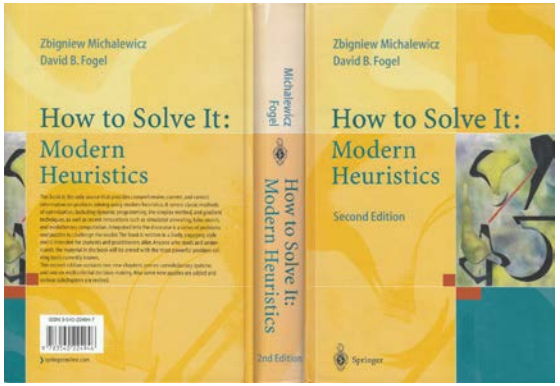

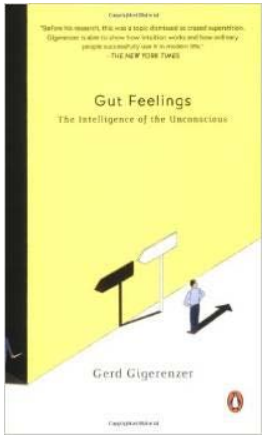

http://www.aceagenda.com/michalewicz/

Information heuristics of information literate people

Katarzyna Materska, Ph.D.
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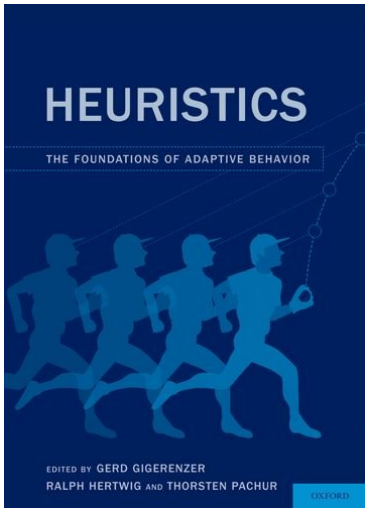
ECIL 2014 Dubrovnik, 20-24.10 2014



http://www.amazon.com/

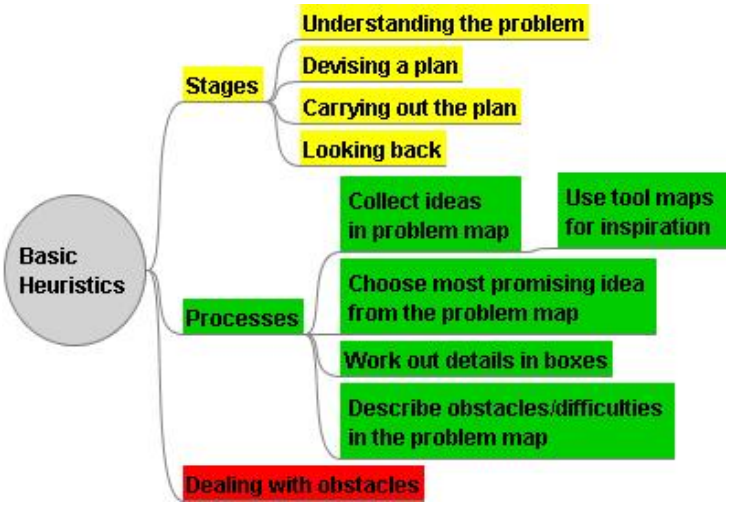
Aims of the presentation

- to direct the attention of the IL researchers and practitioners towards the problem of cognitive heuristics and
- to encourage researchers to incorporate the cognitive heuristics practice into the IL area.

http://frumpo.us/search/what-is-heuristics

https://www.mceducation.sg/

Biology
rules of thumb



http://sookshum.blogspot.com/2011/09/heuristic-algorithm.html

http://fredklumpp.net/10-usability-heuristics-for-user-interface-design/

In computer science, a heuristic algorithm is a **problem solving method** that uses incomplete information to derive a potentially inaccurate or imprecise solution.

Website Usability

Nielsen Heuristics

1. Match the real world (L)
2. Consistency & standards (L)
3. Help & documentation (L)
4. User control & freedom (UC)
5. Visibility of system status (V)
6. Flexibility & efficiency (EF)
7. Error prevention (ER)
8. Recognition, not recall (ER)
9. Error reporting, diagnosis, and recovery (ER)
10. Aesthetic & minimalist design (GD, S)

Spring 2008 6.831 User Interface Design and Implementation 6

https://www.gipom.com/search/Heuristics/images

Heuristics

- general rules of thought or action,
- mental operations,
- tactics,
- behaviors or attitudes that tend to produce useful results in certain problem-solving situations.
- rules of thumb (in biology),
- educated guesses,
- intuitive judgments
- ***common sense***.

