



MENTAL MODELS

#WIAD - WORLD IA DAY 2013

#IA2013GENK - FEB 9, 2013

WOUTER WALGRAEVE - NASCOM



HI!

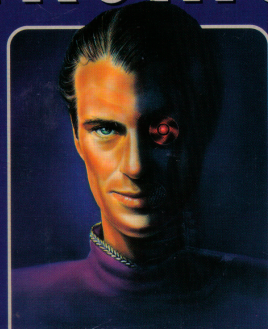
I AM WOUTER WALGRAEVE

AND I WORK AT NASCOM

I LOVE
SCIENCE FICTION

ISAAC ASIMOV &
ROBERT SILVERBERG

THE
POSITRONIC
MAN





ASIMOV &
THE 3 LAWS OF ROBOTICS

1

A ROBOT MAY NOT INJURE A HUMAN BEING OR, THROUGH INACTION,
ALLOW A HUMAN BEING TO COME TO HARM.

2

A ROBOT MUST OBEY THE ORDERS GIVEN TO IT BY HUMAN BEINGS,
EXCEPT WHERE SUCH ORDERS WOULD CONFLICT WITH THE FIRST LAW.

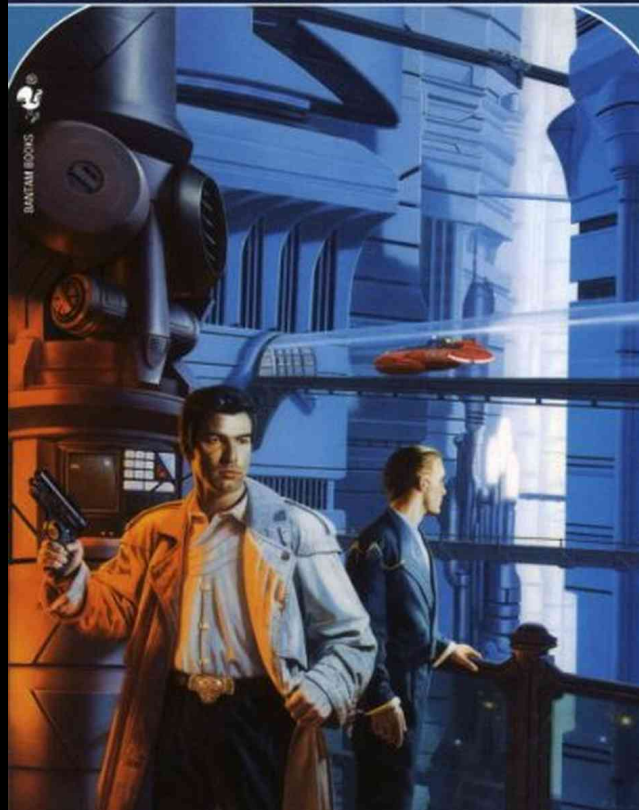
3

A ROBOT MUST PROTECT ITS OWN EXISTENCE AS LONG AS SUCH
PROTECTION DOES NOT CONFLICT WITH THE FIRST OR SECOND LAWS.

ASIMOV

THE ROBOT SERIES

THE CAVES OF STEEL



ASIMOV &
THE POSITRONIC BRAIN

AM

3

154

AT WIAD 2012, I DID A PRESENTATION ON THE
MENTAL MODEL OF TIMELINES

THIS TIME, LET'S GO DEEPER
AND DISCUSS...

MENTAL MODELING



A close-up photograph of a hand holding a Kinder Surprise egg. The egg is partially unwrapped, showing the white foil top and the orange plastic bottom. The foil has the text 'Kinder SURPRISE' printed on it, with 'Kinder' in black and red, and 'SURPRISE' in large, colorful, block letters. A small blue label on the foil says 'LAIT CACAO'. The background is a soft, out-of-focus brown.

THE MENTAL MODEL OF A
KINDER SURPRISE



WHY DO ATHLETES RUN AROUND
THE TRACK COUNTER-CLOCKWISE?



WHAT IS THE ORIGIN OF
THE ZEBRA CROSSING?

