of monitoring: either accepting the outcome of the memory process or rejecting it. If, for example, someone asks me the address of the University of Antioquia, self-predictive metamemory assesses whether or not I know it. In some cases, metamemory determines that I can retrieve it (monitoring), and I therefore attempt to remember it (control), even if the address does not immediately come to mind. In other cases, metamemory determines that I cannot retrieve it (monitoring), and I therefore consider alternative strategies, such as asking someone or looking it up online (control). If I have retrieved an address, say, "Calle 67, Medellín", metamemory post-evaluates the retrieved item (monitoring), determining whether I should endorse it or instead reject it and try again (control).

The recent literature on metacognition distinguishes between two levels or types of metacognition: low-level and high-level (Arango-Muñoz 2011; Koriat 2007; Proust 2013; Shea et al. 2014). Each of these levels has a different structure, a different content, and a different function in the cognitive architecture. On the one hand, *low-level* metacognition is based on *metacognitive feelings*, such as the feeling of knowing, the tip-of-the-tongue state, and the feeling of forgetting. These experiences are used to monitor and control memory: the feeling of knowing motivates the subject to remember, whereas the feeling of forgetting motivates her to look for complementary strategies (Arango-Muñoz and Michaelian 2014). Thus, they guide memory retrieval in a direct, immediate manner. On the other hand, *high-level* metacognition employs psychological concepts and theory of mind to understand memory, to rationalize behavior, and sometimes to control memory; that is, it is *metarepresentational* in character, rather than feeling-based.

12.6   Emergent Metamemory?

In this section, we consider whether and how these two types of metacognition are implicated in collective memory.

12.6.1   Metamemory in Small-Scale Groups

Beginning with small-scale groups, we consider first low-level metamemory and then high-level metamemory.

12.6.1.1 Low-Level Metamemory

The metacognitive feelings described above are feelings that refer to the subject's own cognitive capacities and their outputs. In addition to *self-directed* feelings of this sort, there may be *other-directed* metacognitive feelings that refer to the cognitive capacities and outputs of other subjects, and such feelings may be involved in transactive memory systems. Wegner, in particular, has suggested that, when one subject trusts another subject's memory—i.e., when he defers responsibility for remembering a given item or category of information to the other subject—the relevant feeling of trust can be seen as the social counterpart of the feeling of knowing (1987: 198; Wegner et al. 1985: 266; cf. Huebner 2016). Along the same lines, he has pointed out that, following the dissolution of a transactive memory system of which a subject was a member, the subject may experience a feeling of indecision as he progressively becomes aware of the loss of access to information held by the other member or members of the system (Wegner et al. 1985: 273) Although other-directed metacognitive feelings are interesting in their own right and are certainly worthy of further study, they are clearly not group-level metacognitive feelings: other-directed feelings of knowing and indecision may in a sense refer to the group, but they are nevertheless unambiguously experienced by the individual. Thus they are most parsimoniously attributed to the individual rather than the group, whereas it is properly group-level feelings the existence of which would have to be established in order to establish the existence of low-level group-level metamemory.

It is doubtful that a convincing case can be made for the existence of such feelings, for their existence would entail the existence of group-level phenomenal consciousness, and, as we saw above in our discussion of the notion of collective autonoetic consciousness, group-level phenomenal consciousness can be ruled out as a practical reality, even if it cannot be ruled out as an in-principle possibility. It is worth noting here that even theorists who take the idea of collective mental states of other sorts quite seriously tend to be sceptical with respect to the possibility of collective phenomenal states (e.g., Clark 2009). And even those who take the idea of collective phenomenal states seriously tend to be sceptical with respect to their prevalence. Krueger (2014), for example, distinguishes between extended emotions and collective emotions. Examples of extended emotions are cases in which the stimulus causing the emotion is essential to the production of the experience, as sometimes occurs when we listen to music. Krueger takes it that there are bona fide cases of extended emotion. Examples of collective emotions are cases in which a single emotion is realized in more than one subject. Krueger suggests that infant-caregiver emotional interconnection provides one plausible case of collective emotion, but he acknowledges that it is likely to be the only exception to the rule that "there are non-transferable phenomenal aspects of emotional experience in adulthood that seem to preclude their being collectively realized" (551). Absent any reason to suppose that collective metacognitive feelings constitute an additional exception to this rule, we are entitled to rule out their existence.

