A Cognitive Approach & Implementation of a Measurement Program.

ESCOM-Scope 2000, Munich, Germany

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April 18-20 2000
Presentation Plan

1. Some Issues in Measurement Programs

2. General information on Herrmann model

3. Presentation of Herrmann model

4. Application of Herrmann model to a Measurement Program
Issues in Measurement Programs

What is the success rate of implementation of a software measurement program?

- Challenging - 80% failure rate within 2 years (USA - Rubins 90)
Issues in Measurement Programs

Many recognized roadblocks, such as:

- Lack of organizational commitment
- Lack of focus
- Weak start-up (including working group and support program)
Various measurement programs have been proposed, specifying:

- Steps and activities
- Roles and responsibilities
Issues in Measurement Programs

However, interactions between individuals have not been investigated

- Could a cognitive approach help address the people issues?
Presentation of the Herrmann Model

- Objectives
- Research basis
- Origins of the model
- Main characteristics
- Decision making model
Objectives of Herrmann Model

- Understand how the brain relates to the environment.
- Understand how the brain processes and stores the knowledge acquired in the form of internal representations.
- Understand how the brain uses these internal representations to plan and carry out actions by which an individual will modify his environment.
According to Sperry, (medical Nobel Prize en 1981), each brain hemisphere is specialized in one type of thinking.

The left is: logical, analytical, sequential

The right is: spatial, visual, emotional
The triune brain theory

- Neocortex: Intellect (Think)
- Limbic brain: Emotion (Adapt)
- Reptilian brain: Instinct (Survive)

Research Basis: Paul McLean's Work
Origins of the Metaphoric Model
Whole Brain Model

Cerebral mode thinking processes

Analytical / Logical

Imaginative / Conceptual

Left mode thinking processes

Organised / Detailed

Interpersonal / Expressive

Right mode thinking processes

Limbic mode thinking processes
The Universe of Thinking Styles

Logical  Creative
Factual  Innovative
Rational  Intuitive
Critical  (regarding solutions)
Analytical  Simultaneous
Quantitative  Synthesizer
Directive  Holistic
Mathematical  Artistic

Creative
Intuitive
Intuitive  (regarding people)
Simultaneous  Feeling based
Synthesizer  Reader (personal)
Holistic  Musical
Artistic  Spiritual
Artistic  Expressing ideas
Spatial  Symbolic
Artistic  Emotional

The Universe of Thinking Styles

- Technical reader
- Data collector
- Conservative
- Controlled
- Sequential
- Articulate
- Dominant
- Detailed

- Intuitive
- (regarding people)
- Feeling based
- Reader (personal)
- Musical
- Spiritual
- Expressing ideas
- Symbolic
- Emotional
A Few Precisions

A preference is not a competency

Cerebral preferences

- Single-dominant  7%
- Double-dominant  60%
- Triple-dominant  30%
- Quadruple-dominant  3%
# Differences in Processing Modes

<table>
<thead>
<tr>
<th>Upper Left A</th>
<th>Lower Left B</th>
<th>Lower Right C</th>
<th>Upper Right D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytical</td>
<td>Data collector</td>
<td>Emotional</td>
<td>Spatial</td>
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<tr>
<td>Logical</td>
<td>Conservative</td>
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<td>Intuitive (regarding solutions)</td>
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<tr>
<td>Quantitative</td>
<td>Dominant</td>
<td>Intuitive (regarding people)</td>
<td>Artistic</td>
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<tr>
<td>Factual</td>
<td>Technical reader</td>
<td>Talkative</td>
<td>Creative</td>
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<tr>
<td>Autoritarian</td>
<td>Sequential</td>
<td>Reader (personal)</td>
<td>Innovative</td>
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<tr>
<td><strong>SKILLS</strong></td>
<td></td>
<td></td>
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<tr>
<td>Technical</td>
<td>Organizational</td>
<td>Writing (correspondence)</td>
<td>Integrative</td>
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<tr>
<td>Problem solving</td>
<td>Planning</td>
<td>Expressing ideas</td>
<td>Conceptualizing</td>
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<tr>
<td>Financial</td>
<td>Administrative</td>
<td>Interpersonal</td>
<td>Creative</td>
</tr>
<tr>
<td>Analytical</td>
<td>Implementation</td>
<td>Teaching</td>
<td>Innovative</td>
</tr>
<tr>
<td>Statistical</td>
<td>Supervising</td>
<td>Training</td>
<td>Strategic planning</td>
</tr>
<tr>
<td><strong>TYPICAL PHRASES USED</strong></td>
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<tr>
<td>Knowing the bottom line</td>
<td>By the book</td>
<td>Team work</td>
<td>Play with an idea</td>
</tr>
<tr>
<td>Take it apart</td>
<td>Self discipline</td>
<td>Human values</td>
<td>Cutting edge</td>
</tr>
<tr>
<td>Hardware</td>
<td>Establishing habits</td>
<td>Personal growth</td>
<td>The big picture</td>
</tr>
<tr>
<td>Critical analysis</td>
<td>Law and order</td>
<td>Human resources</td>
<td>Synergistic</td>
</tr>
<tr>
<td>Key point</td>
<td>Play it safe</td>
<td>Interactive</td>
<td>Innovative</td>
</tr>
<tr>
<td><strong>TYPICAL DEROGATORY PHRASES (ZINGERS) USED BY OTHERS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemotional</td>
<td>Picky</td>
<td>Talk, talk, talk</td>
<td>Unrealistic</td>
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<tr>
<td>Uncaring</td>
<td>Unimaginative</td>
<td>Bleeding heart</td>
<td>Off the wall</td>
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<tr>
<td>Cold fish</td>
<td>Can't think for himself</td>
<td>A push over</td>
<td>Can't focus</td>
</tr>
<tr>
<td>Number cruncher</td>
<td>Grinds out the task</td>
<td>Soft touch</td>
<td>Reckless</td>
</tr>
<tr>
<td>Power Hungry</td>
<td>Stick-in-the-mud</td>
<td>Touchy-feely</td>
<td>Dreams a lot</td>
</tr>
</tbody>
</table>
**Decision Making Model**