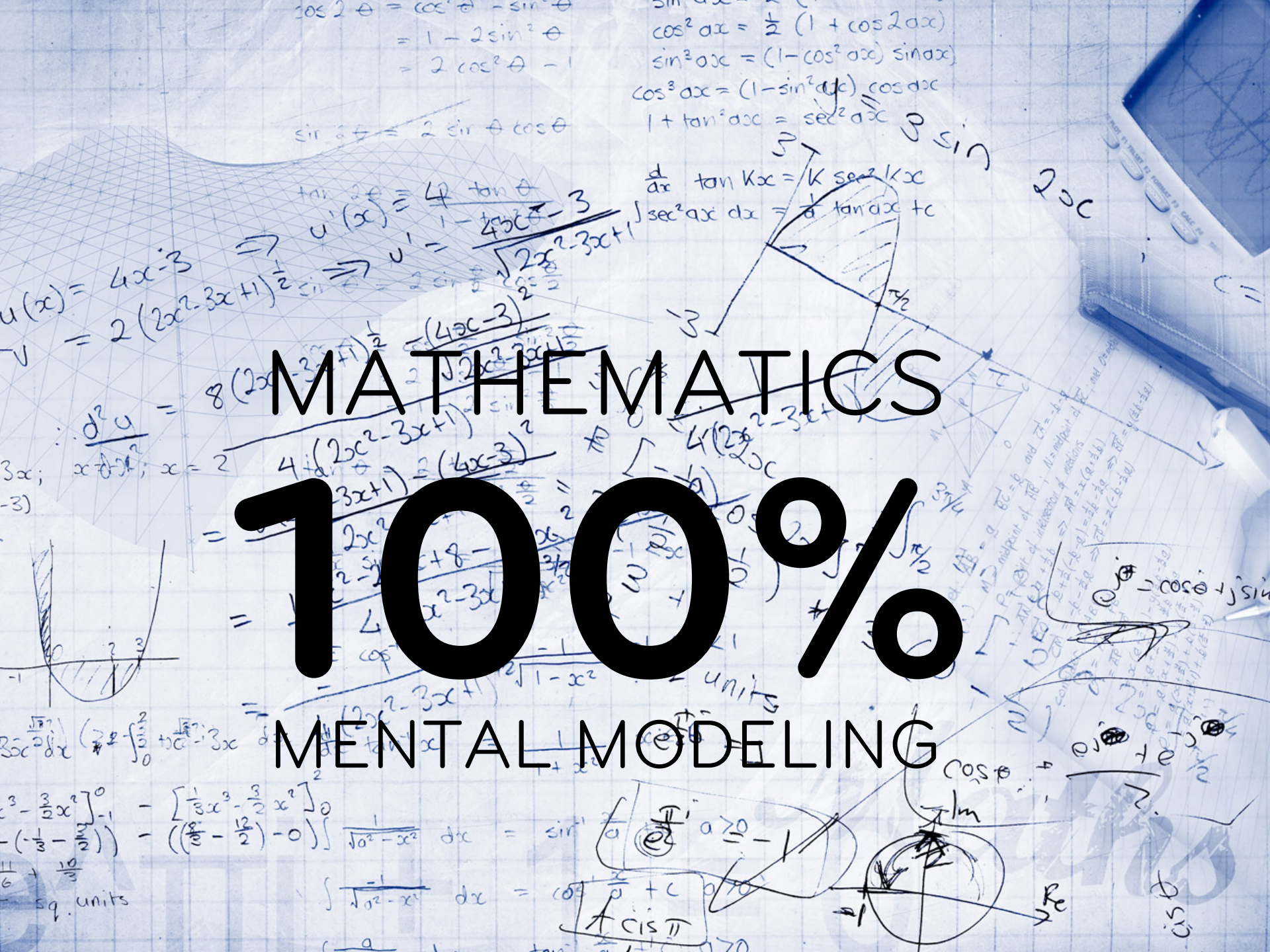
DO AIRPLANES HAVE KEYS?
OR HORNS?



“MENTAL MODELS ARE ESSENTIAL TOOLS
ALLOWING US TO NAVIGATE THROUGH LIFE”



CUTTING A PIE
IS NO PIECE OF CAKE



MATHEMATICS

100%

MENTAL MODELING

IMAGINE A WINDMILL

5 SECONDS



A WINDMILL,
2013



A WINDMILL,
A FEW DECADES AGO



A WINDMILL,
A FEW DECADES AGO,
IN THE STATES



WHAT DIRECTION DO
WINDMILLS TURN?

“HOW YOU INTERACT WITH A TECHNOLOGY
IS A FUNCTION OF YOUR MENTAL MODEL
OF THAT TECHNOLOGY”

“SHAKE IT LIKE A
POLAROID PICTURE”

WRONG MENTAL MODELS
CAUSING TROUBLE...





