

The narrative self, distributed memory, and evocative objects

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Abstract In this article, I outline various ways in which artifacts are interwoven with autobiographical memory systems and conceptualize what this implies for the self. I first sketch the narrative approach to the self, arguing that who we are as persons is essentially our (unfolding) life story, which, in turn, determines our present beliefs and desires, but also directs our future goals and actions. I then argue that our autobiographical memory is partly anchored in our embodied interactions with an ecology of artifacts in our environment. Lifelogs, photos, videos, journals, diaries, souvenirs, jewelry, books, works of art, and many other meaningful objects trigger and sometimes constitute emotionally laden autobiographical memories. Autobiographical memory is thus distributed across embodied agents and various environmental structures. To defend this claim, I draw on and integrate distributed cognition theory and empirical research in human-technology interaction. Based on this, I conclude that the self is neither defined by psychological states realized by the brain nor by biological states realized by the organism, but should be seen as a distributed and relational construct.

Keywords Autobiographical memory · Self · Narrative · Extended mind · Distributed cognition · Evocative objects · Transactive memory · Extended emotion

1 Introduction

In his book, *The Principles of Psychology*, William James (1890) argues that the human self is partly constituted by objects and other people. He writes:

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A man's Self is the sum of all that he can call his, not only his body and his psychic powers, but his clothes and his house, his wife and children, his ancestors and friends, his reputation and works, his lands, and yacht and bank-account. All these things give him the same emotions. If they wax and prosper, he feels triumphant; if they dwindle and die away, he feels cast down, not necessarily in the same degree for each thing, but in much the same way for all (1890, p. 291–292).

James thus argues that not only our embodiment and cognitive capacities, but also objects and other people are constitutive of the self because they cause emotions. In this essay, I advance a new perspective on this claim by developing the following argument. First, I argue that the self is essentially a narrative construct realized by autobiographical memory systems. Further, as James and more recently Richard Menary (2008) remind us, we construct our self-narratives out of embodied experiences. In this article, I extend Menary's view by arguing that not just our embodiment but also our embodied interactions with external artifacts and other persons are important for the narrative we develop. In other words, our narratives are embodied *and* distributed. Specifically, I argue that evocative objects (i.e., objects that are connected to past personal experiences) trigger and sometimes constitute emotionally-laden autobiographical memories. Based on these premises, I conclude that the self is partly constituted by the web of evocative objects in our lifeworld. I call this the *distributed self view* (Heersmink 2016). It provides an important alternative to traditional psychological (continuity) views (e.g., Shoemaker 1984) and animalist views of the self (e.g., Olson 1997), but at the same time recognizes that memory and embodiment are essential to selfhood.

The argument unfolds as follows. In Sect. 2, I outline the narrative approach to personal identity, mainly building on the work of Marya Schechtman. Her neo-Lockean view on personal identity emphasizes narrative as an important criterion of persistence of selfhood over time. On this view, a narrative is a subjective and personal story with of a series of connected events and experiences that are (essential to) the person. In Sect. 3, I analyze various ways in which artifacts transform and are interwoven with autobiographical memory systems. I do so by drawing on and integrating distributed cognition theory and empirical research on human-technology interaction. In Sect. 4, I conceptualize the implications of distributed autobiographical memory for the self. I argue that artifacts but also other people often afford continuity for our personal identity by providing a stable ecology of memory cues in our environment. Who we are as persons or selves thus depends on and is partly constituted by a distributed network of environmental structures.

2 The narrative self

In metaphysics, philosophers typically focus on necessary conditions for selfhood such as consciousness, self-awareness, cognitive agency, emotional capacities, and embodiment. So, to be a self or person, these conditions must be sufficiently satisfied. However, for the persistence of the self over time, other conditions must

be satisfied. This section outlines the narrative view as an approach to the persistence of the self (Schechtman 1996).

In his book, *An Essay Concerning Human Understanding*, John Locke defines a person as “a thinking intelligent being, that has reason and reflection, and can consider itself as itself, the same thinking thing, in different times and places” (1979, p. 335). On this definition, persons thus have certain cognitive and self-reflective capacities, but note that for Locke, persons are also persistent over time. This persistence does not depend on an immaterial soul or a material body, but on the continuation of consciousness. Locke writes: “Self is that conscious thinking thing (...), which is sensible, or conscious of pleasure and pain, capable of happiness or misery, and so is concerned for itself as far as that consciousness extends” (Locke 1979, p. 341). So, I am my past self only when my consciousness extends back to that past self. Conversely, when my consciousness does not extend back to that past self, then I am not that person, in which case there is no continuity of self. It is not entirely clear what Locke precisely means with consciousness extending back into the past, but it is usually interpreted as involving memory. So, I need to have specific memories of past experiences to be that past self who had those experiences. This view seems intuitively quite plausible, but has some undesirable consequences. Schechtman (2005) points out that it is both too weak and too strong. Consider a neurosurgeon implanting false memories into some person. Those implanted memories have clearly not been experienced by the person in question, but are on a Lockean view nonetheless seen as part of the person. Conversely, it also implies that experiences I did have, but, for whatever reason, cannot remember are not part of my self. Critics of Locke find these consequences unacceptable.

