Pieces of light

By Charles Fernyhough

Reviewed by Eric Deeson

Sub-titled "The new science of memory", this is the paperback edition of a title that appeared first in the UK in 2012 and has received several awards.

It is indeed a book that shows a great deal of effective desk research and thought. It also shows a determination to provide a novel account of a subject that enthrals every one of us – but the explanation of which is still a mystery far from final solution. Charles Fernyhough, a writer who is a part-time professor of psychology, deserves congratulation for perhaps having gone a little way to throw pieces of light on that mystery.

Pieces of light is an unusual book, at least partly because its author is unusual. Fernyhough writes very well and fills his pages with personal anecdote, illustrations from literature, and cheerful case studies; all this tends to make what is a somewhat academic text more palatable to interested readers. On the other hand, although although the book is "somewhat academic" and has "science" in its subtitle, the science content is not easy to discover; indeed, this is not a "science book" in any usual sense of the word.

To Fernyhough, the study of memory comes under psychology and (within that) cognition – but he seems to take that as read in his own mind and in those of his readers. I could not find any formal statement, explanation or scientific scene-setting in *Pieces of light*, despite my fairly careful study and Fernyhough's highly detailed and generally accurate index.

Some memory scientists view memory from the angle of physiology – neuroscience of course – and, while Fernyhough doesn't ignore this, his relevant mentions are few and minor. References to the physiology argument are scattered in an almost throw-away fashion throughout the book. It must be said that there *is* just one picture in all those small-print pages – a science-based one, after the text and before the notes, that sketches and labels the relevant parts of the brain; even so, those parts are not indexed and the book's text seems to refer to the picture only once and very casually.

To most memory scientists (I believe, not being one), whether psychologists or neuroscientists, the core message is that memory is the phenomena involved in the brain's systems for

1. receiving, processing and encoding a chunk of information;
2. storing the code and consolidating it, even re-consolidating it; and
3. retrieving it.

Fernyhough's core message is very different, and it is clear from the start:

"I want to persuade you that when you have a memory … you create something new. … Remembering happens in the present tense. It requires the precise coordination of … cognitive processes, shared among many other mental functions and distributed across different regions of the brain."

What *Pieces of light* is saying in practice is that when you remember something, or at least something autobiographical ie personal, your brain constructs the memory along the lines of "this is what must have happened". We can all think of examples – such as how different people in a car recall differently an accident seen in front of them; how those involved in a conversation argue later about what was the final decision; and how chatting about an old family photo leads to clashing recalled stories about that holiday.

Indeed, there is nothing new in the concept that memory is far from objective, whether viewed from a psychological or a neuroscientific viewpoint. But the concept of what I name creative recall? That is a long extra step. And it is a step for which Fernyhough's 280 pages of unappealing small-print text and forty of notes do not add much in the way of hard evidence. Even more disappointing to me is that there are only a couple of mentions of Alzheimer's disease and not a large number more of amnesia and other forms of memory loss; indeed, there is very little too on short-term and long-term memory.

All this is about "autobiographical memory" – the recall of what happened to oneself in the past. It does *not* apply to the recall of facts and principles and learned processes: all

those types of memory most important to *Science in school* readers. Fernyhough does not address why autobiographical memory differs so much from those in not being embedded in the brain but "created" during recall; nor does he address why evolution has (presumably) led to such an imperfect recall system that surely cannot improve species survival. But those are science questions – and this *not* a science book.

Pieces of light is without doubt an unusual book, one that remains impossible to recommend as something that must go into the libraries of schools and colleges with post-16 students of science, even of psychology. But I *do* recommend it for such libraries where there are science and/or general studies and/or philosophy teachers keen to encourage cross-cultural, even iconoclastic, reading and thinking.

Details

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To learn how to use this code, see page 57.

The inGenious code: school-industry collaboration

By inGenious – a project supported by the European Commission FP7 Programme

Reviewed by Jesper Christoffersen

These days, more and more of my colleagues in science, technology, engineering and mathematics (STEM) education are warming to the idea of closer links with industry to show students what these subjects can do in the real world. Several studies have shown that students and pupils often dismiss STEM careers on very flimsy evidence (not a good start in science!), so putting them into contact with working companies can be a great help in adjusting their point of view.

There are two broad ways that industry can bring STEM to life for students: businesses can visit you, or you can visit them. Both can be beneficial – but unfortunately, both can be a nightmare for schools and industry to carry out successfully. Whether it is protecting data, ensuring child safety or providing a worthwhile educational experience, there are so many potential problems that even the most enthusiastic teachers and companies may think twice about organising what could be a mutually beneficial encounter.

This is why the inGenious code for school–industry collaboration is such a useful document. Freely available as a PDF, the code covers pretty much every aspect of organising visits to schools by industry and vice versa. As its introduction states, the code "provides a set of principles, guidelines and checklists that should allow anyone involved in setting up school–industry collaboration to do so as safely, smoothly and securely as possible".

At 24 pages long, it is comprehensive and tackles the general principles of collaboration, as well as dealing with consent, data protection and taking photos and videos – all of which need careful handling in order to stay within mutually acceptable limits.

Perhaps most useful of all are a series of easy-to-follow checklists, focused on organising site visits and managing data protection, which are available for download separately from the inGenious website[w1].

The code is freely available to download as a PDF from the European Schoolnet website[w2].

Web references

w1 – To download the checklists from the inGenious website, visit www.ingenious-science.eu/web/guest/checklists

w2 – The full InGenious code PDF is available to download from the website of European Schoolnet, a network of 30 European ministries of education. See: www.eun.org

To learn how to use this code, see page 57.