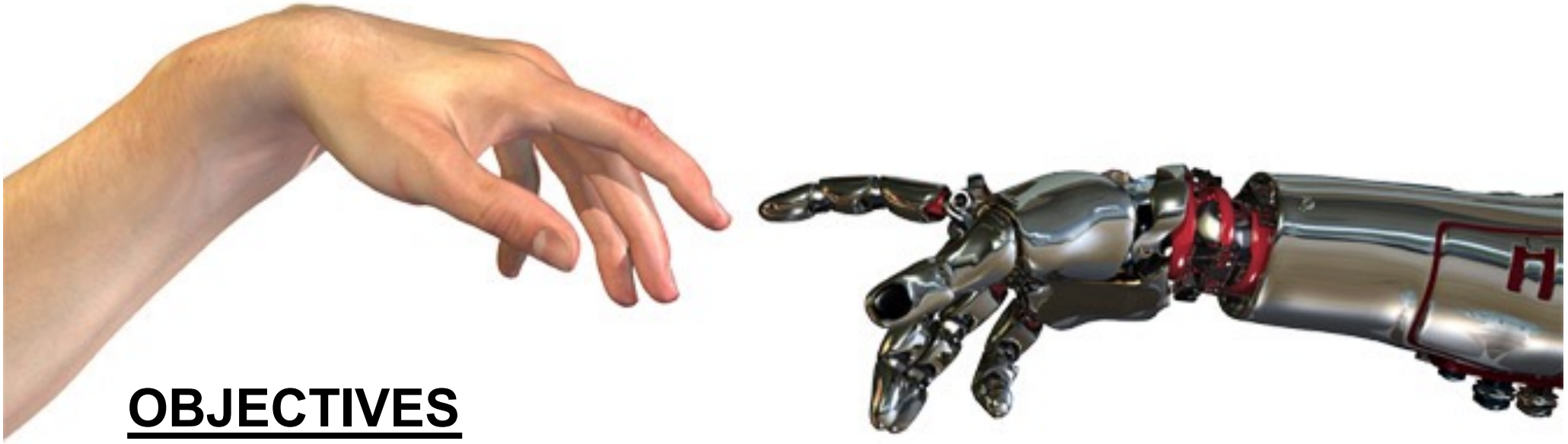
HUMAN-COMPUTER INTERACTION

UNIVERSAL PRINCIPLES OF HUMAN-COMPUTER INTERACTION DESIGN

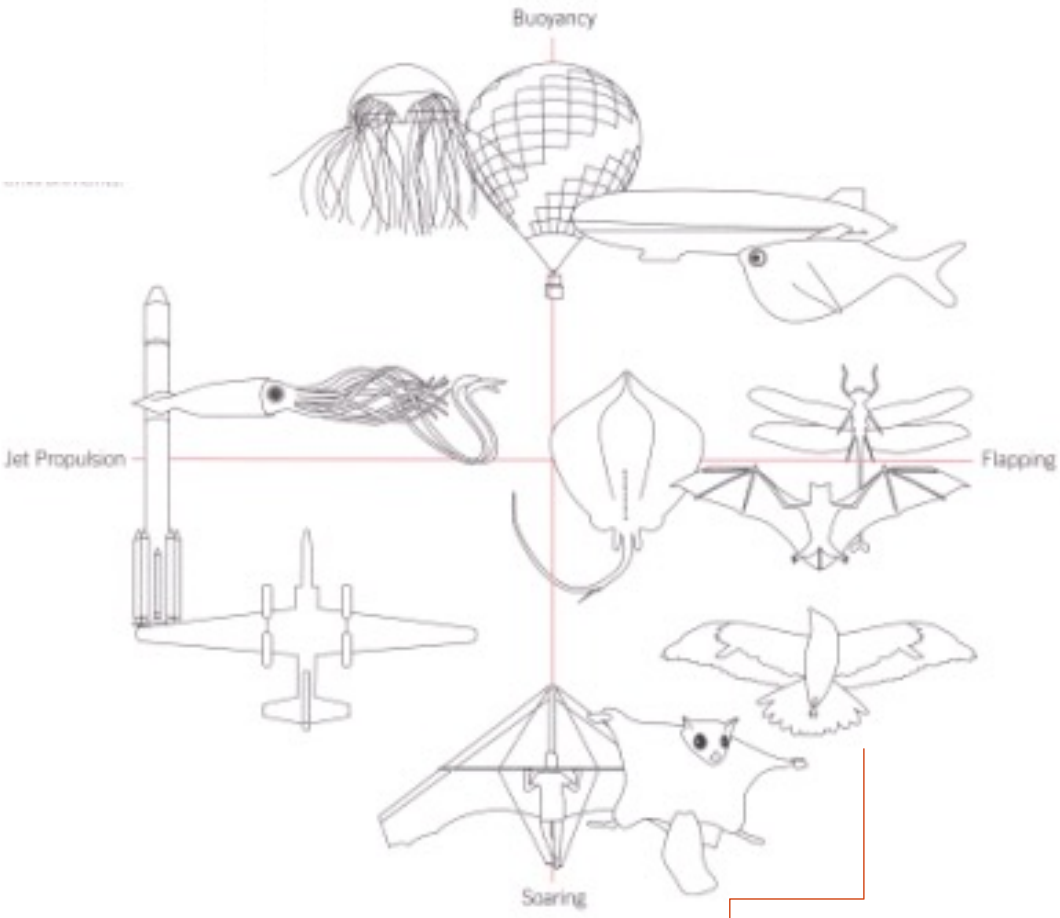


OBJECTIVES

1.) Convergence/Biomimicry,
2.) Familiar Metaphors,
3.) Flow,
4.) Factor of Safety,

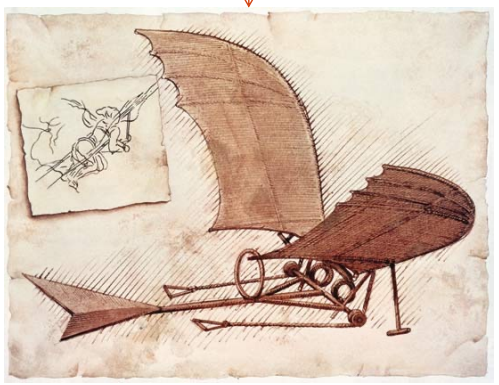
CONVERGENCE/ "BIOMIMICRY"

•Natural or human-made systems that best approximate optimal strategies afforded by the environment tend to be successful, while systems exhibiting lesser approximations tend to become extinct.

