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> "Even though both instinct and reason have their say, instinct and emotions have the decided edge."

The EcoPerception Gap

By David Ropeik

Why do we worry too much about some environmental risks and not enough about others?

SUMMARY QUESTIONS

worksheet available online

1. What does the author mean by the "perception gap"? (answer: In short, it is the disconnect between a person's assessment of risk/danger of an activity and the actual risk/danger of that activity.)

2. Explain the neurobiology behind this statement: "Our brains are hardwired to feel first and think second." (answer: External stimuli reach the amygdala of the brain first, which, if it senses danger, sends out signals for a "fight or flight" response. After the amygdala, the stimulus reaches the cortex, which is responsible for higher-order thinking, processing the details of the stimulus, and deciding on the reaction. The cortex process takes about 20 milliseconds in humans, during which the "fight or flight" response is already underway.)

3. What are the three ways that information gets processed in an emotional way rather than logical way? (answer: 1. Loss aversion = we are more sensitive to, and more troubled by, loss than we are pleased by equivalent gain, 2. Repre-

What's Inside:

sentative effect = how information fits into patterns of what we already know or believe, 3. Framing = the way information 'feels' to us is influenced by the context and meaning in which it is initially presented.)

4. Give three examples of risk-perception factors and how they relate to a specific conservation issue.

DISCUSSION QUESTIONS

worksheet available online

1. What makes the perception gap different from hypocrisy or lack of knowledge? The author lists three examples from his friends at the beginning of the article. Can you come up with a perception gap in yourself or an acquaintance? What factors have led you to process information related to this issue in an emotional way rather than logical?

2. What is your reaction to the examples of loss aversion? Which is the more emotionally poignant slogan to you: "Stop the loss of the Amazonian rainforest," or "Save the Amazonian rainforest"? Look around for other examples used in marketing.

3. How important is it to understand concepts in psychological risk assessment, such as loss aversion, representative effect, and information framing, when working in conservation science? Is it important enough for scientists to receive training in?

4. The author lists his friends' fears (mercury, nuclear power, and chemicals) as being particularly "scary," while climate change, particulate air pollution, and ocean acidification are perceived as less scary. Do you agree? Is your reaction logical or based in emotion? List 10 more environmental issues, and then rank them in terms of scariness. Pass your un-ranked list to someone else for them to rank. Does your ranking agree with other group members'? Discuss your ranking and possible reasons for differences between individuals.

5. Choose an environmental issue that you think does not receive enough attention or response from public attitude or policy. Evaluate how this issue falls into the categories of risk-perception factors given in the article. Pick one or two perception factors that you think could be influenced, and describe how a campaign/discussion/information could be used to influence that risk perception factor.

6. What is your reaction to the four categories of people's cultural cognition (hierarchists, egalitarians, individualists, and communitarians)? What do you

BUILD YOUR OWN GLOSSARY

- heuristics/biases
- loss aversion
- representative effect
- framing an opinion
- cultural cognition/ outlook

> "Losing polar bears feels bad, as does losing rainforest and soil and the Arctic ice—in part because the very word "losing" evokes a mental shortcut that makes circumstances feel more painful."

think influences the categories you fall into (e.g. your personality at birth, your 'tribe' or environment you're raised in, your age, your economic status)? Do you think people are 'stuck' in the same categories throughout life? Do you know anyone in your life that you think has switched from one type to another? How could an understanding of these concepts influence how conservation science is communicated?

7. The author says that one reason people have less fear of certain global environmental issues, such as climate change, is that they believe it will only affect 'someone else.' Do you think this is true? What other conservation issue face the same hurdle in gaining public appreciation? What activities can a conservation scientist do to connect people to environmental issues? Do you know of an example that has done this effectively? (HINT: could be a local issue)

ADVANCED ACTIVITIES

1. **Exploring Risk Perception:** Risk perception is an important concept in many and diverse fields. Search available literature on risk perception in a non-science field (e.g. economics) and relate the findings to conservation science. (Examples: How do military training techniques alter risk perception to avoid panic or fear in combat situations? What are the criteria used by professional risk-assessors of large high-risk/high-payout financial investments? How does the human psyche rationalize irrational choices about money such as playing the lottery?)

2. **Neurobiology in the Emotion-versus-Logic Battle:** Read LeDoux's book, *The Emotional Brain*. What is the evidence that "the wiring of the brain at this point in our evolutionary history is such that connections from the emotional systems to the cognitive systems are stronger than connections from the cognitive systems to the emotional systems"? Can you find other primary literature on the neurobiology of emotional versus cognitive reactions in the brain?

3. **Conservation Scientist Job Description:** Imagine the following continuum:

What jobs exist for scientists that fall at different places along the continuum? What training should they receive? Should scientists stay removed from policy advocacy? Are there official university policies for research PIs on what they can

or cannot do in terms of policy advocacy? Should they view advocacy as part of their jobs? Is that different from science communication? Should conservation scientists be trained in human psychology? If so, what about ethics, policy, economics?

4. **Self-Assessment of Risk-Perception Factors:** Examine your lifestyle. What choices do you make to be 'healthy' (this can include physically, mentally, or environmentally)? What are the underlying risks to your health that you are trying to address with these lifestyle choices? Are you operating on incomplete information for any of these risk assessments? What risk-perception factors are influencing your feelings on the issue? Research the science behind the issue while keeping track of where you get your information. Did more information change your risk assessment? Did the source of information influence your feelings?

5. **Political Science and Patterns in Cultural Cognition:** Read the Kahan et.al. (2011) paper about cultural outlooks. Are there geographic patterns in prevalence of cultural cognition categories (e.g. do we see clusters of communitarians in one region and a predominance of individualists and hierarchists in another)? What would you expect to see within the USA? What would you expect to see on different continents? What about urban versus rural, wealthy versus impoverished, and mid-continent versus coastal? Find data in political science resources that support or refute your hypotheses. Why do these patterns exist? What are the specific regional causes that have resulted in a predominance of types of cultural outlooks?

6. **Teaching Conservation Scientists and Informed Voters:** The article ends with three recommendations for ways in which individuals can avoid falling into the "ecoperception gap". Are there any more you would add (e.g. remain calm)? These may be great recommendations, but how could you go about spreading them (e.g. lead by example versus preaching), and to whom? The article speaks to the fact that a tribal mentality automatically places 'leaders' as a more trusted source of information. As leaders of a classroom, and especially as 'experts,' teachers have tremendous influence not only on what their students learn and accept as truth, but *how* they approach an opinion-filled world, that is also now overflowing with data. How would you bring these recommendations into *your* classroom? How would you bring them to the attention of other educators?