GETTING TRAPPED
IN A MENTAL MODEL

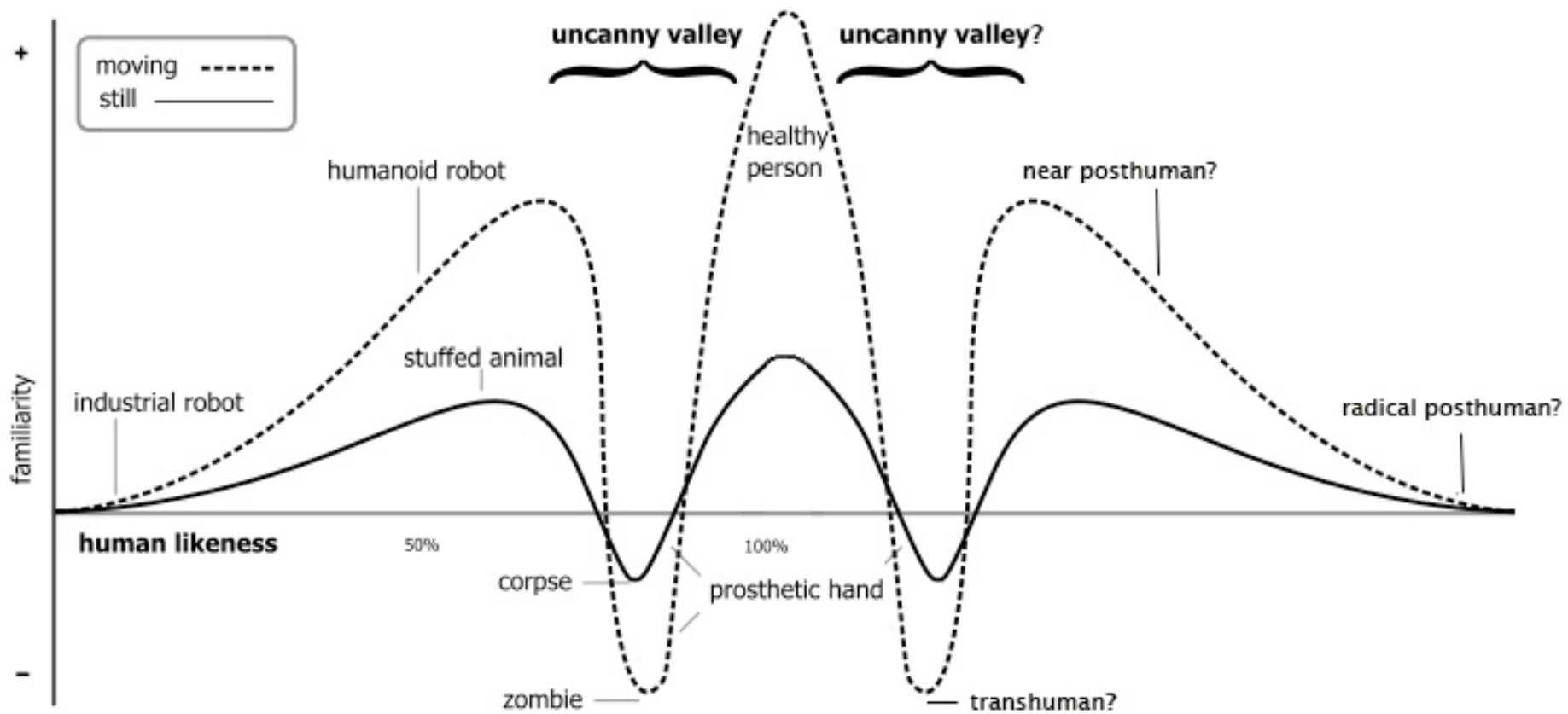



MENTAL MODELS
ARE COMFORTING

ALTHOUGH IT IS SF,
ALIENS OFTEN LOOK VERY HUMANOID.

THE UNCANNY VALLEY





A futuristic spaceship is shown in space, viewed from a low angle. The ship has a long, cylindrical body with various panels and lights. At the rear, a large, bright blue and white engine glow is visible. The ship is oriented vertically, with its nose pointing towards the top of the frame. The background is a dark, starry space with some nebulae or gas clouds.

WHY ARE SPACESHIPS
IN SF AERODYNAMIC?



IMAGE A FUTURISTIC VEHICLE



MENTAL MODELS
EVOLVE...



CHARACTERISTICS OF A MENTAL MODEL

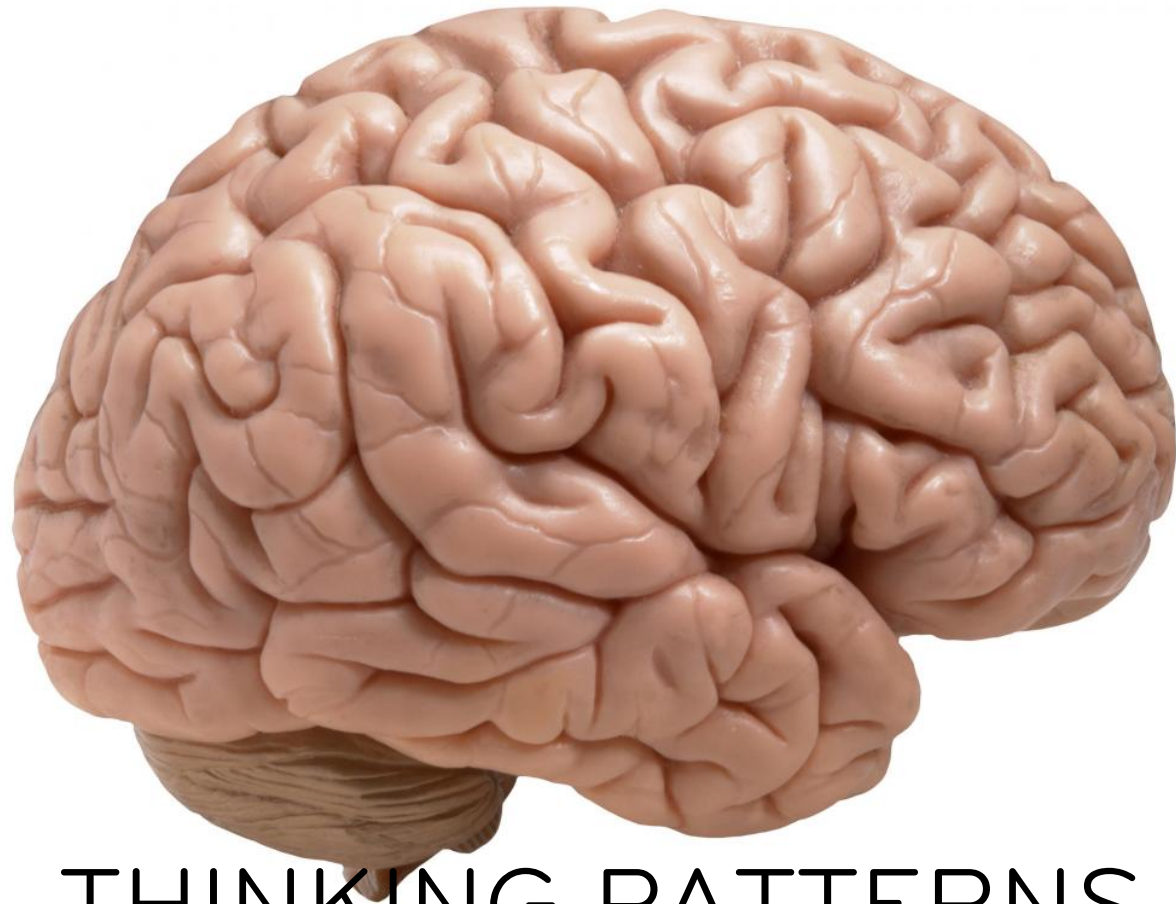


MENTAL MODELS ARE SIMILAR IN STRUCTURE
TO THE THING OR CONCEPT THEY REPRESENT.