In the philosophical, psychological, and cognitive science literature heuristics describe or explain methodological techniques or "shortcut" mental operations that help in inferring, decision-making, and problem-solving.

Researchers indicate that heuristics are two-edged - they can reduce mental efforts in decision-making but their use can also lead to systematic biases or errors in judgment.

Cognitive heuristics

http://www.citelighter.com/science/psychology/knowledgecards/heuristics

http://www.elitemillennial.com/heuristics-double-edged-sword/

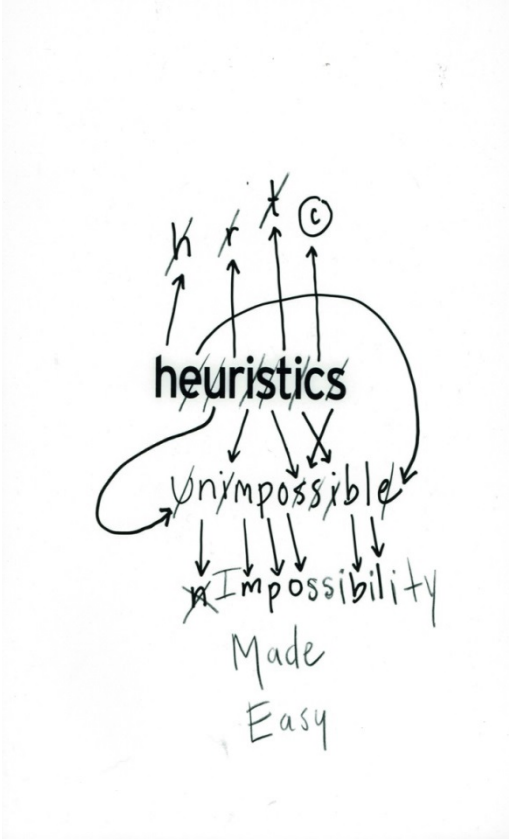
Cognitive heuristics (mental shortcuts) are information processing strategies that enable users to **ignore part of the information to make decisions** more quickly, frugally, accurately and with less effort than with more complex methods, and thus they reduce the cognitive load during information processing.
(Gigerenzer & Gaismeier, 2011),

Digital Information End User- Satisficer

- People do not always invest their full mental capacities in information evaluation tasks. They seek an optimal balance between cognitive effort and desired outcomes.

- One form of bounded rationality is satisficing, when people do not use all their cognitive resources to obtain optimal outcomes, but instead use just enough (good enough) resources to provide a sufficiently optimal outcome for the given context. **Satisficing may thus be a common strategy used by Internet information seekers**.

- **Heuristics do not attempt to optimize (i.e. try to find the best solutions) but rather satisfice (i.e. find a 'good enough' solution).** Choosing the first option that exceeds an aspiration level is a form of satisficing (Gigerenzer, 2008; Gigerenzer & Gaissmaier, 2011).



Homo Heuristicus

http://l-a.com.vn/articles/detail/about-reputation-2965

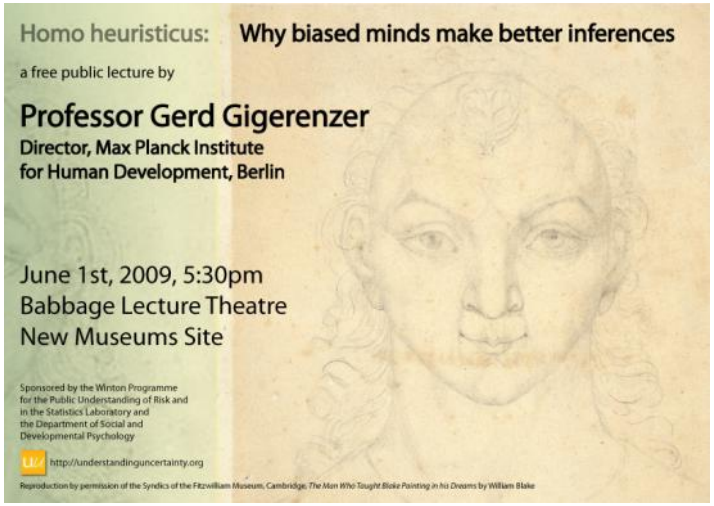
- Judgment under uncertainty leads to the use of simplifying heuristics.