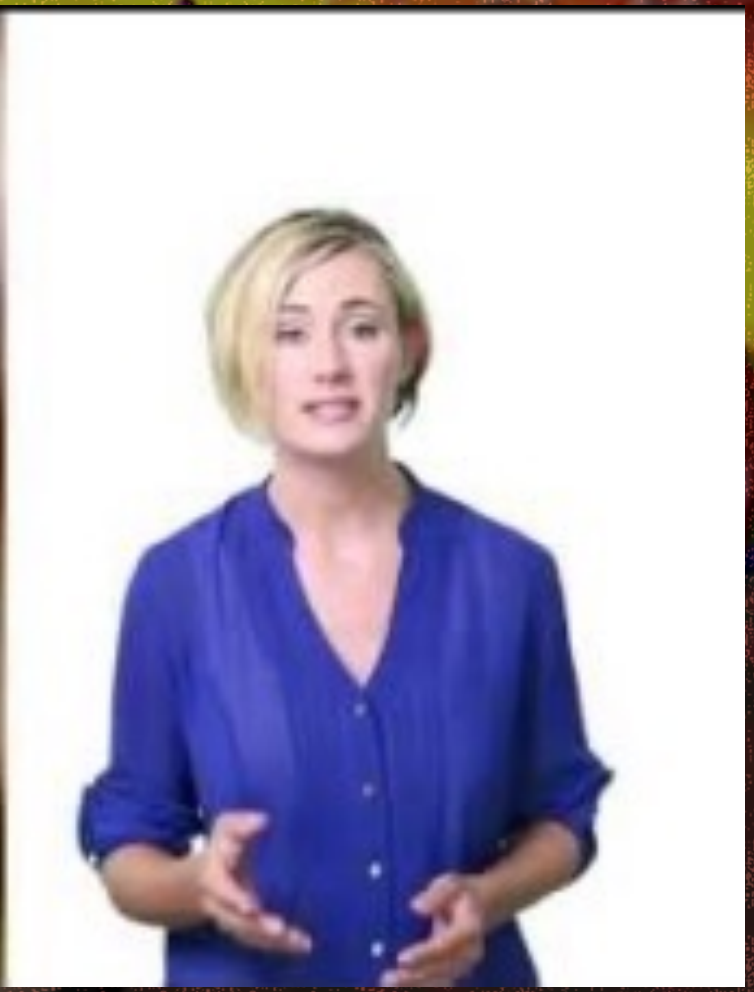


- BIOLOGY

  the tendency of unrelated animals and plants to evolve superficially similar characteristics under similar environmental conditions.

