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A summary of

The Two-Second Advantage: How We Succeed by Anticipating the Future - Just Enough

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Summary by Kim Hartman

This is a summary of what I think is the most important and insightful parts of the book. I can't speak for anyone else and I strongly recommend you to read the book in order to grasp the concepts written here. My notes should only be seen as an addition that can be used to refresh your memory after you´ve read the book. Use my words as anchors to remember the vitals parts of this book. I know I will. If you like this free summary you are more than welcome to send me an email just to say thanks. That would make my day. Or if you like to have a chat about the content of the book or things within the same area I am up for that as well.

Enjoy.

- Gretzky didn't get so good in spite of his unimpressive physical attributes – he became so good because of them.

- Talented people don't need to have a vision of the future ten years or even ten days out. They need to have highly probable prediction just far enough ahead to see an opening or opportunity an instant before the competition. Metaphorically, the prediction only needs to be two seconds out – though the actual time may be hundredths of a second or several minutes, depending on the situation.

- Think about Gladwell; it's a system in which our brain reaches conclusions without immediately telling us that it's reaching conclusions.

- The brain forms memory patterns and assembled into quickly accesses chunks of information. The more experiences re repeated, the stronger and more complex the patterns become.

- Exceptional predictive capability is what drives talent.

- The basic structure of computers works very differently from that of brains. A computer can do some things better than humans, like calculate long calculations. But they can't do some of the simplest things, like knowing that a line drawing of a cow and a real cow are both a cow.

- Databases can help a boss making informed decisions about what to do next based on the outcomes; it analyzes what's already happened, not predicting what's about to happen.

- Gretzky can't search every memory during a game, a business can't search all its data each tie it needs an answer.

- There is never enough time to gather all information needed to make a decision

- The secret to being a great tech CEO is having an efficient, agile mental model that can quickly predict what´s going to happen and be right most of the time.

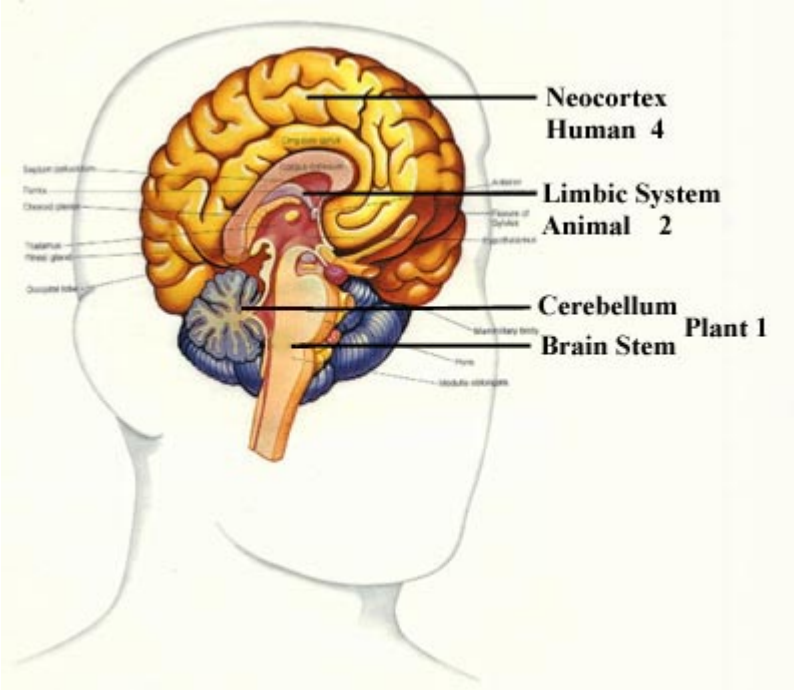
The neocortex

- Neocortex plays a central role in intelligence. Intelligence is not just one of the things your brain does; it is the primary function of the neocortex and the foundation of intelligence.

- Social beings that developed better higher-level brains led more successful lives and passed on their better-brain genes and boosted the evolutionary process.

- It's in the neocortex that language, attention, consciousness, and memory happens.

- The NC has six thin layers of cells wrapped around the old brain. The cells on the bottom layer of the neocortex handle sensory perception and visual things by breaking the signals into very small, discrete elements. One cluster of cells can have small, unimportant jobs.
  The bottom cell passes it up to the next layer in the neocortex where the brain begins to process and combine signals from other cells. The process repeats, and gradually the brain start to assemble discrete pieces of sensory information into an image or an idea. This image or idea is compared against millions of other ideas and an object or concept is shaped.



