# A Cognitive Approach & Implementation of a Measurement Program.

## ESCOM-Scope 2000, Munich, Germany

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# 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 implemention 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)

# Issues in Measurement Programs

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.

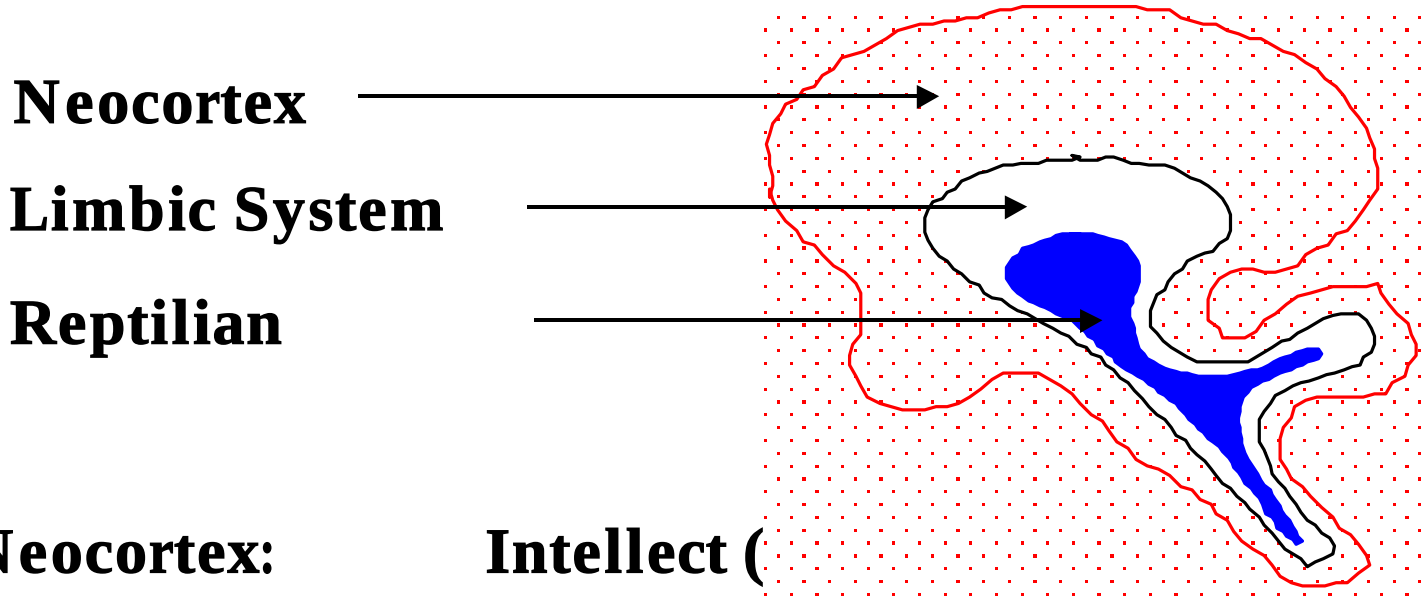
# Research basis

**According to Sperry, (medical Nobel Prize en 1981), each brain hemisphere is specialized in one type of thinking.**

| The left is: | The right is: |
| --- | --- |
| logical | spatial |
| analytical | visual |
| sequential | emotional |