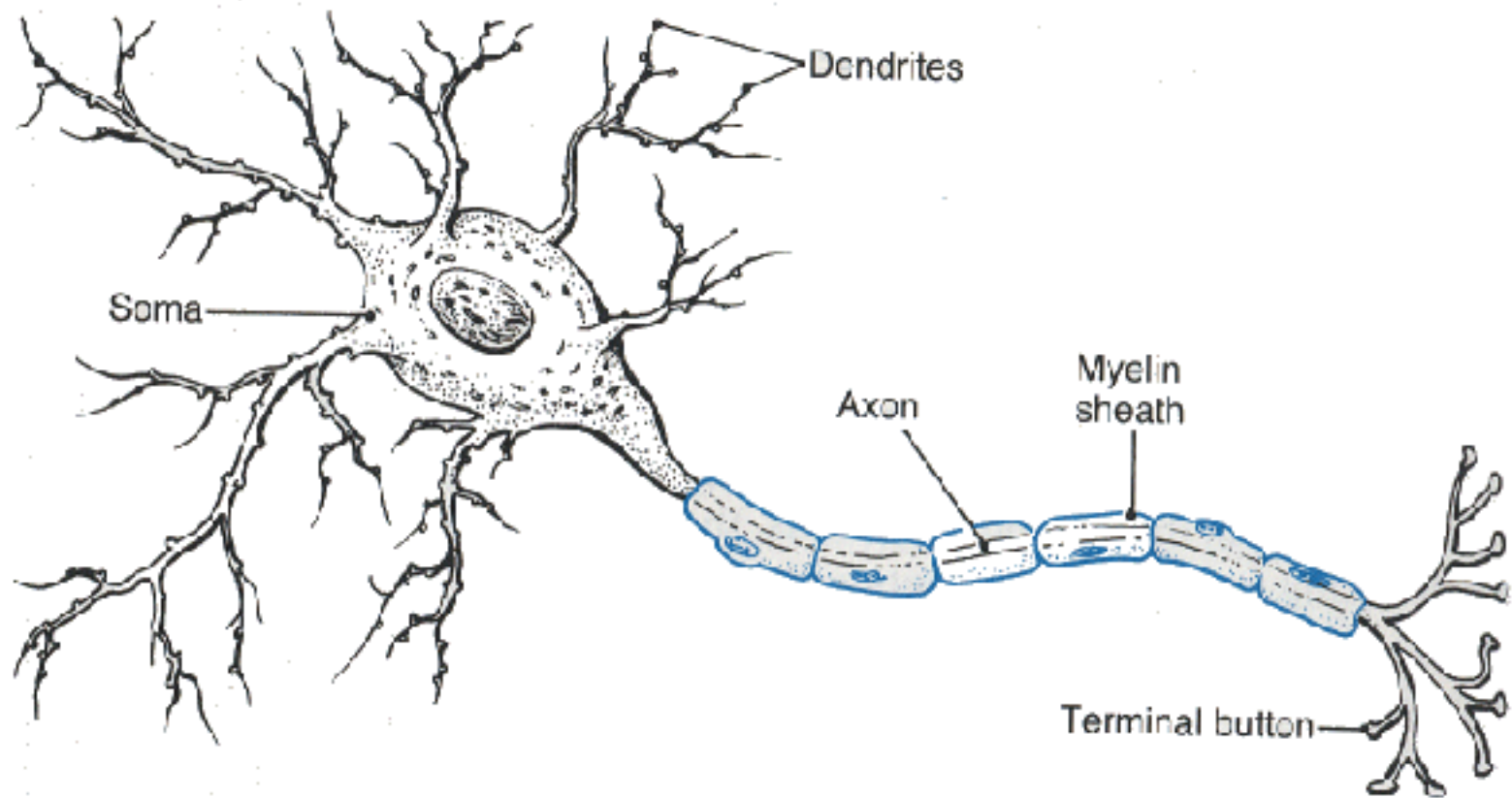
MENTAL MODELS ALLOW A PERSON
TO PREDICT THE RESULTS OF HIS ACTIONS.

MENTAL MODELS ARE SIMPLER
THAN THE THING OR CONCEPT THEY REPRESENT.
THEY INCLUDE ONLY ENOUGH INFORMATION TO
ALLOW ACCURATE PREDICTIONS.

MENTAL MODELS INCLUDE
WHAT A PERSON THINKS IS TRUE,
NOT NECESSARILY WHAT IS ACTUALLY TRUE.



