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ON THE BORDER

Info & insights from the interface between energy healing & science

July 2015

Welcome to the July 2015 edition of 'On the Border'.

This month I am looking at **INTUITION** – and what a Japanese form of chess is teaching researchers about it.

And – drum roll, drum roll – two annoucements about a **Self-Healing Circle in Amsterdam**, and the **new 'Heal! En jezelf ook' course starting in September.**

For those of you new to 'On the Border', this is Jayne's monthly Ezine newsletter about the latest information and insights into energy fields, healing and science. Each month I share with you some of the latest research and how it applies to healing, energy work & (daily) life. There is also a Fascinating Facts section and a 'Freebie' where you get something for nothing, gratis.

Advances in the Science of Intuition

Sometimes a solution just appears out of nowhere. Intuition!

This is the name we give to the uncanny ability to quickly and effortlessly know the answer, unconsciously, either without or well before knowing why. The conscious explanation comes later, if at all, and involves a much more deliberate process.

Understanding computer code, deciphering a differential equation, diagnosing a tumour from the shadowy patterns on an x-ray image, telling a fake from an authentic painting, knowing when to hold and when to fold in poker. Experts decide in a flash, without thought.

Intuition arises within a well-defined cognitive domain. It may take years of training to develop, and it does not easily transfer from one domain of expertise to another. Chess mastery is useless when playing bridge. Professionals, who

may spend a lifetime honing their skills, are much in demand for their proficiency.

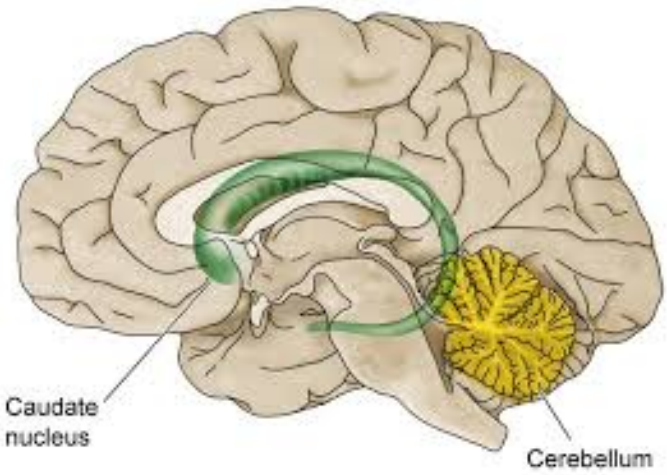
Let us consider a series of elegant experiments in functional brain imaging that finger one brain structure as being centrally involved in intuition. Shogi is a Japanese strategy game played on a nine-by-nine board, with two sets of 20 distinct pieces facing each other. It is much more complex than chess, given that captured pieces can be dropped into an empty position anywhere on the board at the discretion of the capturer. This rule multiplies the number of possible moves available at any point in the game and prevents the steady attrition of the two opposing armies that face off in a chess match.

Keiji Tanaka of the RIKEN Brain Science Institute outside Tokyo led a group of cognitive neuroscientists who studied the brains of shogi players, using functional MRI to search for the neural signatures of proficiency. First, subjects inside the scanner looked at drawings of shogi boards taken either from tournament games or from randomly shuffled board positions. They also looked at sketches that had nothing to do with shogi: games of chess and Chinese chess, as well as pictures of faces and houses.

In professional players, pictures of board positions taken from real shogi games activated a piece of cortex, the precuneus in the parietal lobe (located at the top of the brain toward the back), much more strongly than any of the other catgories of pictures. That is, a region of their parietal cortex read out certain perceptual features associated with shogi games and distinguished them from random board positions. Experts see configurations of pieces, lines of control, a weakened defense or an imminent attack—patterns that amateurs do not notice.

