IB AFRICA, EUROPE & MIDDLE EAST REGIONAL CONFERENCE 2014

ROME • 16–19 OCTOBER

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Exploring designerly ways of knowing

Andrew Mayes

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Introduction

Andrew Mayes

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- Computer Science
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- Information Technology in a Global Society (ITGS)

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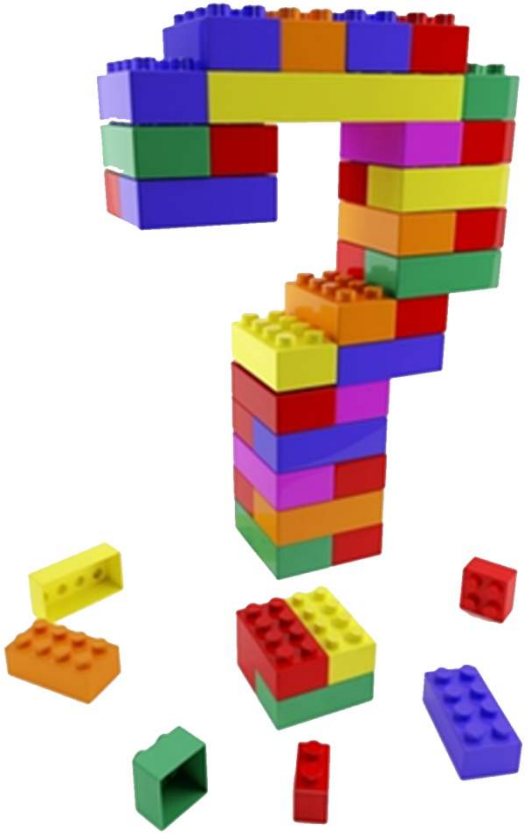
What's it all about?

- Cultures of education
- Designerly ways of knowing
  - Design methodologies
  - Design products

Cultures of education



"The collected experience of the material culture, and the collected body of experience, skill and understanding embodied in the arts of planning, inventing, making and doing" Royal College of Art (1979)

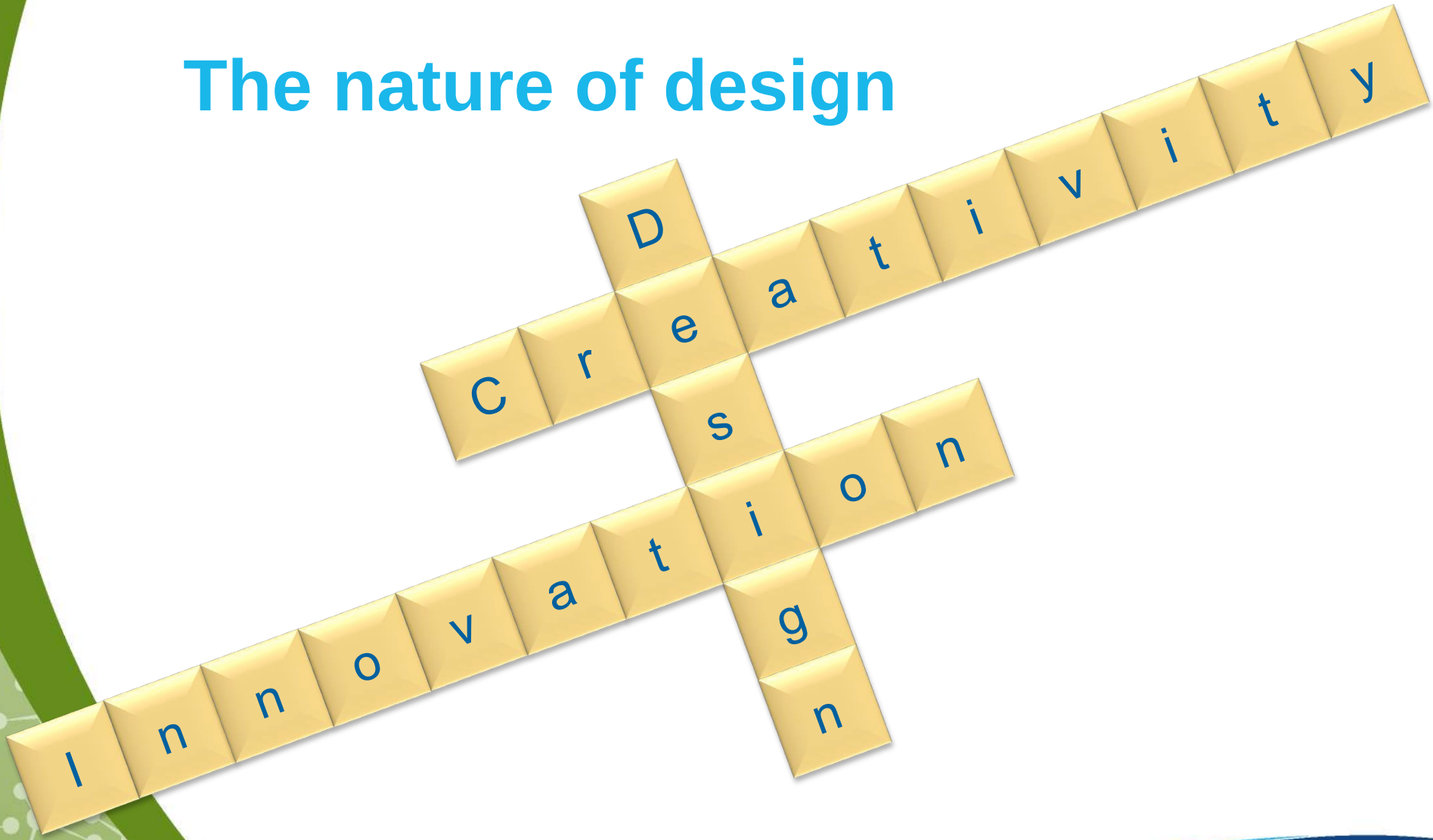
Images from: http://lego.wikia.com

Contrasting science, humanities and Design

	Science	Humanities	Design
Language	Numeracy	Literacy	Modelling
Area of study	The Natural World	Human experience	The artificial world
Methodology	Controlled experiment	Analogy	Modelling
	Classification	Metaphor	Pattern-formation
	Analysis	Evaluation	Synthesis
Values	Objectivity	Subjectivity	Practicality
	Rationality	Imagination	Ingenuity
	Neutrality	Commitment	Empathy
	Concern for ‘truth’	Concern for ‘justice’	Concern for ‘appropriateness’