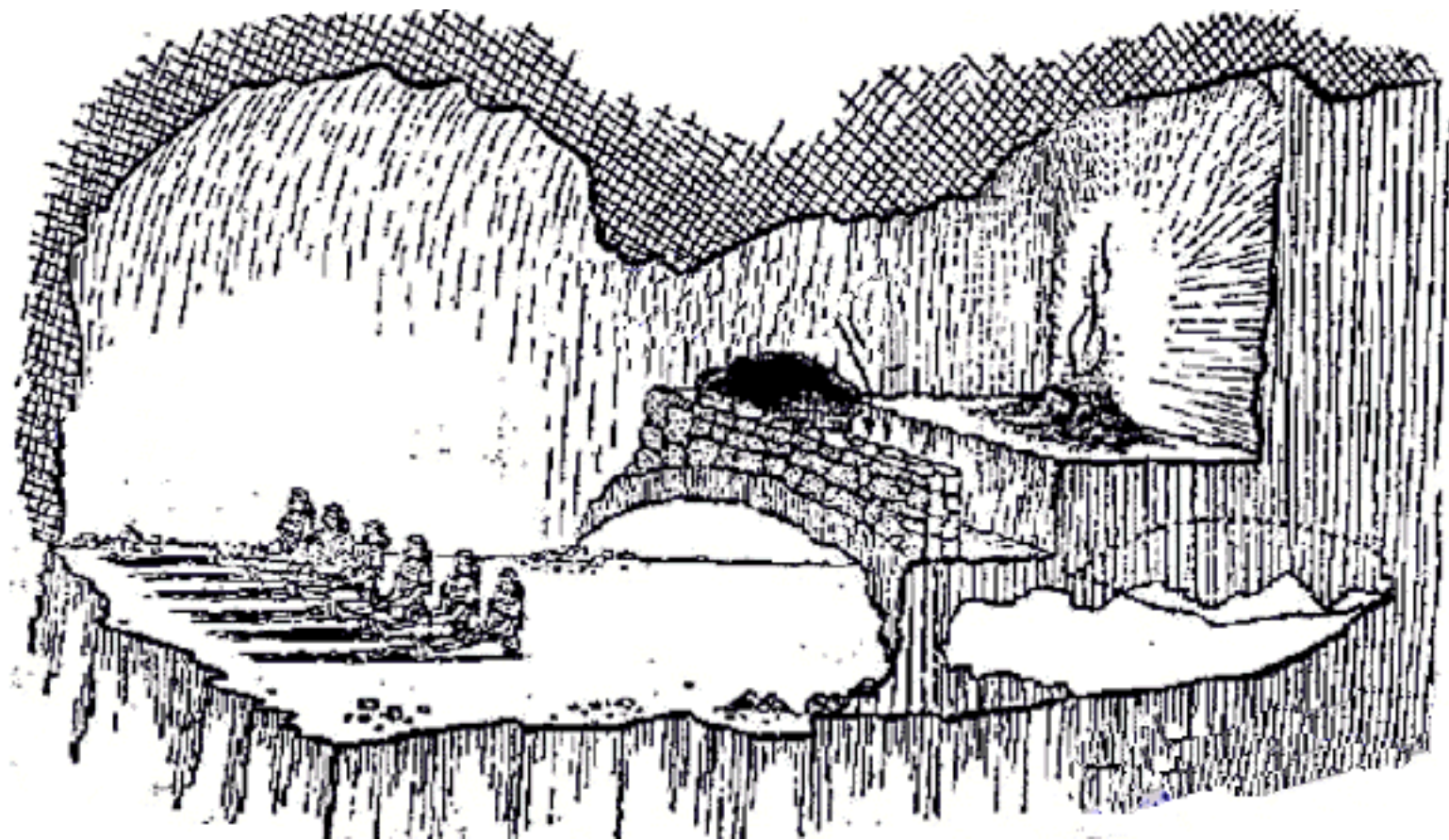
THINKING PATTERNS





PLATO

INFORMATION ARCHITECT



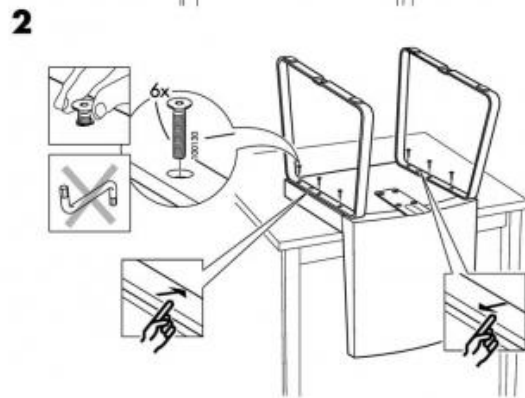
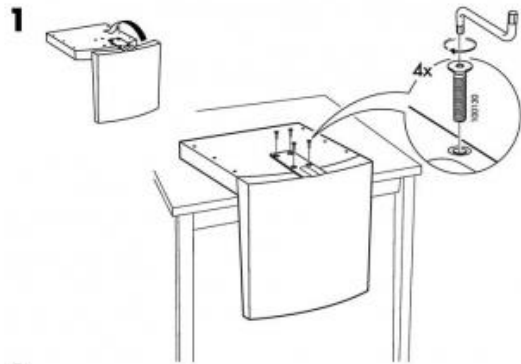


NEO

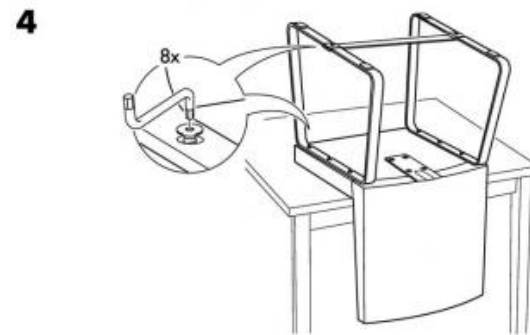
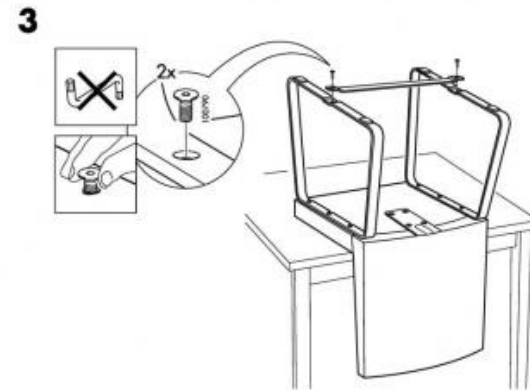
INFORMATION ARCHITECT







3



4

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RECOGNIZING PATTERNS

MEETING EXPECTATIONS!

PATTERN + IDEA

LEFT + RIGHT



DEAR MOTHER NATURE,
TWO NOSTRILS? SERIOUSLY??

Left brain

the left brain.
ist. A mathematician.
ategorize. I am accurate. Linear
ategic. I am practical.
aster of words and language.
ations and play with numbers.
I am logic.
actly who I am



Right brain

I am the right brain.
I am creativity. A free spirit. I am passion.
earing. Sensuality. I am the sound of roaring laug
I am taste. The feeling of sand beneath bare fee
I am movement. Vivid colors.
I am the urge to paint on an empty canvas.
I am boundless imagination. Art. Poetry. I sense
I am everything I wanted to be.