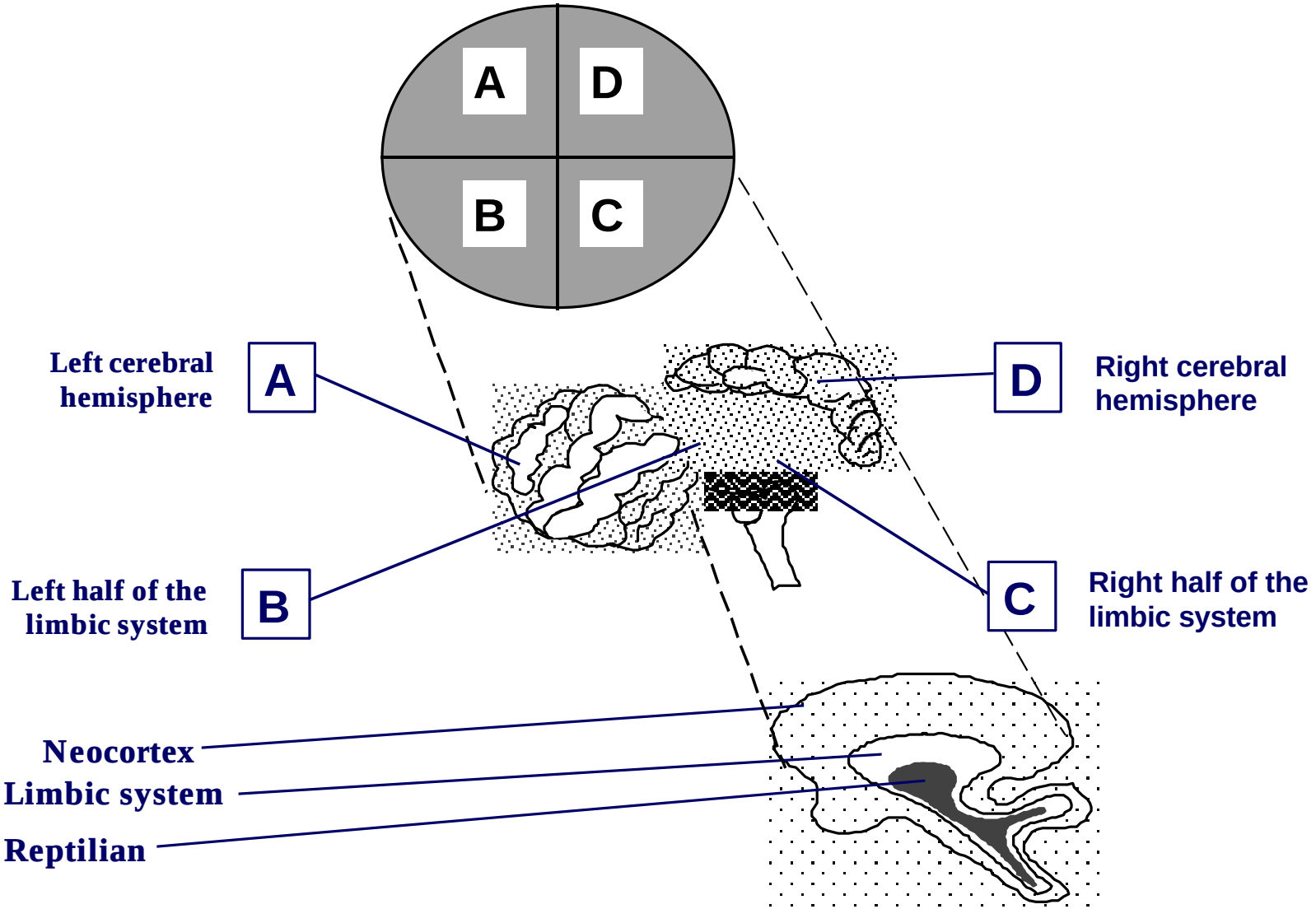
# Research Basis: Paul McLean's Work

**The triune brain theory**

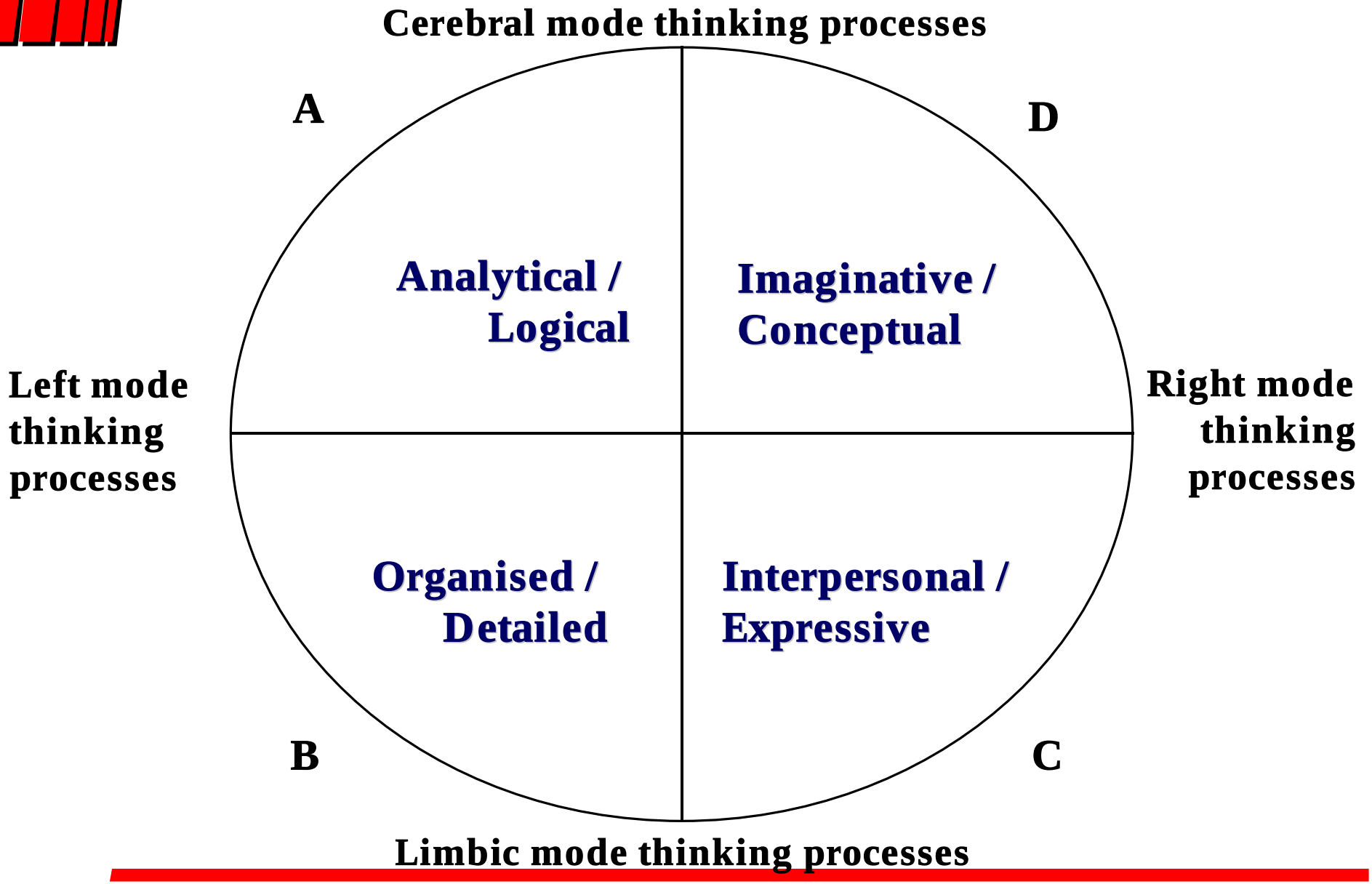