In a second experiment, Tanaka and his group presented players with check-matelike shogi puzzles while they lay in the scanner. Subjects had to find the next move that would lead, inexorably, to the capture of the king. They had to do this within one second, pushing them to rely on their intuition because there was no time to analyse the various moves, countermoves, countercountermoves, and so on. When they controlled for confounding cognitive factors, the scientists found nothing activated in the cortex. They did, however, isolate a small region in the front of the caudate nucleus, under the cortex, that reliably and very distinctly turned on in professional shogi players. The caudate was less reliably and less prominently activated when amateur players tried to find the correct move. And when subjects had up to eight seconds to more deliberately search for the best solution, this subcortical region remained silent.

Special-Purpose Hardware



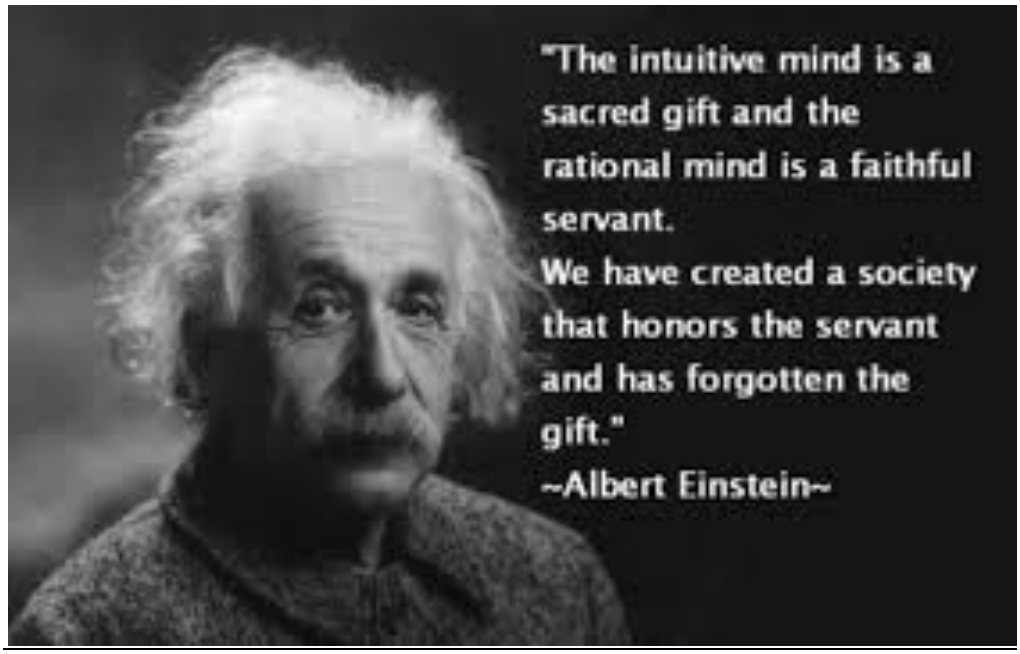
This elegant finding links intuition with the caudate nucleus, which is part of the basal ganglia—a set of interlinked brain areas responsible for learning, executing habits and automatic behaviours. The basal ganglia receive massive input from the cortex, the outer, rindlike surface of the brain. Ultimately these structures project back to the cortex, creating a series of cortical–basal ganglia loops. In one interpretation, the cortex is associated with conscious perception and the deliberate and conscious analysis of any given situation, novel or familiar, whereas the caudate nucleus is the site where highly specialised expertise resides that allows you to come up with an appropriate answer without conscious thought. In computer engineering parlance, a constantly used class of computations (namely those associated with playing a strategy game) is downloaded into special-purpose hardware, the caudate, to lighten the burden of the main processor, the cortex.

So far these experiments relate the task of generating shogi moves to brain activity. Of course, we are not allowed to infer causation from correlation. Just because two things are associated does not imply that one causes the other. As research progresses, the causal structure of intuition and brain activity could be probed by inhibiting or blocking the caudate nucleus to see whether doing so prevents the rapid generation of correct shogi moves. Regrettably there are no reliable technologies to turn bits of brain deep inside the skull on and off in a way conducive to the long-term health of the subject! ;=)

Instead Tanaka and his collaborators wondered whether novices who learn to play shogi wire up their caudate nucleus in a similar manner to that of experts. They recruited naive volunteers and subjected them to an intensive 15-week regime of daily play on a simplified computer version of the game. Motivated by prize money, the subjects improved over the approximately 100 days of training, during which they accumulated total practice time ranging from 37 to 107 hours.

