The Repertory Grid: A Technique for Eliciting the Personal Constructs of Individuals

Dr. Felix B Tan
Professor and Head
Business Information Systems
Faculty of Business & Law
Auckland U of Technology, New Zealand
Objectives

- What is the repertory grid technique
- The research design alternatives that you might consider
- Examples from Information Systems (IS) Research
Overview

- Personal Construct Theory
- The Repertory Grid
- Element Generation
- Construct Elicitation
- Completing the Grid
- Data Analysis
- Program of Research
  - Skill Archetypes of IS Project Managers
Personal Construct Theory

- George Kelly (1955)
- Alternative constructivism
  - Looking at events in different ways.
  - Not locked into one history, or a particular way of interpreting events, situations, people etc.
The Repertory Grid

- Methodological extension of Kelly’s PCT

- What is RepGrid?
  - Process: participants categorize objects along attributes on a numerical scale
  - Product – grid of elements (objects) x constructs (attributes)

- Can yield data for analysis – quantitative and qualitative
**Completed Repertory Grid**

- What are the qualities of ‘excellent’ systems analyst?
- Elements, Constructs and Rating
- How are two the same and yet different from the third in terms of what you consider are the qualities of excellent systems analyst?

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1. Delegator - Does work himself</td>
<td>7</td>
</tr>
<tr>
<td>2. Informs everyone - Keeps to himself</td>
<td>8</td>
</tr>
<tr>
<td>3. Good user rapport - No user rapport</td>
<td>5</td>
</tr>
<tr>
<td>4. Regular feedback - Inappropriate feedback</td>
<td>6</td>
</tr>
<tr>
<td>5. Knows details - Confused</td>
<td>2</td>
</tr>
<tr>
<td>6. Estimates based on staff-Estimates based on himself</td>
<td>8</td>
</tr>
<tr>
<td>7. User involvement - lack of user involvement</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: Elements A to F represent the individual systems analyst (Hunter, 1997)
Repertory Grid Activity

- Focus Discussion
  - What makes a good mentor
- Identify Elements
- Elicit Constructs (just 2 will do)
- Rating (7-point scale)
Identify Elements

- Ph.D supervisor
- Research collaborator(s)
- Chair of Dep’t/School or Dean
- Senior Colleague(s)
- Peer(s)
- Spouse/close family member
- Pastor
Elicit Constructs

- Select three elements
- “How are two of the elements the same, yet different from the third, in terms of what you regard as a good mentor?”
Element Generation

- What are Elements?
  - represent domain of interest
  - eg. systems analysts (Hunter, 1997)
  - eg. IS project managers (Napier, Keil & Tan, 2009)
  - determines focus of the grid

- Generating Elements - Participants
  - role or situation descriptions (Hunter, 1997)
  - elicit through discussion
Element Generation

- Generating Elements - Investigator
  - supplied elements
  - learn about a particular set of elements
  - existing theory guide element choice
  - compare responses of participants

- Rules for Selecting Elements
  - must be discrete (e.g., people, objects, events)
  - must be homogeneous (same sample)
  - should not be evaluative
Construct Elicitation

- Nature of a Construct?
  - basis upon which elements are understood
  - bi-polar: being alike and yet different

- Several different methods
  - minor variations
  - combination of techniques

- Supplied Constructs
  - researcher supply constructs
  - compare the repgrids
Construct Elicitation

• Minimum Context Elicitation
  – Using 3 elements, describe how 2 is alike and yet different from the third
  – Repeat, using another 3 elements
  – Repeat till all constructs are identified (7-10 triads)
  – Variations: sequential / dyads / opposite label
  – Most common form of elicitation

• Laddering
  – Permits elaboration of elicited constructs
  – How and Why questions
  – Hunter (1997); Napier, Keil & Tan (2009)
Construct Elicitation

Many methods of construct elicitation.

– For a review of methods see:
Completing the Grid

- Dichotomizing

```
- ✓  X  ✓  ✓  X  X
```

- Ranking

```
4  1  5  3  2  6
```

- Rating: most commonly used

```
3  2  5  3  4  3
```
Data Analysis

- Qualitative Data (Laddering)
  - Content Analysis (Hunter, 1997; Napier, Keil & Tan 2009)
  - Linguistic Analysis (Walton, 1986)

- Quantitative (Grid Data)
  - Cluster Analysis / multidimensional scaling (patterns & groupings)
  - Correlation Matrices (element/construct r/ships)
  - P.C. Factor Analysis (structure in the repgrid)
  - Cognitive complexity / content / structure
Data Analysis

- Many standalone programs for grid elicitation and analysis
- For an excellent website on computer programs of repertory grids go to
- You can use SPSS to analyse grids.
Sample Size