Cross, N. (2006) Designerly ways of knowing. Springer-Verlag London.
First published in Design Studies Vol 3. No 4, October 1982, pp. 221-227

The nature of design



Ways of knowing – Areas of knowledge

Ways of knowing

- Language
- Sense perception
- Emotion
- Reason
- Imagination
- Faith
- Intuition
- Memory

Areas of knowledge

- Mathematics
- Natural sciences
- Human sciences
- History
- The arts
- Ethics
- Religious knowledge systems
- Indigenous knowledge systems

Designerly ways of knowing

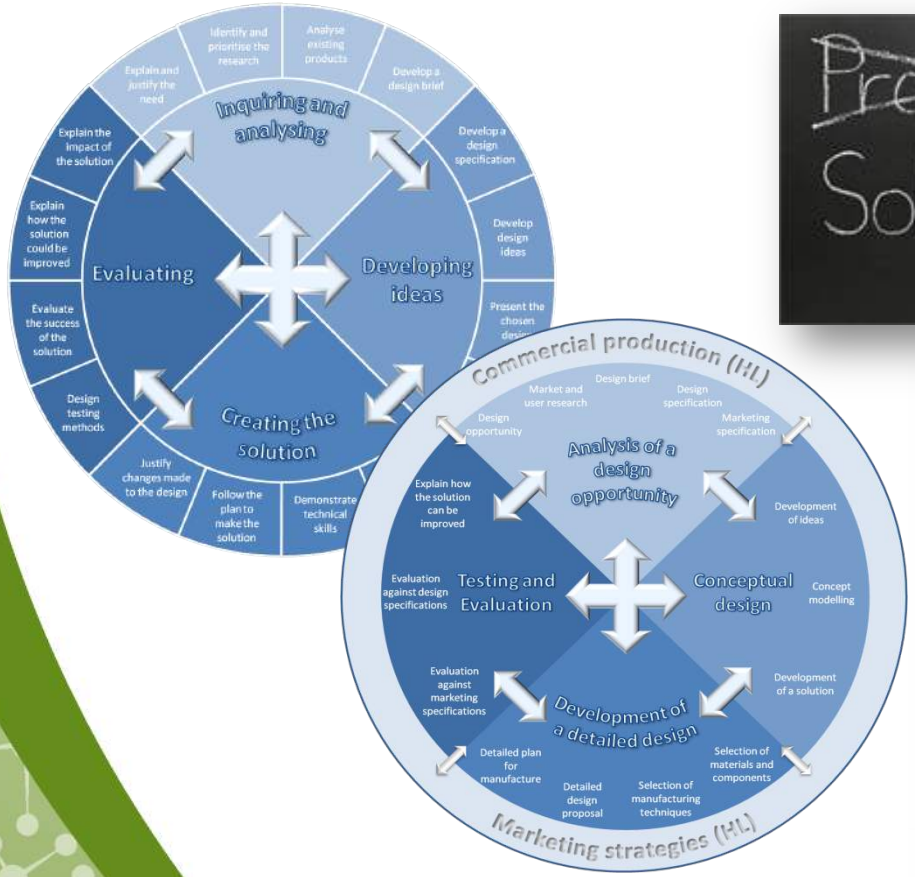
Design processes

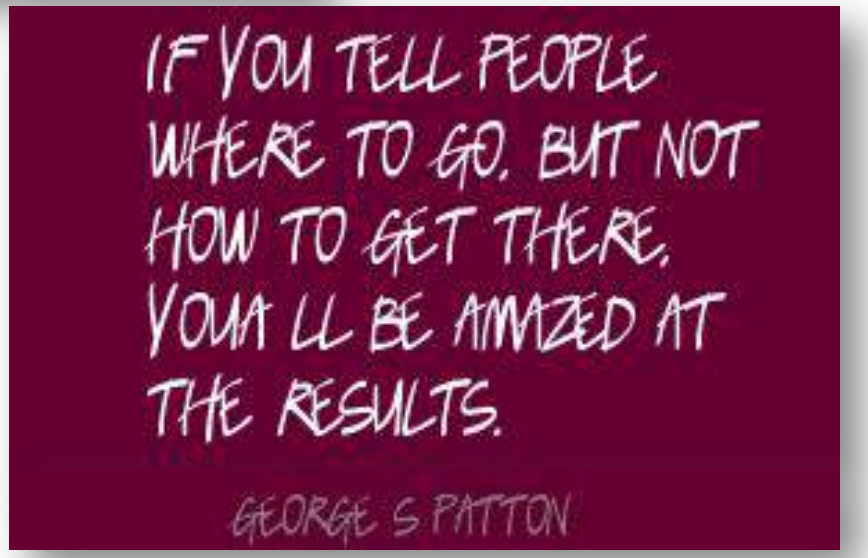
- Solution-focussed
- Wicked problems
- Using codes

Design products

- The wealth of knowledge embodied in objects
- Objects as a form of knowledge available to everyone
- Invention comes before theory

Solution-focussed





Images sourced from: http://www.thedragonflysolution.com.au/9-common-problems-for-business-organisations/
MYP Design guide (2014)
DP Design technology guide (2014)

