Herrmann

Whole Brain® Model

research and development

Certification resources

Whole Brain® Model – research and development

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Overview

Have you ever had one of those moments when the fog disappears and you experience a moment of pure clarity? This is what happened to Ned Herrmann as he explored the brain, he described receiving a 'lightning strike of understanding' (*The Creative Brain* p.1), which enabled him to develop the original Whole Brain® Model.

Ned Herrmann was inspired to answer the questions:

- Who am I?
- Why am I the way I am?
- Who can I become?
- In what direction should I go?
- How can I change?
- Why am I here?

During his own search he made some remarkable discoveries about the human brain, which changed his life enormously. What he found was an explanation for many of the questions just mentioned. It helped him understand the double existence he'd been leading most of his life – with one foot in the business world and the other solidly planted in the world of art and music.

His insights into the brain helped him explain why we are different and from this basis he developed the Whole Brain® Model.

Ned Herrmann's biography

At school Ned found mathematics and science easy but he was also a natural in the singing and acting department, and was active in the Drama and Glee Clubs.

He went to Cornell University and studied chemical engineering but ended up graduating with a double major in physics and music. Ned was quoted as saying "Engineering taught me facts, physics taught me how to think".

He joined the General Electric Company directly after university, and went on to worked as corporate manager of the Management Education division within the company.

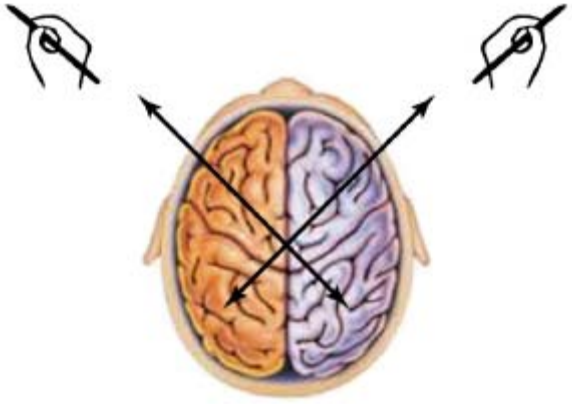
Later in his career he became a professional artist and this led him to ask the question "Where does creativity come from?". This interest led Ned to research some breakthroughs in neuroscience in the 1960s.

Ned Herrmann

History of Ned Herrmann's enlightenment

The following information provides an explanation of the physiological premise upon which the metaphoric Whole Brain® Model is based. It explains the history of the two brain-based models which Ned used to help conceptualise his Whole Brain® Model: Roger Sperry's left/right brain research and Paul MacLean's evolutionary perspective on brain development.

Left Brain/Right Brain studies

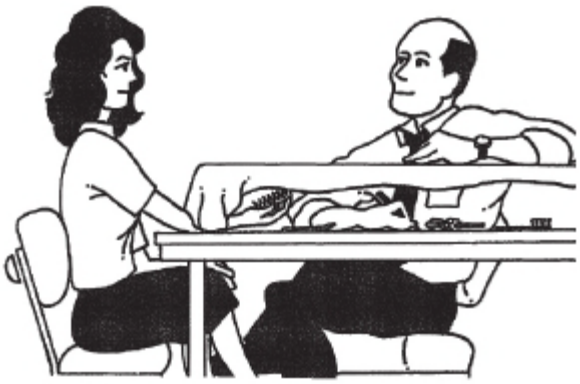


Lateralisation of the brain and handwriting

Ned's first discovery was that the two hemispheres of our brain, the left and right, each has a specialised type of thinking associated with it. The left focuses on scientific types of thinking and the right focuses on artistic types of thinking.

Split-brain experiments by Roger W. Sperry, Joseph E. Bogen, Michael, S Gazzaniga and Jerre Levy proved each hemisphere provided different functions. In their studies they found that when the corpus callosum was severed in epileptic patients, the resultant behaviour provided interesting dichotomies. The corpus callosum is a band of nerve fibres which connects the left and right hemispheres.

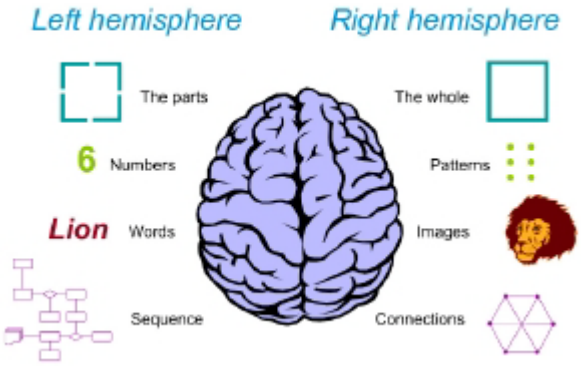
Researchers were already aware that the right side of the brain controls the left side of your body and visa versa and on this basis they made some interesting discoveries. Sperry's research with split brain patients found that when a familiar object was placed in the subject's right hand (obscured from view) the patient was able to name it (utilising the left hemisphere). When the object was placed in the left hand the patient was not able to name it but could demonstrate its use (utilising the right hemisphere).



