Approaching the Cognitive Modeling of Improvisational Acting

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Why Improv?

- Special case of problem solving
  - Creative group activity
  - Creation of content is completely in real-time
  - Sans explicit coordination
- Map closely to desired behaviors from intelligent agents
- Its fun!

Improv is...

- A constant I/O process
- A continuous & serial process
- Based on domain & real-world knowledge
- Involving explicit & implicit communication

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Improv is…

- Severely constrained processing
  - optimally allocate attention
  - interpret events
  - make decisions about current and future actions
  - predict the actions of others
  - store and recall memory elements
  - correct errors
  - control physical movements
  - integrate these processes seamlessly into a performance

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Digital Improv Study

- Methodology
- Experimentation
- Theory Building
- Model Building
- Digital Performance

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Methodology

- Direct data collection is difficult
- Useful techniques
  - Social psychology
    - Interpretation
    - Observation
    - Coding
  - Retrospective interview
  - One-shot verbal protocols

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Coding Scheme

- Referent
- Standard improv techniques
- Coordination (e.g.establishing situation)
- Workload (e.g. errors or response time)
- Action selection (e.g. heuristics)
- Intention (e.g. actor goals and model of other actors' goals)
- Error correction

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Within-game Modification

- Amount & kind of game constraints: How specific are the game rules?
- Response time: How much time is given to respond to their other actors?
- Privilege: Who is given what constraints?
- Number of actors on stage
- Length of scene
- Narrative control

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Meta-game Modification

- Novice vs. expert subjects
- Scene disruption
- Game choice
- Sensory dimensions allowed

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Perceived Architecture Needs

- Referent
  - Procedural & elaborative knowledge
- Standard improv techniques
  - Procedural knowledge
- Coordination (e.g.establishing situation)
  - Language I/O
- Workload (e.g. errors or response time)
  - Plausible decision cycle & memory recall

Perceived Architecture Needs

- Action selection
  - Heuristic selection of goals / actions
- Intention
  - Goals
- Error correction
  - Meta-reasoning
  - Procedural knowledge

Mapping to Soar

- Procedural & elaborative knowledge
- *Language I/O*
- Plausible decision cycle *& memory recall*
- Goals
- Heuristic selection of goals / actions
- Meta-reasoning

Nuggets

- Soar seems to be a good choice
  - Used in large entertainment apps
  - Maps to most perceived needs
- Blazing new trail in creativity research

Coal

- *Everything* isn't there yet
- Data collection is likely to yield surprises

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