A case study in systems failure: NZ's Mangatepopo Tragedy

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Presentation Outcomes:

1. Present existing analysis of event within context of system failure

2. Provide framework for understanding how individuals, systems, and organizations interact in crisis situations

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"It takes just the right combination of circumstances to produce a catastrophe."

Perrow (1999) author of Normal Accident Theory

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The Fallout

- Coroner's inquest

Devonport, C.J. (March 30, 2010). *Report of Coroner*, In The Coroner's Court held at Auckland, February 15 to February 19, 2010.

- Internal Review as per OPC Trustees

- Media interest (long running)

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Operator Error vs. Latent / System errors

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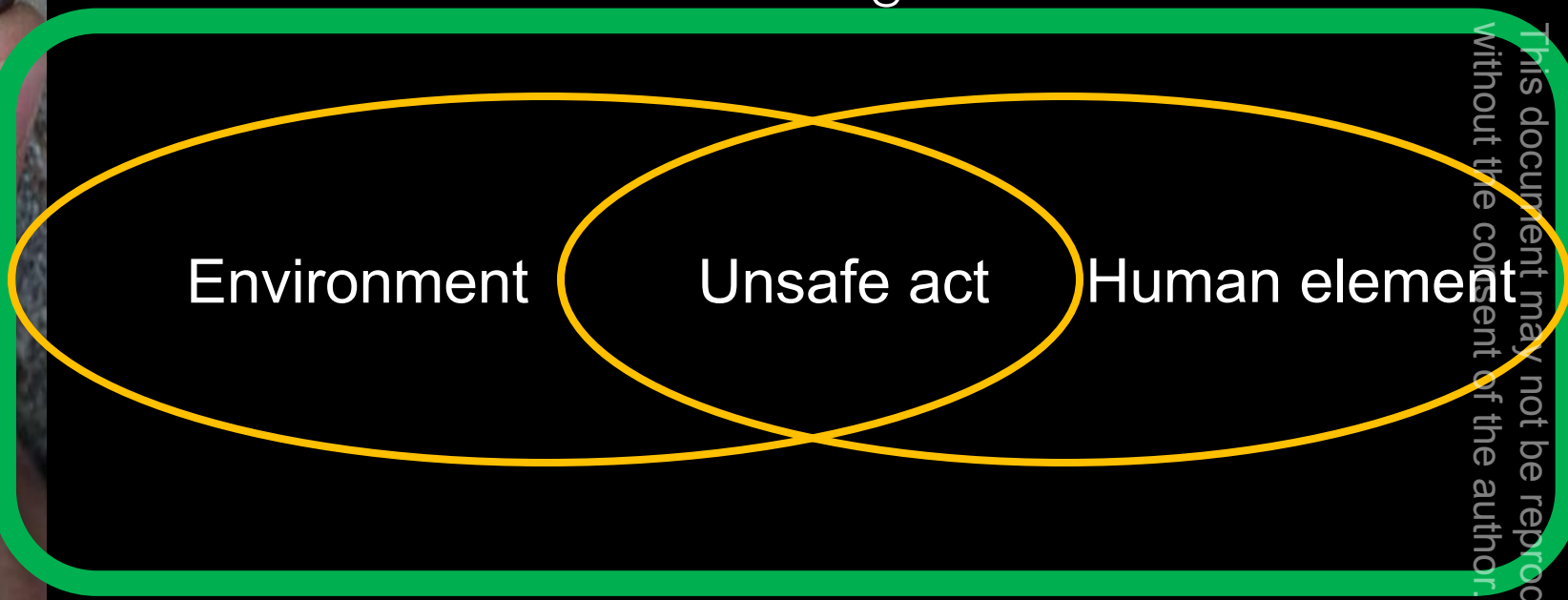

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The Fallout

- Coronor's inquest

Devonport, C.J. (March 30, 2010). *Report of Coroner*, In The Coroner's Court held at Auckland, February 15 to February 19, 2010.

- Internal Review as per OPC Trustees
- NZ Dept. of Labour charges

under Health and Safety Employment Act (OPC pleads guilty of 2 charges, $480,000 fines)

- NZ implements national safety regulations and auditing system

Making it an offence to provide activities involving significant hazards and some level of instruction or leadership without a current safety audit certificate, as of Oct 1 2011

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"Human error is a consequence, not a cause."