**APPROACHES:**
- Abstract,
- Data based,
- Theoretical.

**DO I HAVE ALL THE FACTS?**

- Feelings,
- Synergistic opportunities.

**MAY OVERLOOK:**

**APPROACHES:**
- Organized,
- Conservative,
- Procedural.

**WILL I BE IN CONTROL?**

- Alternative Solutions,
- Novel ideas,
- Big Picture.

**MAY OVERLOOK:**

**APPROACHES:**
- Imaginative,
- Forward looking,
- Risk Taking.

**HAVE I SEEN ALL THE HIDDEN POSSIBILITIES?**

- Details,
- Practicality.

**MAY OVERLOOK:**

**APPROACHES:**
- Emotional,
- Interpersonal,
- Intuitive (feelings),

**HOW WILL I AFFECT OTHERS?**

- Facts,
- Planning.
"I appreciate your fresh, innovative, and perceptive thinking. Unfortunately, here we prefer stale, tried-and-true thinking."
Impact of Design and Management in the Implementation of a Measurement Program

Intended goals

Identification of the objectives

Implementation

Composite whole brain

Organization

Intended goals

Ned Herrmann Group 1986-1993
Adapted by Michelle Rivet
Impact of Design and Management in the Implementation of a Measurement Program

Ned Herrmann Group. 1986-1993
Adapted by Michelle Rivet
Application: Measurement Program

- Herrmann cognitive approach can be of use in any environment where multiple individuals interact in making decision

Two contexts:

- The design of a measurement program
- Interactions at the individual level
Application: Measurement Program

Identification of dominance preference for each activity for each step in the implementation of a measurement program:

- Activity with focus on logical thinking = quadrant A
- Activity with focus on global vision = quadrant D
Identification of cognitive requirements for each step in the design.

Examples:

- Management commitment build-up
- Staff commitment build-up
- Deployment of the measurement program
**Management Commitment Build-Up**

- **A**
  - Identify information that will help the manager take a decision of implementing a measurement program
  - Demonstrate the benefits
  - Demonstrate conformity of alignments with organizational strategy

- **B**
  - Identify the information that will help the manager to take a decision of implementing a measurement program
  - Manage the implementation of the measurement program as a project

- **C**
  - Identify the information that will help the manager to take a decision of implementing a measurement program

- **D**
  - 1. Management Commitment Build-Up
    - Graph showing A B C D percentages
Staff Commitment Build-Up

Find the necessary arguments that will involve the staff in the data collection process and in the measurement program.

Develop analytical skills to extract information from the available data and measures.

Provide useful tools to lead to the acceptation of the measurement program.

Help the project manager in the control of the data collection process.

Find the necessary arguments that will involve the staff in the data collection process and in the measurement program.

Provide useful tools to lead to the acceptation of the measurement program.
Deployment of the Measurement Program

Select a pilot site. Train the personnel. Assign responsibilities and tasks. Set-up the measurement group.

Select a pilot site. Train the personnel. Assign responsibilities and tasks. Set-up the measurement group.
Synthesis

A  B  C  D
0% 10% 20% 30% 40%
Conclusions

- Each step call for different cognitive styles, and with distinct distributions

To increase chances of success of measurement programs:

- Take team cognitive styles into account
- Taylor the message to the project audiences