- **Heuristics are the brain's shortcuts.**
- **Heuristics are efficient cognitive processes that ignore information**

- The discovery of the **"less-is-more effect"** contradicts the most popular model of human cognition in terms of accuracy-effort trade-offs.

- The fact that simple heuristics can be more accurate than complex procedures is one of the major discoveries of the last decades.

Homo Heuristicus



http://understandinguncertainty.org/node/249

Hilligoss and Rieh (2008) revealed in their research four categories of heuristics:

media- related (when people may perceive certain media or specific media formats to be more or less credible),

source-related (well-known sources are more credible than the unfamiliar ones, primary sources are more credible than the secondary ones),

endorsement-based (information sources and objects widely used are more likely to be credible), and

aesthetics-based (if people invest a significant amount of time in the careful design of a website, they spend more time on what they want to say).

Digital Information User - Animal Sociale

- **Individuals do not make credibility judgments in isolation from one another**, thereby ignoring social tools for credibility evaluation.

http://www.rctaylor.co.uk/

- In cyberspace **the traditional notions of credibility** as originating from a central authority **are problematic now, and even outdated.**

- **A shift** from a model of single authority based on scarcity and hierarchy **to a model of multiple distributed authorities based on information abundance and networks of peers**.

Digital Information User - Animal Sociale

- "**If everyone agrees, then the message is probably true**" says a bandwagon heuristic.

- The **prevailing view of the community affects one's attitude and decisions** motivated by the need for conformity.

- The bandwagon heuristic is of particular relevance today as it reveals the **user-driven nature of the Internet.**

http://www.doodlebunch.com/heuristic.html

Heuristics in the Evaluation of Credibility

Metzger, Flanagin and Medders (2010)

- ***The reputation heuristic*** signals a reliance on the reputation or name recognition of the websites or sources of web-based information as a credibility cue, rather than close inspection of site content or source credentials.

http://l-a.com.vn/articles/detail/about-reputation-2965

- **People are likely to believe that the source, the name of which they recognize, is more credible compared to unfamiliar sources.**

- The reputation of the source serves as a heuristic credibility cue allowing users to avoid more effortful and systematic processing of the content as they evaluate online information.

Heuristics in the Evaluation of Credibility

Metzger, Flanagin and Medders (2010)

- "***The endorsement heuristic*** - people are inclined to perceive information and sources as credible if others do so also. They automatically tend to trust sites and sources that were either recommended by their acquaintances or come from aggregated testimonials, reviews, or ratings.

- **Trust derived from acquaintances is an endorsement heuristic**.

- Trust derived from aggregated information sources stems from the presumption that the website is credible if or its source receives a lot of positive feedback (for example ‘‘star ratings’’).

http://www.sprintchecks.com/endorsment-stamp-p-39.html

Heuristics in the Evaluation of Credibility

Metzger, Flanagin and Medders (2010)

- ***The consistency heuristic*** - One of the common strategies for validating information is checking different websites to make sure that the information is consistent.

http://www.theartoforganising.com.au/

- In the situations where information is highly consequential (e.g., a large financial transaction or health situation), individuals state they cross-validate for consistency offline to a greater extent.

Heuristics in the Evaluation of Credibility

Metzger, Flanagin and Medders (2010)

http://mrbtg.wordpress.com/2012/01/31/how-valuable-is-social-data/

- ***The self-confirmation heuristic*** - People tend to view information as credible if it confirms their preexisting beliefs and not credible if it negates their existing beliefs, regardless of how well-argued, duly researched, appropriately sourced … it is.

- People tend to evaluate attitudinally-consistent information more favorably than inconsistent information.

- People tend to avoid information contradicting their existing beliefs, terminating searches when they find information that confirms their beliefs.

Heuristics in the Evaluation of Credibility

Metzger, Flanagin and Medders (2010)

- ***The expectancy violation heuristic*** - If a website fails to meet users' expectations in some way, they will immediately judge it as not credible.