Neo-Lockean views try to improve Locke’s original insight. To deal with implanted memories, psychological continuity theorists argue that autobiographical memories must not only be remembered but also be caused by the actual experience. So, a causal connection between experience and the content of the memory is necessary for the memory to be part of one’s autobiographical memories. To deal with experiences I had but cannot remember, psychological continuity theorists argue that overlapping chains of memories are sufficient to establish continuity. So, for example, I may not remember the experiences I had when I was in elementary school, but when I was in high school, I did remember most of my elementary-school-experiences, when I was in university I remembered being a high school student, and so on. There may thus not be many direct memory connections to my deep past, but, such theorists claim, there *are* sufficient overlapping chains of memory to establish persistency of self over time. Furthermore, it is not just memory that is important for persistence of the self over time. The continuation of our beliefs, desires, values, and the connections between intentions and the actions performed at some latter time that realise those earlier intentions are also important for persistency of self over time (Schechtman 2005).

A drawback of Neo-Lockean views is that they conceptualize autobiographical memory as a storehouse or archive where specific episodes are stored and retrieved at some later point in their original format and content. Schechtman (1994) and Jens Brockmeier (2015) argue that human biological memory does not work like that.

We do not have many discrete and detailed copies of past events in our long-term autobiographical memory. Our memory is not like a film we can play back and watch in detail. We do, of course, have specific memories of past experiences, but they are typically neither discrete nor detailed. Most of our memories only contain the general gist of an event. We may, for instance, remember *that* we went to our PhD graduation ceremony and may have consolidated a few specific visual images and emotions of the event, but we certainly do not remember the entire event in detail. Schechtman's (1994) point is not that we do not have specific memories. Rather, we *also* create an overall narrative of our important life-experiences, implying that autobiographical memory is integrative and holistic rather than discrete and atomistic. Narrative theories of personal identity thus claim that autobiographical memories are integrated into a narrative structure, implying that our autobiography plays an important role in who we are. We summarize and condense important memories into a story about ourselves. Given the large amount of information that is constantly coming in, it makes sense to distill the self-relevant information and integrate that into a narrative structure. This is so because we have a strong human need for coherence of our temporal existence. Narratives provide this coherence.

What exactly is a self-narrative? Building on Hilde Lindemann (2001), Amy Kind (2015) outlines four properties that characterize a narrative structure. First, they are dynamic depictions of a series of past events. The events are usually, but not necessarily, depicted in chronological order. Second, the depicted events building up the narrative are chosen selectively. Someone's self-narrative is not a literal depiction of *all* past events, but can only contain a selection of representative and self-defining events. Third, a narrative is a subjective interpretation of a series of events, usually from a first-person perspective. Given that human interpretation is indeed subjective, narratives are not always depicting events as they happened. Two persons may, for example, have different interpretations of the same event. Fourth, a narrative is connective. The events and experiences that are the building blocks of the narrative are connected not just temporally but also causally. This is usually referred to as *emplotment*, where meaningful relations between memories are made. Typically, this occurs through the agency of the person who is creating the narrative. The degree of agency over the contents of the narrative are limited. Events and experiences sometimes happen to us. Most humans do not have a great deal of control over events in their environment and so also have limited control over the content of their narrative. They do, however, have control over shaping the relations between the memories. In sum, a self-narrative is a subjective and personal story with of a series of connected events and experiences that are (essential to) the person.

Finally, it is not just the web of autobiographical memories that are relevant for the self. A narrative is seen by the person as part of an unfolding trajectory of which the person is largely (or perhaps only partly) the author. The present situation logically follows from past events and is used to anticipate the future. Who we are as persons is not only constituted by the past but also by being future-orientated. Our goals about the future deeply shape who we are in the present. "The past should not only be remembered; it should help to explain the present, which in turn should

help to predict the future” (Schechtman 2005, p. 20). So, a narrative not only gives structure and coherence, but also directedness to one’s self. New experiences are interpreted against the background of the self-narrative which gives those experiences meaning. I am largely in agreement with Schechtman’s narrative self view, but one drawback is that it does not consider the role of emotions. A narrative is not a mere objective, neutral description of a series of connected events and experiences. Rather, the autobiographical memories that build up the narrative often have an emotional component. So, to have a fuller picture of the relation between memory and self, we must also take into account emotions. Below I explore how objects trigger and sometimes constitute emotionally-laden autobiographical memories.

3 Situated cognition

Having outlined the narrative approach to the self, the next step in the argument is to make clear that autobiographical memory is often scaffolded by and interwoven with artifacts and other persons. I do so by drawing on situated cognition theory, which is a cluster of views, emphasizing the embodied, embedded, extended, distributed, and transactive nature of cognition (Robbins and Aydede 2008). Although some situated cognition theorists take these as a package deal, there are some important differences between these views. Two key differences are (1) the size and type of components of the unit of analysis and (2) whether cognition is merely embedded or genuinely extended and distributed.

Some theorists focus on systems comprising of a single embodied agent interacting with an artifact, for example Otto (a man with Alzheimer’s disease) using a notebook to complement his deteriorating biological memory (Clark and Chalmers 1998). Others focus on larger systems comprising of various embodied agents interacting with several artifacts, for example a team of navigators on a ship interacting with navigational instruments (Hutchins 1995a) or pilots interacting with cockpit equipment (Hutchins 1995b). Yet others focus on systems comprising of embodied agents without using artifacts such as dyads (Wegner 1986; Sutton et al. 2010) or larger groups (Theiner 2013). The size of the unit of analysis and the amount and type of components involved in the larger situated cognitive system has methodological implications. Generally, the larger the system, the more effort it takes to observe and study. Small-scale systems can be observed both in the laboratory and in the wild. Large-scale systems are typically only observed in the wild and thus require ethnographic methods.