**Neocortex:** **Intellect (**
**Limbic brain:** **Emotion (Adapt).**
**Reptilian brain:** **Instinct (Survive).**

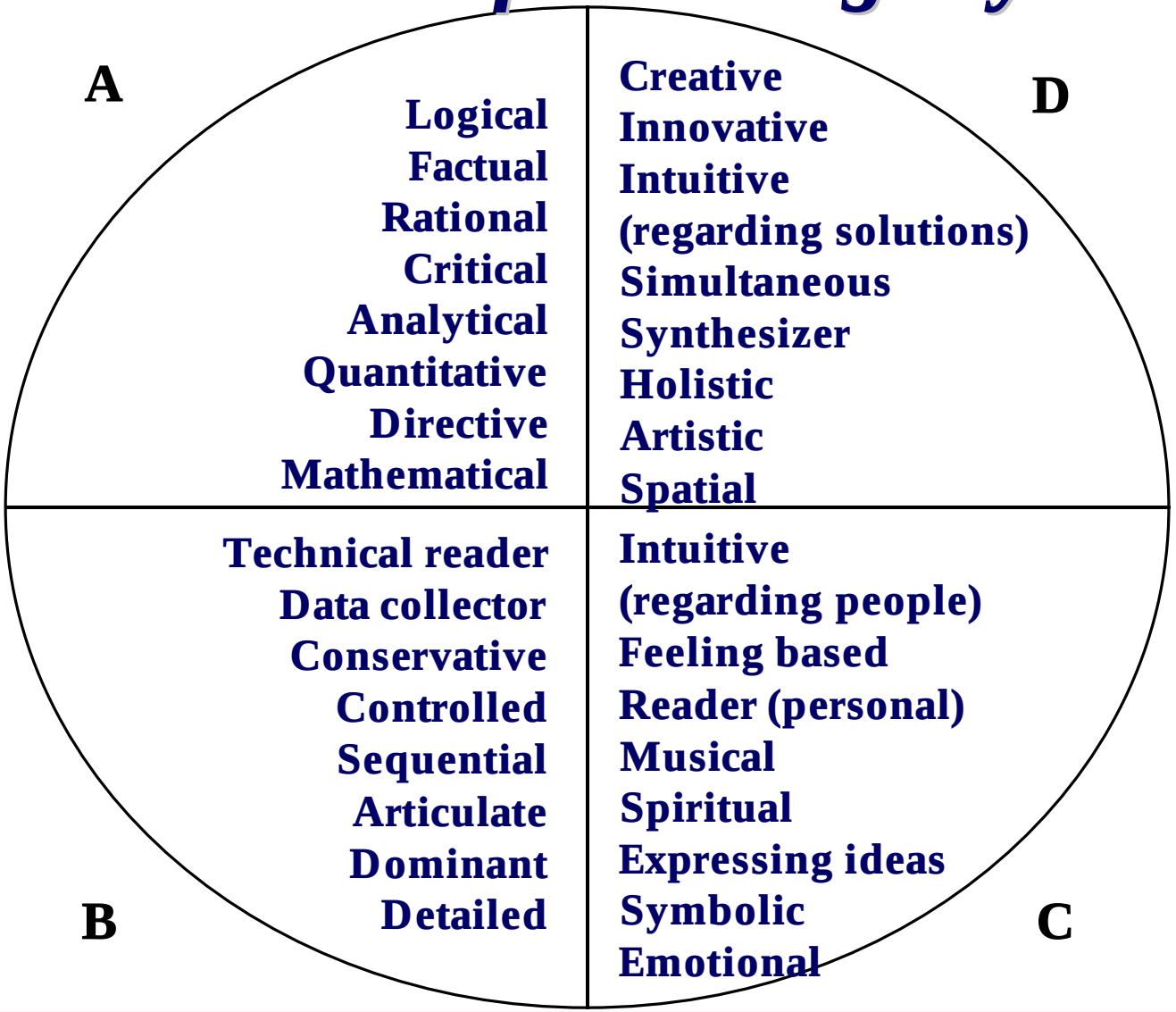
# Origins of the Metaphoric