Emerging risks in public perception:
Will we face an acceptance crisis?

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Risk Perception

What Do We Know?

Janus face –
roman god of ambivalence/ambiguity

Principles of Risk Perception

- Human behavior depends on perceptions, not on facts

- Perceptions are a well-studied subject of social science research: they differ from expert assessments, but they follow consistent patterns and rationales

- There are four genuine strategies to cope with threats: fight, flight, playing dead, experimentation

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Qualitative Risk Characteristics

- with respect to the nature of risk:
  - dread
  - familiarity
  - personal experience (perceptible by human senses)
  - natural versus artificial risk source
- with respect to the risk situation:
  - voluntariness
  - controllability
  - fair distribution of risks and benefits
  - confidence in risk management

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Qualitative Benefit Characteristics

- with respect to the nature of the benefit:
  - Commonly agreed social need such as competitiveness or quality of life
  - Familiarity (comprehensibility)
  - Personal experience (control over benefits)

- with respect to the social situation:
  - Embedding in positive social context
  - Compatibility with one's own lifestyle
  - Fair distribution of risks and benefits
  - Confidence in the innovation network

Dominant Risk Perception Clusters

- *Emerging danger:* randomness as threat

- *Creeping danger:* confidence or zero-risk

- *Surpressed danger:* myth of cycles

- *Weighing risks:* only with betting

- *Desired risks:* personal challenge

Application to Emerging Technology

Public perception:
Representative of Cluster: "Pending Danger"
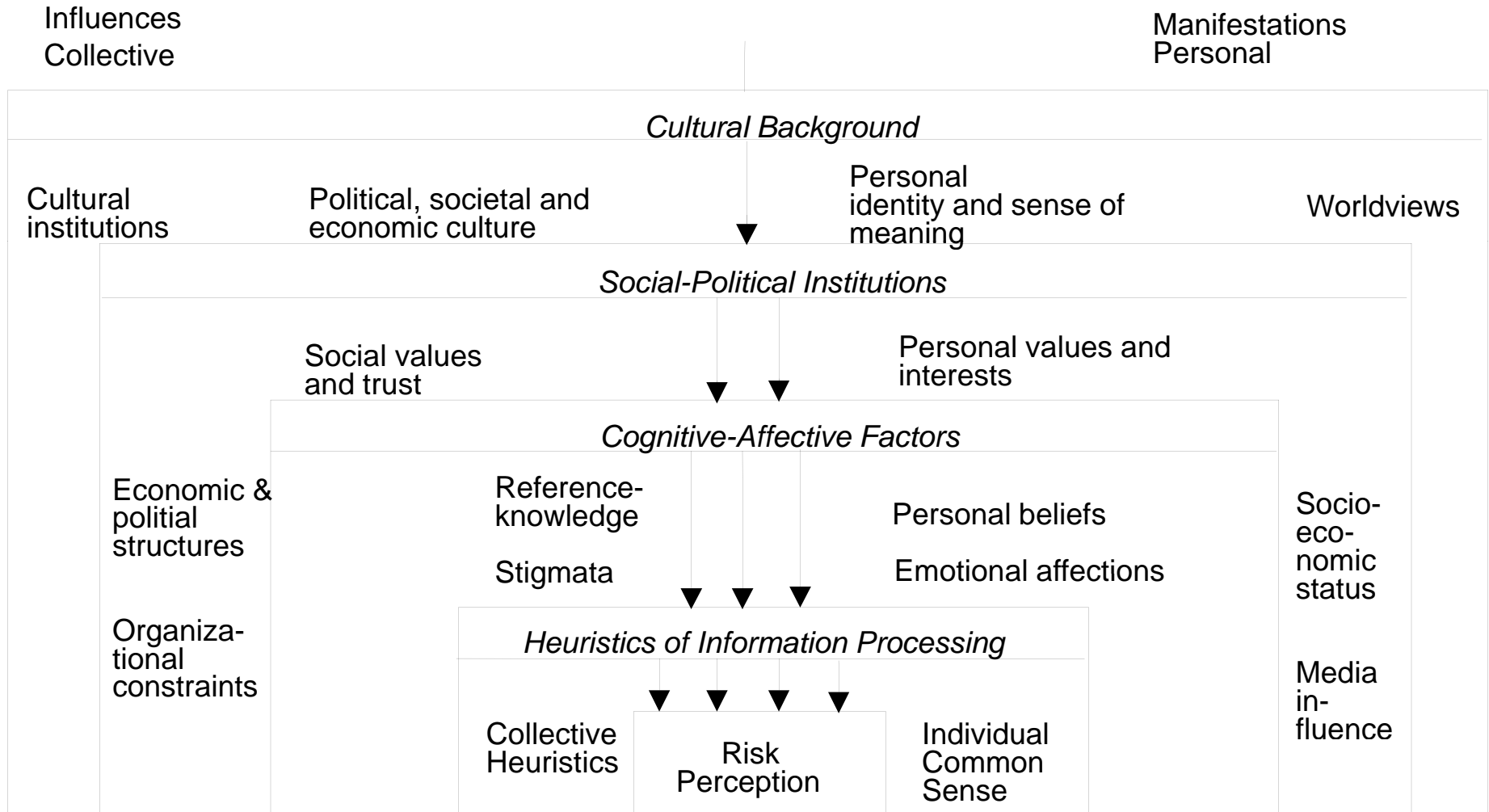
- Key characteristics
    - Low-probability, high-consequence risk
    - Sophisticated technology with little long-term familiarity
    - Little time for warning and emergency measures