Wicked problems

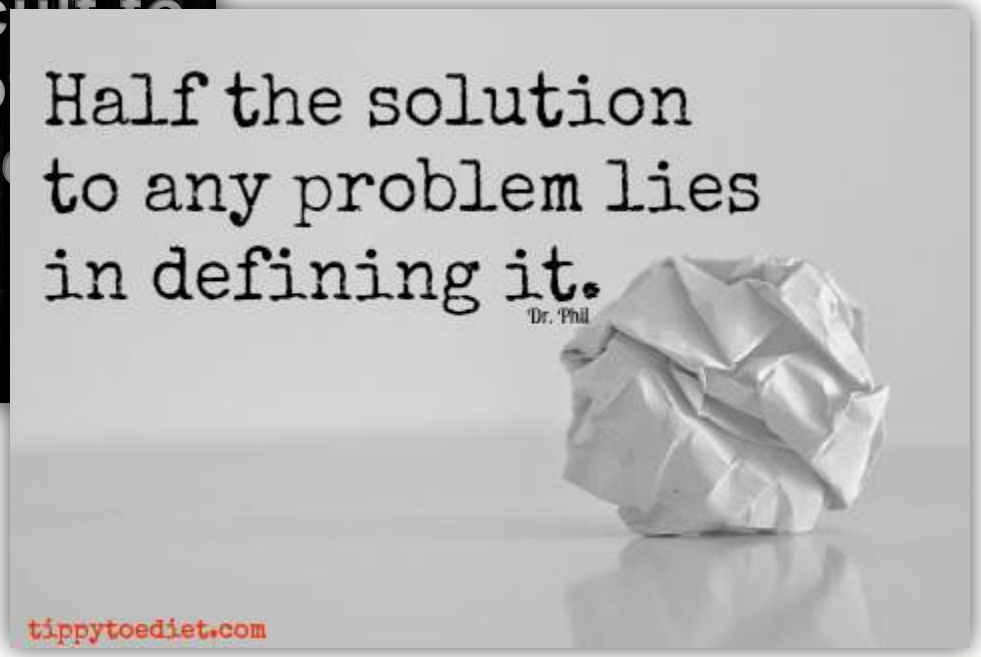
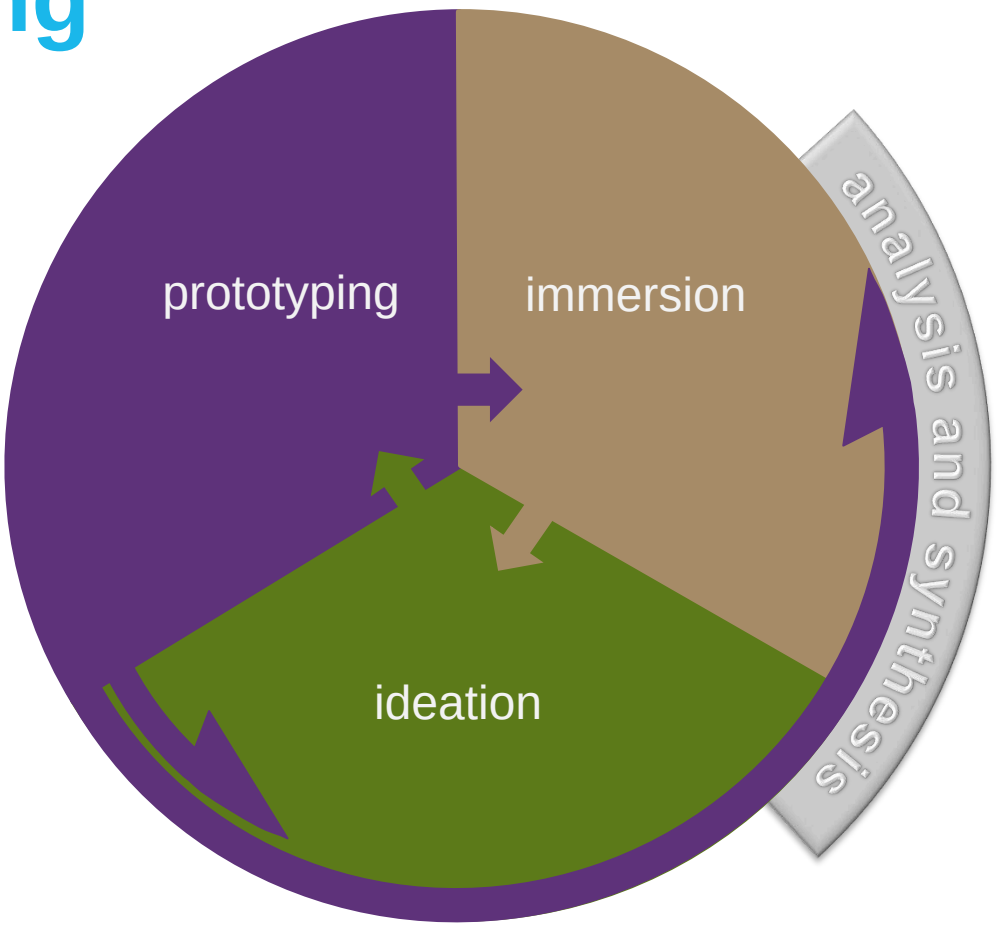


Image sourced from: http://www.tippytoedlet.com

Design thinking

"[Design thinking is] a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity."

