Beyond off-the-shelf solutions for on-the-shelf risks

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“Doubt is not a pleasant condition, but certainty is absurd”  Voltaire
Standard risk planning framework**

Rapid Growth in Risk Management

• Capability
  – The ubiquity of computers and communications technology engendered sophisticated risk models
  – Advances in risk perception, acceptability of risks, and extreme events modelling.

• Need
  – Technological advances and globalization have amplified risks: increasing complexity and coupling

• Outcomes
  – significant advances in risk management and risk governance frameworks
Major Challenges in Risk Management

• Introducing risk management into an organization often implies setting up rules and procedures

• Paradox: risk management is not a recipe and cannot be reduced to a checklist.

• Setting up risk standards enable a compliance-based framework that delineates a minimum set of standards that must be achieved, but this approach is a necessary but not sufficient condition for an effective risk management plan.
Implications of using a “Risk Protocol”

• Complacency about the standards
• Lack of flexibility in the standards
• Potential failure to inculcate a culture of risk-awareness in the organization.
Managing Complexity

High Reliability Organizations (HRO) and Normal Accident Theory (NAT)
Fundamental Distinction**

- High Reliability Organizations
  - Accidents can be prevented through good organisational design and management because formal organisations can create **rules, structures and processes** to regulate risky decision-making.

- Normal Accidents
  - There are too many systems and each system is too complex and interdependent for anyone to know the eventual outcomes of their decisions and actions.

Accidents

• HRO
  – Accidents can be prevented through good organizational design and management

• NAT
  – Accidents are inevitable in complex and tightly coupled systems
Safety

• HRO
  – Safety is the number one organizational objective

• NAT
  – Safety is one of a number of competing priorities
Redundancy

• HRO
  – Redundancy enhances safety: duplication and overlap can make a reliable system out of unreliable parts

• NAT
  – Redundancy often causes accidents: it increases interactive complexity and opaqueness and encourages risk-taking
Centralization / Decentralization

- **HRO**
  - Decentralized decision-making is needed to permit prompt and flexible field-level responses to surprises

- **NAT**
  - Organizational contradiction: decentralization is needed for complexity, but centralization is needed for tightly coupled systems
Reliability

• HRO
  – A ‘culture of reliability’ will enhance safety by encouraging uniform and appropriate responses by field level operators

• NAT
  – A military model of intense discipline, socialization, and isolation is incompatible with democratic values
Training

• HRO
  – Continuous operations, training and simulations can create and maintain high reliability operations

• NAT
  – Organizations cannot train for unimagined, highly dangerous, or politically unpalatable operations
Learning

• HRO
  – Trial and error learning from accidents can be effective, and can be supplemented by anticipation and simulations

• NAT
  – Denial of responsibility, faulty reporting, and reconstruction of history cripples learning efforts
In sum . . .

- The debate is not resolved: glass half full / half empty argument

- Both can add value to our understanding of risk

- Increased complexity of networks validates NAT, challenges HRO

- When the “system” in question goes beyond a single organization and/or plant, the assumptions of the HRO approach do not necessarily hold
ISO 31000 standard – Risk Management and Practices

- ISO 31000
  - published in 2009
  - provides a standard on the implementation of risk management
  - purpose of ISO 31000:2009 is to be applicable and adaptable for “any public, private or community enterprise, association, group or individual.”
  - is not developed for a particular industry group, management system or subject matter field in mind, rather to provide best practice structure and guidance to all operations concerned with risk management.
HAZARD AWARENESS AND RISK MITIGATION in INTEGRATED COASTAL AREA MANAGEMENT

Fig. 1.1. The linkages and feedbacks between the general elements of the ICAM process.
Source: Adapted from Henocque and Denis, UNESCO, 2001.
Risk Management in ICAM

