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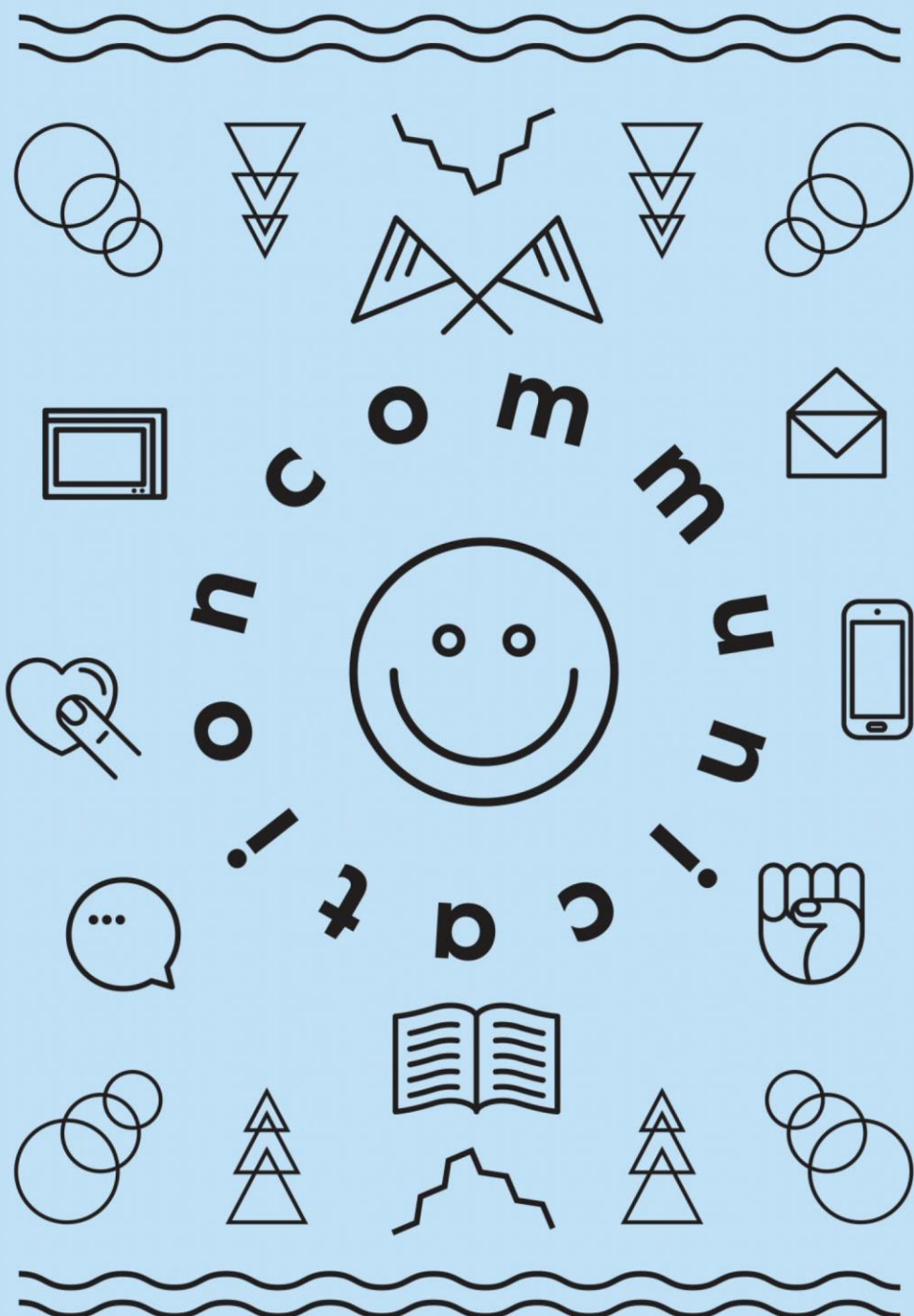
3

Science Communication

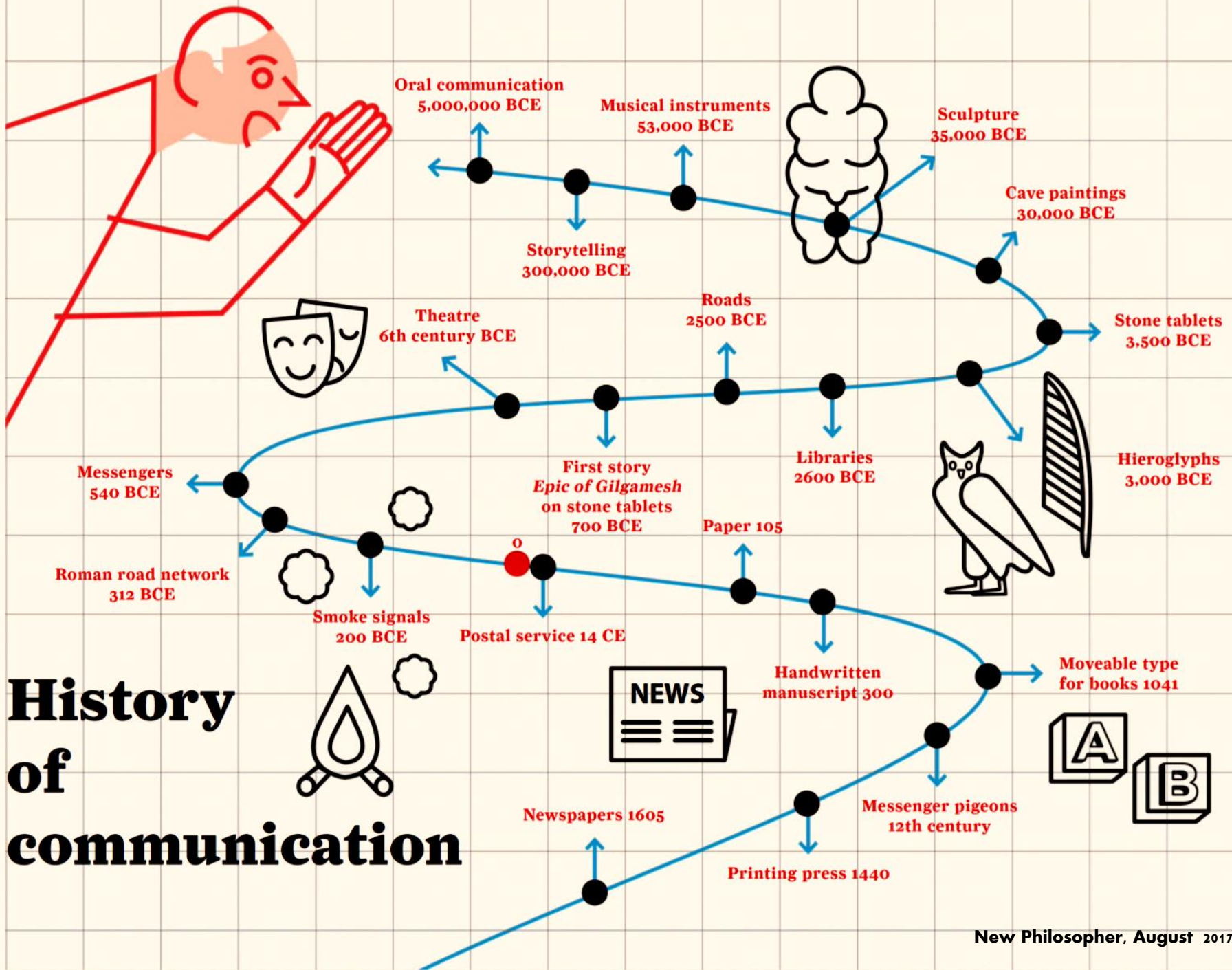
**objectives, techniques and practices
in Informal Education**

