An introduction to the science of thinking

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assisted by John Little

Thinking as a science

- thinking is a skill,

  but can there be a science of thinking?

- a science makes sense of a mass of data
- Galileo gave us a science of movement
- Newton introduced a science of optics

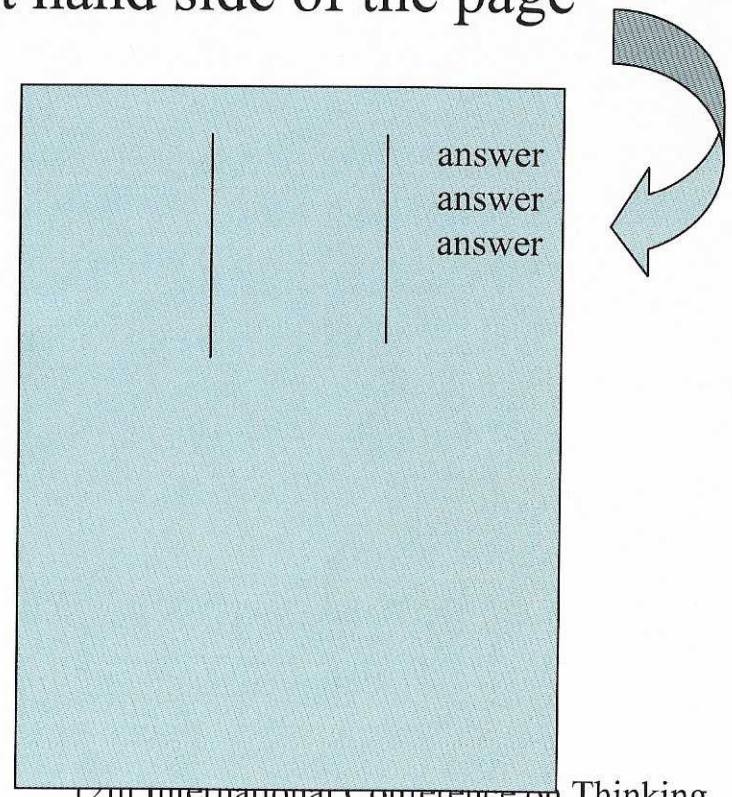
Let's gather some experiential data on thinking

In this data we will discover:

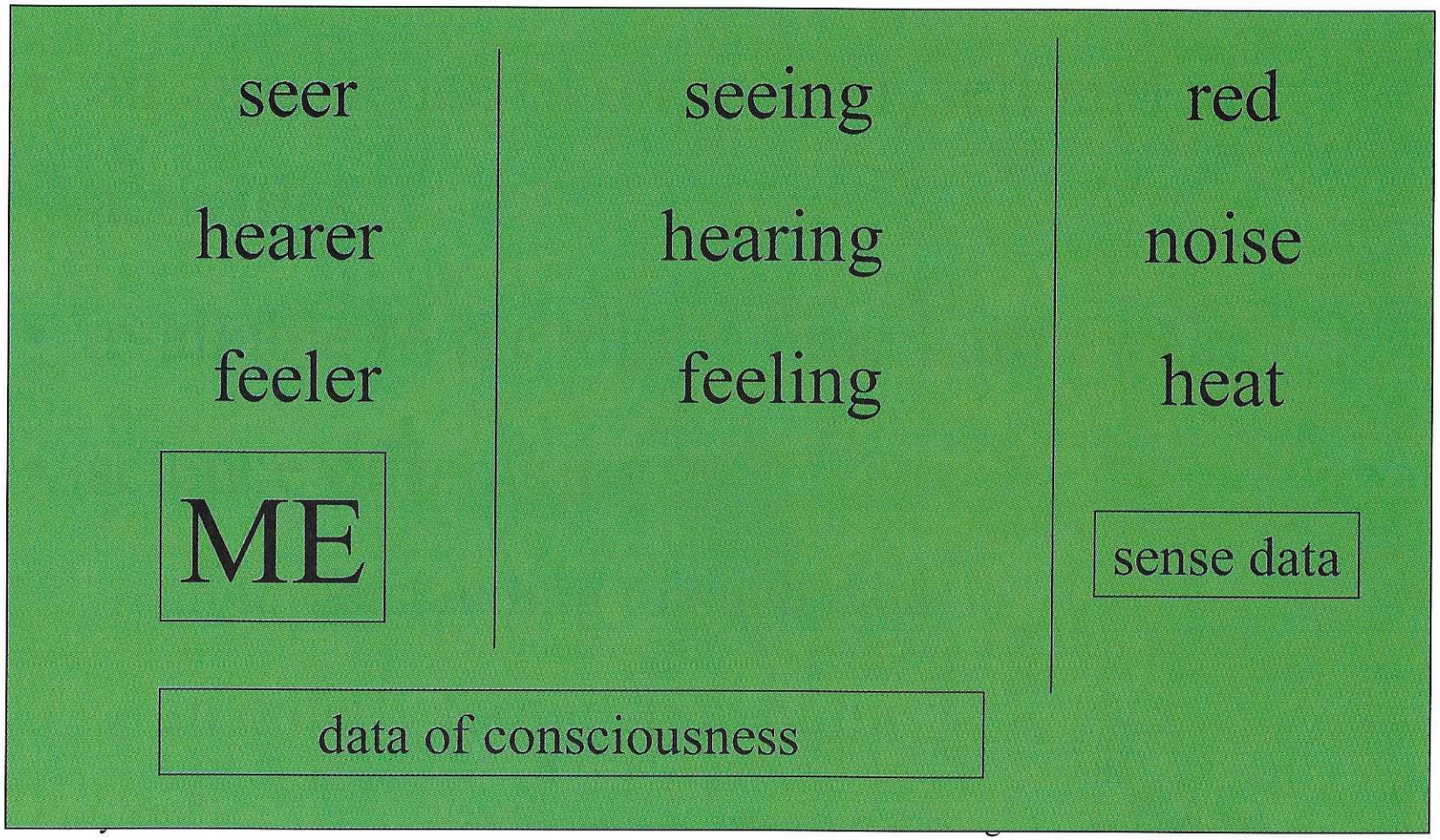
- landmarks in thinking
- the structure of thinking
- skills appropriate to each of the landmarks

Exercises in experiencing data

Write your responses on p 147…of your conference program,
on the right hand side of the page



Distinctions in our experiences



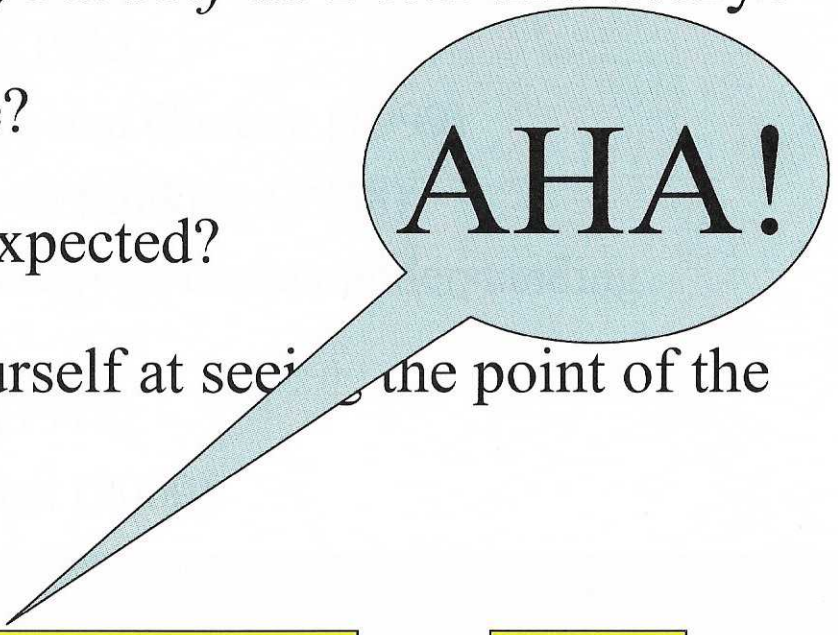
Consciousness

- an experience of data on myself and my activities
- available to me all the time I am awake
- science of thinking:
  - an understanding of such data
  - an orderly formulation of this