Tim Brown, IDEO



Immersion

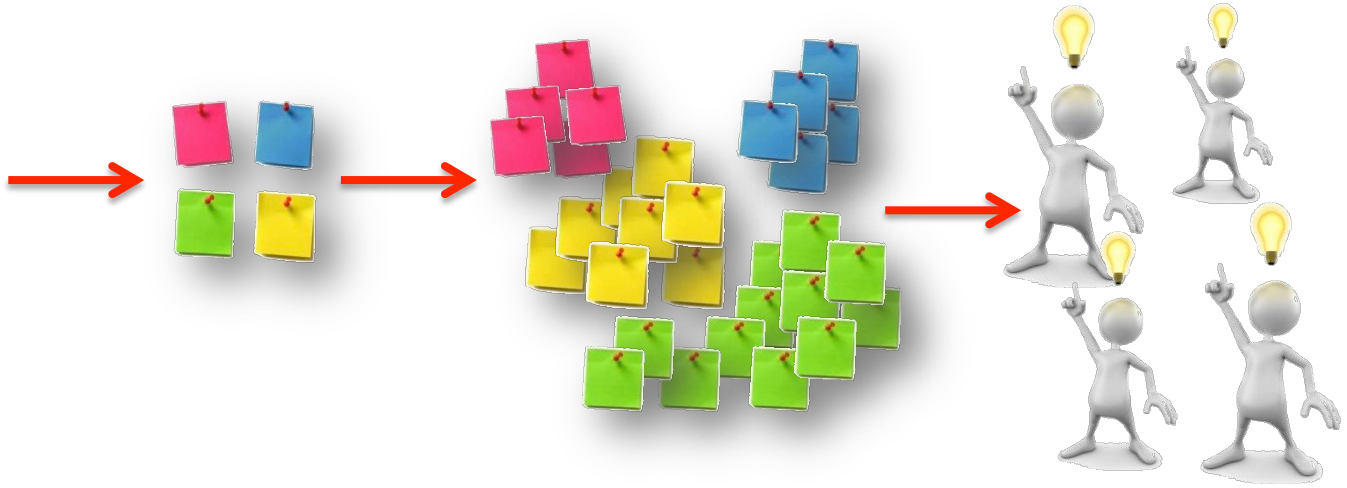
preliminary immersion

in-depth immersion

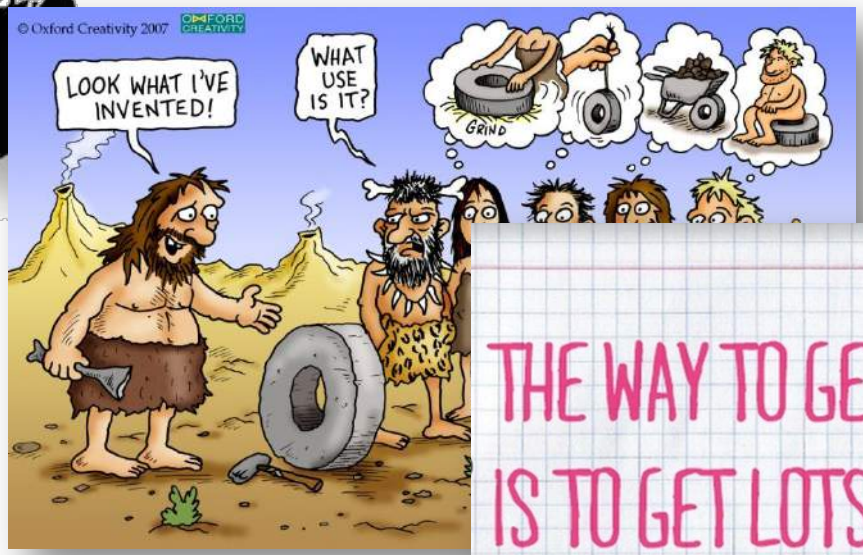
Image sourced from: http://poolwizardswi.com/?attachment_id=210