Some philosophers claim that the relations between the components in situated cognitive systems are merely causal (Adams and Aizawa 2001; Rupert 2004), whereas others argue that these relations are constitutive (Clark and Chalmers 1998, Hutchins 1995a, b; Menary 2007; Sutton 2010; Wheeler 2011). The constitutive claim is ontologically much more demanding than the causal claim and has generated substantial debate. In Sect. 3.2, I get back to the embedded versus extended debate in relation to autobiographical memory and present a practical solution to the problem. Despite their conceptual and methodological differences,

what all these approaches have in common is that they focus on our embodied interactions with the social and material environment, in that way providing an important alternative to neurocentric and individualist views on cognition. Thus, to better understand cognition and memory, we should enlarge the unit of analysis and take an interactionist approach.

3.1 Situated memory

Artifacts scaffold, transform, and are interwoven with human biological memory systems (Michaelian and Sutton 2013). The paradigm cases in situated cognition theory mainly focus on the way artifacts scaffold working memory, prospective memory, and semantic memory. Examples include remembering with a knotted cord (Rowlands 1999), making a calculation with pen and paper (McClelland et al. 1986; Clark 1989), Otto's and his notebook (Clark and Chalmers 1998), navigating with a map or GPS system (Rowlands 2010), bartenders ordering drink glasses (Beach 1988), and pilots interacting with cockpit equipment (Hutchins 1995b). In these examples, information is usually first offloaded onto an artifact and then used to scaffold some practical cognitive task involving memory. Scaffolded autobiographical remembering seems to be largely ignored in the situated cognition literature. By contrast, autobiographical memory does play a large role in transactive memory theory (Wegner 1986; Sutton et al. 2010; Theiner 2013). However, transactive memory theory typically does not focus on artifacts, but on socially distributed memory in dyads or larger social groups. The relation between autobiographical memory and artifacts is thus underexplored in situated cognition theory. One of the goals of this article is to further explore this relation by introducing empirical research on human-technology interaction to situated cognition theory.

Before moving on to outlining various ways artifacts scaffold autobiographical memory, let me first briefly describe how transactive memory works. Autobiographical remembering often takes place in transactive memory systems. In such transactive systems, memory is socially distributed across the members of a group (Sutton et al. 2010). Celia Harris et al. (2010) describe a striking example of how transactive memory works. A long-married couple tries to recall the name of the show they saw on their honeymoon more than 40 years ago. Neither of them initially knows the name of the show, but by interactively cuing, they construct the answer together. Memory here is an emergent property that cannot be reduced to its individual constituents.

Wife: And we went to two shows, can you remember what they were called?
 Husband: We did. One was a musical, or were they both? I don't ... no ... one ...
 Wife: John Hanson was in it
 Husband: Desert Song
 Wife: Desert Song, that's it, I couldn't remember what it was called, but yes, I knew John Hanson was in it
 Husband: Yes

Autobiographical remembering often takes place not just in dyads, but also in families, sports teams, a group of colleagues, and a group of friends, because members of such groups often have many shared experiences. Artifacts, too, play an important role in autobiographical memory (van Dijck 2007; van den Hoven 2014). Personal objects such as souvenirs, clothing, furniture, CDs, DVDs, books, letters, musical instruments, works of art, and various other objects are often connected to specific personal experiences or specific episodes from one's past. Sherry Turkle refers to such objects as *evocative objects*, which, she writes, are typically "experienced as part of the self, and for that reason have a special status" (2007, p. 7). Turkle's (2007) edited book contains short personal stories of designers, researchers, and artists who reflect upon their favorite evocative object. Examples include a cello, ballet slippers, a laptop, a silver pin, a suitcase, a painting, an old analogue camera, a car, and various other artifacts.

In virtue of which informational properties can such objects connect us to our past? To better understand the causally relevant informational properties of evocative objects, it is helpful to start by introducing a distinction between three types of representations, namely, icons, indices, and symbols (Peirce 1935). Icons such as photos, videos, or drawings display a relevant isomorphism to their target. Indices such as thermometers and scales have a direct causal connection to what they represent. If the target system changes, say, temperature, then the index automatically changes as well. Symbols such as words and numbers obtain their representational function through shared use, social agreement, and logical rules.

Some evocative objects clearly have representational properties; for example, photos or videos of important (life) events, journal entries, letters, and drawings. But evocative objects need not exhibit iconic, indexical or symbolic properties in the Peircean sense. Souvenirs, clothing, furniture, or coffee mugs, for example, do not exhibit presentational properties. In their empirical work on evocative objects, Daniela Petrelli, Steve Whittaker, and Jens Brockmeier examined what types of objects trigger autobiographical memories. They found that "Everyday objects become mementos by virtue of what the owner has invested in them, be it time or emotion. Thus, it is not usually the physical characteristics of the objects that make them biographical, but the meaning imputed to them as significant personal possessions" (2008, p. 56). I am sympathetic to their view, but it seems to me that those physical non-representational properties of objects such as their shape, color, size, and perhaps their aesthetic properties, do make them autobiographical. Only *that* specific object with those properties can evoke *that* specific memory. Our embodied-perceptual experiences of those properties seem highly relevant. Their view seems individualist and perhaps gives too much credit to the internal, isolated human mind. Compare media theorist José van Dijck when she writes: "Mediated memories can be located neither strictly in the brain nor wholly outside in (material) culture but exist in both concurrently, for they are complex manifestations of a complex interaction between brain, material objects, and the cultural matrix from which they arise" (van Dijck 2007, p. 28). On her view, memory is thus the result of interactions between humans and objects, which seems a more plausible view to me and is more consistent with the view I develop in this paper.