Reason (1997), *Managing the Risks of Organizational Accidents*

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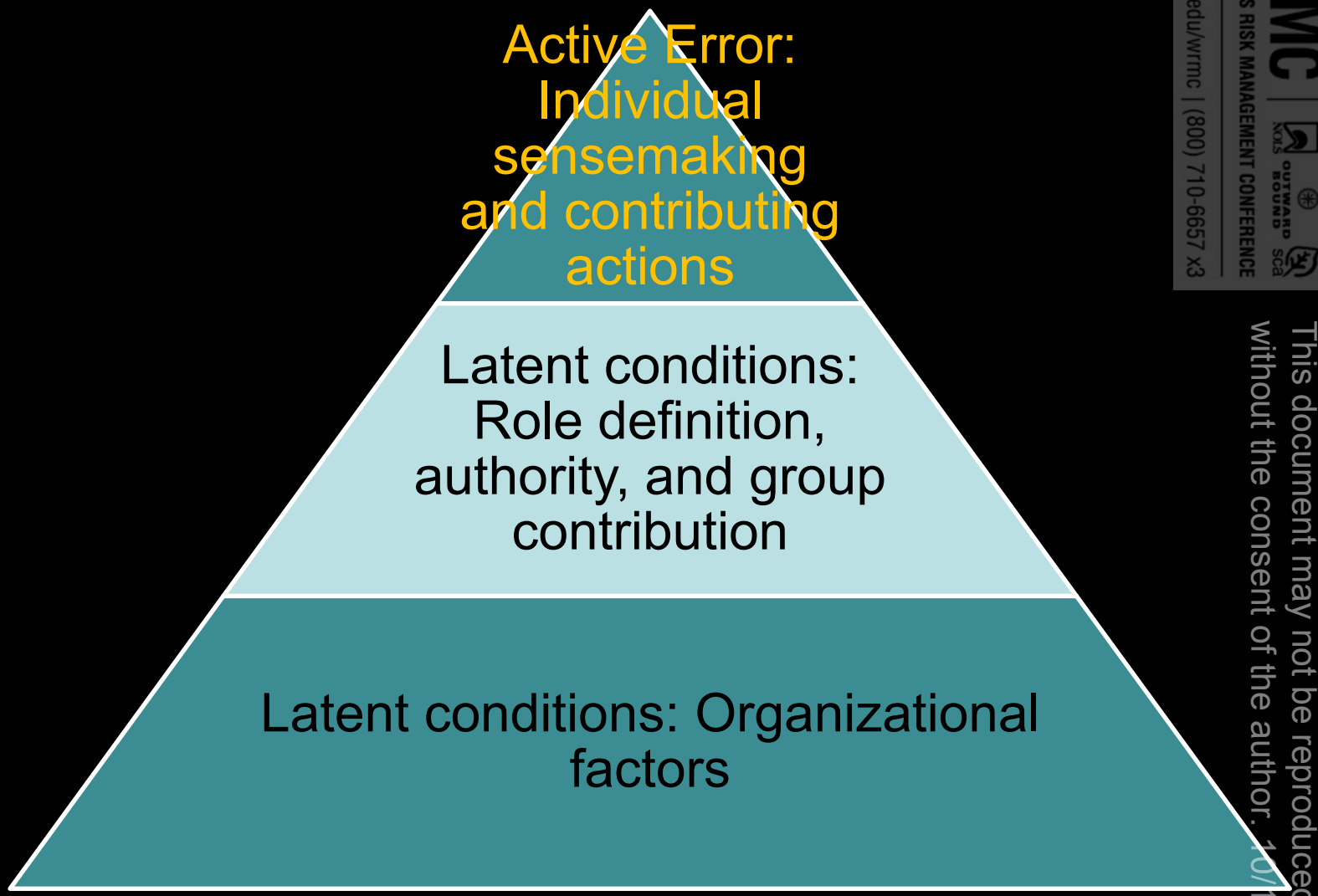
Systems based investigation model:

Based on Snook (2000)



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Operator vs. System induced error *

- Substitution test:

'Given how events unfolded and were perceived in real time,

is it likely that a new individual, with the same training and experience,

would have behaved any differently?'

