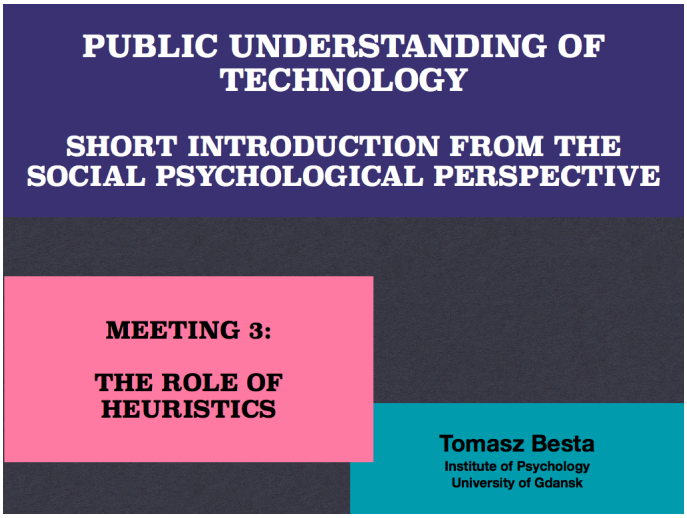

Meeting 3

The role of heuristics

To understand information-processing distortion and biased perception of new technologies, two more psychological mechanisms are very important: people's tendency to relay on (a) heuristic thinking and (b) so-called motivated reasoning. The first will be discussed here, and the second one in the next presentation.

Heuristics are cognitive shortcuts that help people make decisions and judgments quickly, without elaborate mental processing based on analyzing all available information. They shape our decision-making and influence our understanding of the social and physical world. Classical studies on decision-making by **Amos Tversky and Daniel Kahneman** showed how external situational factors and our cognitive tendencies related to how our brains work influence the results of mental shortcuts.

For example, **the representativeness heuristic** is a tendency during the decision-making process to rely mostly on one's past experiences. That is, **the known issue or person is treated as a representative for the current evaluation of the unknown person or social issue.** For example, we tend to associate some traits with people from particular professions and assume that people who possess such traits are more likely to belong to these professions. Doing so, **people underweight the probability and statistical base rate** that would indicate that only a very small percentage of people do such work or belong to that profession.

Another important heuristic is **loss aversion, a tendency to prefer avoiding losses to obtaining gains.**

Important works by Tversky and Kahneman:

Tversky, A., & Kahnemann, D. (1973). Availability: a heuristic for judging frequency and probability. Cognitive Psychology, 5, 207-32.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: heuristics and biases. Science, 185, 1124-1130.

Tversky, A., & Kahnemann, D. (1981). The framing of decisions and the psychology of choice. Science, 211, 453-8.

Many studies have demonstrated that people, when free to choose, prefer not to lose than to have a chance to win. Results of the studies suggest that individuals **value possible losses up to twice as much as possible gains.**

Two important heuristics related to social perception of technologies and to risk evaluation are 1) the affect heuristic and 2) the availability heuristic.

Other important psychological heuristics:

- Anchoring and adjustment
- Representativeness
- Familiarity
- Fluency
- Similarity

The affect heuristic describes people's tendency to make judgments based on their emotions. Studies by **Paul Slovic** and his colleagues demonstrated that a person's affect, **how a person feels about a social issue or technology, is an important predictor of how that person assesses the risks and costs** associated with a specific technology. Choices regarding and evaluations of social phenomena are often expressions of people's feelings toward a specific target.

If people like the activity or technology, they consider it less risky and more beneficial. When they dislike an activity, the opposite happens: they perceive it as having more risks and fewer benefits (even when people have no information about risk nor evidence about its safety). **Kahneman**, summing up Slovic's research, noted that when faced with a previously unknown dilemma or technology, we tend to ask ourselves these questions: **Do I like I it? Do I love it? In general, how do I feel about it?** The answers to these easy questions serve as an answer to this harder question: **What do I think about it?**

Another important cognitive shortcut that influences our judgments is the **availability heuristic. Kahneman wrote in his book** that "in social context, all heuristics are equal but availability is more equal than the others." Others often agree. The availability heuristic describes people's tendency to rely on easily available, salient examples, images, and data. Media's role in shaping easily available context and content is obvious. An example of this role is the so-called **availability cascade,** described by **Kuran and Sunstein**. This cascade is a self-sustaining chain of events. It may start with a media report of relatively minor event and lead to public panic and government intervention. Media stories about the possibility of risk related to an action or technology can catch the attention of some viewers and readers; they may react with fear and negative emotions, which may lead to more media coverage, and **this - as a cascade - creates more emotional distress among the public and more emotional reactions**.

In summary, studies on heuristics shed light on how people rely on simplistic rules and cognitive shortcuts when evaluating social phenomena. This area of research highlights the role of cognitive distortions in risk perception and how cognitive distortions could be related to affective responses (and vice versa).

Recommended future readings:

Kahneman, D. (2011). Thinking, fast and slow. Macmillan.

Keller, C., Siegrist, M., & Gutscher, H. (2006), The role of the affect and availability heuristics in risk communication. Risk Analysis, 26: 631–639. doi: 10.1111/j.1539-6924.2006.00773.x

Pachur, T., Hertwig, R., & Steinmann, F. (2012). How do people judge risk: availability heuristic, affect heuristic, or both? Journal of Experimental Psychology: Applied, 18, 314–330.

Slovic P., Finucane M. L., Peters E., & MacGregor D. G. (2007). The affect heuristic. European Journal of Operational Research 177(3), 1333-1352.

Slovic, P., & Peters, E. (2006). Risk perception and affect. Current Directions in Psychological Science, 15, 322-325.