Further data on thinking

What is your experience *of yourself* as I tell this story?

- does this story make sense?
- was the final sentence unexpected?
- were you pleased with yourself at seeing the point of the twist?



an understander

grasping the point of

a joke

Puzzles

- Puzzles are a powerful follow-up to jokes.
- Many are found in:
  - George Polya: How to Solve it (1945)
  - ~~Ian~~ James Stewart: Calculus - Concepts and Content (1999)
  - Edward de Bono: 5 day course in thinking (1968)
  - Bernard Lonergan: Insight - a study in human understanding (1957)
  - Martin Gardner: Aha! Insight (1978)
  - David Perkins: The Eureka Effect (2000)

Aristotle: "forms are grasped by the mind in images"

Testimonies to the importance of "scientific hunches"

- Washington Platt and Ross Baker (1931)
  - "I had been studying to improve circulation of oil in pipe coils for several days. Sunday in church the correct principle came like a flash as the preacher was announcing the text. I put it into practice. it was correct. Strange to say, I have always remembered the text and the sermon." (D. Wesson)
- Eliot Dole Hutchinson (1939 - 1943)

Conceptualisation

Conceptualisation is an effort

- to preserve the vivid insight and
- to communicate it to others

Inquiry

- have you any questions?
- what new data have you just experienced?

