

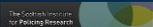
Professional Judgement & Decision Making Expertise in Scene Examination



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Overview

- PJDM Expertise in Scene Examination
- Scene Examination: A Naturalistic Environment
- Defining Expertise...
- Skilled Intuition in Scene Examination
- What Experts 'Know' and Can 'Do'
- Aims & Objectives
- Key Findings
- Further Engagement...

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PJDM Expertise in Scene Examination

- SE's meticulously search for, record, and recover forensic evidence (Step 2 of Evidence submission process; Koppl & Cowan, 2010).
- PJDM offers insight into how practitioners think in action... (Martindale & Collins 2012).
 - A series of judgements and decisions
 - Required to process vast amounts of information
 - Be able to think on micro and macro levels (often at the same time)
 - Rapidly formulate and enact coherent plans of action



Scene Examination: A Naturalistic Environment

- Time pressured decision making
- Conditions of uncertainty
- Ill-defined/ competing goals
- High stakes environment
- Stressful field conditions

(Ross, Shafer & Klein, 2006)



- Transfer from other domains of Human Performance Science (e.g., sport, military, and medicine)

Defining Expertise... (Hoffman, 1998)

- **Cognitive Development** - progression from superficial and literal understanding to articulated, conceptual, and principled understanding.
- **Knowledge Structure** - more sophisticated knowledge organisation, and more elaborate mental models.
- **Reasoning Processes** - enhanced perceptual skill, more case-based reasoning, and greater reasoning flexibility.



Skilled Intuition (Kahneman & Klein, 2009)

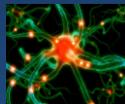
"The situation has provided a cue. This cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition."
(Simon, 1992).

A 'blending' of intuition and systematic analysis...



Skilled Intuition in Scene Examination...

I maybe shouldn't say this, but you do have a feel, you know... And I can't describe how I know, but there's loads of instances where you walk in, you think "This isn't right. There's something not right here". You can't necessarily put your finger on what it is, but you know something's not right... I just happened to glance at the body and I thought "Oh, wait a minute. That doesn't look right".



What Experts 'Know' and Can 'Do'...

What they know:

- procedural knowledge (SOPs)
- declarative knowledge
- perceptual skills
- mental models
- sense of typicality
- routines

Klein & Militello, 2005

What they can do:

- run mental simulations
- spot anomalies and detect problems
- find leverage points
- manage uncertainty
- plan and re-plan
- assess complex situations
- manage attention
- take own strengths and limitations into account

Against this Backdrop... Aims & Objectives

- Accelerating PJDM Expertise in Scene Examination...
- Feedback on expert cognition:
 - Understand key cognitive elements required to perform proficiently
 - Benefits & limitations of ACTA techniques
- Product of analysis:
 - Inform scenario-based training tool
 - Collate exemplar responses (East, West & North)

Applied Cognitive Task Analysis (ACTA; Militello & Hutton, 1998)

AKA "Making Thinking Visible"

Techniques:

- Task Diagram
 - broad overview of task
 - Knowledge Audit
 - expertise required for task
 - Simulation Interview
 - cognitive processes in context
- Cognitive Demands Table
(consolidate and synthesize data)

Key Findings...

- Knowledge elicitation tools (e.g., ACTA) offer an insight to cognitive processes required for effective SE performance (generally positive perceptions)
- CTA techniques provide greater quantities of useful information than observations or self-generated explanations.
- Difficulty "thinking on the spot" and uncertainty over whether responses were "correct" suggest markers of 'quality' and 'what is expected' are procedurally based.
- Scope to develop an expertise-based culture through a community of practice approach:
- Professional learning systems/structures enabling SE's to share experiences and explore 'shades of grey'...

Simulation Scenarios...

- Major incident involving 4 separate but related scenes of crime:
 - First deposition site, deceased's home address, second deposition site, suspect's home address
- Photographic stills and panoramas
 - FS Scottish Multimedia Unit
- SE responses to simulation scenario
 - Actions, situation assessment, critical cues, potential errors
- Exemplar responses of SE's in East, West & North of Scotland:
 - Highlighted potentially important regional differences...



Further Engagement...

Expert Cognition (and Meta-Cognition) in Forensic Services:

- Understanding PJDM expertise (e.g., Knowledge)
- Training Systems/Structures (Communities of Practice)
- Cognitive Bias (Poor PJDM)

Challenges at both ends of the decision making spectrum (intuition – analysis) can be met by good training tools and an effective culture...

"The safe way to evaluate the probable accuracy of a judgment (our own or somebody else's) is by considering the validity of the environment in which the judgment was made as well as the judge's history of learning the rules of that environment"

Kahneman & Klein (2009)

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Questions & Comments?