- A line segment in a certain part of your field of vision gets combined with other signals from nearby cells and your brain eventually says; aha, I recognize that. It's a circle!
  That's when the lower and upper cells fire or signal each other with a tine electrical pulse. That is a spark of recognition, resonance; a kind of electronic agreement between cells at different layers.

- The lower levels handle very specific jobs with a small universe of options, the higher levels of NC operate at a more idea-driven, conceptual level. Like a factory.

- The top levels receive signals from multiple resources, aggregate them, and compare them to what's happened in the past and say, ok, I've seen this before.

- The incoming input doesn't have to be a perfect match; circles can be different but still circles. It's like the brain had a generic folder named circles.

- The brain can classify things in patterns without being locked into rigid rules about those patterns. The brain can explain rules + expectations.

Predictions

- We constantly make predictions, send them pinging out into the world, and learn something when they turn out to be right or wrong. Someone tells you that you're about to meet Bill Clinton and you predict what he´s going to be like. You earn what´s he really likes by finding out which of your predictions were right and which were wrong.

- If you reach for the orange juice your brain automatically issues a series of predictions based on many previous mornings when you´ve gone to the same refrigerator, opened the same door and picked the juice. Those predictions also factor in your experiences of the physical world that you keep stored in your memory: what cardboard feels like, how it feels to pick objects in your hand etc. your brain the measures those predictions against your actual experience.

- The brain predicts what it will see and tests the predictions against the images coming in through the eyes. What you see is something of a compromise between the two.

- Predictivness seem to allow people to selectively focus attention on really important tasks and filter out the ocean of sensory data constantly flowing in.

- Almost everything were doing is totally unconscious. Its only when something unexpected happens that we potentially become conscious of it.

- Hebb´s law – neurons that wire together fire together.

- Neurons that fire together nearly simultaneously in time wire that pattern together and then can replay the pattern equally simultaneously in time. Experiences make neurons fire, and repetition and prediction strengthen the bond. When the prediction is right, a ping of satisfaction rushes through the brain and the connection get strengthened.

- When a prediction about the concept of cars gets verified, that part of the pattern gets stronger. If a prediction doesn't match what actually happens, that part of the pattern gets adjusted or are thrown out. This, ladies and gentlemen, is learning!

- Chunking: put information and access it all together at the same time, as a serie of connected events. Building a chunk is to build a complex pattern of information that fire at the same time around a certain concept.

- Predicting and chunking goes together. A chunk feeds a prediction that's sent down through the layers of the neocortex and says, I've seen this pattern before, and this is what´s supposed to happen. If the prediction is right, the chunk gets strengthened. If it's wrong, the chunk learns. Your brain realize that something about the pattern has to be adjusted, ad it pays attention. The new experience gets added to the chunk, and which tests the new pattern b generating a new prediction the next time. The predications create the chunks; the

chunks drive the predictions; the outcome of those predictions improve the chunks… and round and round it goes… if you have better chunks, you have better predictions. As you make better predictions, you build strong chunks.

- Predicting correctly is satisfying and gives you a safe feeling. The brain is predicting to try to reduce uncertainty because it fucking hates anxiety.

- A lack of talent in a certain realm corresponds to a relative lack of accurate chunking – which results in slower processing speed.

- Example: the more speech a kid hears, the more experience his brain gets in practicing fast processing.

- The more you can predict, the faster you can process, and you need a lot of examples to feed those predictions.

Chunking

- Chunking is the creation inside the brain of superefficient mental models that process events in a flash – and it is a huge factor in talent among individuals.

- Predictions that prove right are satisfying, but prediction that are always right become boring and makes the chunked pattern put on autopilot for that activity. Unpredictable events in our environments grab our attention and motivate us to learn.

- Developing talent requires a balance of a desire to push past what's comfortable, and a willingness to do the same things over and over to reinforce the links among neurons that make up chunks. Learning happens when prediction fail and our brains pay attention to something new. The learning becomes knowledge when prediction succeeds and our brains reinforce and store the chunks. OBS!

- Strategic intuition: predicting what will happen based on immediate events and taking action based on that prediction.

- Klein: People who are talented don't just make prediction based on events; they also make predictions based on a lack of events. This means that they catch the notes that didn't get played because someone in the orchestra missed them or recognize the deal that didn't happen. Applied on the web, this doesn't work. Machines can't make predictions based on non-events. If someone goes into a website but never registers for something, that information disappears.