Also, non-representational evocative objects potentially have different effects on their user as compared to representational objects, because they leave more room for interpretation. A photo or video of a past holiday exactly shows what a certain event was like, but a souvenir of the same holiday has no isomorphism to a past event and so provides more room to the imagination of the user. Luciano Floridi points out that external memory as it relates to narrative identity also has limiting factors. He writes: “The more memories we accumulate and externalise, the more narrative constraints we provide for the construction and development of personal identities. Increasing our memories means decreasing the degree of freedom we might enjoy in defining ourselves” (2011, p. 562). But for reconstructive purposes, non-representational evocative objects provide more freedom in creating our narrative. Furthermore, our emotional and cognitive responses to evocative objects are not constant over time. It is not the case that an object causes the exact same response each time we interact with it (van Dijck 2007). Memories stored in the brain are subject to change and are reconstructed each time they are retrieved. So, over time, our autobiographical memories (slightly) change, which implies that the cognitive effects of evocative objects also change over time. To draw some of the previous discussion together; I define evocative objects as physical objects or structures that in virtue of representational or non-representational properties evoke autobiographical memories. The autobiographical function need not be the object’s primary or intended function. A cello, for example, has as its primary function to make music, but may have as a secondary and perhaps unintended function to remind its owner of past experiences (Heersmink and Carter 2017).

The web of evocative objects has been referred to as an *autotopography*, i.e., a topography of the self. “Just as a written autobiography is a series of narrated events, fantasies, and identification, so too an autotopography forms a spatial representation of important relations, emotional ties, and past events” (Gonzalez 1995, p. 139). An autotopography can exist in many forms and is highly idiosyncratic. It can be “a careful, visual arrangement of mementos and heirlooms, on the one hand, and a jumbled, hidden assembly of dusty and unkempt objects, on the other, can both constitute a material memory landscape” (Gonzalez 1995, p. 139). The notion of an autotopography is person-centered. Evocative objects can indeed be meaningful to a single person, but they can also be embedded within a larger transactive memory system involving more than one person. A holiday souvenir, photo album or video, for example, may be meaningful to all the family members who participated in that holiday. Such objects may collectively remind the family about their shared experiences and might generate conversations about past experiences. There are thus also *grouptopographies*, i.e., shared material memory landscapes of dyads or larger groups.

New autobiographical memory technologies are now emerging referred to as lifelogging or self-tracking technologies, allowing an agent to monitor and record a variety of bodily, cognitive, and emotional variables. These include heart rate, body temperature, weight, dietary intake, sleep patterns, GPS locations, but also social interactions on the internet, emails, text messages, and allow one to take photos and videos. Most of these variables can be recorded with a smartphone that typically have sensors such as GPS, digital compass, gyroscope, and accelerometer. More

advanced smart phones also have sensors to record heart rate, body temperature, humidity, and altitude. Such advanced sensors, software, and the hundreds of self-tracking apps allow one to create an elaborate and detailed database about one's life, which is often referred to as a lifelog (Smart et al. 2017). An important lifelogging technology are SenseCams, which are small wearable cameras worn around one's neck. The wide-angle camera takes a picture when its internal sensors detect a change in movement, GPS-location or light intensity, resulting in a visual narrative of one's daily activities. Sociologist Deborah Lupton points out that "The personal data that are collected using self-tracking devices—photographs, videos, messages, interactions on social media, calendar entries, geolocation information, bodily functions and activities—become a biographical repository of significance and meaning to the user" (2016, p. 72).

A striking example of lifelogging is the MyLifeBits project of Gordon Bell developed at Microsoft. In their co-authored book, *Total Recall*, Bell and Jim Gemmell write that an elaborate and detailed lifelog allows one to "become the librarian, archivist, cartographer, and curator of your life" (2009, p. 5). So, according to them, a lifelog not only gives one more control over one's life, but also gives one enhanced self-insight, and allows one to remember less and think more creatively. Bell's digital lifelog contains photos, videos, webpages, GPS-based locations, letters, memos, receipts, legal documents, business cards, meeting agendas, symposium programs, diplomas, employee evaluations, newspaper clippings, childhood drawings, birth certificates, and much more. Based on various metadata, he and his colleagues developed advanced software to search the lifelog, allowing easy and effective retrieval of information. Bell has thus centralized and digitalized his autotopography into an all-encompassing and easy accessible lifelog. A noteworthy example he mentions is a blanked he inherited from his grandmother. Bell says he will soon give the blanked to his son and then take a high-resolution photo of it and upload that into his lifelog. He writes "I've discovered that I derive more pleasure from them in digital form. While I'm enjoying my e-memories, most people's physical mementos gather dust in an attic" (2009, p. 138). So, a digitalized evocative object is, on Bell's view, more enjoyable and useful. Bell and Gemmell predict that lifelogs "will become vital to our episodic memory. As you live your life, your personal devices will capture whatever you decide to record. Bio-memories fade, vanish, merge, and mutate with time, but your digital memories are unchanging" (Bell and Gemmell 2009, p. 57). Their ambitious approach thus aims to overcome the weaknesses of human biological memory.

