


→ Breakdowns in Coordinated Decision Making

- Dr Chris Bearman
- Jared Grunwald
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→ Breakdowns

“The CFS officers ...were finding it extremely difficult to obtain any relevant information about the fire, its status and its size...There was a large measure of frustration experienced in Port Lincoln about the adequacy of information from the fire ground.

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→ **Breakdowns**

“Mr <A> stated in evidence that he attempted to contact the Kilmore ICC to pass the information on, without success. He did not know whether the Kilmore ICC was releasing this type of information.”

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→ **Breakdowns**

“There is in the evidence some conflict about whether or not it was agreed at the meeting that using the Baldy Range trail as the eastern containment line would be reconsidered the following morning.”

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→ **Breakdowns and Disconnects**

- Breakdown = “a failure in coordination, cooperation or communication that leads to a temporary loss in the ability to function effectively.”
- Disconnect = “individual instances of disagreement between participants.”

Bearman, Paletz, Orasanu & Thomas (2010)

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→ **Disconnects**

- *Operational disconnects*
  - a difference between the actions of one party and actions expected by the other party, or
  - a mismatch in the plans that each party has about the physical operations of the response

Bearman, Paletz, Orasanu & Thomas (2010)

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→ **Disconnects**

- *Informational disconnects*
  - a difference in the information that each party possesses.
- *Evaluative disconnects*
  - a difference in the evaluation or appraisal of information that is available to both parties

Bearman, Paletz, Orasanu & Thomas (2010)

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→ **Shared Mental Models**

- A mental model is a cognitive structure that a person uses to signify objects, actions, situations and people (Johnson-Laird, 1980)
- A shared mental model “enables team members to have more accurate expectations and a compatible approach for task performance” (Salas & Cannon-Bowers, 2001, p. 87)

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→ **Breakdowns in 3 Fires**

- Wangary (2005)
- Canberra Firestorm (2006)
- Kilmore East (2009)



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→ **Method**

- Identified situations that *prima facie* contained a breakdown
- A random selection of these situations were analyzed further for
  - Types of Disconnects
  - Causes of Disconnects
  - Resolution

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→ **Results**

- 44 breakdowns yielded 84 disconnects
- Types
  - Operational = 32
  - Informational = 41
  - Evaluative = 11

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→ **Example of a Breakdown**

*“There is in the evidence some conflict about whether or not it was agreed at the meeting that using the Baldy Range trail as the eastern containment line would be reconsidered the following morning. Mr <A>’s memory was that they were going to try to use the Baldy Range trail as the first option, the fall-back option being Dingo Dell Road. He was definite that at no stage did he convey any opinion that, on the basis of the information he had from Mr <B>, the Baldy Range trail could not be used as a containment line because of the intensity of the fire burning across it.”*

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*“Ms <c> did not remember anyone saying at the meeting that the fire on the Baldy Range was containable. Her memory was that it was reported, 'They are there. It is across the track and we are getting out'. Hence, on the basis of her understanding of the information provided to her at the meeting by those who were observing the Baldy spot fire at the time, Ms <C> formed the view that the Baldy trial had been lost as a possible eastern containment line.”*

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### Disconnect Chain

```
graph LR; A([Informational disconnect]) --> B([Evaluative disconnect]); B --> C([Operational disconnect]);
```

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	Informational disconnect	Evaluative disconnect	Operational Disconnect
Disconnects	Difference in understanding presented information	Difference in evaluation of situation and containment strategies	Difference in operational containment strategies between two agencies
Cause	Important information about operations is not distributed/understood	Different understanding of the situation by the 2 agencies.	Disagreements about the interpretation of fire information
Location in shared mental model framework	Disruption to shared situation awareness	Disruption to shared situation awareness	Disruption to shared planning and plan execution
Consequence	Different understanding of the situation by the 2 agencies.	Difference in opinion left unresolved. Different containment plans are made.	Eastern containment line moved back substantially further to far side of park.

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→ **Causes of Informational Disconnects**

- Lack of feedback (4)
- Difficulties in sending/receiving information (7)
- Information not shared/distributed (30)

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→ **Causes of Operational Disconnects**

- Assumptions that work will be carried out (16)
- Procedures or responsibilities unclear/ambiguous (9)
- Going against set procedure (5)
- Disagreements about the interpretation of fire information or duties (5)
- Plans not satisfactorily carried out (1)

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→ **Causes of Evaluative Disconnects**

- Wanting to go against procedure (4)
- Disagreement about operational deployment (7)
- Different understanding of information (1)

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→ **Resolution**

- Evaluative 10/11
- Operational 5/32
- Informational 3/41

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→ **Cycle of Team Activity**

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graph TD; PE[Plan Execution] --> TSA[Team Situation Awareness]; TSA --> PF[Plan Formulation]; PF --> PE;
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→ **Negotiating the Safety Space - The Safety Fish**

The diagram illustrates the 'Safety Fish' model. It features a large, irregular shape representing the 'Safety Space'. Inside this space, there is a smaller, more defined area labeled 'Area of Safe Operations'. To the left of the safe operations area is a region labeled 'Area of Adverse Events, Accidents & Incidents'. A horizontal line with arrows at both ends, labeled 'Cycle of Team Activity', spans across the 'Area of Safe Operations'. Below the main diagram, there is a circular flow diagram showing 'Team Situational Awareness' at the top, 'Plan Execution' at the bottom, and 'Plan Formation' on the right, with arrows indicating a clockwise cycle.

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→ **Simple Strategies to Avoid Unnecessary Disconnects**

- Ensure Procedures and Responsibilities are Clear
- Make Sure Important Information is Shared With Others
- Use Closed Loop Communication
- Check That Work is Being Carried Out Correctly

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