12.6.1.2 High-Level Metamemory

In the individual case, high-level metacognition crucially involves a metarepresentational structure deployed by the subject to self-ascribe mental properties. As Carruthers describes it, this type of metacognition is a matter of "turning mindreading capacities upon oneself" (2009: 3). High-level metacognition also plausibly plays a role in the case of transactive memory: because it provides a representational format suitable for the construction of complex intentions and purposes that involve other subjects and their mental states, high-level metamemory would appear to be more directly relevant than low-level metamemory to the functioning of transactive memory systems. Theiner (2013: 72) describes the role of this metarepresentational structure in the collective case as follows. "The awareness of who knows what in a group constitutes a special kind of higher-order knowledge because they are about other memory structures, rather than about things as such. [T]ransactive memories are meta-memories about memories which one does not possess … but which are believed to be held by other group members". Thus the members of a transactive memory system have metarepresentational knowledge that allows them to coordinate their contributions to collective remembering with those of other members of the system.

Wegner understands transactive remembering as including three stages: transactive *encoding*, transactive *storage*, and transactive *retrieval*.[5] Transactive encoding involves a decision as to which member of the group is to be responsible for learning a given item of information or information belonging to a given category, a decision that presupposes knowledge of the encoding, storage, and retrieval abilities of each group member; thus group members must be represented not just as generic mnemic resources but rather as resources with specific capacities. Transactive storage requires a means of keeping track of which group member has learnt what and thus of which information or kind of information a given group member can be expected to provide; again, this presupposes a representation of group members not as generic stores of information but rather as sources of specific items or types of information. And transactive retrieval requires the integration of information provided by different group members to produce a consensus representation; at this stage, too, group members must be represented not as generic sources of information but rather as sources having particular domains of authority or competence. Thus metarepresentational knowledge plausibly plays a role at all three stages of transactive remembering. It would, however, be a mistake to attribute this metarepresentational knowledge to the system itself, just as it would have been a mistake to attribute metacognitive feelings to the system. Interaction among members of the system does not produce the high-level metacognition that is involved in transactive memory—instead, high-level (and possibly low-level) metacognition makes their interaction possible. In short, metarepresentational knowledge, like metacognitive feelings, is most parsimoniously attributed to the individual rather than the group.

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[5]We noted above that there has been no discussion of small-scale group-level consolidation in general, and this goes for transactive consolidation in particular.

12.6.2   Metamemory in Large-Scale Groups

Though we have already ruled out the possibility of emergent processes in large-scale groups that, strictly speaking, satisfy criteria for mnemicity, we have acknowledged that such groups may, given mechanistic criteria for emergence, manifest emergent mental states of other sorts and that it may be possible to speak in a loose sense of large-scale collective memory. Before concluding, we therefore briefly discuss the possibility of emergent metamemory in large-scale groups.

In certain cases, it may seem that a subgroup within the larger society carries out metacognitive monitoring and control. We have in mind, for example, the role assigned by Anastasio et al. (2012) to what they refer to as groups of "opinion leaders", in which intellectuals, journalists, historians, and like individuals actively shape a society's memory for key events of its past, determining what is remembered and how it remembered. The role of groups of opinion leaders in directing large-scale collective consolidation is certainly interesting, but, even in cases where groups of opinion leaders play this role, we are not entitled to attribute the relevant monitoring and control processes to the society as a whole, even given mechanistic criteria for emergence. One of Huebner's criteria for collective mentality, recall, is that we are not to "posit collective mentality where collective behavior results from an organizational structure set up to achieve the goals or realize the intentions of a few powerful and/or intelligent people" (2014: 21). Since this sort of structure would seem to be at work in cases of the sort described by Anastasio et al., all that needs to be explained in these cases can be explained by appealing to the decision process of the members of the relevant subgroup, without any appeal to collective metacognition.

In sum, neither small-scale collective memory nor large-scale collective memory appears to involve either low-level or high-level group-level metacognition.