- Time-intensive
  - 60 to 90 minutes
- 15 to 25 sufficient
- Dunn et al (1986)
  - 17 interviews
  - Constructs were completely generated by 10th
  - No new constructs added by last 7 interviews
Skill Archetypes of IT PMs

- Napier, Keil & Tan (ISJ 2009)
- Research Questions
  - What do IT project managers construe as skills necessary for successful project management practice?
  - How do IT project managers group these skills to reflect successful project management practice?
### Research Design

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Gender</th>
<th>IT PM Experience (years)</th>
<th>Industry of most recent employer</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patty</td>
<td>Female</td>
<td>10</td>
<td>Telecommunications</td>
<td>M.S.</td>
</tr>
<tr>
<td>Sean</td>
<td>Male</td>
<td>7</td>
<td>E-commerce</td>
<td>M.S.</td>
</tr>
<tr>
<td>Glenda</td>
<td>Female</td>
<td>10</td>
<td>Telecommunications</td>
<td>M.S.</td>
</tr>
<tr>
<td>Edward</td>
<td>Male</td>
<td>12</td>
<td>Telecommunications</td>
<td>High School</td>
</tr>
<tr>
<td>Laura</td>
<td>Female</td>
<td>12</td>
<td>Telecommunications</td>
<td>B.S.</td>
</tr>
<tr>
<td>Jennifer</td>
<td>Female</td>
<td>8</td>
<td>Telecommunications</td>
<td>High School</td>
</tr>
<tr>
<td>Mitch</td>
<td>Male</td>
<td>5</td>
<td>Telecommunications</td>
<td>B.S.</td>
</tr>
<tr>
<td>Paul</td>
<td>Male</td>
<td>15</td>
<td>Telecommunications</td>
<td>B.S.</td>
</tr>
<tr>
<td>Wayne</td>
<td>Male</td>
<td>5</td>
<td>Telecommunications</td>
<td>Associate</td>
</tr>
<tr>
<td>Janet</td>
<td>Female</td>
<td>N/A</td>
<td>Telecommunications</td>
<td>M.S.</td>
</tr>
<tr>
<td>Kate</td>
<td>Female</td>
<td>3</td>
<td>Wireless</td>
<td>M.S.</td>
</tr>
<tr>
<td>Evan</td>
<td>Male</td>
<td>6</td>
<td>Wireless</td>
<td>M.S.</td>
</tr>
<tr>
<td>Amy</td>
<td>Female</td>
<td>20</td>
<td>Document Imaging</td>
<td>B.S.</td>
</tr>
<tr>
<td>Rob</td>
<td>Male</td>
<td>6</td>
<td>N/A</td>
<td>B.S.</td>
</tr>
<tr>
<td>Mark</td>
<td>Male</td>
<td>16</td>
<td>Information Services</td>
<td>M.S.</td>
</tr>
<tr>
<td>Kirk</td>
<td>Male</td>
<td>10</td>
<td>Information Services</td>
<td>High School</td>
</tr>
<tr>
<td>Randall</td>
<td>Male</td>
<td>7</td>
<td>Wireless Telecom</td>
<td>B.S.</td>
</tr>
<tr>
<td>Cher</td>
<td>Female</td>
<td>8</td>
<td>Information Services</td>
<td>B.S.</td>
</tr>
<tr>
<td>Sam</td>
<td>Male</td>
<td>5</td>
<td>Consulting</td>
<td>B.S.</td>
</tr>
</tbody>
</table>
Research Design

- 60 minute interviews, recorded & transcribed
- Participants randomly selected 3 cards from a stack of 8 index cards (elements)
  - 6 cards: IT PMs they identify
  - 1 card: “Ideal” IT PM
  - 1 card: “Incompetent” IT PM
- Constructs were elicited from participants
  - “With regard to the skills of successful IT PMs, how are two of these PMs the same and yet different from the third?”
- Laddering technique
  - Underlying meaning of elicited constructs
- Participants ranked constructs
Interview Process

Repeat 6-8 times

Create 8 index cards
- 6 IT PMs
- “Ideal”
- “Incompetent”

Pick 3 cards
- “With regard to the skills of successful IT Project Managers, how are two of these PMs the same and yet different from the third?”

Underlying meaning
- How? Why?
Number of New Constructs Elicited

- X-axis: Interviewee
- Y-axis: Number of New Constructs
- The graph shows a downward trend, indicating that the number of new constructs elicited decreases as the number of interviewees increases.