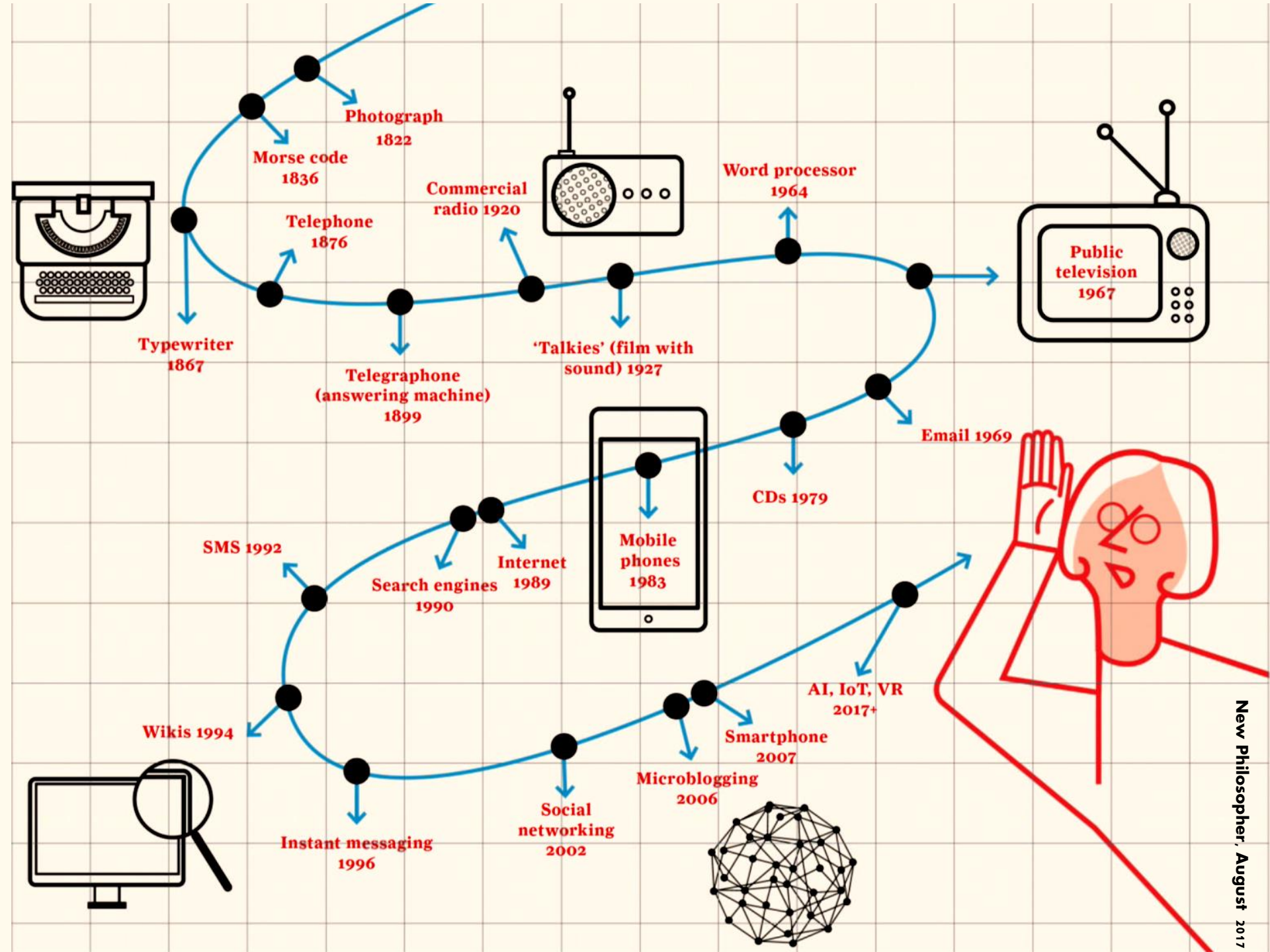
**Chinju National University of Education
South Korea
November 11 2019**

Luís Azevedo Rodrigues
Lagos Ciência Viva Science Centre



History of communication





**'Science is not finished
until it's communicated'**

— Sir Mark Walport, UK Government Chief Scientific Adviser



KNOWLEDGE FLOWCHART



Scientists do research



Papers peer reviewed



Press release



Media



Public

“... I am defining **science communication** broadly, meaning any activity that involves one person transmitting science-related information to another, from peer-reviewed articles to tweets.”

SCIENCE COMMUNICATION (SciCom) may be defined as the use of appropriate skills, media, activities, and dialogue to produce one or more of the following personal responses to science (the vowel analogy)

Awareness, including familiarity with new aspects of science

Enjoyment or other affective responses, e.g. appreciating science as entertainment or art

Interest, as evidenced by voluntary involvement with science or its communication

Opinions, the forming, reforming, or confirming of science-related attitudes

Understanding of science, its content, processes, and social factors

Science communication may involve science practitioners, mediators, and other members of the general public, either peer-to-peer or between groups.

Figure 1. The AEIOU definition of science communication. This definition clarifies the purpose and characteristics of science communication and provides a basis for evaluating its effectiveness

Burns et al. (2003) : Science communication

The public

The simplest and most useful definition of **the public is every person in society**. It is acknowledged that “the public” is a very heterogeneous group; it is as multifaceted and unpredictable as the individuals that compose it. In fact at least six overlapping groups within society (sometimes known as “publics”), each with its own “needs, interests, attitudes and levels of knowledge” have been identified for the purposes of science communication activities and/or research.² These are:

- “Scientists: in industry, the academic community and government.
- Mediators: communicators (including science communicators, journalists and other members of the media), educators, and opinion-makers.
- Decision-makers: policy makers in government, and scientific and learned institutions.
- General public: the three groups above, plus other sectors and interest groups. For example, school children and charity workers.
- Attentive public: the part of the general community already interested in (and reasonably well-informed about) science and scientific activities.”³
- Interested public: is composed of people who are interested in but not necessarily well informed about science and technology.⁴