- Information users do not like websites asking for more information than necessary or providing more information than requested. They do not trust sites that give them something they did not ask for or expect to receive.

- People expect credible sources to present information in a clear and professional manner as a reflection of their expertise and attention to detail.

- The expectancy-violation heuristic is likely underpinned in part by the ''effort heuristic'', which is the human tendency to value objects based on how much effort was spent on their production.

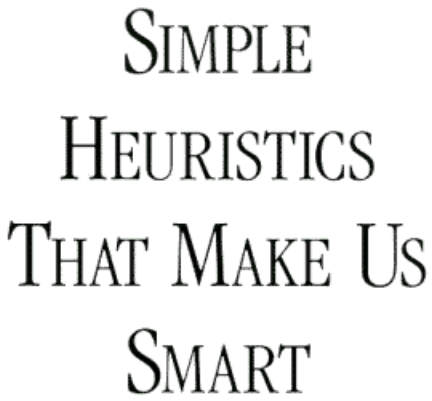
http://howtocreateonlinewealth.com/warning-suffering-from-information-overload-on-the-internet

Heuristics in the Evaluation of Credibility

Metzger, Flanagin and Medders (2010)

- ***Persuasive intent heuristic*** - unsolicited and unwelcome information negatively affects users' perception of website content.

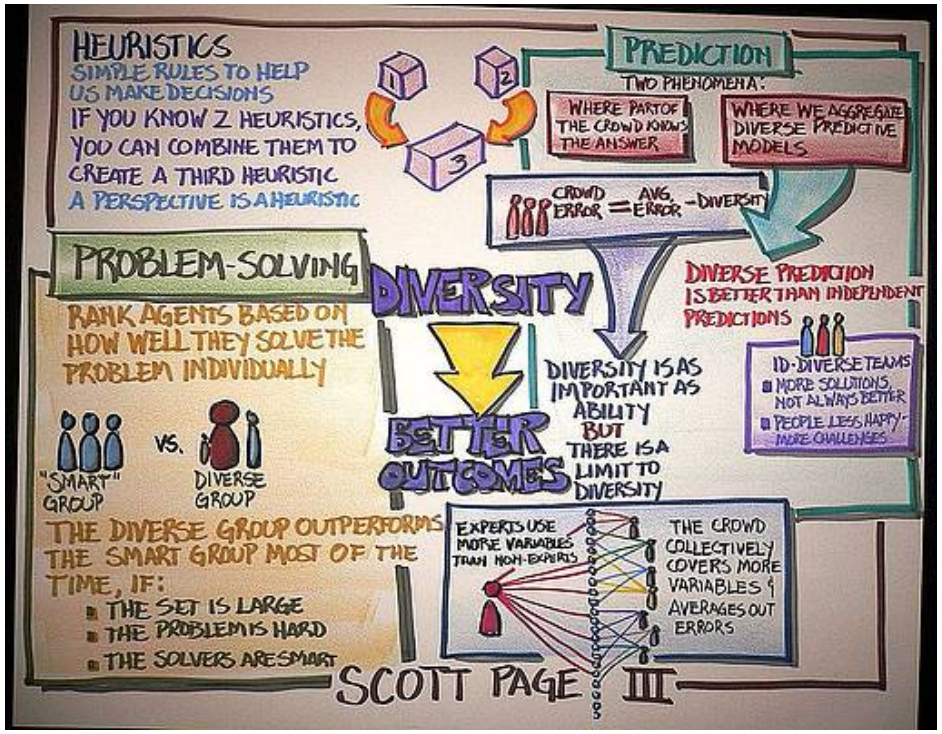
- Internet users feel negative about the credibility of websites that present unexpected commercial content, intrusive advertising (pop-ups or page-redirects). Many of them recognize it as a kind of red flag, perceiving it as **some sort of manipulation**, which **elicits an immediate defense mechanism** that leads people to mistrust information without further scrutiny.



http://www-abc.mpib-berlin.mpg.de/sim/Heuristica/

Recapitulation

- An **inventory of the most prominent information heuristics** is needed.
- Cognitive heuristics used by online information users - **additional explanation of online information behavior and personal information management strategies.**
- A proposal to treat heuristics as **intuitive but not entirely accidental search tactics based on experience that should be included in the debate on information literacy.**



http://sinus.uni-bayreuth.de/2940/

More Questions?

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katarzyna.materska@gmail.com