Johnston (1995)

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Systems Failure:

1. Risk tolerance
2. Systems errors
3. Operational features

Latent conditions: Organizational factors

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Business Management System

Organization Planning System

Staffing/Human Resources System

Program Planning System

Program Activity

Crisis Management System

Client Information System

Equipment Management System

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OPC systems failure: Program Planning System

- Risk and skill
- Solo instructing
- No map!
- Hazard identification

- *Practical drift* and check in procedure

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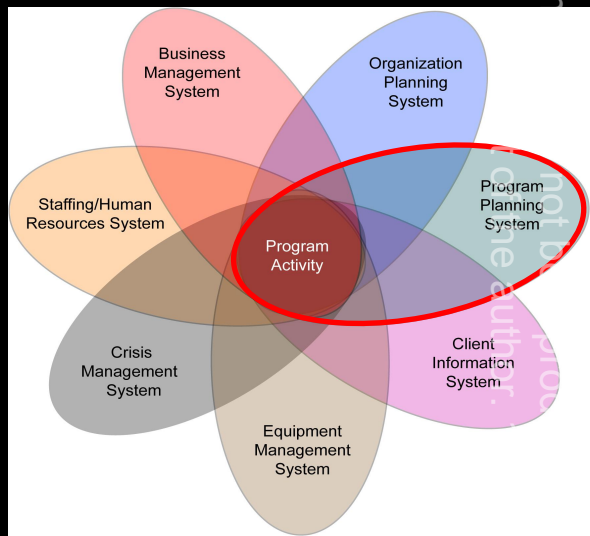

OPC systems failure:
Client Information System

- Informed consent*
- Challenge by choice
- Swim confidence vs. ability

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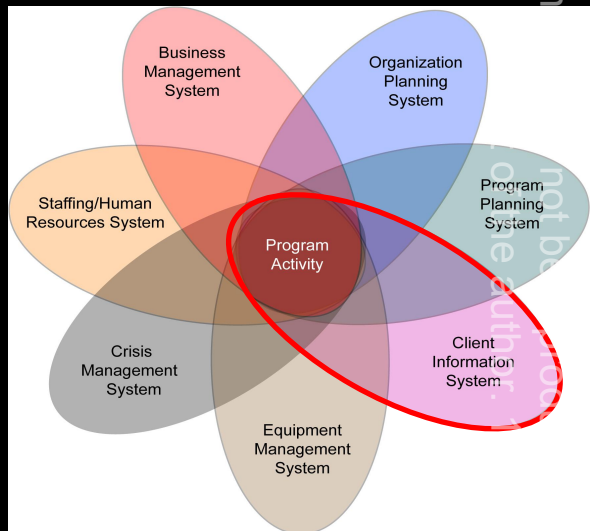

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OPC systems failure: Equipment Mgt. System

- Radio communication

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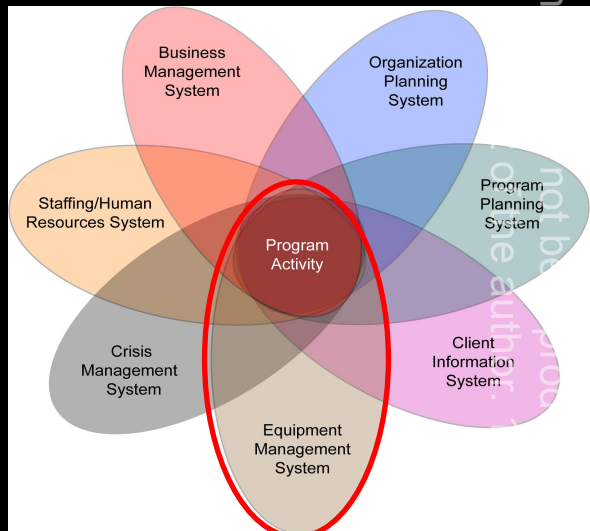

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OPC systems failure: Crisis Mgt. System

- Non-clicking triggers*
- Gorge rescue plan
- Rescue resources

- Learning

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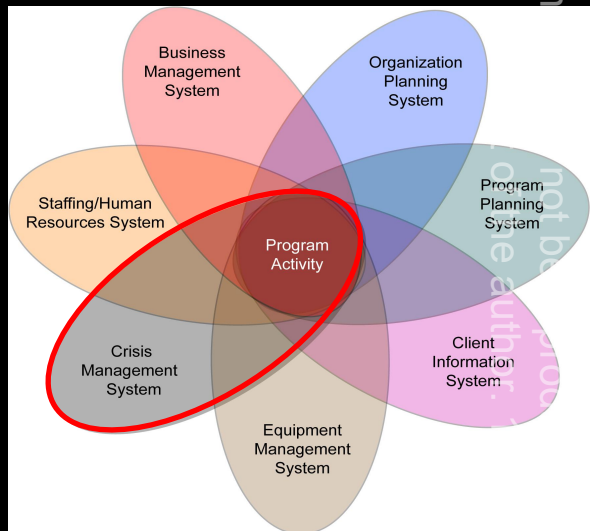