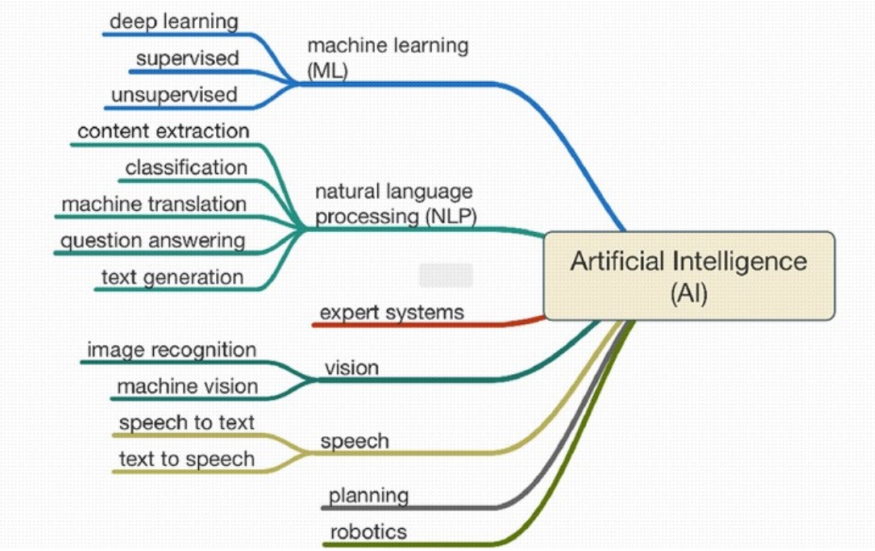


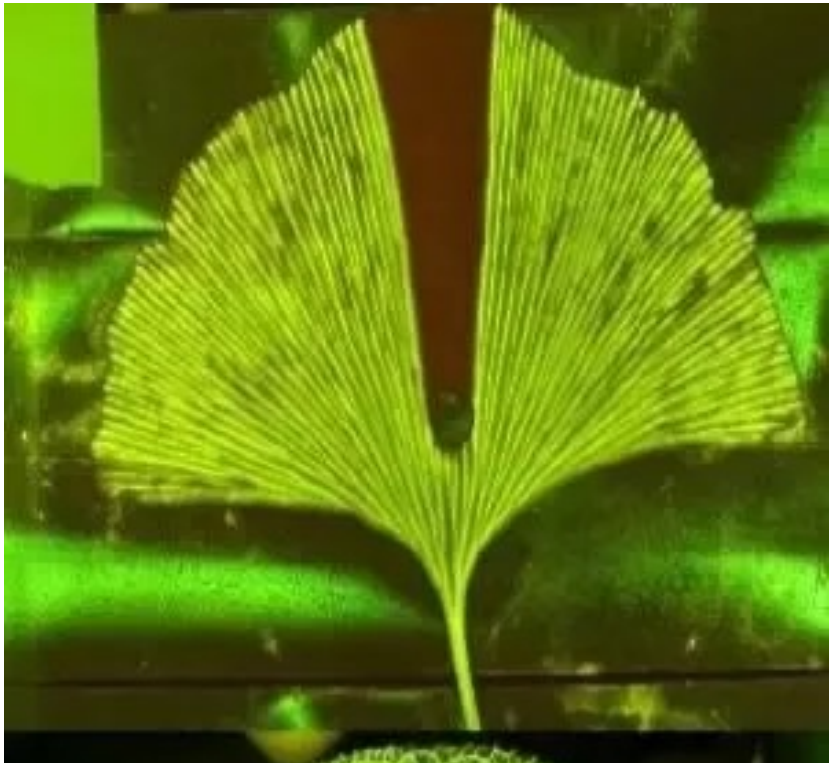
BIOMIMICRY



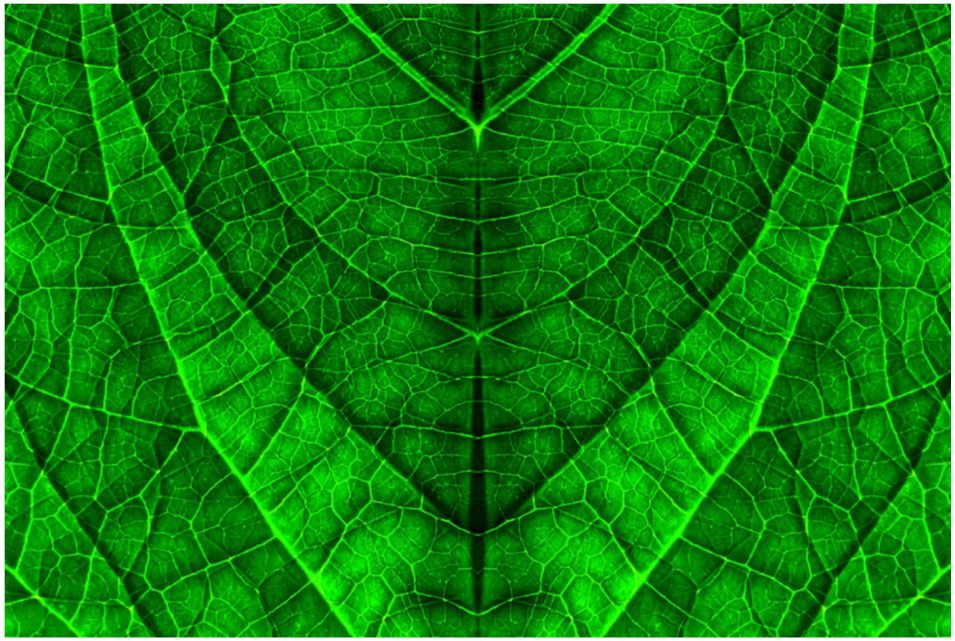
https://www.youtube.com/watch?v=ZODvr_GzNc4

WHAT IN THE HE** DOES BIOMIMICRY HAVE TO DO WITH COMPUTER SCIENCE?

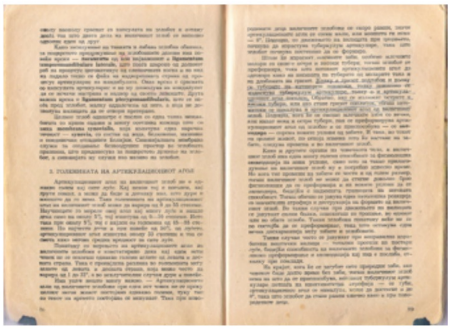




Nowadays, many computer scientists are revisiting an older study that suggests putting artificial intelligence through various evolutionary processes, like those that carefully molded the human brain over the millennia, and help us create smarter and more efficient algorithms.

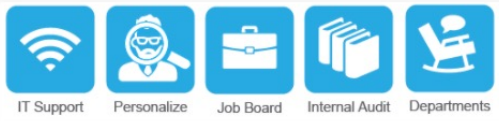


FAMILIAR METAPHORS



MATCH BETWEEN SYSTEM AND REAL WORLD

BEWARE OF BAD Icons!



Examples of intranet icons that are not helpful (from left to right): the ubiquitous wireless symbol used here to represent support, a hard-to decipher image of a person with a magnifying glass over his face to represent personalization, a briefcase standing for job listings, books to represent internal audit, and a chair with a speech bubble to represent departments.