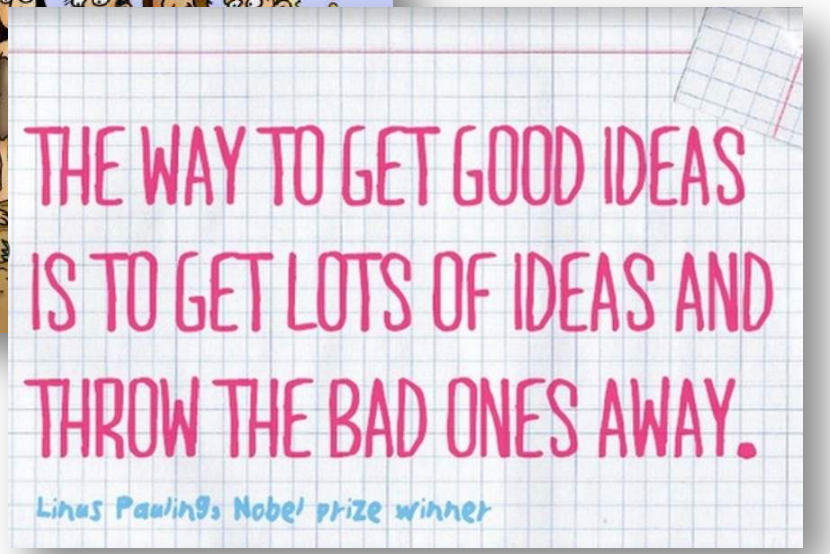
Analysis and synthesis

information

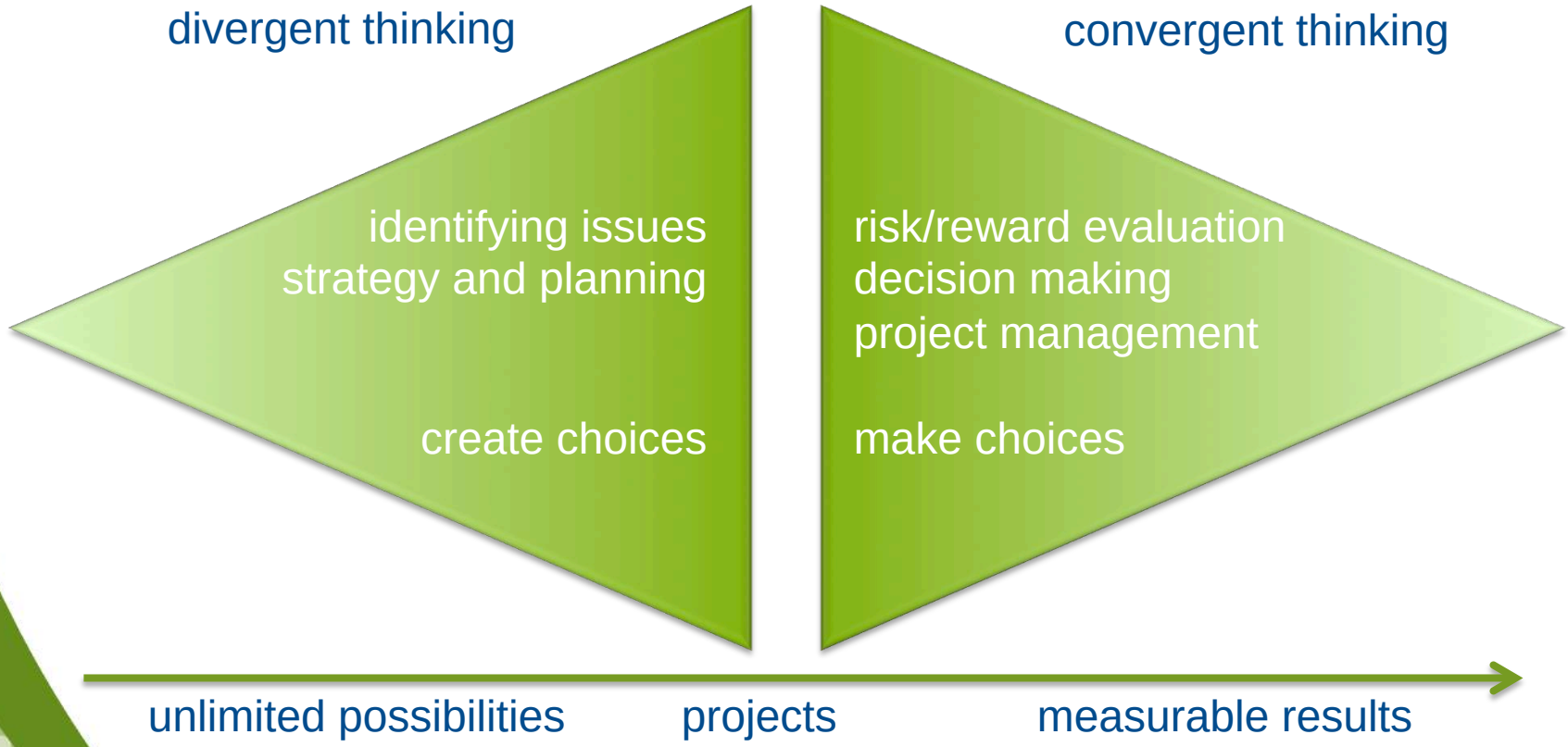


Ideation


© Oxford Creativity 2007
OXFORD CREATIVITY
LOOK WHAT I'VE INVENTED!
WHAT USE IS IT?
GRIND


THE WAY TO GET GOOD IDEAS
IS TO GET LOTS OF IDEAS AND
THROW THE BAD ONES AWAY.
Linus Pauling's Nobel prize winner

Divergent and convergent thinking



Inductive reasoning

Image sourced from: http://toknow-11.wikispaces.com/Inductive+Reasoning

Deductive reasoning

"Eliminate all other factors, and the one which remains must be the truth."

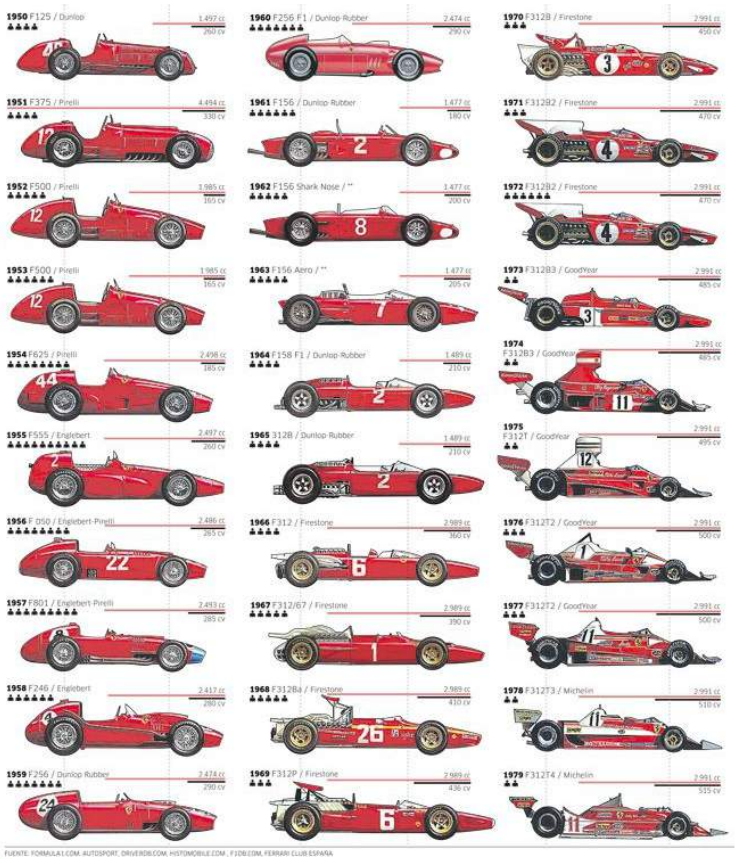
- Sherlock Holmes,
The sign of Four.

Image sourced from: http://images.clipartpanda.com

Abductive reasoning

Image sourced from:
http://blogs.solidworks.com/solidworksblog/2012/09/whats-the-difference-in-solidworks-packages.html