Burns et al. (2003) : Science communication

SciComm Models

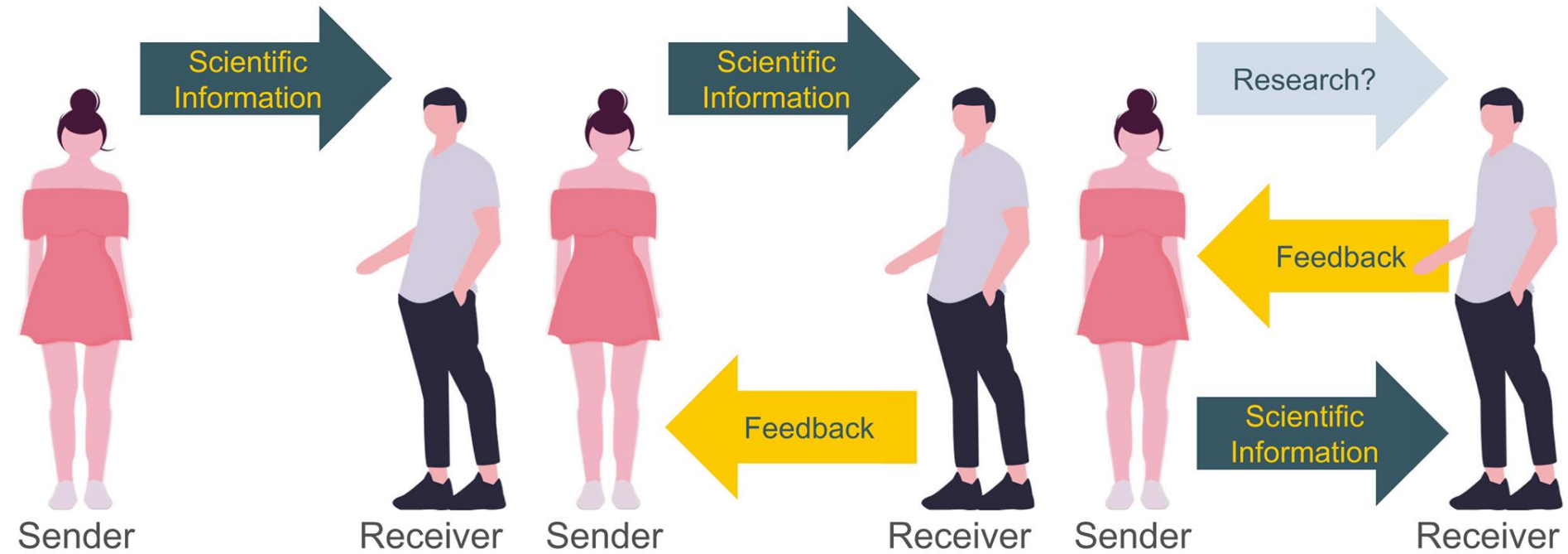
Dissemination Model



Dialogue Model



Participation Model



Public Engagement

"Public engagement describes the myriad of ways in which the activity and benefits of higher education and research can be shared with the public. Engagement is by definition a two-way process, involving interaction and listening, with the goal of generating mutual benefit."

National Co-ordinating Centre for Public Engagement (2018, Oct 16).

What is Public Engagement? Retrieved from

<http://www.publicengagement.ac.uk/about-engagement/what-public-engagement>

Citizen Science

“Citizen science typically refers to research collaborations between scientists and volunteers, particularly (but not exclusively) to expand opportunities for scientific data collection and to provide access to scientific information for community members.

As a working definition, we offer the following:
projects in which volunteers partner with scientists to answer real-world questions.”

Cornell Lab of Ornithology (2018, Oct 16). *Citizen Science*. Retrieved from <http://www.birds.cornell.edu/citscitoolkit/about/definition>



<https://www.youtube.com/watch?v=LyEIdl1ThZw>

citizen science projects

scistarter[®]
Science we can do together.

log in sign up Quick Navigate

CitSciMonth Dashboard Project Finder Events Podcast



ADVANCING
CITIZEN SCIENTISTS ARE

- Agriculture
- Animals
- Archeology & Cultural
- Astronomy & Space
- Awards
- Biology
- Birds

Select a topic ^

Online only



Near me



Find a Project

Advanced search

citizen science projects

The screenshot displays the CosmoQuest website interface. At the top, a navigation bar includes links for Home, About Us, Blog, Forums & Chat, Donate, and Get Merch!. The main header features the 'COSMOQUEST' logo with a red 'X' mark. Below the header is a red navigation bar with dropdown menus for 'What We Do', 'Science Projects', and 'Streams & 'casts'. The central content area is titled 'About CosmoQuest Citizen Science Projects' and features a sub-section for 'Moon Mappers'. The 'Moon Mappers' section includes a detailed instruction: 'Help map out the safe places for a spacecraft to land and the scientifically interesting places to explore with Moon Mappers. This project asks you to map out craters on the moon in images of such high resolution that sun bathing basketball players could easily be seen on the Moon's surface.' To the left of this text is a dark blue callout box with white text: 'Try to mark at least 1 craters. We're only interested in craters larger than this: [red circle icon] TIP: If a crater is too small, your circle will be red.' Below the text are three small circular images of the moon's surface. At the bottom of the interface, there are three toggle switches: 'Examples' (ON), 'Marks' (ON), and 'Skip Tutorial' (OFF). A red 'SUBMIT' button is located at the bottom right. On the far right, a sidebar contains the text 'Goal (& Yours)', 'our help to collect a diverse data', 'n train computers to find craters', 'kinds of soils and under', 'ghting conditions. This is the', 'e can map all 37.9 million', 'meters of the Moon and the', 'craters covering it.', 've are the teachers learning', 'eed!', 'A LISTEN', 'ILE YOU', 'MAP', '365 DAYS OF ASTRONOMY', 'cience, hear', '& explore', 'erse in audio.', and 'iTunes | RSS | website'.

Home About Us Blog Forums & Chat Donate Get Merch!

COSMOQUEST

What We Do Science Projects Streams & 'casts

About CosmoQuest Citizen Science Projects

Moon Mappers

Help map out the safe places for a spacecraft to land and the scientifically interesting places to explore with Moon Mappers. This project asks you to map out craters on the moon in images of such high resolution that sun bathing basketball players could easily be seen on the Moon's surface.

Try to mark at least 1 craters. We're only interested in craters larger than this: ● TIP: If a crater is too small, your circle will be red.

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A LISTEN

ILE YOU

MAP

365 DAYS OF ASTRONOMY

cience, hear

& explore

erse in audio.

iTunes | RSS | website

Outreach

“a one-way discourse, in which scientists communicate their research to the general public, with particular focus on school children and young people.”