Split-brain patient experiment

These results led to the conclusion that each hemisphere of the brain is specialised and has its own unique mode of knowing. The left involves logic, analysis of parts, sequencing and words, while the right involves holistic thinking, creativity, images, patterns and connections.

Scientists continued to explore the left/right theories of the brain, specifically how different functions are dominated by one side or the other – how they are lateralised. Roger Sperry won a Nobel Prize for his insights about the brain in 1981.



Demonstrates the lateralised nature of the left and right hemispheres.

"... both the left and the right hemisphere may be conscious simultaneously in different, even in mutually conflicting, mental experiences that run along in parallel."
Roger Wolcott Sperry, 1974

Further reading:

Edwards, Betty (1999). *The New Drawing on the Right Side of the Brain.* New York: Tarcher.

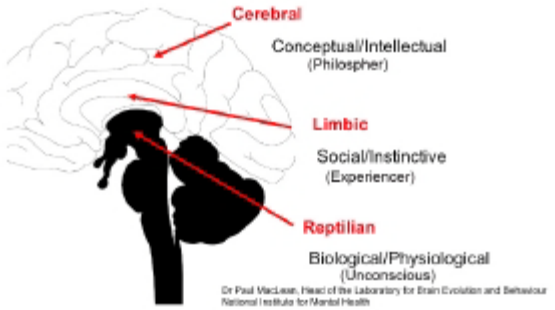
Gazzaniga, Michael S.; R. Ivry; G.R. Mangun (2002). *Fundamentals of Cognitive Neuroscience (2 ed.).* W. W. Norton.

Ornstein, Robert (1998). *The Right Mind: Making Sense of the Hemispheres.* Harcourt Brace International.

Girstenbrey, W. (1981). *The different faces of the hemispheres. The presentation of the Nobel Prize for Medicine and Physiology 1981 to the neurobiologists Sperry, Hubel and Wiesel.* Fortschritte der Medizin 99 (47–48): 1978–1982

The triune brain

Theories about the evolutionary development of the brain also helped Ned understand thinking and conceptualise his Whole Brain® Model. Specifically he looked at the Triune Brain Theory of Dr Paul MacLean, which is based on evolutionary development of the brain, proposing the human brain in theory is 3 brains superimposed over each other.



Cross section of the brain as if superimposed on each other

The first and oldest is the primitive reptilian brain that comprises the brain stem, responsible for the motor and sensory functions (heart rate, breathing, sleeping, eating). The next layer and second biggest system is the limbic brain (a set of brain structures including the hippocampus, amygdala, anterior thalamic nuclei, septum, limbic cortex and fornix). We share this layer with other mammals and it is responsible for emotions, behaviour, motivation, intuition and long-term memory.

The third layer and most recently evolved is the neocortex part of the cerebral cortex, which is involved in perception, reasoning, thought and language and is adept at learning new ways of coping and adapting.

What is thought to distinguish humans from other animals is that our neocortex is much larger and more convoluted compared to other species.

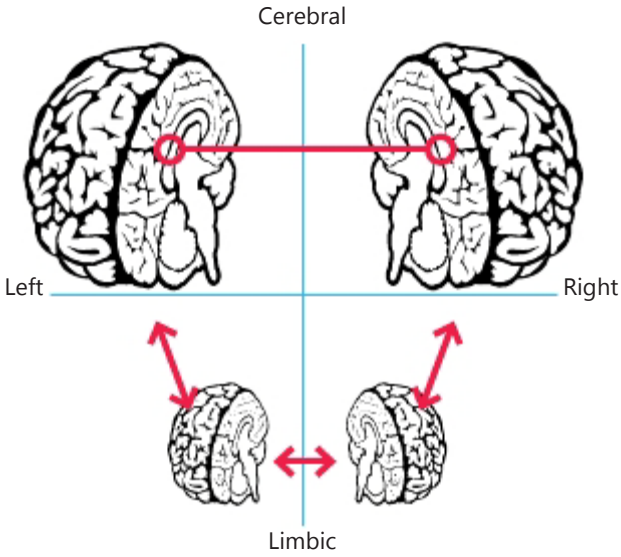
Further reading:

MacLean, Paul D. (1990). *The triune brain in evolution: role in paleo-cerebral functions*. New York: Plenum Press.

The Whole Brain® Model

The Whole Brain® Model architecture

Combining the left and right understanding with the cerebral, limbic concepts Ned could articulate four defined ways of knowing. The result is an axis, depicted below, which has four quadrants, initially categorised as left cerebral, left limbic, right limbic and right cerebral. You may see other descriptors used to define the cerebral and limbic distinction, this could include intellectual/instinctive, reflective/reflexive and abstract/concrete.