This suggests saturation in the elicitation of new constructs.
Analysis

- 19 RepGrids Yielding
  - 147 raw constructs

- Content Analysis
  - Reduce raw constructs into larger thematic categories
  - Skill categories emerging from elicited constructs
  - Generic content analysis procedure [Jankowicz, 2004]
    (i) identification of categories and allocation of constructs to them
    (ii) establishment of reliability of the category system
  - Reliability > Internal and external plausibility of category system (Guba 1978; Patton 1990)
    (i) internal – 3rd author independently verifying categories
    (ii) external – categories included all skills in extant literature
  - 46 unique constructs, 9 skill categories emerged
Analysis

- Clustering
  - Inductive categorisation process (Miles & Huberman, 1994)
  - Examined patterns in each RepGrid
  - How each IT PM combined skill categories to form archetypes of successful IT PMs
  - Table > 9 skill categories as rows; 19 participants as columns
  - 0’s and 1’s, where 1 indicating that the IT PM’s elicited constructs had included that skill category
  - Participants that listed the same skill categories were grouped together
  - 19 RepGrids $\rightarrow$ 4 IT PM archetypes
Analysis Process

Activities

1. Interview participants
2. Determine skill categories
3. Identify patterns across participants

Outcomes

- 19 RepGrids
- 147 raw skills
- 46 unique skills
- 9 skill categories
- 4 archetypical skill sets identified
Results: IT PM Skills

Four most frequently mentioned categories:

1. Planning & Control
2. General Management
3. Leadership
4. Communication

N = 147 raw constructs
Planning & Control

● Description
  – Skills related to planning, monitoring, and controlling the project tasks to ensure the project is completed on time and within budget
  – Mentioned by 18 of the 19 participants
  – Ranked most important by 6 participants

● Selected Unique Skills
  – Continuous project planning (Glenda, Triad 8)
  – Hands-on, assertive and consistent at follow-up (Kate, Triad 1)

● Example of Mistakes
  – Inadequate project monitoring (Kate, Triad 7)
  – Managing by intuition rather than plan (Mark, Triad 5)
General Management

- Description
  - General business skills required of all managers to appropriately manage themselves and others
  - Mentioned by 12 of 19 participants

- Selected unique skills
  - Delegate effectively
  - Facilitate meetings
  - Prioritize tasks
  - Flexible, negotiating & communications skills (Laura, Triad 5)
  - Managing people

- Examples of GM mistakes
  - Failure to delegate (Laura, Triad 1)
  - Inability to prioritize (Amy, Triad 7)
IT PM Archetypes

- Examined how participants combined the skill categories when describing the ideal ITPM
- Participants were placed into 4 groups based on how closely their identified skill categories matched
- Graphical presentation describing the relative weights of the skill categories
  - Frequency each category was mentioned
  - Star chart shows % of time each skill category was mentioned
IT PM Archetypes – General Manager
General Manager (GM) Archetype

- Internally focused
- Demonstrate high amounts of business knowledge
- Solid communications skills to clearly specify roles and responsibilities and relate to upper management
- Great motivator and inspires team to perform
- Concern for team members’ needs
- Level-headed and not emotionally charged
- Distinguishing factors
  - GM expresses little concern on technical competence
  - Importance of personal integrity: high ethical standards, low focus on self interests
IT PM Archetypes – Problem Solver
Problem Solver (PS) Archetype

- Hands-on, detailed oriented
- Makes use of technical expertise to actively control and manage
- Team leader, motivating and building team coherence
- Distinguishing factors
  - Importance of managing issues proactively and through strong analytical ability get to the root cause
  - Importance placed on technical competence (Mark, Triad 4)
IT PM Archetypes – Client Rep

- Communication
- Personal Integrity
- General Management
- Leadership
- Team Development
- Client Management
- Problem Solving
- Planning & Control
- Systems Development

Graph showing the strengths and weaknesses of a Client Rep in the context of IT PM Archetypes.
Client Rep (CR) Archetypes

- Same with GM archetype
  - Communications
  - General management

- Like the PS archetype
  - Systems development
  - Combining technical and people skills

- Distinguishing factors
  - Less emphasis on leading and managing others internally
  - More on managing the relationships with the client
Future Research

- In what organizational and project contexts are the IT PM archetypes most effective?
- Are there specific weaknesses that a manager adopting one of these archetypes may suffer?
- How can a manager with a specific archetype select a job that will fit his/her expectations?
- Explore other stakeholders’ construction
- With increases in virtual teams and offshoring, examine the impact of culture on perceptions of IT PM skills
Conclusion

- **Strengths of the Repertory Grid Technique**
  - rests on a well established theory (Kelly, 1955)
  - accepted tool in psychology and increasingly utilized in other disciplines
  - permits quantitative and qualitative analyses
  - diagnostic qualities permit practical intervention

- **Word of Caution**
  - RepGrid is one of several cognitive mapping techniques
  - Used with other techniques