**EXECUTIVE SUMMARY**

**SECTION 1** INTRODUCTION

**SECTION 2** THE ICAM CONTEXT

**SECTION 3** THE HAZARDS DESCRIBED

**ICAM PHASE I**

**SECTION 4** Identifying and quantifying the hazards

**SECTION 5** Measuring vulnerability

**ICAM PHASE II**

**MAN. PLAN**

**ICAM PHASE III**

**SECTION 6** Assessing the risk

**SECTION 7** Enhancing awareness and preparedness

**ICAM PHASE IV**

**SECTION 8** Mitigating the risk
IRGC Risk Framework: Integrated Risk, Governance & Compliance**

** Ortwin Renn, “Risk Governance: Towards an Integrative Approach”, 2005
Risk classes**

- **Simple** risk problems
  - Classical risk analysis

- **Complex** risk problems
  - Scientific disagreement about the causal factors, relationships/pathways, vulnerabilities

- Risk problems due to high unresolved uncertainty
  - Unknown or poorly understood part(s) of the problem

- Risk problems due to interpretive and normative ambiguity
  - Divergent views on the importance/meaning of the risk assessments

** Ortwin Renn, “Risk Governance: Towards an Integrative Approach”, 2005
A Structure for Stakeholder Involvement

As the dominant characteristic changes, so also will the type of stakeholder involvement need to change.

Source: An introduction to the IRGC Risk Governance Framework, IGRC
Risk Rationality
Classification tree for vessel incident occurrence as a function of weather

Critical Theory

• For Critical Theorists, at issue is the positivistic approach to the natural sciences that presumes that the natural sciences hold the exclusive model for all knowledge, with little or no reflection upon the appropriate scope and application of such science.

• The application of natural scientific methodologies to social phenomena leads to the development of governmental and administrative structures that are insensitive to the true nature of human social interaction, and that too readily reduce human agents to mere objects to be manipulated. If society is not sufficiently vigilant, power can be concentrated into the hands of a small group of specialists in social and political elite apparatuses.
Critical Theory

• Critical Theory has no explicit definition of risk. Critical Theory takes seriously that individuals living together must intentionally discuss preferences, interests, norms and values in a rational way
Psychometrics

- **Domain**: Psychology, Social-psychology

- **Assumptions**: Whether cause-effect relationships reflect reality or not is irrelevant. Individuals respond to their perception

- **Definition of Risk**: a subjective expression of individual fears or expectations about unwanted consequences of actions or events
Psychometrics

• Individuals respond to: dread, personal control, familiarity, equitable sharing of both benefits and risks and the potential to blame an institution or person; how a person feels about something (e.g., a technology); often a product of underlying beliefs (e.g., what you think about government)

• Examples of Preferred Tools, Processes: surveys; questionnaires; opinion polls; some forms of persuasion

• Communication: symbols, images
Cultural Theory and the Role of Institutions

• Assumptions: Risk (blame and accountability) is informed by a person’s cultural values. Institutions uphold this value system.

• Definition: varies with institutional setting; key variables are regulation and integration
### Cultural Theory of Risk**

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<th>Regulation</th>
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<tr>
<td><strong>Fatalist</strong></td>
<td>Emphasize ‘spontaneity’; random chance; lady luck</td>
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<tr>
<td><strong>Individualist</strong></td>
<td>Reduce rules; emphasize creativity, competition and financial incentives</td>
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<tr>
<td><strong>Hierarchist</strong></td>
<td>Emphasize rules and expertise</td>
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<tr>
<td><strong>Egalitarian</strong></td>
<td>Emphasize process and community involvement</td>
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** Integration  

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Cultural Theory: Blindspots**

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<td></td>
<td>Difficulty in Planning</td>
<td>Reduces Innovation</td>
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<td>Large Failures, Swept under the Rug</td>
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<td>Self-interested; lack of cooperation; corruption</td>
<td>Organizes on a small scale; low trust; reduces innovation</td>
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Take-away message

- Relying on risk concepts and processes when developing regulations and governance models should not be limited to the analytical, prescriptive contributions of this field.
- Risk management and governance are active areas of research which are continually providing more insight into cultural, social and enterprise management implications of operating in a complex, uncertain environment.
“There are costs and risks to a program of action, but they are far less than the long range risks and costs of comfortable inaction.”

John F Kennedy