THE PROCESS OF LEARNING

LEARN TO RECOGNIZE PATTERNS

MENTAL MODELS =

INSIGHTS, NOT KNOWLEDGE

MENTAL MODELS =

CONSCIOUS AND UNCONSCIOUS

MENTAL MODELS IN INFORMATION ARCHITECTURE



DESIGN / VISUAL
THINKING

Patterns for Effective Interaction Design

Designing Interfaces



O'REILLY®

Jenifer Tidwell

SAFE EXPLORATION

“LET ME EXPLORE WITHOUT GETTING LOST
OR GETTING INTO TROUBLE.”

INSTANT GRATIFICATION

“I WANT TO ACCOMPLISH SOMETHING NOW,
NOT LATER.”

SATISFICING

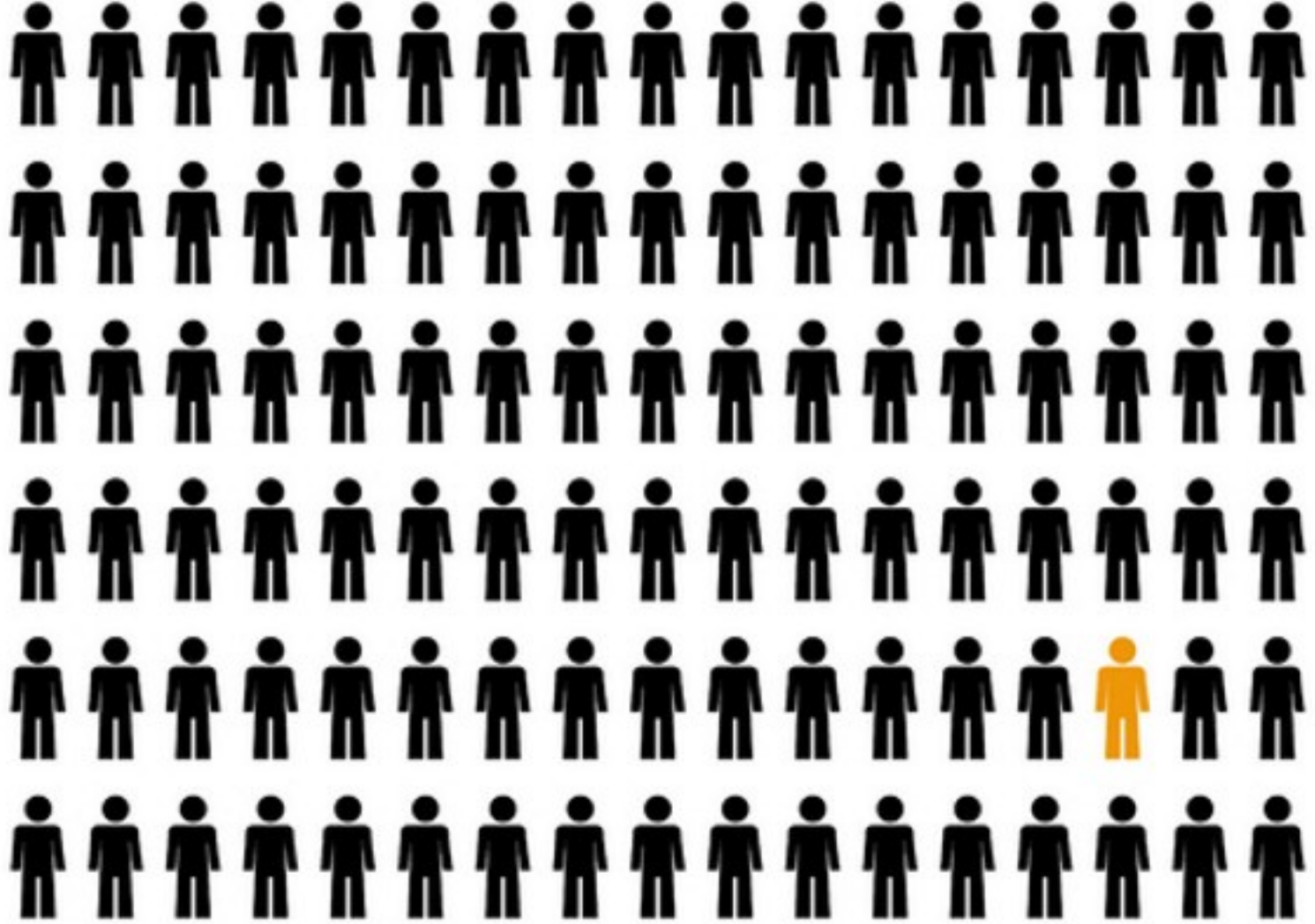
“THIS IS GOOD ENOUGH. I DON'T WANT TO SPEND MORE TIME LEARNING TO DO IT BETTER.”

HABITUATION

“THAT GESTURE WORKS EVERYWHERE ELSE,
WHY DOESN'T IT WORK HERE TOO?”

SPATIAL MEMORY

“I SWEAR THAT BUTTON WAS HERE A
MINUTE AGO, WHERE DID IT GO?”







CONGRATULATIONS,
YOU UNLOCKED THE [CLOSURE](#) BADGE!