Architecture of combining the left/right theory and cerebral/limbic concept

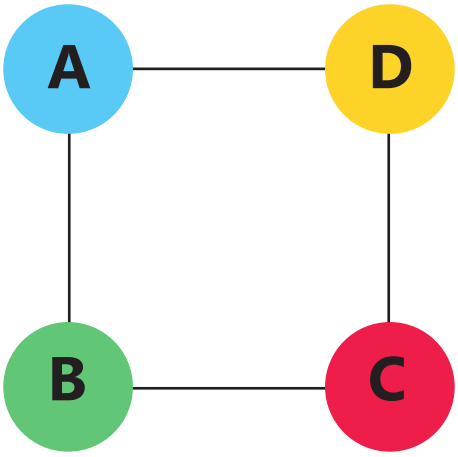
A shift from brain physiology to a thinking metaphor

Whilst initially focusing on the physiological functioning of the brain, Ned moved from a physiological premise to a metaphor for thinking. When we used the descriptors (eg cerebral left, limbic right) to categorise the four styles it became clear that Ned was referring to different styles of thinking. Hence the focus and language moved away from brain-based descriptors to letters and colours representing each style.

The process by which the Whole Brain® Model was formulated is comprehensively detailed in chapter 3 of Ned's book: *The Creative Brain*.

His shift from a physiological focus to a thinking preference model was based on two fundamental patterns that were emerging in the research:

1. The thinking metaphor supported the four cluster model Ned's initial research had been indicating.
2. It shifted the focus from a purely neuro-scientific basis to a metaphor for thinking.



Architecture of the Whole Brain Model

These four modes became known as the "four interconnected clusters of specialised mental processing, that function together situationally, and iteratively, making up a Whole Brain® in which one or more parts become naturally dominant (*The Creative Brain* p.413)". Each quadrant is different and yet of equal importance.

The graphic below is Ned's initial depiction of the model.

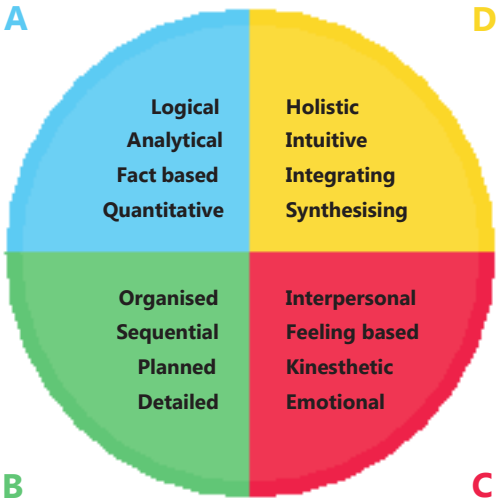
Ned's initial depiction of the Whole Brain Model

The Whole Brain® Model

This image below depicts the Whole Brain® Model as we have come to recognise it today, a 4-quadrant metaphor representing our thinking selves.

- The upper left Blue A quadrant specialises in logical, analytical, quantitative, fact-based thinking.
- The lower left Green B quadrant focuses on details and specialises in planning, organising and sequencing information.
- The lower right Red C quadrant places a priority on feelings and the interpersonal, emotional and kinesthetic aspects of a situation.
- The upper right Yellow D quadrant synthesises and integrates information and is more conceptual and holistic in its thinking.

Whole Brain® Thinking Model



The Whole Brain® Model is an organising principle

Another way we can use the model is as an organising principle.

An organising principle is like a map and is a very powerful way to assist with understanding and learning. We can organise different elements into the map to enhance our understanding.

Look at the model on page 6 to see how the Whole Brain® Model provides an organising principle for many different functions, such as school subjects we might have enjoyed, work that interests us, how we make decisions and solve problems, even the hobbies we choose to participate in.

The Whole Brain® Model (continued)

Mapping different functions onto the Whole Brain® Model

A Quadrant:

At school: maths, science, computers

At work: financier, engineer, chemist, technician

Decision making: gathers facts, argues rationally

Problem solving: forms theories, solves logically, measures precisely

Hobbies: model making, home improvements, computer games

D Quadrant:

At school: science, maths, art and crafts

At work: self employed, entrepreneur, artist, designer, advertiser, marketing, sales person, financier

Decision making: is imaginative, forward looking, takes risks

Problem solving: is inventive, intuitive, sees the big picture

Hobbies: outdoors, experimental, artistic, photography, with a bit of risk

B Quadrant:

At school: geography, history, language (grammar)

At work: manager, administrator, project manager, travel agent

Decision making: stands firm, is conservative, procedural

Problem solving: approaches problems practically

Hobbies: travelling, fishing, camping, spectator sports, golf, reading

C Quadrant:

At school: social science, literature, history geography, drama

At work: social worker, teacher, trainer, HR professional, sales person

Decision making: involves others, is interpersonal, intuitive, emotional

Problem solving: considers others, is intuitive, picks up on non-verbal and interpersonal clues

Hobbies: reading, listening to music, travelling, walking, relaxing

The HBDI evolves from the Whole Brain® Model

The HBDI is about THINKING

The HBDI is used to identify Whole Brain® Thinking preferences. It does not indicate how our brain works or functions. Rather it articulates a model for how we prefer to think.