Illingworth S, Redfern J, Millington S and Gray S. What's in a Name? Exploring the Nomenclature of Science Communication in the UK [version 2; referees: 3 approved, 1 approved with reservations]. *F1000Research* 2015, **4**:409 (doi: [10.12688/f1000research.6858.2](https://doi.org/10.12688/f1000research.6858.2))

The thieves' code

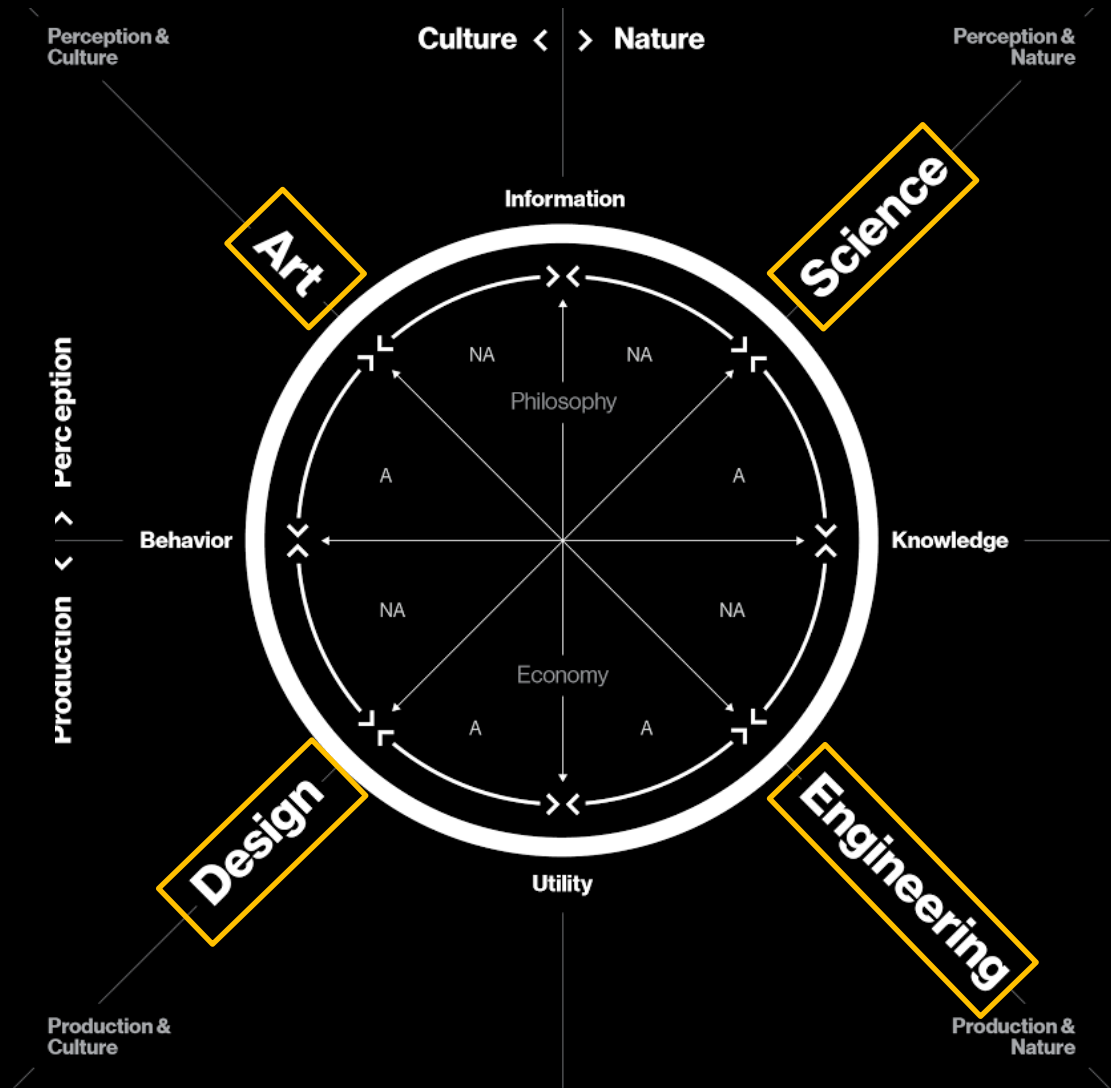


**AVOID
JARGON**



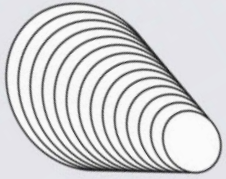
Krebs Cycle of Creativity

Neri Oxman, January 2016

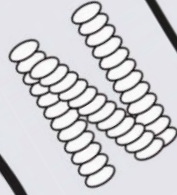


<https://bit.ly/2SsuiM6>

C



COMMUNU



ILCA

TION



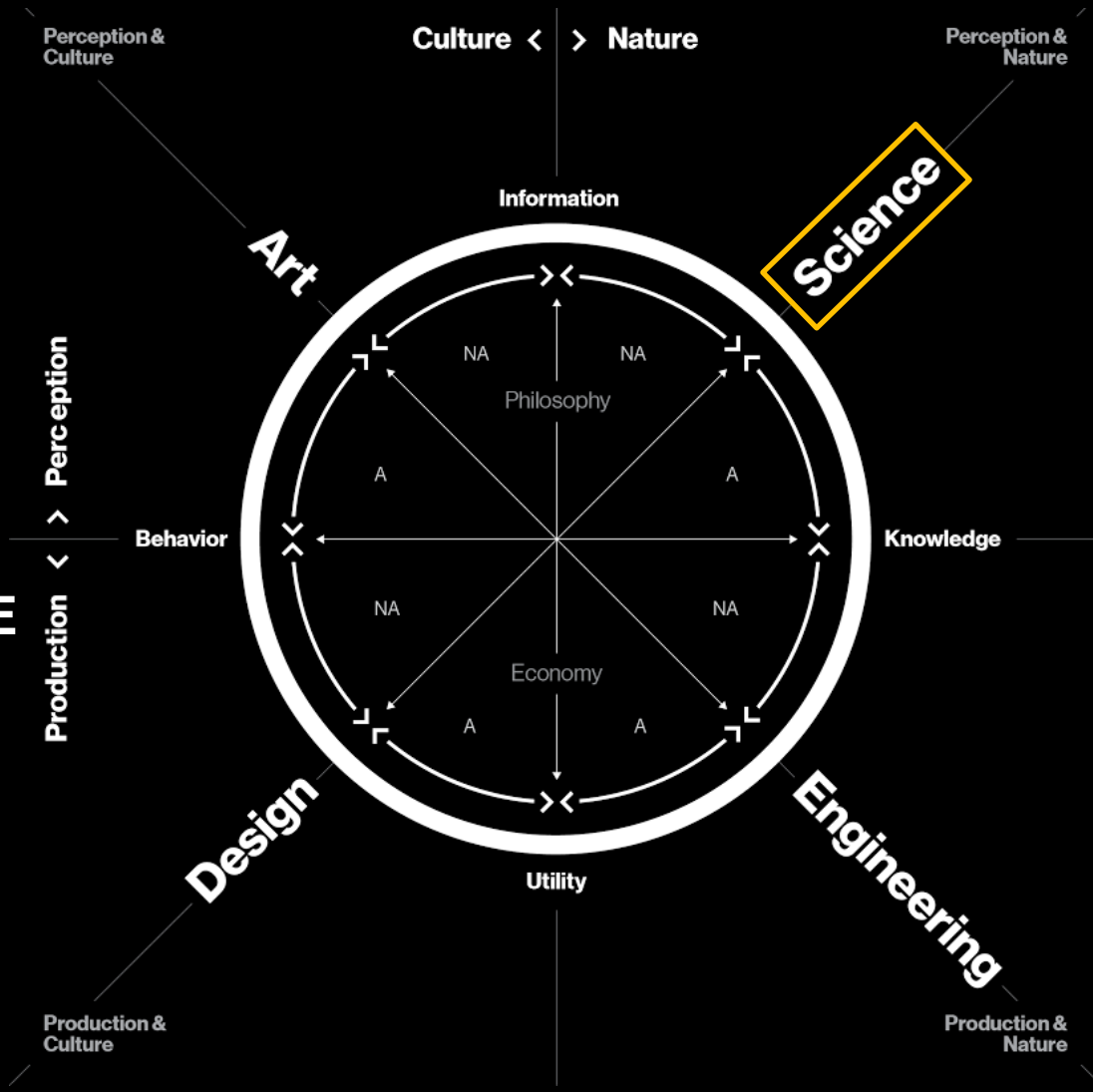
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Krebs Cycle of Creativity