GESTALTISM

GESTALT - “ESSENCE OR SHAPE OF AN ENTITY'S COMPLETE FORM”

GESTALT PRINCIPLES

proximity



similarity



continuity



closure

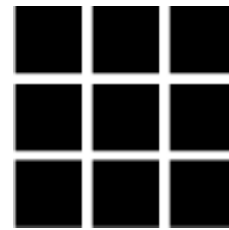
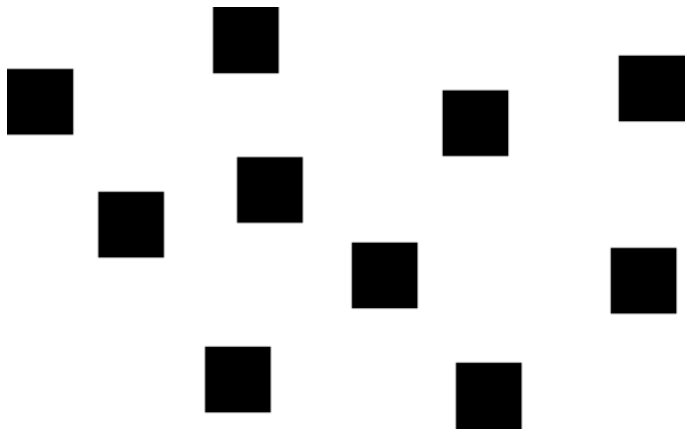


area

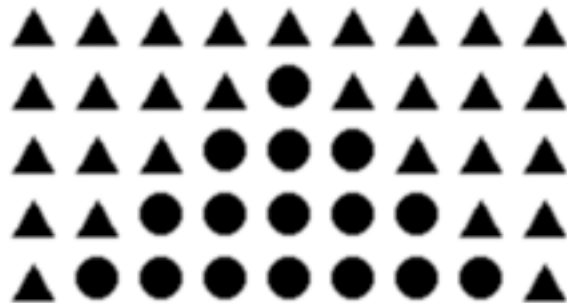


symmetry





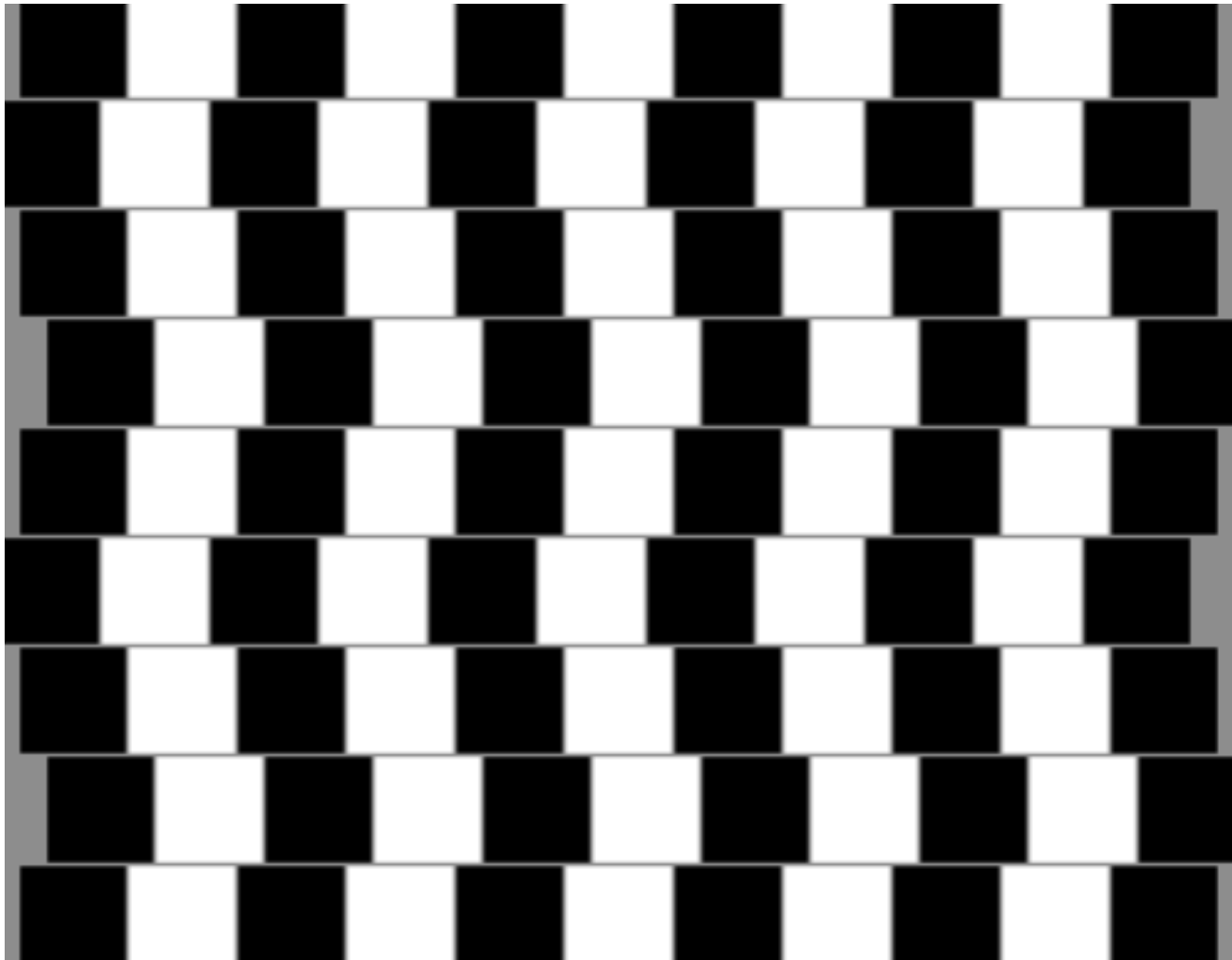


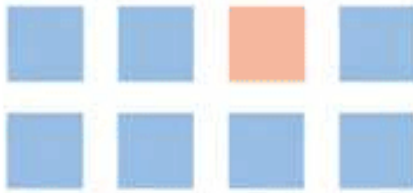


Similar elements will be perceived as part of the same form. These similarities may include shape, size, and rotation.