Bell's approach to lifelogging aims to capture as many of his daily activities as possible, exemplified by his slogans "total recall" and "total capture". However, from a narrative perspective on the self, total capture seems too course-grained. Our narrative is not a complete story of all our past experiences, but only a highly selective set of self-defining autobiographical memories integrated into a meaningful story. A lifelog should support that narrative with content such as photos, videos, descriptions, certificates, and so on. A successful example of this approach is developed by Masashi Crete-Nishihata et al. (2012). They developed a "multimedia biography" for twelve people with mild cognitive impairment or Alzheimer's disease. These multimedia biographies included photos, home movies, documents,

letters, music, and narration compiled into a 15–60 min digital video representing a person's life story. The video has a number of acts representing life stages such as adolescence, marriage, career, and hobbies, which are told chronologically. The researchers show that lifelogs can have beneficial effects for autobiographical memory and consequently also for their self. Moreover, the total capture approach to lifelogging is motivated by the view that memory is like an archive. On such a view, we should try to develop a complete external archive (visual or otherwise) of our past events. However, as outlined above, human memory is not like an archive. An archive-like view on memory is evolutionarily implausible as there is too much information coming in and there is no need to store everything we experience in detail. So, if one's aim is to create a lifelog which successfully supports one's narrative, it should be selective.

3.2 Embedded or extended autobiographical memory?

An important question is whether evocative objects merely scaffold or are genuinely constitutive of memory. First-wave extended mind theory, as developed by Clark and Chalmers (1998) and Mike Wheeler (2011), focusses on course-grained functional parity between an internal and external resource, as well as on the “trust and glue” conditions of constancy, reliability, trust, and past endorsement. Thus, only when an external resource exhibits functional parity with an internal cognitive resource and is constantly available, reliable, trustworthy and endorsed in the past, is the resource part of an extended cognitive system. However, functional parity between an internal and external resource has been questioned as a criterion for membership of an extended cognitive system (Menary 2007; Sutton 2010). In case of memories, for example, external memories are typically static and do not show the regency and primacy effect, whereas internal memories are automatically updated based on new incoming information and are much more dynamic and holistic. There are thus important functional differences between internal and external memories.

For this reason, John Sutton (2010) has identified and articulated an alternative route to extended cognition. This is referred to as second-wave extended mind theory, focusing on *complementarity* between internal and external resources and on the degree of integration between the two (Menary 2007; Sutton 2010). On a complementarity view, artifacts need not exhibit similar properties as internal states and processes, but complement the internal with *different* properties and functions. Complementing brain functions is often the point of using cognitive artifacts, that is, such that they can perform functions the brain cannot do or cannot do well. For example, the unaided brain is good at pattern recognition and completion, but not at visualizing complex structures in mental imagery. For this reason, scientists often create physical or virtual models of the target system they are studying. A key example here is Watson and Crick building a physical model of the structure of DNA. The informational properties and affordances of the model complement the pattern recognition and completion powers of the human brain.

Further developing complementarity-based extended mind theory, Heersmink (2015) proposes a multidimensional framework to conceptualize the degree of

cognitive integration between agents and artifacts (see also Wilson and Clark 2009; Sterelny 2010; Sutton et al. 2010). These dimensions include the intensity of information flow, accessibility of the resource, durability of the relation between agent and artifact, trustworthiness of the information the artifact contains, procedural transparency or ease of use, informational transparency, the degree of individualization, and the degree of transformation. All these dimensions are matters of degree and the higher a given agent-artifact system ranks on these dimensions the deeper the two are integrated and the more likely it is that they form an extended cognitive system. This framework provides a novel perspective on the conditions of cognitive extension and offers a more practical solution to the metaphysical question of constitution. On this view, constitution and membership to extended cognitive systems is not seen in terms of necessary and sufficient conditions. Rather, it outlines a conceptual space in which the complexity of both embedded and extended cognitive systems can be explored (see also Skorburg 2017). Systems ranking high on most key dimensions are typically deeply integrated and good candidates for extended cognitive systems. Whereas systems ranking low on most key dimensions are usually not deeply integrated and thus candidates for embedded cognitive systems. However, it is not always easy or even possible to clearly demarcate between the embedded and extended cases. Because relations between agents and artifacts can vary along many dimensions and are thus quite complex, there is a grey area in between the paradigm cases of embedded and extended systems in which it may not always be clear whether a system is embedded or extended.

Further, this framework is developed to conceptualize the degree of integration between agents and artifacts when performing some practical cognitive task such as navigating, calculating, or problem-solving. It therefore mainly describes the functional integration between agents and artifacts. This is important because, as Wilson and Clark point out, “the right kind of coupling (one resulting in deep functional integration) is a major part of what determines the scope and bounds of an agent’s cognitive apparatus” (2009, p. 71). In the paradigm cases of deeply integrated cognitive systems, there is typically (though not necessarily) reciprocal information flow between agent and artifact. This happens, for example, when making a calculation with pen and paper, writing a text, re-arranging letter tiles when playing Scrabble, sketching some structure, or making a PowerPoint presentation. These are all tasks involving problem-solving to achieve some practical goal.

However, in case of autobiographical remembering with the aid of evocative objects, there is often no practical goal involved, other than reminiscing. Therefore, in relation to autobiographical memory, we should add a dimension to the framework, namely a dimension of autobiographical dependency. We often depend, to varying degrees, on evocative objects to be able to remember some past event or experience. If the object would not be available, then we would not think about the past event it represents. As with the other dimensions, dependency is a matter of degree. In some cases, we do not need the object at all to be able to have an autobiographical memory. But in other cases—for example when an event is deeper in our past or is perhaps less strongly consolidated—we depend more on the object

to be able to evoke an autobiographical memory. On one extreme of this spectrum of dependency is an Alzheimer's patient who needs the object to be able to remember the past. For such a patient, the object is necessary to be able to have certain memories.