OLD SKOOL METAPHORS

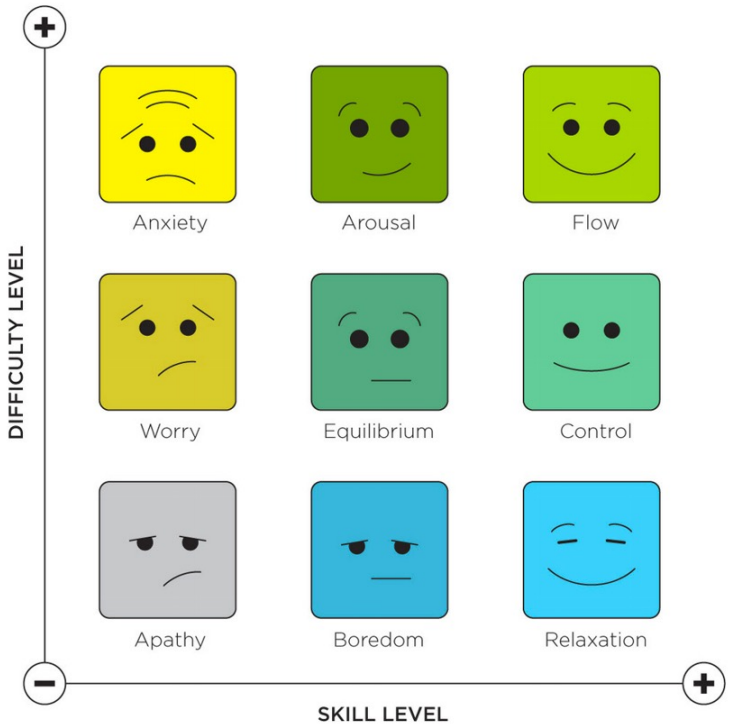
FLOW (=HAPPY)

A state of immersion so intense that awareness of the real world is lost.

- When people are not challenged, they become bored. When they are challenged too much, they become frustrated. Flow occurs when people are challenged at or near their maximum skill level.
- People in a state of flow lose track of time and experience feelings of joy and satisfaction.
- Tasks that create flow experiences have achievable goals, require continuous engagement, provide clear and immediate feedback, and are able to maintain a balance between difficulty and skill level.
- Incorporate elements of flow in activities that seek to engage the attention of people over time

—e.g., instruction, games, and music. Designing tasks to achieve flow is more art than science; therefore, leave ample time for experimentation and tuning.

See Also Control • Gamification • Performance Load Progressive Disclosure • Zeigarnik Effect