Non-clicking Triggers

- Gradual change research
  http://www.youtube.com/watch?v=_1Cp3Ux85lE

- Return to slideshow

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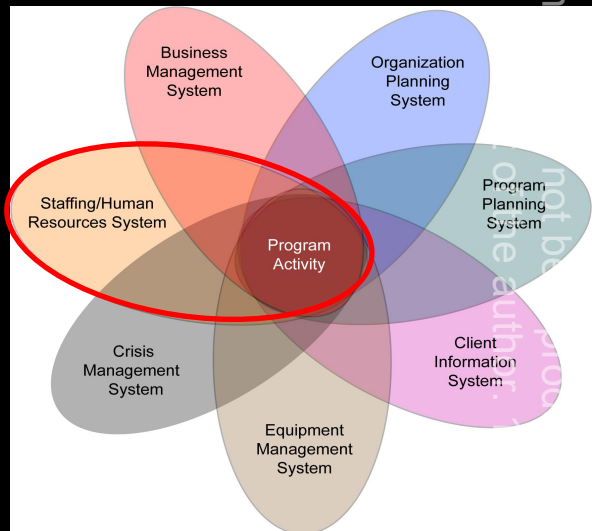
OPC systems failure: Staffing/HR System

Root causes:

1. Failure to maintain staff & supervise*
2. Learning lost / turnover
3. Production pressure
4. Competency based assessment



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OPC systems failure: Business Mgt. System

- "Culture of Production" vs. culture of safety

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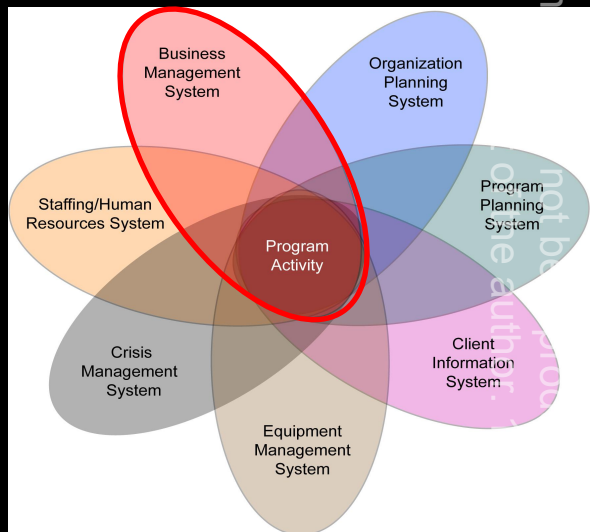

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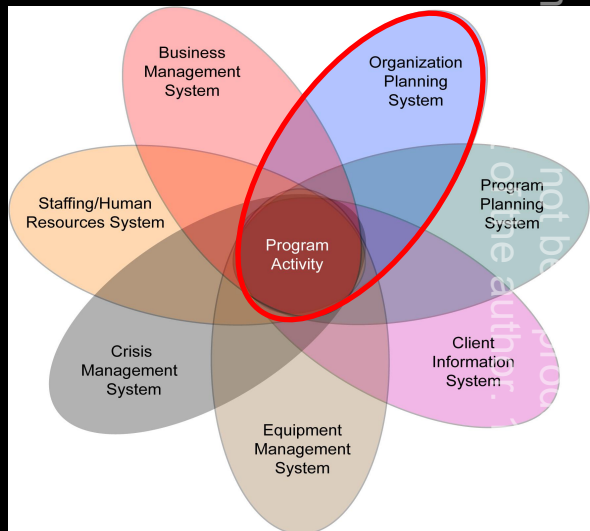
OPC systems failure: Organizational Planning System

- Risk tolerance:
  - Explicit vs. implied*
- Over confidence in systems*



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"We cannot change the human condition; people will always make errors.