12.7   Conclusions

Our aim in this chapter has been to delineate a form of shared agency that we take to be manifested in collective memory. We have argued for two theses. First, we have argued that, given a relatively weak conception of episodicity, certain small-scale groups display a form of emergent (i.e., genuinely collective) episodic memory, while large-scale groups, in contrast, do not display emergent episodic memory. Second, we have argued that this form of emergent memory presupposes (high-level and possibly low-level) metamemorial capacities, capacities that are, however, not themselves emergent group-level features but rather strictly individual-level features. The form of shared agency that we have delineated is thus revealed as being minimal in three senses. First, the relevant groups are themselves minimal in terms of their size. Second, the form of memory in question is minimally episodic. And finally, the cognitive capacities attributed to the relevant groups are minimal, in the sense that they need not themselves be capable of metacognition.

References

Anastasio, T. J., Ehrenberger, K. A., Watson, P., & Jiang, W. (2012). *Individual and collective memory consolidation: Analogous processes on different levels*. Cambridge, MA: MIT Press.

Arango-Muñoz, S. (2011). Two levels of metacognition. *Philosophia, 39*(1), 71–82.

Arango-Muñoz, S., & Bermúdez, J. P. (2018). Remembering as a mental action. In K. Michaelian, D. Debus, & D. Perrin (Eds.), *New directions in the philosophy of memory* (pp. 75–96). London/New York: Routledge.

Arango-Muñoz, S., & Michaelian, K. (2014). Epistemic feelings, epistemic emotions: Review and introduction to the focus section. *Philosophical Inquiries, 2*(1), 97–122.

Barash, J. A. (2017). Collective memory. In S. Bernecker & K. Michaelian (Eds.), *The Routledge handbook of philosophy of memory* (pp. 255–267). London/New York: Routledge.

Barnier, A. J., Sutton, J., Harris, C. B., & Wilson, R. A. (2008). A conceptual and empirical framework for the social distribution of cognition: The case of memory. *Cognitive Systems Research, 9*(1), 33–51.

Blight, D. W. (2009). The memory boom: Why and why now? In P. Boyer & J. V. Wertsch (Eds.), *Memory in mind and culture* (pp. 238–251). New York: Cambridge University Press.

Brescó, I., & Wagoner, B. (2016). Context in the cultural psychology of remembering: illustrated with a case study of conflict in national memory. In C. Stone & L. Bietti (Eds.), *Contextualizing human memory: An interdisciplinary approach to understanding how individuals and groups remember the past* (pp. 69–85). London/New York: Routledge.

Carruthers, P. (2009). How we know our own minds: The relationship between mindreading and metacognition. *Behavioral and Brain Sciences, 32*(2), 121–138.

Clark, A. (2009). Spreading the joy? Why the machinery of consciousness is (probably) still in the head. *Mind, 118*(472), 963–993.

Harris, C. B., Barnier, A. J., Sutton, J., & Keil, P. G. (2014). Couples as socially distributed cognitive systems: Remembering in everyday social and material contexts. *Memory Studies, 7*(3), 285–297.

Harris, C. B., Barnier, A. J., Sutton, J., Keil, P. G., & Dixon, R. A. (2017). "Going episodic": Collaborative inhibition and facilitation when long-married couples remember together. *Memory, 5*(8), 1148–1159.

Heyes, C. (2016). Who knows? Metacognitive social learning strategies. *Trends in Cognitive Sciences, 20*(3), 204–213.

Hirst, W., & Echterhoff, G. (2008). Creating shared memories in conversation: Toward a psychology of collective memory. *Social Research, 75*(1), 183–216.

Hollingshead, A. B., Yoon, N. G. K., & Brandon, D. P. (2011). Transactive memory theory and teams: Past, present, and future. In E. Salas, S. M. Fiore, & M. Letsky (Eds.), *Theories of team cognition: Cross-disciplinary perspectives* (pp. 421–455). New York: Taylor and Francis.

Huebner, B. (2014). *Macrocognition: A theory of distributed minds and collective intentionality*. New York: Oxford University Press.

