

Computer Simulation of the Effects of Communication Procedures on the Jury Decision-Making Process

Stephen L. Henty
COGS 131, "Distributed Cognition"
Hutchins and Hollan
Winter 1999

1

Introduction

- Research Topic
 - Jury decision-making
 - Communication procedures
- Research Method
 - Computer Simulation
 - Connectionist Network Model

2

Juror Schematic

——— Excitatory
 - - - Inhibitory

(adapted from Hutchins, *Cognition in the Wild*)

3

“Juror” Interpretation

Properties:

Model Units Connections Weights Activation pattern External (to the net) connection	World Hypotheses Constraints Correlation between hypotheses Current beliefs Environment
--	--

(Hutchins, *Cognition in the Wild*)

4

Jury Schematic

(adapted from Hutchins, *Cognition in the Wild*)

5

“Jury” Interpretation

Properties:

Model Inter-net connection Inter-unit connection between nets Connection weights Time course	World Who talks to whom What they talk about Persuasiveness When they talk
--	---

(Hutchins, *Cognition in the Wild*)

6

Trial Corpus

- 16 Trial Configurations
- Combinations of:
 - prosecution & defense evidence
 - strength & length of presentation

7

Experimental Conditions

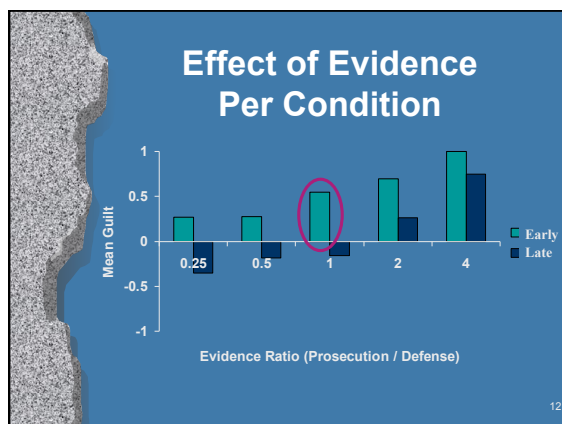
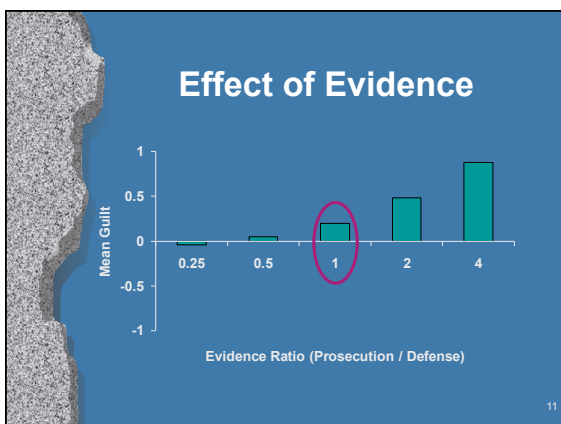
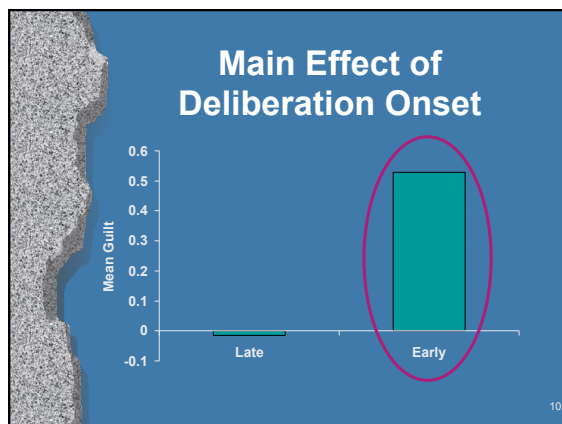
- Late Deliberation (Normal)
- Early Deliberation (Experimental)

8

Results

	Avg. Time (cycles)	Guilty Ratio	Correlation
Late	58.4	49.2 %	-0.30
Early	36.9	76.6 %	-0.54