Thinking (sometimes called cognition):
The process of using one's mind to consider or reason about something. The mental action or process of acquiring knowledge and understanding through thought, experience and the senses.

- Thinking is not intelligence
- Thinking is not personality
- Thinking is not values
- Thinking is not emotions
- Thinking is not behaviour
- Thinking is not about competence

The HBDI assumes we have PREFERENCES.

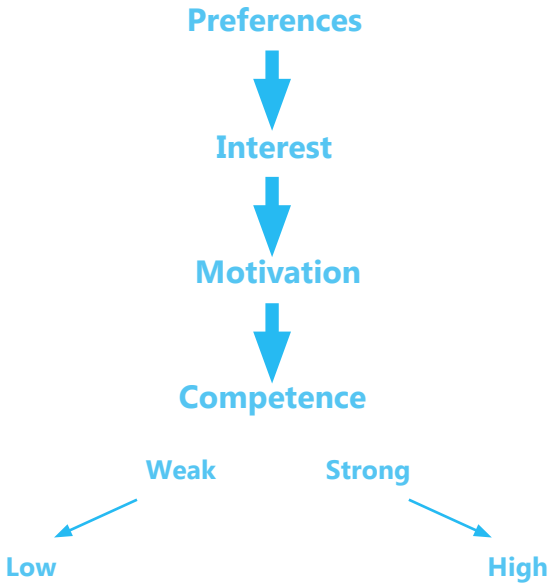
The Whole Brain® Model assumes we have different thinking preferences. Just as we may prefer writing with our left or right hand, we have certain thinking preferences, called cognitive preferences or as Ned referred to them, preferred modes of knowing.

Dominance is thought to have developed as an evolutionary function to reduce cognitive load and increase our response in a situation. It also enables us to develop and strengthen skills. Preferred modes of knowing will correlate with what we will prefer to learn and how we learn it. But it will NOT indicate our competence to perform in a certain area.

"A preference for a certain mental activity and the competence to perform it are two completely different things."

A brief introduction to the functioning of the brain can provide insights into how preferences develop, specifically the concept of brain plasticity. Brain plasticity refers to the idea that the brain can constantly change and evolve. Developing new neural pathways based on one's experiences.

Michael Merzenich was the first to refute the argument that the brain was hard-wired from birth and could not develop after a critical period of development. He asserted the "view that we are born with a hardwired system had to be wrong. The brain had to be plastic."



The HBDI evolves from the Whole Brain® Model

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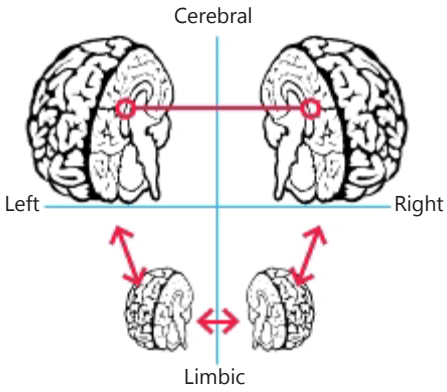
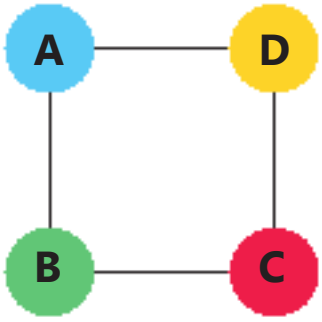
Summary of the development of the Whole Brain® Model and the HBDI

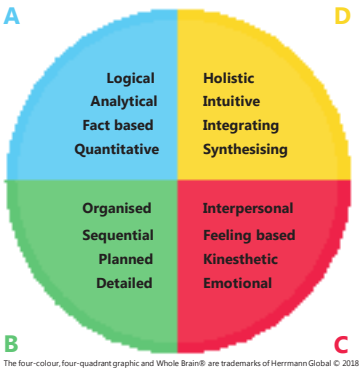
Physiology – the brain



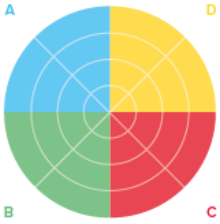
Architecture – the organising principle



Whole Brain® Thinking Model



Application – the HBDI



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