Asking subjects in these experiments to quickly come up with the best next move led to increased cortical activity, but that activity did not change over the training period, nor did it correlate with the fraction of correct responses. In contrast, changes in blood flow in the front of the caudate nucleus evolved over the course of training in parallel with better performance. Furthermore, the strength of the caudate signal at the end of the training correlated with how much subjects improved over time. The more the subject learned, the larger the caudate signal.

It appears that the site of fast, automatic, unconscious cognitive operations—from where a solution materialises all of a sudden—lies in the basal ganglia, linked to, but apart from, the cortex. These studies begin to provide a telling hint of what happens when the brain brings the output of unconscious processing into awareness. My intuition tells me that the last word on this subject has not been written by a long way!



References:

■ **The Neural Basis of Intuitive Best Next- Move Generation in Board Game Experts.** Xiaohong Wan et al. in *Science,* Vol. 331, pages 341–346; January 21, 2011.

■ **Developing Intuition: Neural Correlates of Cognitive-Skill Learning in Caudate Nucleus.** Xiaohong Wan et al. in *Journal of Neuroscience,* Vol. 32, pages 17,492– 17,501; November 28, 2012.

■ **Without a Thought.** Christof Koch in *Scientific American Mind*, Vol. 26, No. 3, pages25-26; May/June, 2015.

The Self-Healing Works: Healing Circles

Start your journey to well-being with a Self-Healing Experience: *The Self-Healing Works* – a Self-Healing Circle in Amsterdam - is here!!

Jayne has joined forces with healer & colleague, Carmen O'Dwyer, to offer a healing space open to the public. Through the experience of our Self-Healing Circle, you will reconnect and activate the inner intelligence of your body, mind and spirit. You also bring well-being to your life in a new, effective way.

The sessions are being held in the centre of Amsterdam, close to the Jordaan, in the spacious Instituut-Amsterdam.

These Self-Healing Circles, however, have a new, different setup. We ask the participants to do some reading beforehand; and, once that's done, to take a short questionnaire online. In short, we're including some preparation work to bring you up to speed before you attend a session.

The Self-Healing Circle sessions last approx. 45 minutes to 1 hour and cost €30 per session. You can participate in as many sessions as you like.

Interested? Please visit www.TheSelf-HealingWorks.com for more details on this Self-Healing Circle, the agenda and the link to the registration form.

Heal! En jezelf ook

Yes indeedy, this popular course is back for its yearly appearance!
Many of you have asked over the last few months about when it will be held again. You asked, so I not only listened but took action as well ;=)

The course is being revamped at the moment – details will follow shortly – but for those eager to take part then here are the dates for you to note in your diaries (all on Sundays, instead of during the week; just one of the revamp changes). And, as usual, it will be given in Dutch.

Sunday 13th September
Sunday 4th October
Sunday 25th October
Sunday 8th November

Each Sunday class will take place between 10-16u in 'De Ruimte' (Weesperzijde 79A, Amsterdam) , and includes a fabulously lekkere lunch.
Price: €445, incl. btw and coffee/tea/lekkere dingen/lunch

Fascinating Facts

Did you know that…….

- Prolonged eye contact between dogs and their owners releases a spike of oxytocin, the 'love hormone', in both species?
- People who prioritise creativity in their life tend to be happier and more fulfilled?
- ADHD rates are higher in children who are exposed to secondhand smoke at home?
- Childhood trauma is linked to higher blood pressure later in life?

July Freebie

In this section you get the chance to get something for nothing. Helemaal gratis. Always a pleasure!

Many of you are heading away on holiday – or are already there. So here is a link to the most popular Top Twenty Ted Talks to help you ease away the hours travelling, sitting on the beach, stuck in traffic…..to help keep your brain

exercised.

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Back Issues

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