Huebner, B. (2016). Transactive memory reconstructed: Rethinking Wegner's research program. *Southern Journal of Philosophy, 54*(1), 48–69.

Hutchins, E. (1995). How a cockpit remembers its speeds. *Cognitive Science, 19*(3), 265–288.

Kirchhoff, M. (2016). Composition and transactive memory systems. *Philosophical Explorations, 19*(1), 59–77.

Klein, S. B. (2015). What memory is. *Wiley Interdisciplinary Reviews: Cognitive Science, 6*(1), 1–38.

Klein, S. B., & Nichols, S. (2012). Memory and the sense of personal identity. *Mind, 121*(483), 677–702.

Koriat, A. (2007). Metacognition and consciousness. In P. D. Zelazo, M. Moscovitch, & E. Thompson (Eds.), *The Cambridge handbook of consciousness* (pp. 289–325). Cambridge, UK: Cambridge University Press.

Krueger, J. (2014). Varieties of extended emotions. *Phenomenology and the Cognitive Sciences, 13*(4), 533–555.

List, C. (2018). What is it like to be a group agent? *Noûs, 52*(2), 295–319.

Loftus, E. F. (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. *Learning & Memory, 12*(4), 361–366.

Mace, J. H. (2007). Involuntary memory: Concept and theory. In J. H. Mace (Ed.), *Involuntary memory* (pp. 1–19). Malden: Blackwell.

Mahr, J. B., & Csibra, G. (2018). Why do we remember? The communicative function of episodic memory. *Behavioral and Brain Sciences, 41*, e1.

Malanowski, S. (2016). Is episodic memory uniquely human? Evaluating the episodic-like memory research program. *Synthese, 193*(5), 1433–1455.

Manier, D., & Hirst, W. (2008). A cognitive taxonomy of collective memories. In A. Erll, A. Nünning, & S. B. Young (Eds.), *Cultural memory studies: An international and interdisciplinary handbook* (pp. 253–262). Berlin: Walter de Gruyter.

Meade, M., Nokes, T. J., & Morrow, D. G. (2009). Expertise promotes facilitation on a collaborative memory task. *Memory, 17*(1), 39–48.

Michaelian, K. (2014). Review essay on Anastasio et al., Individual and collective memory consolidation: Analogous processes on different levels. *Memory Studies, 7*(2), 254–264.

Michaelian, K. (2016). *Mental time travel: Episodic memory and our knowledge of the personal past*. Cambridge, MA: MIT Press.

Michaelian, K., & Arango-Muñoz, S. (2018). Collaborative memory knowledge: A distributed reliabilist perspective. In M. Meade, C. B. Harris, P. Van Bergen, J. Sutton, & A. J. Barnier (Eds.), *Collaborative remembering: Theories, research, applications* (pp. 231–247). Oxford: Oxford University Press.

Michaelian, K., & Robins, S. (2018). Beyond the causal theory? Fifty years after Martin and Deutscher. In K. Michaelian, D. Debus, & D. Perrin (Eds.), *New directions in the philosophy of memory* (pp. 13–32). London/New York: Routledge.

Michaelian, K. & Sutton, J. (2017a). Memory. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*. http://plato.stanford.edu/entries/memory/

Michaelian, K., & Sutton, J. (2017b). Collective mental time travel: Remembering the past and imagining the future together. *Synthese*. https://doi.org/10.1007/s11229-017-1449-1

Michaelian, K., & Sutton, J. (2018). Collective memory. In M. Jankovic & K. Ludwig (Eds.), *The Routledge handbook of collective intentionality* (pp. 140–151). London/New York: Routledge.

Nelson, T. O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. *The Psychology of Learning and Motivation, 26*, 125–173.

O'Connor, T. & Wong, H. Y. (2015). Emergent properties. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*. https://plato.stanford.edu/entries/properties-emergent/

Olick, J. K., Vinitzky-Seroussi, V., & Levy, D. (2011). *The collective memory reader*. New York: Oxford University Press.

Perrin, D., & Rousset, S. (2014). The episodicity of memory. *Review of Philosophy and Psychology, 5*(3), 291–312.