How deeply are evocative objects integrated into the autobiographical memory systems of their users? Some evocative objects clearly are not deeply integrated into the cognitive systems of their users. Memorabilia stored away in a box in the attic are rarely interacted with and so rank very low on intensity of information flow, accessibility, and transformation. They may, however, rank high on autobiographical dependency, in which case they also rank higher on overall integration. Other evocative objects such as lifelogs rank much higher on most dimensions. They contain a lot of biographical information, are interacted with more often, and are used for a variety of tasks. Lifelogs seem to play a much more important role for autobiographical memory and in the cognitive lives of their users more generally (Clowes 2015); they therefore rank much higher on all dimensions and are therefore much deeper integrated with the cognitive systems of their users. This is particularly the case when the lifelog is used to compensate deteriorating memory systems. Commenting on the effects of lifelogs for patients with Alzheimer's disease, Crete-Nishihata et al. (2012) write that "family members and participants perceived the multimedia biographies as a *means for preserving the personhood* of their loved one..." (2012, p. 101, italics added). In such cases, the dependency is very high. For this reason, the object is deeply integrated, part of one's autobiographical memory, and, as Crete-Nishihata et al. point out, also part of one's personhood (for more discussion see Heersmink 2016).

So, some components of our autotopography are mere triggers to biomemory, whereas other components are constitutive parts of one's autobiographical memory systems. It is important to note, however, that even the objects that are not deeply integrated can still play key roles in one's memory and self. It is conceptually useful to better understand the causal-constitutive issue, but we should not ignore objects that are not constitutive of memory.

3.3 Embedded or extended emotion?

The examples presented above make clear that human autobiographical memory is scaffolded by and interwoven with a variety of artifacts and other people. I now argue that to have a fuller picture of the relation between human cognition and artifacts, we also need to consider how artifacts influence emotions. Emotion has only recently received attention from situated cognition theorists (Griffiths and Scarantino 2009; Huebner 2011; Slaby 2014; Krueger 2014; Stephan Walter and Wilutzky 2014; Colombetti and Roberts 2015; Carter Gordon and Palermos 2016). Traditionally, emotion is conceptualized as a purely internal and individualist phenomenon. Most emotion theorists and psychologists focus on emotion as brain-based affective states and processes. However, Paul Griffiths and Andrea Scarantino point out that "Emotion is a form of skillful engagement with the social environment that involves a dynamic process of negotiation mediated by reciprocal feedback between emoter and interactants" (2009, p. 443). Griffiths and Scarantino

focus on emotional aspects of inter-personal interactions. But, as I will argue below, artifacts also have a strong emotional significance for humans.

Whether emotion is embedded (i.e., causal) or extended/distributed (i.e., constitutive) is an important question. Griffiths and Scarantino remain neutral to this topic. They make clear that a situated approach to emotion invites us to shift the focus from internal and individualist concepts of emotion to our embodied interactions with both the social and material environment. So, on their view, the payoff of a situated approach to emotion is methodological, not metaphysical. By contrast, in an article published in this journal, Colombetti and Roberts (2015) argue that emotions *can* be extended into the environment. They start with outlining the realm of the affective, which, on their view, includes emotions, moods, sentiments, temperaments, and certain character traits. Paradigmatic emotions include fear, anger, sadness, hope, shame, joy, and contempt. Moods include having the blues, being grumpy, and feeling anxious. Sentiments are tendencies to feel a variety of different emotions. Temperaments are tendencies to have certain moods such as being cheerful, being prickly, and being melancholic. Character traits, finally, are dispositions to evaluate and affectively respond to events in a certain way. Examples are being optimistic, friendly, loyal, modest, cruel, and courteous. Note that affective states, processes and dispositions may sometimes be grouped into more than one of those categories. These categories are neither meant to be exhaustive nor mutually exclusive.

Drawing on Clark and Chalmers' (1998) parity principle and "trust and glue" conditions, Colombetti and Roberts argue in favor of extended non-occurrent affective states. Thus, when Eve writes in her diary that she resents her parents, that information is "part of the supervenience base of the system that realizes her standing, dispositional resentment towards her parents" (2015, p. 1253). Another example they give is wearing the wedding ring of a deceased partner. "If sentiments are dispositions to be attached to certain objects, including people, then the deceased spouse's ring in this example ought to be seen as a proper part of the vehicles that instantiate the sentiment of love toward a specific person" (2015, p. 1254). I am sympathetic to Colombetti and Roberts' view and to the idea of extended emotion more generally, but perhaps, in case of evocative objects like diaries and wedding rings of deceased partners, it is not emotion in and of itself, but emotionally-laden autobiographical memories that are extended. Peter Goldie developed a view on memory, narrative, and emotion, arguing that emotion is in some cases part of the content of the memory and narrative. He writes: "It is not as though there is, first, a completed narrative, and then, second, an evaluation and emotional response to the narrative; rather, the evaluation and emotional response themselves infuse the narrative, shaping and colouring it" (Goldie, 2012 p. 11). On Goldie's view, it is difficult to disentangle the emotional and informational components of memories and narratives. So, when specific autobiographical memories with an emotional component are extended, emotion seems to be extended as well. However, not all autobiographical memories have an emotional component. When that is the case, emotion is not extended.

4 Distributed narratives

In the previous section, I argued that emotionally laden autobiographical memories are scaffolded by and interwoven with external artifacts. What are the implications of this view for our personal identity? Menary (2008) argues that our specific embodiment is important for the narratives we develop (for discussion see Mackenzie 2014; Jongepier 2016; K ster 2016), in that way bringing together embodied cognition theory and the narrative approach to the self. He writes: “Our embodied experiences, perceptions and actions are all prior to the narrative sense of self, indeed our narratives are structured by the sequence of embodied experiences” (2008, p. 75). Narrative theorists such as Schechtman have not paid a great deal of attention to the role of embodiment for generating our narratives. Menary, however, emphasizes that our narratives are anchored in our embodiment, that is, narratives arise directly from our lived experience as embodied subjects. We first have embodied experiences which we then integrate into our overall narrative. In an important sense, the content or building blocks of our narrative are first-person embodied experiences. On this view, we do not just have *narratives* but we have *embodied narratives*. In this section, I want to extend Menary’s view by arguing that not just our embodiment but also our embodied interactions with external artifacts and other persons are important for our narrative. In other words, our narratives are embodied *and* distributed.