Neri Oxman, January 2016

Science

INFORMATION > KNOWLEDGE

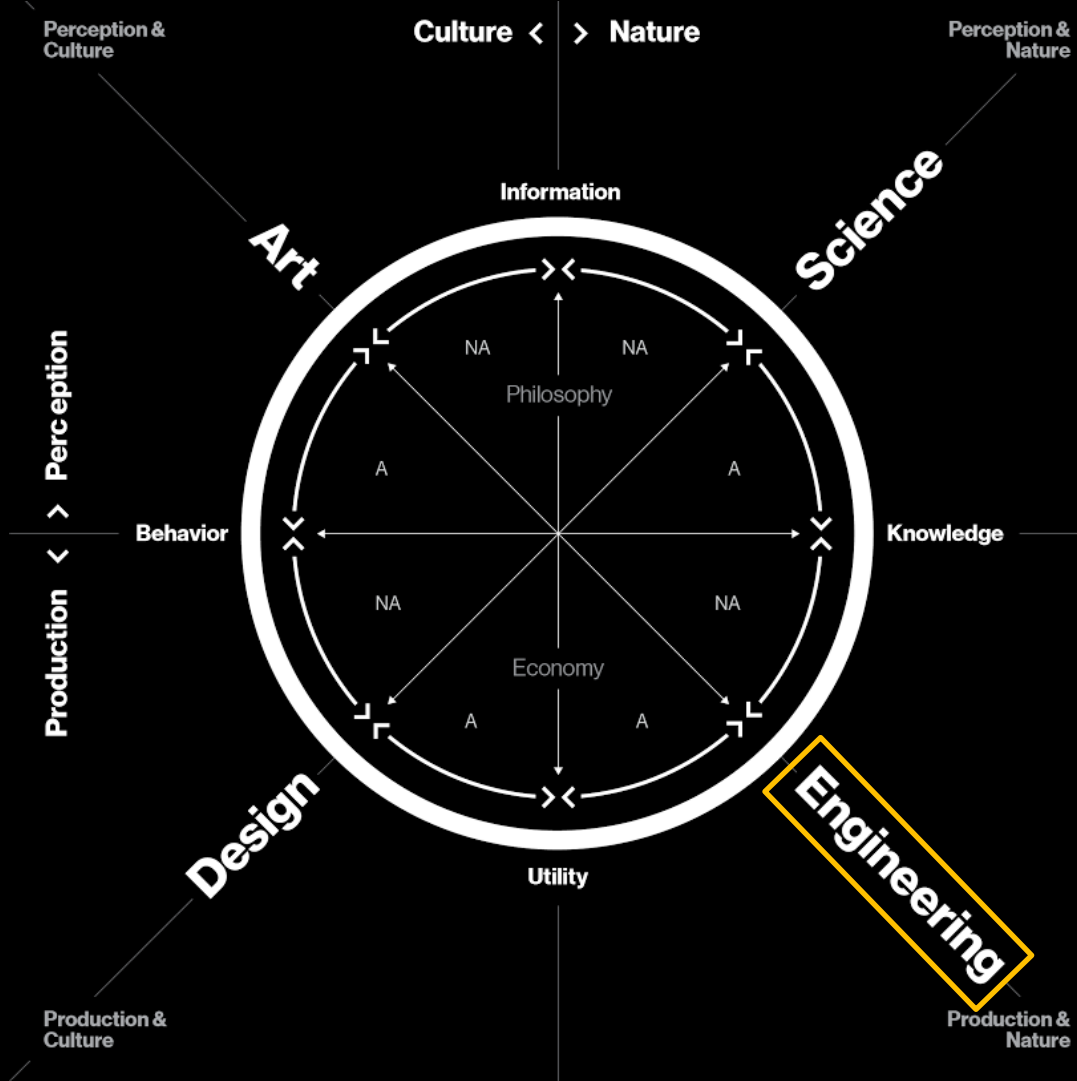


Krebs Cycle of Creativity

Neri Oxman, January 2016

ENGINEERING

KNOWLEDGE > UTILITY

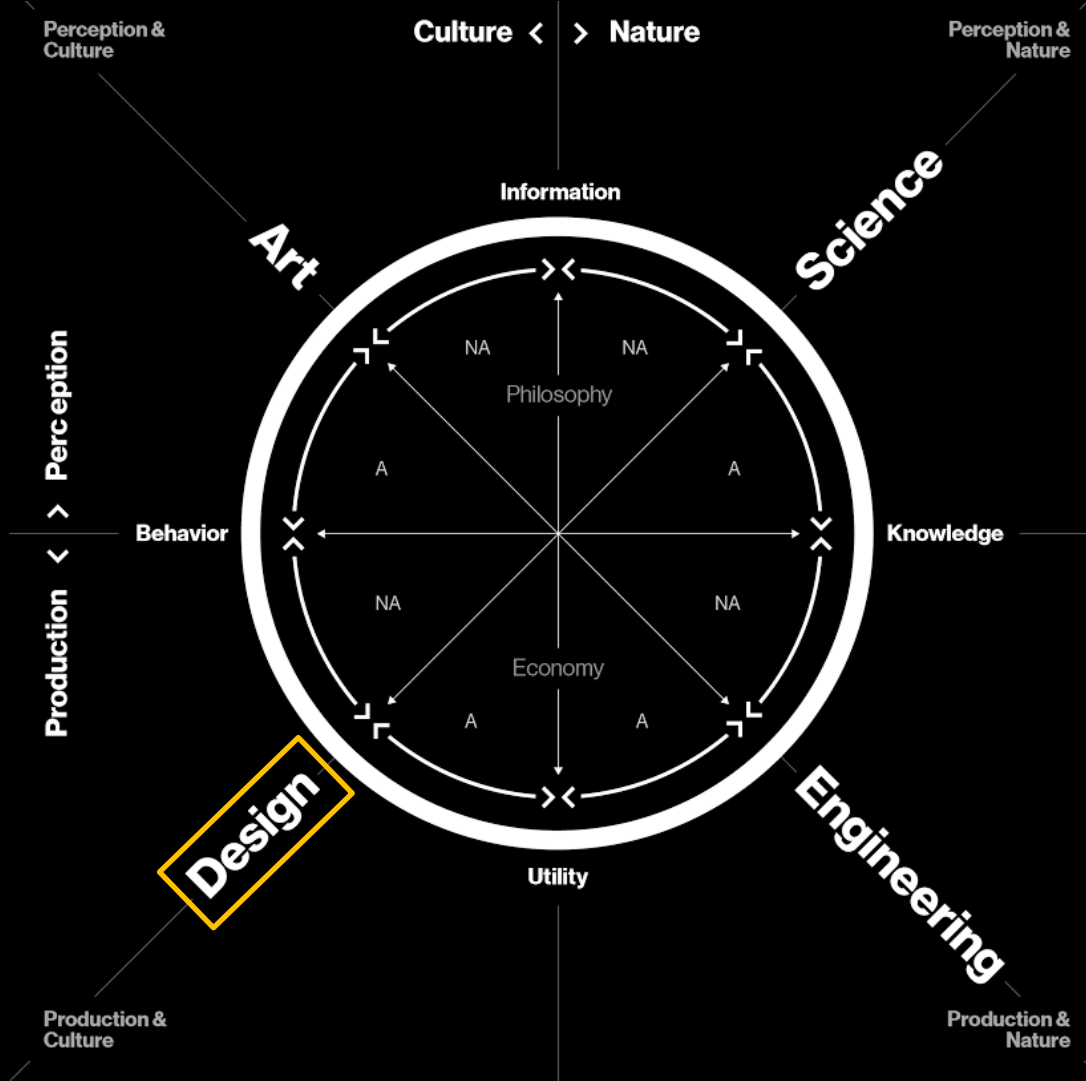


Krebs Cycle of Creativity