Pettit, P. (2003). Groups with minds of their own. In F. Schmitt (Ed.), *Socializing metaphysics* (pp. 167–193). Lanham: Rowman & Littlefield.

Proust, J. (2013). *The philosophy of metacognition: Mental agency and self-awareness*. New York: Oxford University Press.

Rajaram, S., & Pereira-Pasarin, L. P. (2010). Collaborative memory: Cognitive research and theory. *Perspectives on Psychological Science, 5*(6), 649–663.

Reese, E., Haden, C. A., & Fivush, R. (1993). Mother-child conversations about the past: Relationships of style and memory over time. *Cognitive Development, 8*(4), 403–430.

Ren, Y., & Argote, L. (2011). Transactive memory systems 1985–2010: An integrative framework of key dimensions, antecedents, and consequences. *The Academy of Management Annals, 5*(1), 189–229.

Robins, S. K. (2016). Misremembering. *Philosophical Psychology, 29*(3), 432–447.

Roediger, H. L., & Abel, M. (2015). Collective memory: A new arena of cognitive study. *Trends in Cognitive Sciences, 19*(7), 359–361.

Schwitzgebel, E. (2015). If materialism is true, the United States is probably conscious. *Philosophical Studies, 172*(7), 1697–1721.

Shea, N., Boldt, A., Bang, D., Yeung, N., Heyes, C., & Frith, C. D. (2014). Supra-personal cognitive control and metacognition. *Trends in Cognitive Sciences, 18*(4), 186–193.

Stone, C. B., Coman, A., Brown, A. D., Koppel, J., & Hirst, W. (2012). Toward a science of silence: The consequences of leaving a memory unsaid. *Perspectives on Psychological Science, 7*(1), 39–53.

Suddendorf, T., & Corballis, M. C. (2007). The evolution of foresight: What is mental time travel, and is it unique to humans? *Behavioral and Brain Sciences, 30*(3), 299–313.

Sutton, J. (2008). Between individual and collective memory: Coordination, interaction, distribution. *Social Research, 75*(1), 23–48.

Szanto, T. (2014). How to share a mind: Reconsidering the group mind thesis. *Phenomenology and the Cognitive Sciences, 13*(1), 99–120.

Theiner, G. (2013). Transactive memory systems: A mechanistic analysis of emergent group memory. *Review of Philosophy and Psychology, 4*(1), 65–89.

Tulving, E. (1972). Episodic and semantic memory. In E. Tulving & W. Donaldson (Eds.), *Organization of memory* (pp. 381–402). New York: Academic Press.

Tulving, E. (1985). Memory and consciousness. *Canadian Psychology/Psychologie Canadienne, 26*(1), 1–12.

Wegner, D. M. (1987). Transactive memory: A contemporary analysis of the group mind. In B. Mullen & G. R. Goethals (Eds.), *Theories of group behavior* (pp. 185–208). New York: Springer.

Wegner, D. M., Giuliano, T., & Hertel, P. T. (1985). Cognitive interdependence in close relationships. In W. Ickes (Ed.), *Compatible and incompatible relationships*. New York: Springer.

Wegner, D. M., Erber, R., & Raymond, P. (1991). Transactive memory in close relationships. *Journal of Personality and Social Psychology, 61*(6), 923–929.

Weldon, M. S. (2000). Remembering as a social process. *Psychology of Learning and Motivation, 40*, 67–120.

Werning, M., & Cheng, S. (2017). Taxonomy and unity of memory. In S. Bernecker & K. Michaelian (Eds.), *The Routledge handbook of philosophy of memory* (pp. 7–20). London/New York: Routledge.

Wilson, R. A. (2005). Collective memory, group minds, and the extended mind thesis. *Cognitive Processing, 6*(4), 227–236.

Wimsatt, W. (1986). Forms of aggregativity. In A. Donagan, J. Perovich, N. Anthony, & M. V. Wedin (Eds.), *Human nature and natural knowledge* (pp. 259–291). Dordrecht: Springer.

Zahle, J., & Kaidesoja, T. (2019). Emergence in the social sciences. In S. Gibb, R. Findlay, & T. Lancaster (Eds.), *The Routledge handbook of emergence* (pp. 400–409). London/New York: Routledge.