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Citation for final published version:

Bray, Emma, Harding, Katharine and Hughes, Tom 2015. Thinking, fast and slow [Book Review]. Practical Neurology 15 (4) , p. 327. 10.1136/practneurol-2015-001218 file

Publishers page: <http://dx.doi.org/10.1136/practneurol-2015-001218>  
<<http://dx.doi.org/10.1136/practneurol-2015-001218>>

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# Thinking, Fast and Slow - by Daniel Kahneman, 2011.

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Our most recent discussion at the Cardiff Neurology Book Club was 'Thinking, Fast and Slow', by Daniel Kahneman, a 2011 best seller that attempts to better understand how we think. This choice was inspired by the 2014 ABN Medallist's Lecture on 'How neurologists think: what my errors taught me', by Martin A Samuels, Professor of Neurology at Harvard University, and we were fortunate that he was also able to join us over a videolink from Boston.

Nobel Prize winner Kahneman has developed a unique take on human thinking that spawned an interesting analysis in the book club. 'Thinking, fast and slow' is based on research conducted with his colleague Amos Tversky, and for which Kahneman was awarded the 2002 Nobel Prize for Economics. Although not solely related to medicine, its ideas provide a useful approach to understanding the way that doctors think, including the reasons for their mistakes. It is especially interesting to neurologists because of the inclusion of some relevant neuroanatomy.

Kahneman develops the idea of two systems of thinking—types 1 and 2—associated mainly with function of the limbic system and neocortex respectively. 'Thinking, Fast and Slow' suggests that they are functionally independent but mutually informing systems that generate decisions, or in our case, diagnoses.

System 1 (fast) is instinctive and natural and linked to our emotions, whereas system 2 (slow) is more logical and thorough, and therefore more time consuming. Most people rely on their system 1 to make fast decisions, although sometimes this can result in jumping to the wrong conclusion. However in our day-to-day lives, decisions based on feelings and intuitions that are informed over time by the experience and reflections of our slower thinking help us to work more efficiently. One interesting example describes variations in radiology reports. In one study, up to 20% of senior radiologists would contradict their first report if re-presented with the same image.

We discussed how having an insight into our own reasoning process might affect our clinical practice. As clinicians, our everyday decisions are based on calculating risk versus benefit, to ensure that we are first 'doing no harm', as outlined in the Hippocratic oath.<sup>1</sup> We discussed whether or not we did our patients an injustice by doing tests without a more critical assessment of what is really needed. It goes without saying that the more experienced a clinician is, the more effortlessly they seem to be able to do this. Could this be because these decisions have become inherent, their lean system 1 thinking becoming trimmed, pruned and informed over the years by repeated cross checking with system 2? In chapter 28 'Bad Events', Kahneman suggests the idea of 'Loss aversion': that is, that we are more driven to avoid losses than to achieve gains. We went on to discuss how this chimed with our clinical experience of obtaining consent that often focusses on what can go wrong, rather than the potential gains of the procedure. A good example of this is epilepsy surgery; often patients and clinicians are preoccupied with the possible complications and lose sight of the benefits of becoming seizure free.

Although we felt that the book itself was overly long (getting to the finishing line is definitely a system 2 process) and could have done with some stricter editing, we particularly enjoyed the inclusion of the Nobel Prize-winning paper at the end, which was pleasingly consensus was that 'Thinking, Fast and Slow' provides a useful framework to help us be more aware of different types of thinking so that our cognitive short-cuts do not become hazardous short-circuits.

Competing interests - None declared