4.1 Evocative objects and self

I start by outlining some of the empirical research on evocative objects. Petrelli et al. (2008) conducted field studies in people’s homes in which participants gave an interviewer a tour through their homes describing how and why particular objects are biographically meaningful. One participant says about her mug:

I feel very emotionally attached to it for some reason. (...) I bought it in London, when I was working in London. I think it is the memory of working in publishing, living in London and going through a sort of fulfilling patch in my career. (...) Also, I associate it with buying my first house. (...) So, it is an object of continuity because I think I must have had it for... Ohh... let me think, I probably had it for nearly 20 years (2008, p. 56).

This quote not only shows that an artifact provides connections to emotionally-laden past events and episodes, but that it can do so for a long period, providing long-term stable connections to past experiences. Interestingly, what Petrelli, Whittaker and Brockmeier found is that most evocative objects relate to the recent past, that is, the last ten years or so. The objects that do relate to the deep past, for example childhood, are typically not placed in central locations in the home. The researchers point out that objects refer to various aspects of the past. First, relationships with other people; for example, a photo of someone, a gift received from a friend, or a sculpture made during an art class that both partners attended. Second, personal reminiscence; for example, childhood memorabilia, tools for

hobbies such as an old camera, or objects indicating achievements such as medals, awards, and certificates. Third, past events; for example, photos and souvenirs of holidays. Note that these three aspects are neither meant to be exhaustive nor mutually exclusive.

Surprisingly, objects that are most emotionally significant are often stored away in boxes. Such boxes then function as time capsules and when rediscovered “a whole past world is opened and the owner is thrown back in time, deeply immersed in reminiscing” (Petrelli et al. 2008, p. 60). One example Petrelli and Whittaker (2010) mention is a box given to a participant by her mother filled with personal objects such as photos of her grandmother, her grandmother’s sewing kit, her uncle’s wooden carvings, and other old family things. The participant says: “It is like a little corner of a part of my life” (Petrelli and Whittaker 2010, p. 161). However, the objects that participants talked about most frequently are deliberately placed in plain view. A participant says: “The study is not a place where I would put my memories because I rarely come in here and when I do it is because I need to work” (Petrelli and Whittaker 2010, p. 161–162). The living room is thus a more important place for evocative objects. Petrelli and Whittaker therefore distinguish between active and passive objects. Active evocative objects are placed in prominent and easily visible places usually in the living room, whereas passive objects are stored away in boxes and are not often interacted with. In terms of cognitive integration, active objects seem integrated deeper into the memories of their users than passive objects. Reflecting on their empirical work, Petrelli and Whittaker write “Recollecting our lives makes use of both physical and narrative aspects: mementos mark events, while the narrative plot organises these scattered points” (2010, p. 154). Their view seems exactly right to me: evocative objects and narratives complement each other. Our embodied interactions with evocative objects trigger and sometimes constitute emotionally-laden autobiographical memories, which are the building blocks of our narrative. Our narrative, in turn, helps to make sense of our autotopography. Objects and narratives are thus interwoven. Also, evocative objects stabilize and extend autobiographical memory, but the narrative construction is done by the agent.

Much of the empirical research has been done in people’s homes as that is where we keep most of our evocative objects. Other places, however, may also include evocative objects. People’s work-environments, say, an office, may contain personal objects such as photos, drawings, mugs, books, certificates, and so on. Evocative objects may even be in public space. Monuments, buildings, perhaps even locations such as a park or a city square may evoke emotionally-laden autobiographical memories. Monuments are particularly relevant as their intended function is, both to individually and collectively, commemorate a person or event. Although it may not always be autobiographical, monuments and the cultural practices related to them can be relevant for one’s personal identity, but also for one’s cultural identity (Osborne 2001). The relation between personal identity, cultural identity, and collective memory seems a fruitful area for future exploration (Wilson and Lenart 2014). Furthermore, there is a large variety in the kinds of distributed selves. Some people keep a lot of evocative objects, whereas others very few. Some people interact with their evocative objects frequently, whereas others do not. Some people

have a lifelog, whereas others do not. This may depend on age, gender, personality, education, cognitive profile, socio-cultural background, and other variables. We all have different autotopographies supporting different narratives. Further conceptual and empirical research should study and map such differences.

Up to this point, the emphasis has been on artifacts and distributed selves, but selves can also be socially distributed. Schechtman emphasizes the first-personal nature of narratives. Self-narratives are experienced from one's own perspective and the person in question is typically the protagonist in the narrative. Lindemann (2001), however, argues that third-personal narratives can play an important role in one's personal identity, too. She argues that how others see us can influence our self-narrative. If, for example, other people have a negative view on some of my capabilities, it may influence how I see those capabilities, even if the views of others are incorrect. Lindemann's view puts open the door to socially distributed narratives (see also Wilson and Lenart 2014). This point can be further developed by drawing on transactive memory theory, as some of the autobiographical memories that build up my narrative can be stored in other people's brains. The Desert Song example presented in Sect. 3, shows that close partners scaffold each other's autobiographical memory. Autobiographical memories may thus be scaffolded by objects and other people.

