Towards resilient transport networks through connected decision-making

Vivienne Ivory, Maggie Trotter
Resilience to Nature’s Challenges - Mission

- Partner with stakeholders to build a transformative pathway towards natural hazard resilience.

- Delivered by priority-driven co-creation laboratories and targeted underpinning research, suited to our diverse and rapidly changing cultural, economic, built and natural environments.
RNC 2015-19 Research Program

- Resilience Trajectories
- Hazards
- Culture
- Infrastructure
- Governance
- Economics

Toolbox programs

Co-creation Labs

Resilience Pipelines

Underpinning Resilience Disciplines

Resilient New Zealand

Priority Partnerships

Urban

Edge

Maori

Rural

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Contribution of Resilient Governance to the RNC

How can we make decisions that will enhance the resilience of the whole network?

Case:
- Canterbury / West Coast transport network
- North Canterbury 2016 earthquake affecting upper South Is, lower North Is and national capacity
The context of making decisions

- How do decisions that affect network resilience get made?
  - Who is involved?
  - Where are the key interactions between parties?
Method: Iterative development process

Initial collation of agencies involved in dynamic event and their interactions

- Media reports: Online coverage, newspaper reports, RNZ interviews, TV etc
- MCDEM response/recovery documents
- Applied to the Risk Management Framework and translated to the Case

Iterative development by expert key informant interviews

- Key actors (players)
- Key interactions
- Ineffective/over/missing interactions (governance opportunities)

Extension incorporating disaster dynamics

- Dividing the Actor map into preparation, response, & recovery plus overlaps
Results so far

132 actors (or actor groups)

- 69 key actors
  - 02 identified by all
  - 05 by majority
  - 18 identified by two +
  - 44 identified by one

- 65 key interactions
  - 03 identified by multiple experts

Key Actors
- NZTA, KiwiRail, MCDEM, Fonterra, shipping, highways, ports

Key Interactions
- MoT – NZTA
- MoT – KiwiRail
- Ports - shipping
Mapping actors across the disaster risk reduction cycle

Central

Local

Preparedness

Response

Recovery
Identified by all experts
Identified by 3
Identified by 2
Identified by 1
Identified by research team only
Findings: pilot method

- Use of media data allowed an ethical, early research response
- System method promotes a holistic perspective, situational awareness amongst experts
- Helps query different perspectives, reveals both strengths and absence of actors and interactions
- Provides a common view of the system for different sectors, disciplines
Findings 1)

- Adaptive capacity of the network
  - Transfer between modes
  - Informal and formal responses (e.g., air and sea based modes)
- Interdependencies between modes – rail, road & ports
- Interdependencies between regions – ports and freight
Findings 2)

- Over-interaction – loudest voices before, during, and after an event?
  - Adhoc interactions
  - Competing agendas
- Under-interaction – who isn't heard?
  - e.g., are local authorities heard at the appropriate levels? (not just locally)
- Are we learning lessons?
  - Existing advice
  - Translation of resilience theory into practice
  - Sharing lessons (e.g., tsunami evacuations)
The [Railway] Commission was appointed on October 24 1882 and reported its findings on February 7 1883. The Commission was investigating whether the Middle Island Railway Extension could head up South Island’s east coast through Kaikoura or turn inland to Hanmer Springs... then continue to Tophouse and shunt down the Wairau valley to Blenheim. The weather was one of their prime concerns.

“In its 1883 report, the Railway Commission decided not to recommend either the east coast line or the central line. It was unenthusiastic about either option and damned them with faint praise”

No Place to Run a Railroad

The indubitable atmosphere was such that, having left a bill of lads in the free-place when retiring to bed, the cold wind would be freezing to a hill of solid ice during the period of one or eight, so decided brother George Kneen of his experiences on Molesworth when giving evidence to the Railway Committee. The Committee was appointed on October 24, 1882 and reported its findings on February 7 1883.

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“[Railway] Commission, a provisional group whose descriptions of the natural beauty of the Molesworth landscape were lyrical. To have seen the blue glens of the Arthurs and Clutha in sunshine, when in full snow, standing as high as good wheat-stops, its polished heads waving to the sunshine beneath a light wind, and giving out a gentle voice to its honey-sweet air, is to have received an indescribable impression of beauty, and of a fertility that might not have been an insignificant factor.”

The Nelson Committee was also a strong advocate of Swiss immigration, talking about how the Swiss had prospered in their mountains for centuries. The Swiss were a sturdy, cheerful and hard-working farming people, and the translation of a district like the Clutha valley with such men and women would probably be of great success, if home-sickness... did not intimidate.”

In its 1883 report, the Railway Commission decided not to recommend either the east coast line or the central line. It was unenthusiastic about either option and damned them with faint praise. The report is an impressive document. The questioning of the witnesses is polite but sharp, its conclusions are well reasoned, and it would put many of our current parliamentary select committee reports to shame!”

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Opportunities identified to date

- Facilitating useful interaction between actors before, during & after an event
- Sharing capacity across the country
- Seeing decision-making in a holistic context
- Min of Transport seen as important point for coordination & prioritisation
- “Corridor Forums” to connect, develop interactions between modes, investors, operators, users
Next steps:

- Further develop Actor map with data collection from transport agencies, operators & users
- Review gaps and opportunities and their implications for resilient decision-making
- Identify possible governance ‘interventions’ to trial - 2018

***Governance, prioritisation and coordination are key!***

Contact: vivienne.ivory@opus.co.nz
Maggie.trotter@opus.co.nz