Neri Oxman, January 2016

DESIGN

UTILITY > BEHAVIOUR

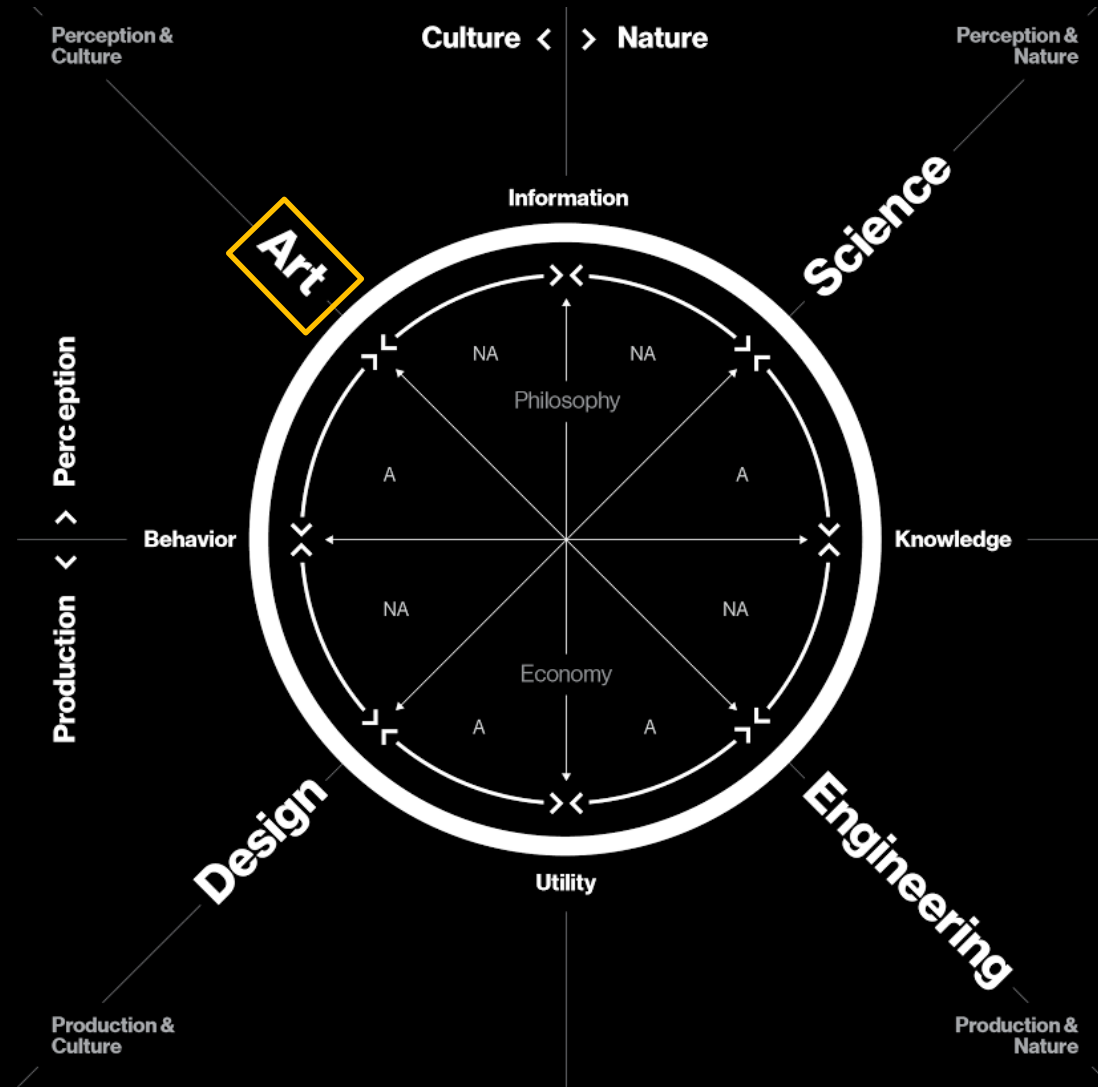


Krebs Cycle of Creativity

Neri Oxman, January 2016

ART

BEHAVIOUR > INFORMATION (new perceptions)



MO Museum campaign, "Story of the World"