4.2 Soft selves

Some situated cognition theorists argue that the human self is essentially a soft self. Clark, for example, claims that "our best tools and technologies literally become us: the human self emerges as a soft self, a constantly negotiable collection of resources easily able to straddle and criss-cross the boundaries between biology and artifact" (2007, p 278). Clark here is mainly talking about tools that are incorporated into the body schema, which is a subpersonal representation of the body's size and position in space. Subjectively, such tools are then experienced as transparent extensions of our perceptual-motor system. Phenomenologist Don Ihde (1990) refers to this as an *embodiment relation*. Ihde argues that in such cases, the technology becomes part of the machinery that experiences the world, in that way mediating the relation between agent and world. A key example here is a blind person using a cane to sense the environment (Merleau-Ponty 1965). The cane withdraws from attention and is absorbed into its user's body schema. When that happens, there is a "symbiosis between artifact and user within human action" (Ihde 1990, p. 73). The system we call an agent or person ends at the cane-environment interface, not at the agent-cane interface. Lambros Malafouris (2008) uses this kind of reasoning to argue for an extended self. Drawing on research in archeology, phenomenology, and neuroscience, he argues that certain body ornaments extend the self. I agree with Clark, Ihde, and Malafouris. I think the phenomenology of tool-use is one route to showing that our self is fluent and open to incorporate objects. But, as I argue in this article, I think it applies more broadly. Human selves are open as to incorporate objects and artifacts, not just in our body schemas, but also in our autobiographical memories and narrative selves. And, importantly, it is not just objects, but also other people that are incorporated into our selves.

Lynne Rudder Baker (2009) argues that if our self is a changing combination of biological, psychological, and technological components, then there cannot be continuity over time. However, contrary to her view, I think evocative objects can, in some cases, provide continuity for our self. The above example of the mug that has been kept and used for almost 20 years shows that objects can actually provide long-term stability for autobiographical memory. And because such memories are the building blocks of narratives, they indirectly also provide stability for our narrative self. The narrative—especially emplotment (i.e., creating and shaping the relations between memories) and remembering experiences—establish continuity. The objects and memories themselves are fragments until they are given coherence by emplotment into a narrative form. The objects themselves are scaffolding the memories that provide the raw material for the narrative which provides the continuity.

A critic might argue that even if we are isolated from all our objects and other people such that there is no material and social scaffolding of memory, there remains a core self. This self may be rather diminished and may have a much less detailed and stable narrative, but still has a narrative. I agree with this view. My claim in this article is neither normative (I am not saying that selves ought to be distributed), nor is my claim metaphysical (I am not saying that selves are necessarily distributed). Given our technological and social lifeworld, it happens that our narratives are interwoven with objects and other people, but non-distributed selves seem logically and metaphysically possible. Likewise, in extended mind theory the consensus is that cognition sometimes extends (under certain conditions), but certainly not always. We also have internally realized cognitive states and processes.

Finally, the view developed in this paper implies that when we lose our homes and the evocative objects in it, we lose part of our memory and identity. Daniel Dennett therefore writes that when you take Alzheimer's patients "out of their homes is literally separating them from large parts of their minds" (Dennett 1996, p. 138). Recently, an interesting initiative has been developed to counter this deterioration of memory and self. The Old Town Museum in Aarhus, Denmark, has a room with objects and furniture from the 1950s called the "House of Memories". It is not open to the public but is meant for Alzheimer's patients who live in a daycare center nearby to help them reminisce about their past. To optimize historical authenticity, the patients are welcomed by someone dressed in traditional 1950s Danish clothes. The patients are encouraged to interact with the objects and to talk about their past with a caregiver. Although this won't give such patients back their full memory and restore their sense of self, it seems a very promising way to help deal with loss of self through Alzheimer's disease. It is, however, not only Alzheimer's patients who sometimes suffer from a diminished sense of self through loss of evocative objects. We all occasionally suffer from loss of objects for all kinds of reasons, which has implications for memory, emotion, and self. Let me end this paper by going back to the original insight of James (1890) with which this paper began. James writes:

Although it is true that a part of our depression at the loss of possessions is due to our feeling that we must now go without certain goods that we expected the possessions to bring in their train, yet in every case there remains, over and above this, a sense of the shrinkage of our personality, a partial conversion of ourselves to nothingness, which is a psychological phenomenon by itself (1890, p. 293).

A loss of evocative objects can thus result in a reduction of our sense of self, accompanied with psychological and emotional consequences. This gives such objects a distinct ontological status, which has important normative implications. If objects partly constitute who we are, then those objects ought not be interfered with (Heersmink 2016). As Dennett pointed out, this seems particularly the case for patients with memory disorders, but it applies to all of us.

5 Conclusion

Our autotopography, that is, the network of evocative objects in which we are embedded, provides stability and continuity for our autobiographical memory and narrative self. By interacting with these objects, we construct and reconstruct our past and by doing so also our personal identity. Objects and narratives complement each other. Our embodied interactions with evocative objects trigger and sometimes constitutive emotionally-laden autobiographical memories, which are the building blocks of our narrative. Our narrative, in turn, helps to make sense of our autotopography. This happens individually (where objects are only meaningful to single persons), but also collectively (where objects become part of a transactive memory system). On my view, evocative objects stabilize and extend memory, but the narrative construction is done by the agent. An important conclusion of this paper is thus that our narrative is partly anchored in our embodied interactions with an ecology of artifacts in our lifeworld. For this reason, personal identity is neither defined by psychological states realized by the brain nor by biological states realized by the organism, but should be seen as a distributed and relational construct.

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