- High sensibility for indicators of human failures or organizational problems (high reliability)
- Concern about randomness of catastrophic event
- Risk aversion most frequent response

Application to Emerging Technology

- Public perception:
  Representative of Cluster: "Creeping danger"

  – Concern about long-term impacts (risks and benefits)

  – Key variable trust:

    - If yes: risk-benefit balancing

    - If no: request for zero risk regardless of benefit

    - If maybe: orientation on external criteria

  – High sensibility for symbolic aspects of technology (risks and benefits)

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Integrative Approach(Rohrmann/Renn)

Four Context Levels of Risk Perception

Influences
Collective

Manifestations
Personal

Cultural Background

Cultural
institutions

Political, societal and
economic culture

Personal
identity and sense of
meaning

Worldviews

Social-Political Institutions

Social values
and trust

Personal values and
interests

Cognitive-Affective Factors

Economic &
politial
structures

Reference-
knowledge

Personal beliefs

Socio-
eco-
nomic
status

Stigmata

Emotional affections

Organiza-
tional
constraints

Heuristics of Information Processing

Media
in-
fluence

Collective
Heuristics

Risk
Perception

Individual
Common
Sense

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Risk Perception

Empirical Results

Janus face –
roman god of ambivalence/ambiguity

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Empirical Results

- with respect to causal factors
  - Psychometric factors such as personal control, dread or familiarity (highly influential)
  - Personal value orientation (selectively important)
    - Materialistic
    - Hedonistic
    - Work Ethics
    - Post-materialistic
  - Trust in institutions (creeping danger: high)
  - Stigma Effects (selected risks but then very powerful)
  - Socio-demographic variables (minor effect)

Empirical Results

- with respect to countries **I**
  - Trust:
    - Europe:: low regulation, high in science, high in NGOs
    - US: medium regulation, split in science, polarized in NGOs
    - Japan: normally high in regulation, high in science, medium to low in NGOs
  - Psychometric attributes
    - Europe: -- artificiality –no personal control -dread,
    - USA:: --familiarity, --dread, --unfair
    - Japan: --artificiality – no institutional control, -foreign

Empirical Results

- with respect to countries II
  - Concerns:
    - Europe: nuclear energy, GMOs, chemical facilities
    - US: nuclear energy, centralized IT
    - Japan: GMOs, food techology, nuclear energy
  - Stigma effects
    - Europe: BSE, nuclear waste, GM food
    - USA: Nuclear waste,
    - Japan: BSE, air pollution,

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Implications for Risk Management and Communication

- **For communication**
  - Provide the *right* audience with the *right* information through the *right* source and channel
  - Provide *proactive communication* about all issues that matter to people and their risk-benefit perception

- **For management**
  - *Design technologies* in a way that they reduce the potential for fear and increase the confidence in the potential benefit for society and consumers
  - Incorporate the views and opinions of all stakeholders in the *process* of risk analysis and governance

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Summary

- People behave according to perceptions not facts

- Perceptions follow consistent patterns, but their expression may vary from culture to culture

- Perceptions are governed by qualitative characteristics, semantic patterns, trust, and value orientations

- Of special importance are pending risks and emerging risks in the perception of new technologies

- Emerging risks are of high concern in Europe, medium in Japan and low to medium in the USA

Not to forget:

Risk managers cannot produce certainty but can help people to develop coping mechanisms to deal prudently with the necessary uncertainty that is required for societies to progress