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## Reviews

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**The Proust effect: The senses as doorways to lost memories** by C van Campen (translated by J Ross); Oxford University Press, Oxford, 192 pages, £19.99 cloth (US \$35.00) ISBN 9780199685875

We have all experienced once in our life this feeling of being suddenly transported back to our past and reliving intense and emotional memories triggered by a smell, a taste, a sound, or a visual sensation. This phenomenon, usually illustrated by the famous *madeleine de Proust* story, is well known by psychologists and neuroscientists, especially those working on memory. In this episode the main character Marcel describes how the taste of a madeleine dipped in tea unexpectedly triggered a long-forgotten childhood memory. Through his book, Cretien Van Campen gives us the opportunity to go beyond this famous ‘madeleine incident’ to improve our understanding of sense memories. With that aim, Van Campen bases his work on various sources—including scientific studies, art projects, and personal accounts—which make the reading of this book a delight. His approach broadens both the theoretical framework of the topic and its potential contribution to different fields such as health-care therapy and education, as well as the culinary or arts professions, to cite just a few.

In the first section of the book van Campen tackles sense memories from the angle of the arts. Here, he immerses us in literature and especially in Marcel Proust’s contribution to the exploration of sense memories through his seven-volume novel *In Search of Lost Time*. For instance, he highlights how Proust distinguished voluntary (ie a goal-directed retrieval of memories) and involuntary memories (ie memories that break into consciousness unexpectedly, often triggered by senses) or Proust’s early view that remembering the past does not consist of the retrieval of a picture but of an act of *reliving* the event. While neuroscience studies focus mostly on the way information is stored in the brain and on the factors that influence the retrieval (or not) of memories, an interesting view developed in the book is of the aesthetical qualities of memories—for instance, their power in terms of creativity and the pleasure associated with the recollection of involuntary memories. In this vein, the author reports anecdotes on how smells, tastes, or music give rise to strong emotional reactions, which is of interest since it contributes to broaden the perspectives on sense memories and makes the reading of this book relevant for researchers working on different senses. In particular, the author describes the relative power of different senses to trigger memories and their common and distinct phenomenological properties. In this part, it is apparent that Van Campen is fascinated by the arts, and especially Proust’s work, where he has transcribed faithfully Proust’s original thoughts. I really appreciate the way the author links arts and sciences, with illustrations ranging from poems to paintings and movies, and from Ancient Greece to new media. Through these cross-generational illustrations, the author bridges the gap between sciences and the arts, which is an original angle that makes the reading of this book enjoyable, especially since the readers will not only learn more about sense memories, but also discover works of art and their story.

The second section is devoted to science and the neurological, psychological, and sociological nature of sense memories. A strength of this chapter is to first provide a clear definition of the Proust effect, which is “an involuntary, sensory-induced, vivid and emotional reliving of events from the past” (page 47) that begins with a mood/feeling and then comes gradually to mind. After a review of smell experiments, the question of the neural substrates of the Proust effect is addressed. A main role of brain structures such as the amygdala and the hippocampus is put forward here. An interesting point developed in this section is Proust’s view of “remembering as a creative act, as the creation of joyful moments in which present and past are brought together” (page 54). This last point opens up the question of the brain regions sustaining this creative memory. In the absence of direct investigations dealing with this, Van Campen adopts here a philosophical standpoint. However, as the author underlines the similarities between sense memories and the artistic creative process, the inclusion of some recent findings on the functional underpinnings of creativity (eg Kowatari et al., 2009; Limb & Braun, 2008; Shamay-Tsoory, Adler, Aharon-Peretz, Perry, & Maysel, 2010) could have been of interest to provide some partial data on this topic. In this section the readers will also get information on the development

of sense memories in childhood and the period of childhood amnesia. In my opinion a relevant finding for people interested in memory is the early reminiscence bump of sense memories between the ages of 3 and 10 years. Given the limited narrative skills of young children, their memories rely more on senses. This explains why the recollection of memories triggered by senses concerns mostly childhood events but also why these memories are more accessible by sensory information than by verbal cues. To conclude this section, Van Campen presents famous cases of people with synaesthesia, such as the Russian writer Vladimir Nabokov and Wolfgang Amadeus Mozart, and how synaesthesia is related to eidetic memory (ie the ability to recall images, sounds, or objects in memory with high precision without the use of strategies) but also to greater capacity for empathy. Then, the author nicely bridges the gap between the cases with synaesthesia and findings in children which support the idea that children often rely “on sensory empathic abilities (such as synaesthetic and eidetic experiences) to understand things” (page 78) and fix their memories, and how this contributes to the development of empathy in childhood. I found this last subject compelling, since it offers, for nonexperts of the domain, a different view of the phenomena of synaesthesia and eidetic memory that goes beyond their traditional presentation.

The third section of the book deals with the benefits of sense memories on well-being and on cognitive functions. I found this chapter particularly appealing, especially the part focusing on the power of sense memories to diminish depression and promote well-being in the care of older adults. Different approaches are reviewed in this chapter such as reminiscence therapies (based on voluntary and involuntary recall of memories), life-review therapies, or Snoezelen, and each of them is well illustrated by the author. More precisely, he states that the recall of pleasant memories is found to reduce depressive symptoms, especially in people with severe depression. Regarding the effect of sense memories on cognitive functioning, Van Campen goes back to the importance of sense memory development during childhood and puts forward a provocative view on how this should be promoted by educational systems. In particular, the author makes the emphasis on the importance of growing up surrounded by various odours and tastes.

A last chapter is then devoted to the distinctive features of synaesthetes' memory, especially how “they colour their past in a very special way” (page 126) and how “synaesthesia seems to crystallize the emotions in childhood memories” (page 127), to finally create this intense experience of ‘reliving’ memories.

Overall, I think that one of the key strengths of this book is its interdisciplinary view which makes it relevant for different audiences and experts of various domains. On the basis of this approach, the readers will finally find a precise definition of sense memories, which are “memories that are triggered involuntarily by a single sensory stimulus and which in collaboration with other sensory processes in the brain create an emotionally charged and physically palpable collage which gives a meaningful but coloured representation of an episode from the personal past” (page 128). Because of the latter definition, this book would probably be appreciated by the audience of *Perception* working in different fields of human perception.

For my part, by reading this book, from the perspective of a memory researcher, I wondered if sense memories have a counterpart in the future—that is, sort of ‘sense future simulations’. Recent studies have documented the occurrence of involuntary future projections which are characterised by a high positivity bias and come to mind under conditions that are similar to those of involuntary memories (Bernsten & Staerk Jacobsen, 2008; Finnbogadóttir & Bernsten, 2013).

Reading this book was a real pleasure, and Van Campen successfully passes on his expertise and enthusiasm for the topic to readers. One thing is for sure: from now on, when I will eat mashed potatoes that taste like my grandmother's, the experience will not be the same.

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