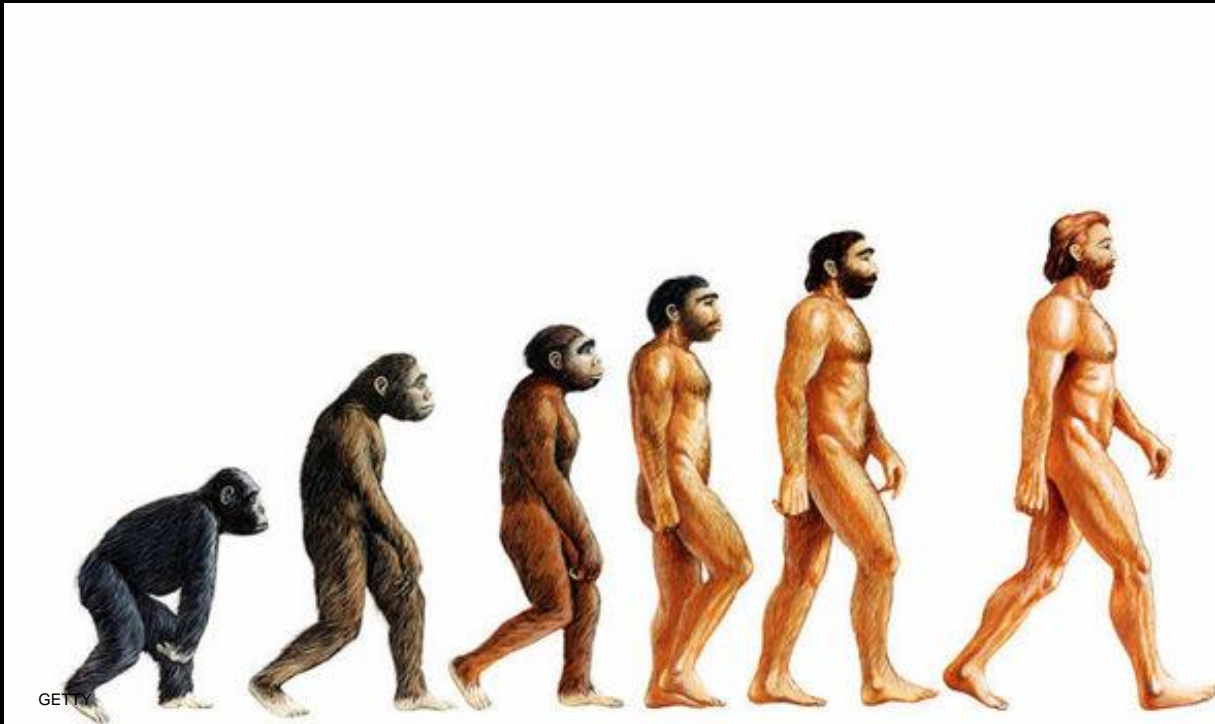
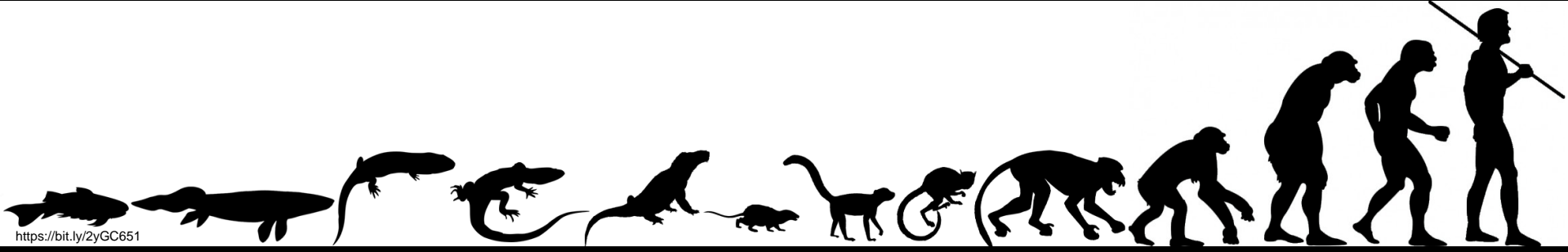


Vidmantas Bčiukas
1997 m.
Iš ciklo „Laispinė“
100x100 cm

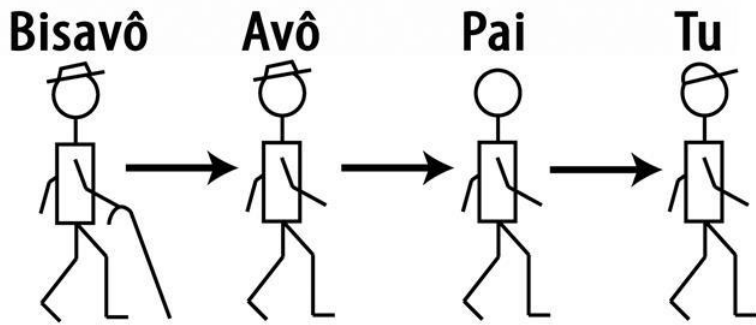
<https://www.youtube.com/watch?v=qoHKSRGrXmE>

Museum of Science, “Just Imagine”