The best answer for now



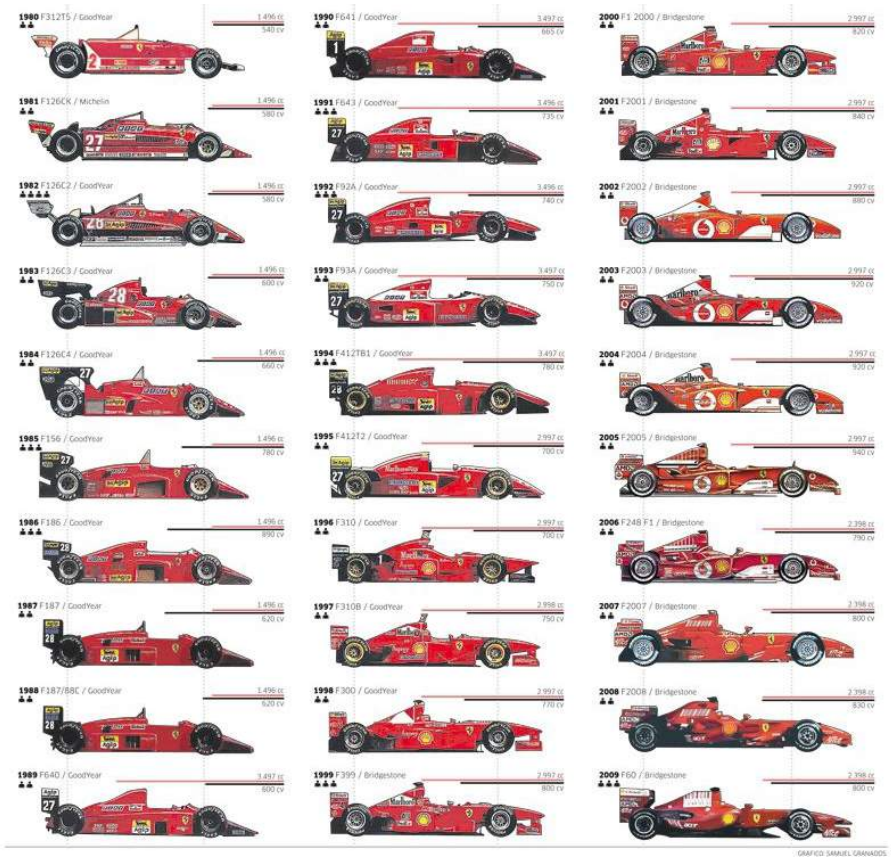
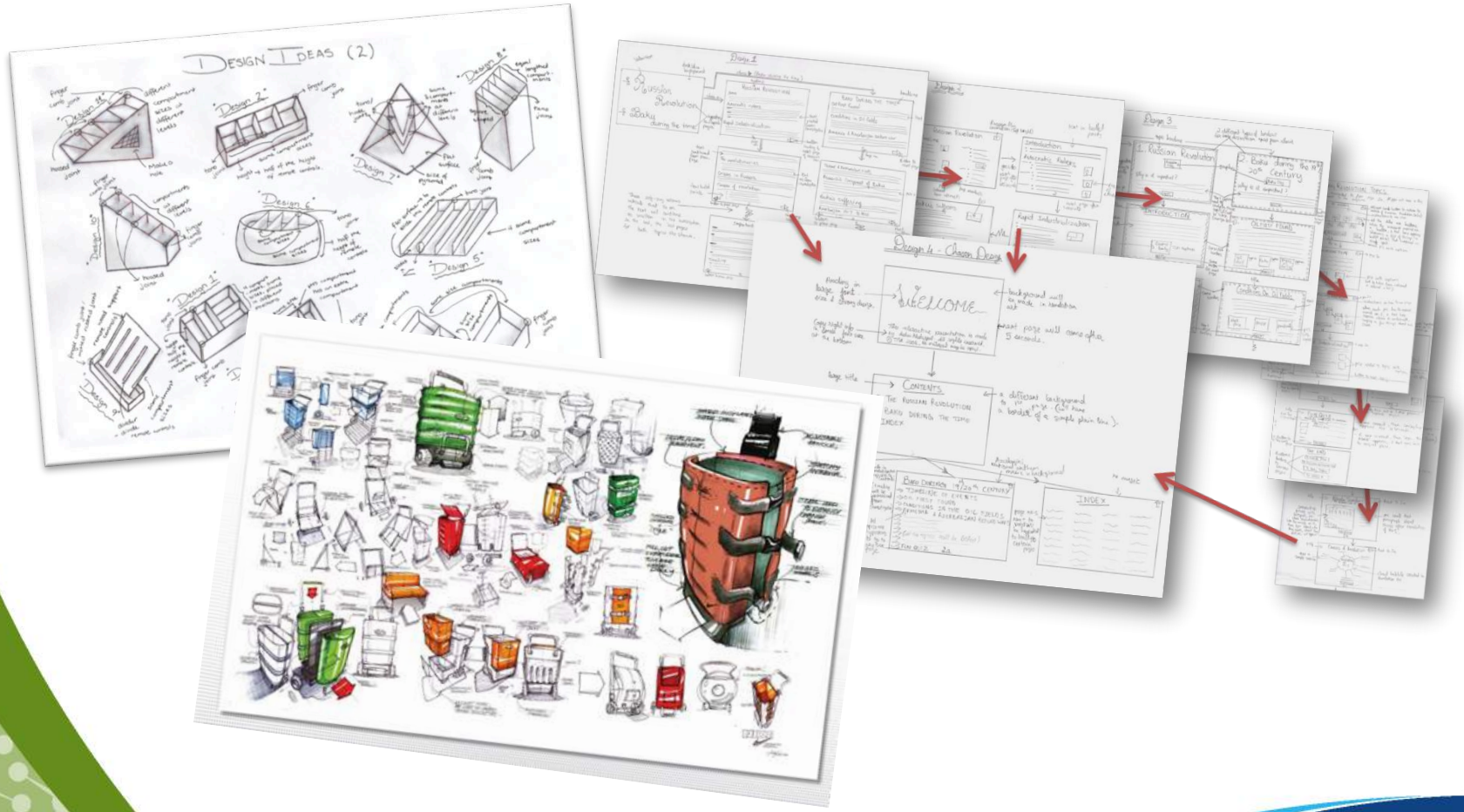


Image sourced from: http://3oneseven.com/ferrari-f1-racing-cars-1950-2011/

The designers' 'code'



Images sourced from:
1: MYP design Teacher support materials;
2: http://www.idsketching.com/toolbox/toolbox-levels-of-sketching/

Prototyping

prototypes (fidelity) + testing (context) = prototyping (validation)