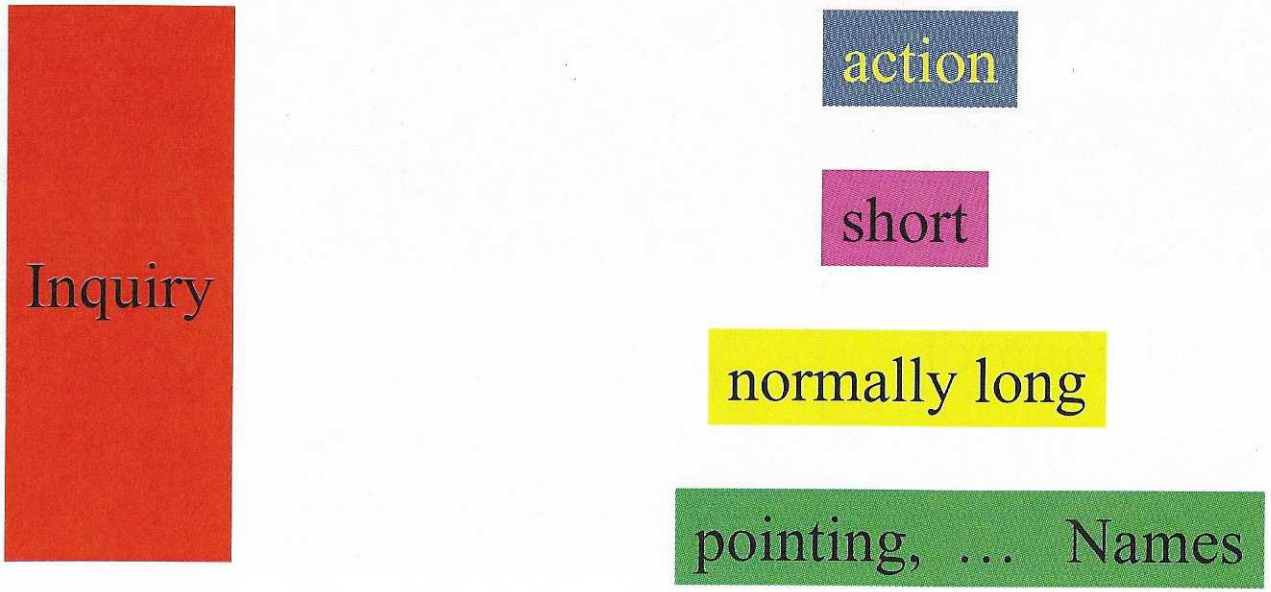
an enquirer

wondering about

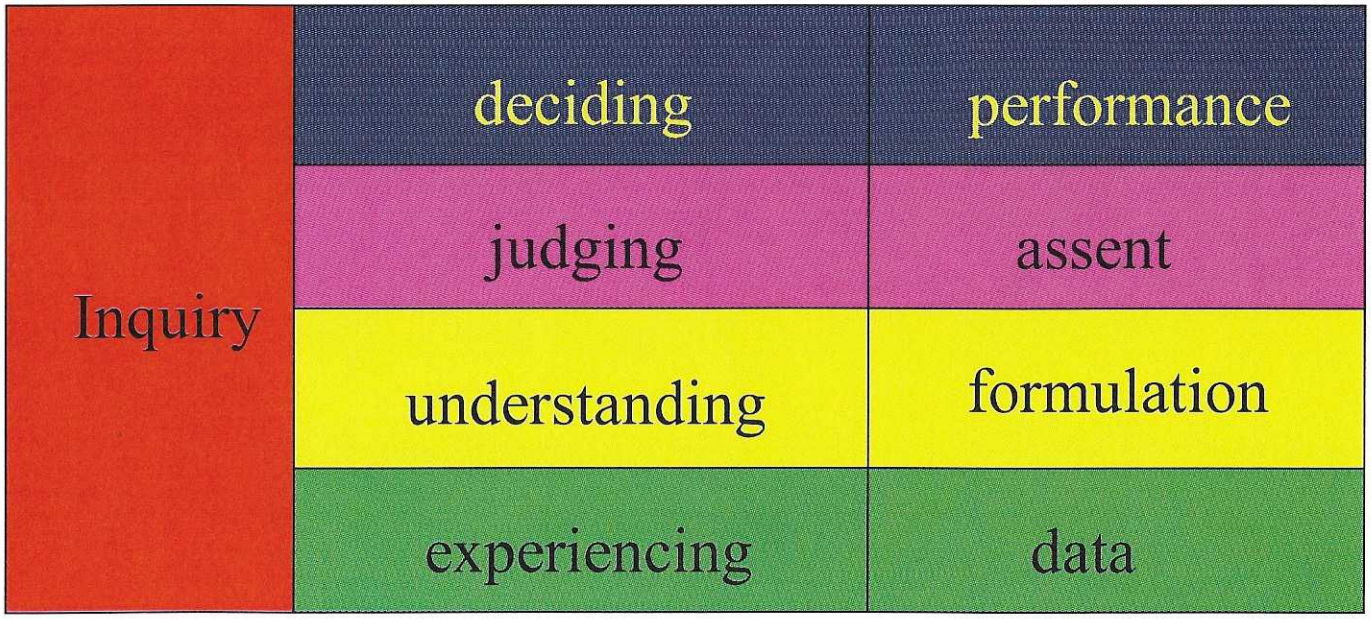
a mass of recently presented data

Let me distinguish types of questions

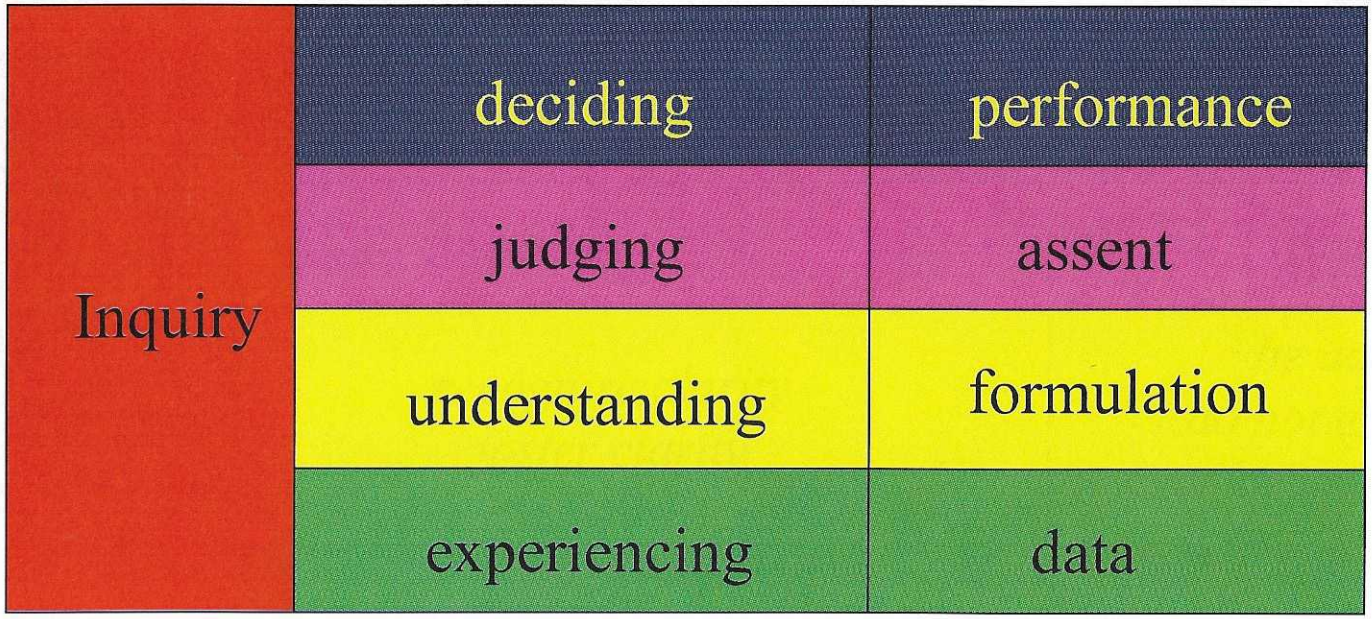
by type of appropriate answer



the structure of thinking



the SCIENCE of thinking



the Skills of thinking

Inquiry	deciding *be fair, patient, team spirited, committed, courageous, self controlled, objective, and open to each of the basic human goods*	performance
	judging *become familiar with the field* *ask all relevant questions* *test against the DATA*	assent *be humble but not shy* *do not assent without full justification*
be open *be active* *avoid drifting* *avoid obscurantism*	understanding *recognise clarity* *foster clarity*	formulation *be accurate* *do not exaggerate or understate*
	experiencing *attend to the data* *gather a wide range of data*	data

Aristotle's distinction between sensation and intelligence (through saturation)

"the perceptive and intellectual faculties are not alike. For a sense loses its power to perceive after something excessively perceptible; it cannot for instance perceive a sound after very great sounds, nor can it see after strong colours nor smell after strong smells,

whereas when the intellect has understood something extremely intelligible, it understands lesser things more, not less"

Have you ever experienced…?

- one big **insight** that lead on quickly to other insights in the same area?
- one very firm **assent** that facilitated assents to other minor issues?
- a difficult but strong **decision** that has lead quickly to a series of minor decisions?
- one powerful basic **question** that made it easy for you to formulate a whole series of minor questions?

if so…

…you have a clue to why Aristotle makes sense praising an **understanding of understanding**, while his commentators, lacking the science of thinking, are perplexed by his apparent stupidity in valuing a life of **thinking about thought.**