Even the Gestalt principles of continuity and proximity are affected by similarity.







Color hue



Position and alignment



Color brightness



Orientation



Color saturation



Size



Texture

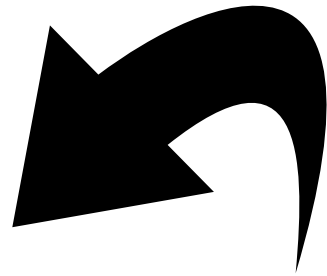


Shape

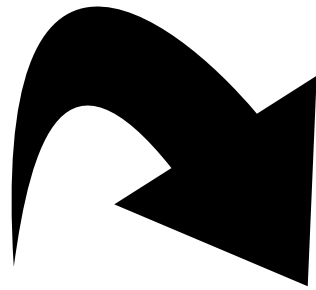
LAW OF PAST EXPERIENCE

YOUR MEMORY IS A
TREASURE OF MENTAL MODELS

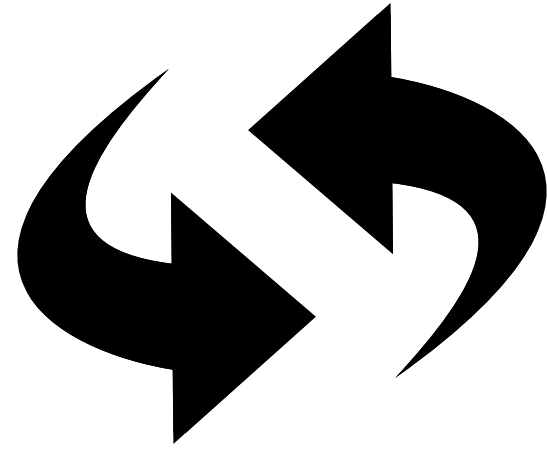
ICONS, SYMBOLS
AND THE SEMIOTIC WEB



UNDO



REDO



REFRESH

REPLAY



REPLAY



REPLAY



REFRESH

MENTAL MODELS
= CREATIVITY

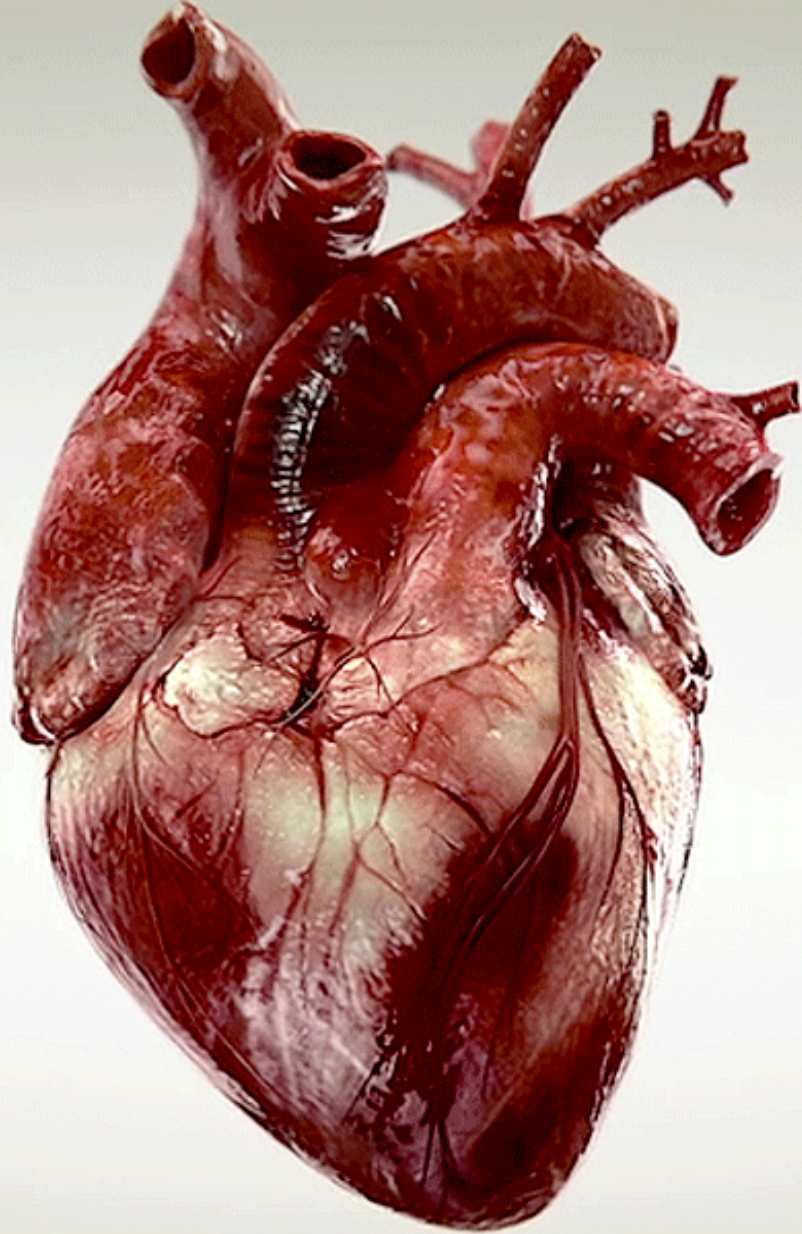


CREATIVITY IS...

SEARCHING FOR THE
MENTAL MODEL OF A USER

CREATIVITY IS...

STRETCHING THE LIMITS
OF A MENTAL MODEL



MENTAL MODELING IS...
THE HEARTBEAT
OF IA



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