- Strategic intuition or **anticipatory thinking** doesn't just happen in individual brains, but I critical to effective performance for individuals and teams. If anticipatory thinking can occur in team, it should be able to take place in larger organizations. **(pp. 47)**

- Flow seems to be a state of pure predictiviness. The person in a state of flow is firing complex chunks so rapidly and seamlessly that she feel like she can see what´s going to happen before it happens and can act with complete certainty and confidence.

- How much of exceptional ability is hardware (the raw genetic wiring and processing the speed of a brain) and how much is software (the experiences and learning that become chunks and program the brain)?

- People with autism focus on the trees rather than the forest. Savants with autism waste no brain power at all on seeing the forest – to them, it's just not there. Instead, all the brain power zeros in on the trees, in minute detail, giving them "privileged access to lower levels of raw information" not typically available to the rest of us.

- The lowest layer of the neocortex collects raw information in granular detail from our five senses and passes it up to the next level. This starts to put the pieces together to form an image or sensation. As the information moves up to yet higher layers of the cortex, it´s assembled into broader, more sophisticated, more creative concepts. At the highest working levels – Gretzky on ice – the details are left behind, chunked into an efficient mental model that can process what's happening in a flash of recognition and anticipate the near future with incredible speed and accuracy.

- In normal, the brain takes in every tiny detail, processes it, then edits out most of the information leaving a single useful idea which become conscious.

- Autistic savant's existence is made up of massive amounts of data and little understanding. They can't forget.

- Since our brains have to make a choice, the higher-level thinking is far more valuable than collecting and recalling tons of detail. Forgetting is evolving.

- Some peoples brain are by nature better suited to certain tasks

- One factor that seem to play a role in highly talented people: their brains become super synchronized when they´re using their talent.

- The brain can work like a symphony orchestra. When not focused on a task – say, when you´re in the shower and letting your mind wander – your brain is like an orchestra warming up. All the instruments – or in your brain´s case, neurons – are playing something, but they are not in sync with any other instrument, so it just sounds like noise.

- *Ex: imagine that the first violin starts playing a melody that another musician recognizes, and that other musician joined in. soon a few other musicians joins in, and then more, spontaneously out of the noise a song emerges. This goes on until a musician across the room realizes the song reminds her of a different song and starts playing that one. Other musicians hear it and decide they like the new song better, and they start playing it – until the same thing happens again and everybody switches to yet another song.*

- The new neuron recruits in turn recruits each other, and suddenly your brain is synchronized, thinking deeply about something – until a different neuron has an idea that recruits a wave of neurons its way, and your brain shifts to that thought.

- …the notes played are all coordinated for a greater effect. Similarly, a human brain is at its best when the neurons coordinate for a specific task for an extended period.

- Monks can will themselves into a state of flow – which they would call meditation. Their brains settle into complex rhythms, but very coordinated. It shows aspects of a symphony orchestra. It allows many brain regions to communicate easily with each other – they interact as if they have a clear channel to each other. Talented people seem to be born with an unusual ability to focus the brains resources on one task.

- Research suggests that most humans who excel in their fields are made, not born with a great genetic advantage.

- Talented people get in their ten thousands of hours by constantly challenging themselves on the job, piece by piece building the “tacit knowledge and intuitive expertise” associated with the top performers in a field.

- When neurons fire together closely in time, they wire that pattern of events and knowledge together. As that pattern is repeated and learned, the chunk becomes more complex, more solid, and faster at accessing the whole pattern. The repetition builds myelin along the pathways of the connections among the neuron that are chunked together, turning the neural networks into superhighways.

- A talent doesn’t go searching his entire database for information or get yet more data from polls or consultants. Instead, he uses the data he collects to refine his mental model. The new information gets processed through his mental model and either confirms and strengthens the assumptions built into the model o forces the talent to slightly retune the model.

- Myelin can be built and changed by learning, and as you build myelin you get better at what you are learning. Through repetition, this process moves your brain to the point where something clicks – that transition from struggling to learn a skill to doing it intuitively. All that practice seems to build up a whole lot of myelin in all the right places. It’s the physical manifestation of deliberate practice.

- The brain of a talented person uses all the information gathered to create an efficient, fast-acting model – a little piece of intelligence software that quickly processes sensory input and makes fast, accurate predictions.

- The key was developing that efficient, superfast predictive model that let Gretzky see the future just a little bit better and faster than anyone else.

- Our brain perceives things by first predicting what it will perceive, then comparing the prediction and the actual events, and paying attention to elements that are, in essence, a surprise.