We can change the conditions under which they work and make unsafe acts less likely." Reason (1997)

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Key learning:*

1. Risk tolerance: explicit vs. implied
2. Train to failure – recognize non-clicking triggers
3. System function – recognize non-clicking triggers
4. Do my supervisors ‘supervise’?
5. Have we forgotten to be afraid?

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References / further reading

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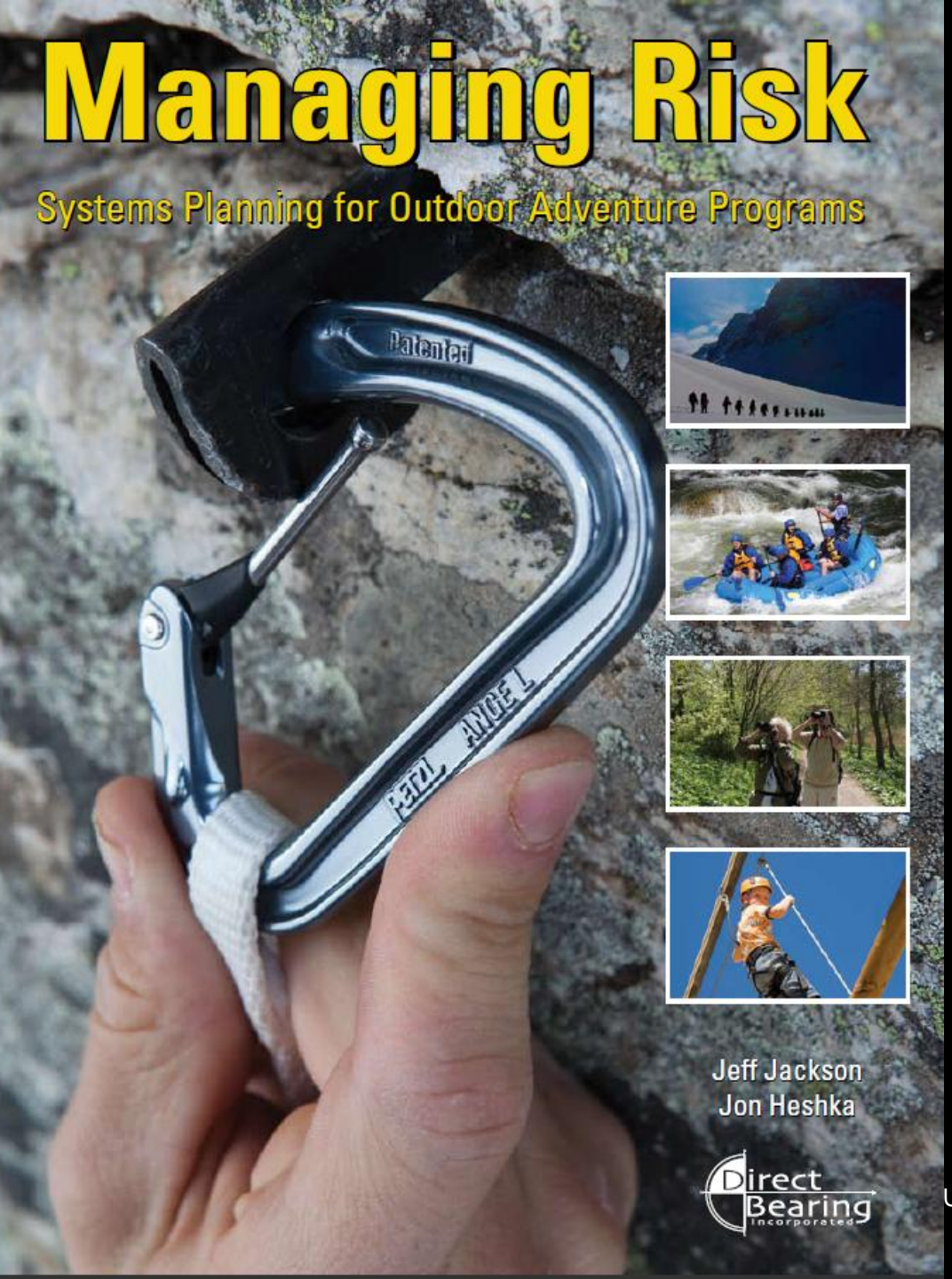

Book info:

TheManagingRiskBook.com

Adventure Risk Report

AdventureRiskReport.blogspot.com

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