Image sourced from: http://www.cartoonstock.com
Image sourced from: http://www.cadfanatic.com
Image sourced from: http://www.chasingalion.com

Design products

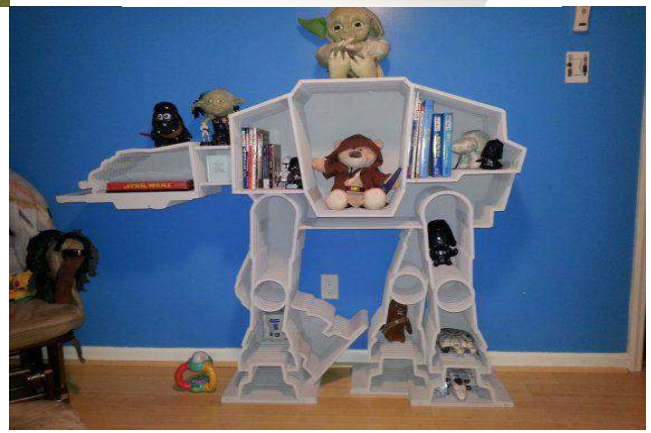


Image sourced from: http://www.buzzfeed.com/leonoraepstein/super-fun-products-you-definitely-need-this-summer#22k1pyy
Image sourced from: http://www.random-good-stuff.com/wp-content/uploads/2011/04/Splash-Bowl.jpg
Image sourced from: http://www.viralnova.com/awesome-inventions/

Objects as a form of knowledge

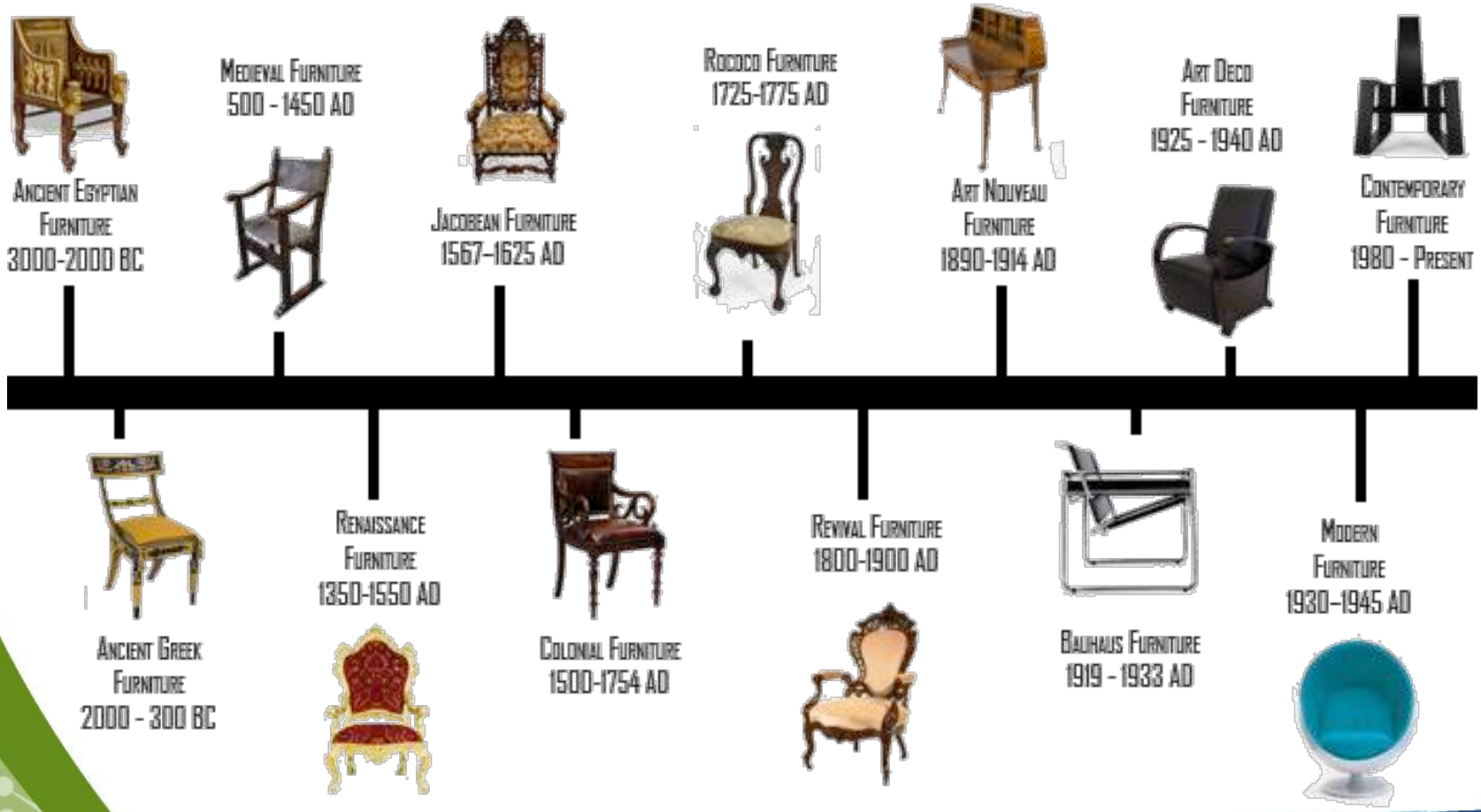


Image sourced from: http://www.onlinedesignteacher.com/furniture_design/furniture_design%20history.html