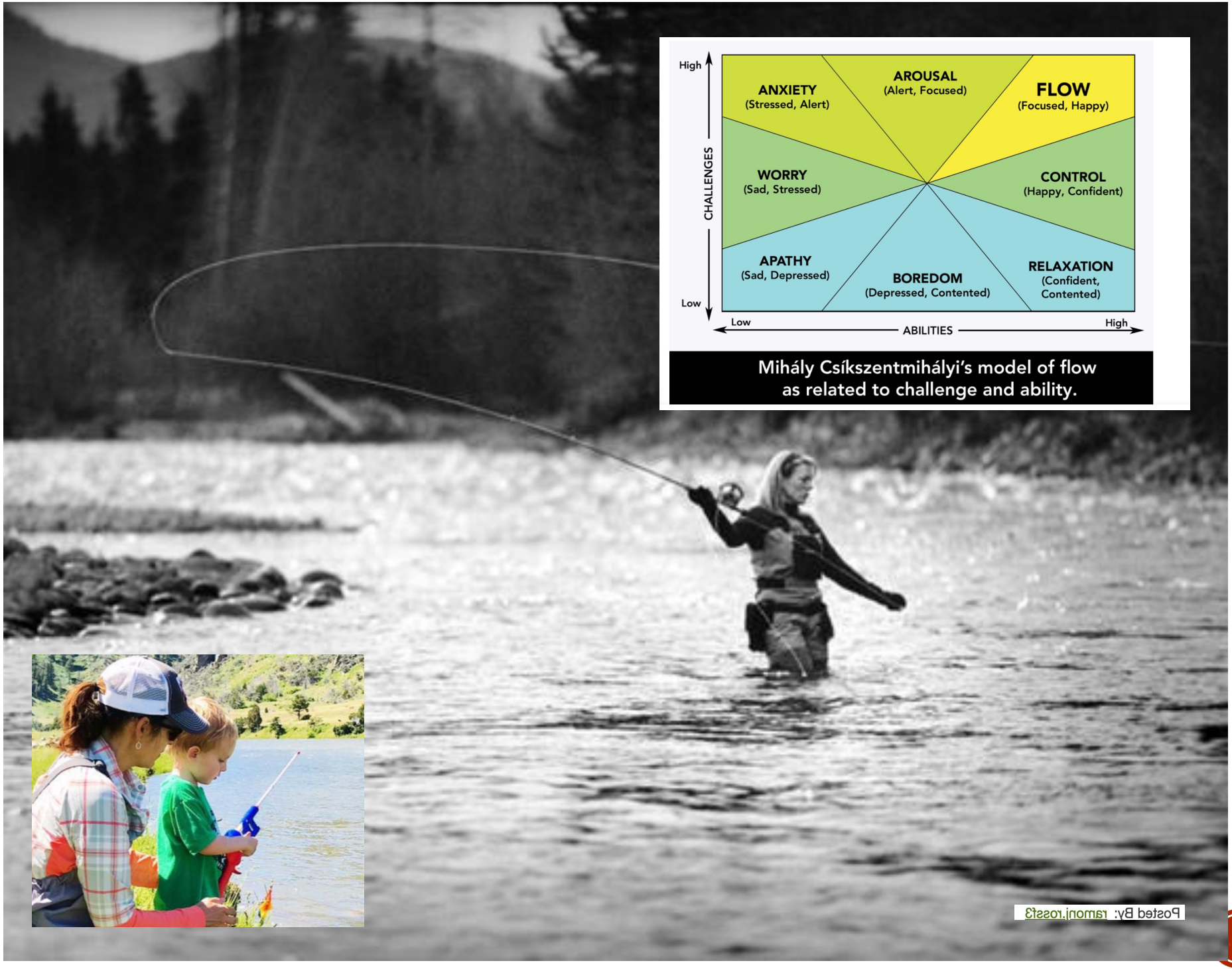


credit: 505 Games)

The Witcher 3: Wild Hunt might just be one of the best video games of all time.
(Image credit: CD Projekt Red)

VIDEO GAMES – DESIGNING FOR FLOW!

Flow is attained when high difficulty matches high skill level.

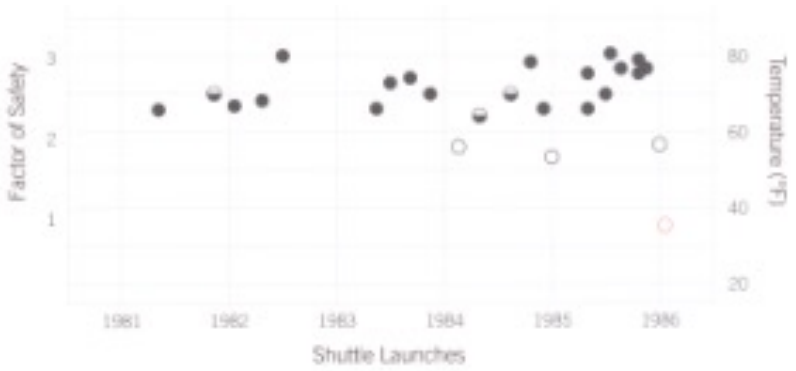


Mihály Csíkszentmihályi's model of flow as related to challenge and ability.

Posted By: ramonj.rossi3

FACTOR OF SAFETY

- Design requires dealing with unknowns. Factors of safety are used to offset the potential effects of these unknowns. This is achieved by adding materials and components to the system.
  - Internet provider support 1,000 users. However, to account for unanticipated uses of services (download movies) the design specification can be multiplied by safety factor of 3 = 3,000 users supported.



- The size of the safety factor in a design corresponds directly to the level of ignorance of the design parameter required-the greater the ignorance, the greater the safety factor.
  - **For example, structures that are well understood and made of materials of consistent quality (e.g. steel and concreted) typically = 2-4 safety factor. When ignorance is combined with materials of varying quality, the safety factor can be quite large e.g. Great Pyramids = 20 safety factor.**