9



Interpretation

- Early deliberation:
 - More “guilty” verdicts
 - Shorter “trials”
 - Redistribute “guilty” verdicts over trial configurations

13

Conclusion

- Communication procedures:
 - Main effect on group behavior when individual behavior is held constant
 - Predicted by order of evidence when framed by confirmation bias
 - Possibility of other effects at limit conditions

14

References

- Fleck, Ludwig, *Genesis and Development of a Scientific Fact*, The University of Chicago Press, 1981
- Hastie, Reid, Ed., *Inside the Juror, The psychology of juror decision making*, Cambridge University Press, 1993
- Hutchins, Edwin, *Cognition in the Wild*, The MIT Press, 1996
- MacCoun, Robert J., *Experimental Research on Jury Decision-Making*, The RAND Corporation, 1989
- Rumelhart, David E., James L. McClelland, *Parallel Distributed Processing*, vols. 1 and 2, The MIT Press, 1989
- Vidmar, Neil, Ed., *Law and Contemporary Problems*, “Is the Jury Competent?”, vol. 52, n4, Autumn 1989

15

Outline

- Research Motivation
- Model
- Simulation
- Results
- Interpretation
- Questions

16

Research Motivation

- Theoretical Motivation
- Practical Motivation
- Previous Jury Research
- Distributed Cognition Approach

17

Terminology

- Constraint Satisfaction
- Confirmation Bias
- Connectionist Network

18

Model Choice

- Constraint Satisfaction Network
- 12 “Juror” Networks
- “Jury” Network
- Trial Corpus
- Onset of Deliberation

19

Limitations

- Mapping from constraint network to mental processes
- Mapping from inter-network communication to discourse
- Mapping from trial corpus to actual trial dynamics

20

Trial Corpus

- 16 Trial Configurations
- Combinations of:
 - prosecution & defense evidence
 - strength & length of presentation
- Legend -- Pstr, Plen, Dstr, Dlen
 - Trial configuration “lhhl” is a weak, long prosecution with a strong, short defense

21

Trial Epoch

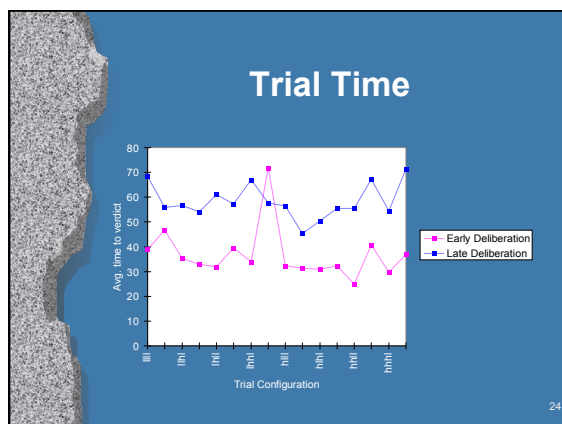
- 5 Trial Phases
 - Prosecution case
 - Defense case
 - Prosecution closing arguments
 - Defense closing arguments
 - Deliberation

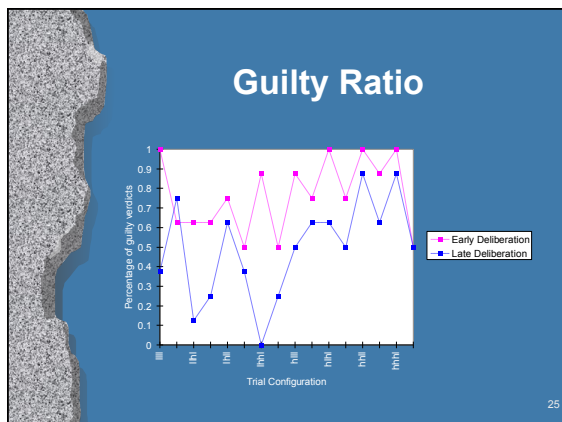
22

Simulation

- 256 epochs -- 8 epochs per trial configuration (16), per condition (2)
- 32 verdict ratios
- 32 average deliberation times
- Overall verdict ratio
- Overall average time
- General Linear Model analysis

23





25