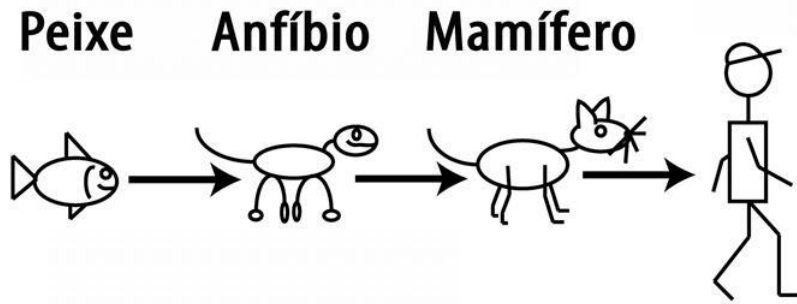




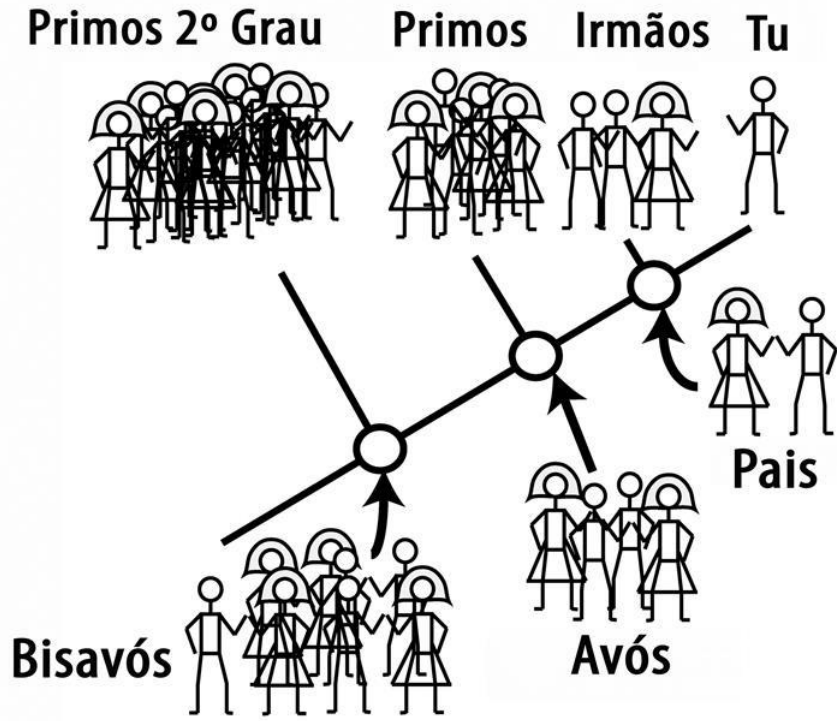
Isto Não é a árvore da tua família



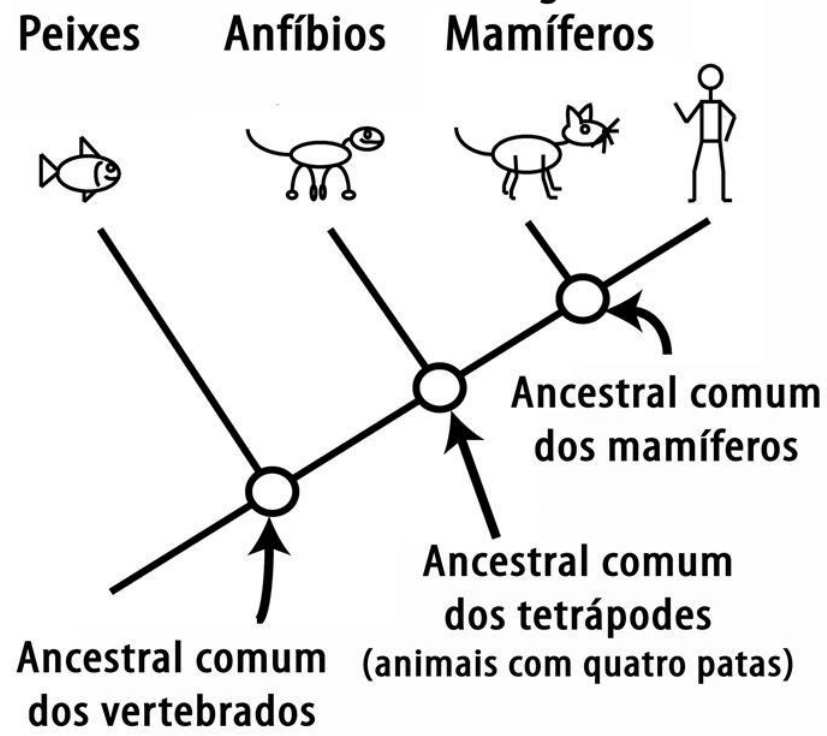
Isto Não é Evolução



Isto É a árvore da tua família

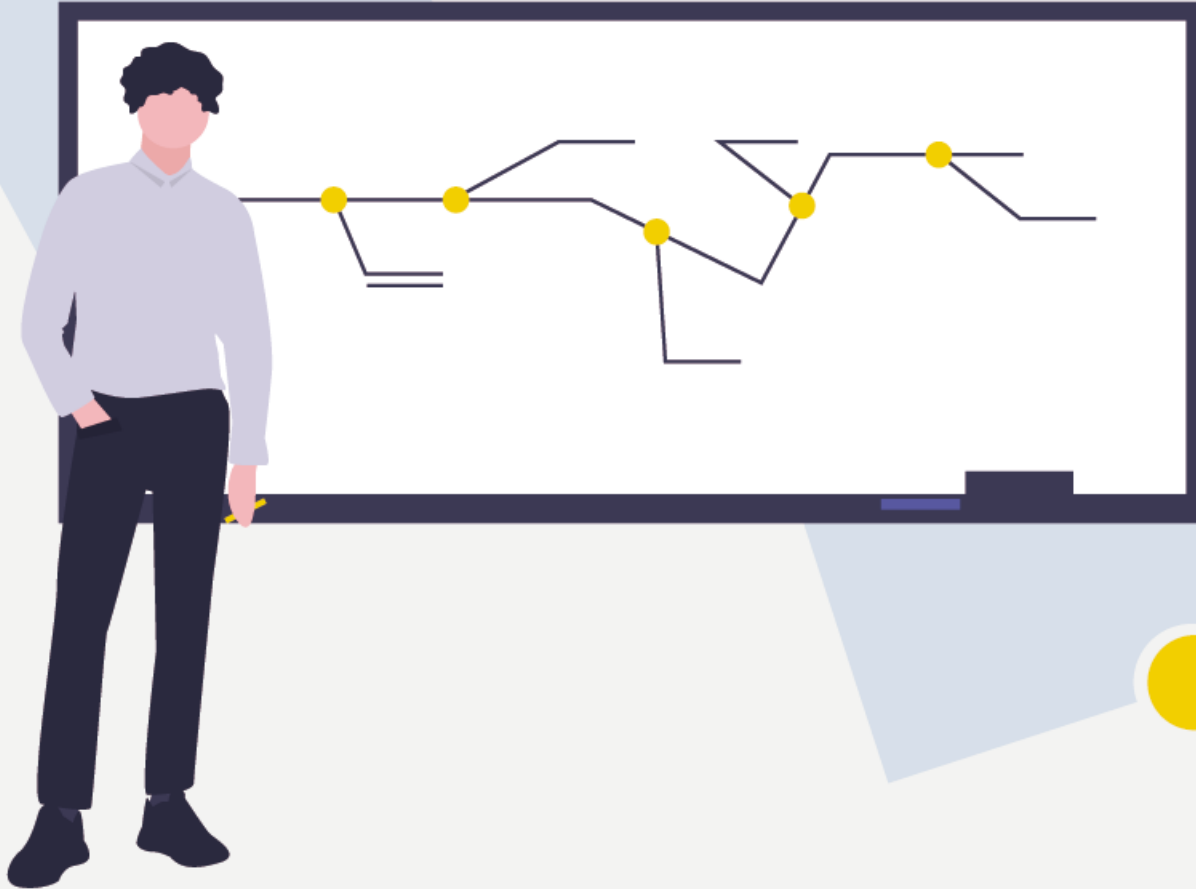


Isto É Evolução



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(adaptado por Luis Azevedo Rodrigues)



Effective communication is not necessarily intuitive; it is a skill that must be learned and practiced.

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Filter by:



PROJECTS



RESEARCH



EVALUATION




Activities


Always communicate first
the *why*, then the *how*
and finally the *what*.



Graphics and Multimedia Resources



IF YOU FEEL TEMPTED TO USE A
PICTURE OF TWO HANDS
SHAKING IN FRONT OF A
GLOBE, PUT THE PENCIL DOWN,
STEP AWAY FROM THE DESK,
AND THINK ABOUT TAKING A
VACATION OR INVESTIGATING
AROMATHERAPY.



Nancy Duarte



A YAWN IS A



SILENT SCREAM
FOR A COFFEE