Knowledge embodied in objects

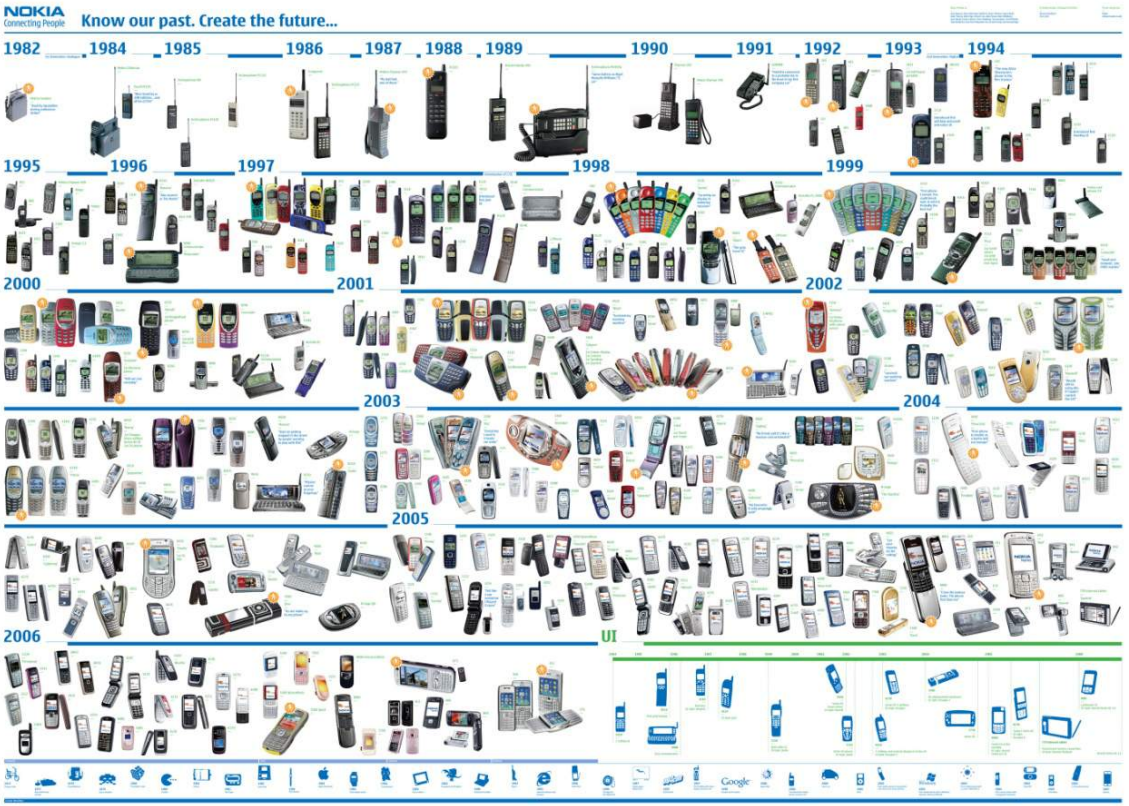


Image 1 sourced from: http://www.props.eric-hart.com/resources/telephone-history/

Image 2 sourced from: http://www.bitrebels.com/wp-content/uploads/2011/04/Insane-Nokia-Cell-Phone-Timeline-1.jpg

Knowledge embodied in objects

Luigi Colani - Bresser Pocket Binocular

Binocular image sourced from: http://www.katsclass.com/10787/wk03.htm
Tea strainer image sourced from: http://www.redcandy.co.uk/product-alessi-te-o-tea-strainer.php
Tray image sourced from: http://www.eatnineghost.com/26-really-creative-and-innovative-products/

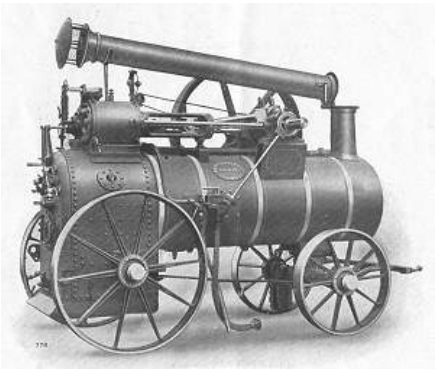
Invention before theory

Sword image source: http://commons.wikimedia.org/wiki/File:Uncrossed_gladius.jpg
Bell image source: http://www.rgbstock.com/bigphoto/mUONP8K/Bell
Pot image source: http://open.salon.com/blog/twayneking/2010/11/05/the_pot_and_the_kettles_-_a_parable
Forge image source: http://www.theyearofmud.com/2012/12/26/john-neeman-tools-damascus-knives/

Invention before theory

Wood hardening image source: http://cleversurvivalist.com/wp-content/uploads/2013/04/woodspear8ancientcraft.co_.uk_.jpg
Wheel image sourced from: http://marketinomics.com/digital-marketing-2/evolution-of-marketing/
Vulcan image source: http://openbuildings.com/buildings/vulcan-statue-profile-27699

Invention comes before theory



"Thermodynamics owes more to the steam engine than vice versa"

Derek de Solla Price

Steam engine image sourced from: http://www.paxmanhistory.org.uk/paxsteam.htm
Fire image sourced from: http://soundandlightingspecialists.com/tag/flames
Steam image sourced from: http://www.wisegeek.com/what-is-a-soft-boiled-egg.htm
Steam train image sourced from: http://strongarmbrand.com/SitePages/USAGES/Trains/Abiline3415/

Technology leads to Science which leads to Technology which leads to...

Image sourced from: http://monumentimpact.org/programs/techonology/html1/eric-padilla/electricauto.html
Image sourced from: http://www.teslamotors.com/roadster

In summary

The missing ‘third’ culture of education

Design processes

- Wicked problems
- Solution-focussed
- Abductive reasoning
- Using codes

Design products

- The wealth of knowledge embodied in objects
- Objects as a form of knowledge available to everyone
- Invention comes before theory

The loose ends...

- To what extent are we still missing the ‘third’ culture of education?
- What is the value of developing these ‘Designerly ways of knowing’ within our students, parents, teachers, administration?
- TO what extent do trained designers think and act in these different ways?

We cannot solve our problems with the same thinking we used when we created them.

Albert Einstein

START

FINISH

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Making time for creativity: Why does it matter?

Get involved!

- Submit a film demonstrating creativity at your school
- Apply to be a speaker at the symposium

Find out more at: http://blogs.ibo.org

Twitter: #IBPAS2015