Model



# Whole Brain Model

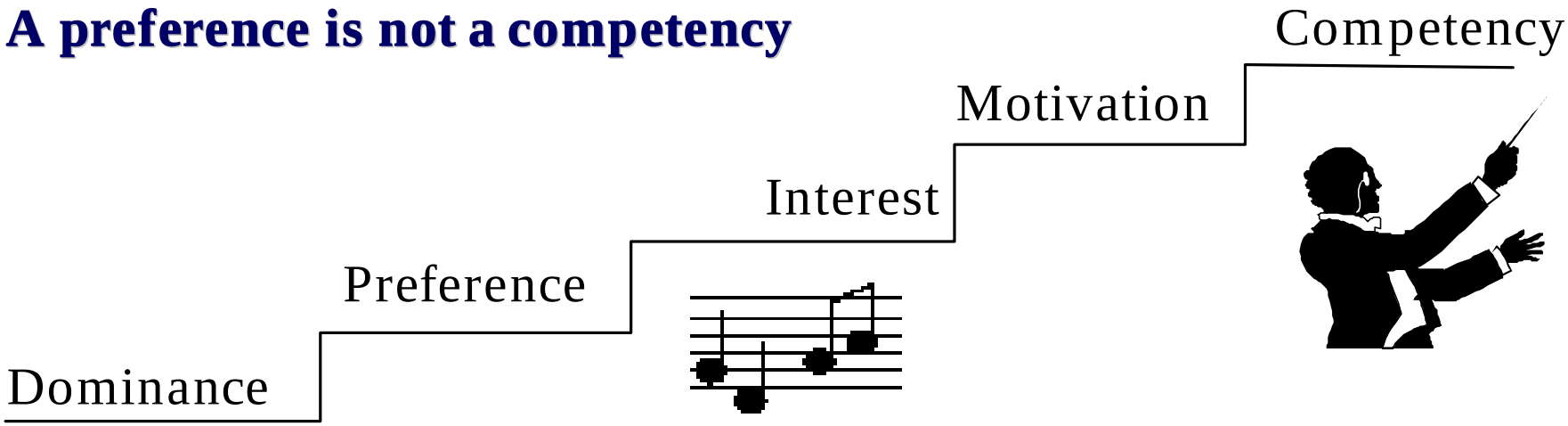


# The Universe of Thinking Styles



# A Few Precisions

## A preference is not a competency

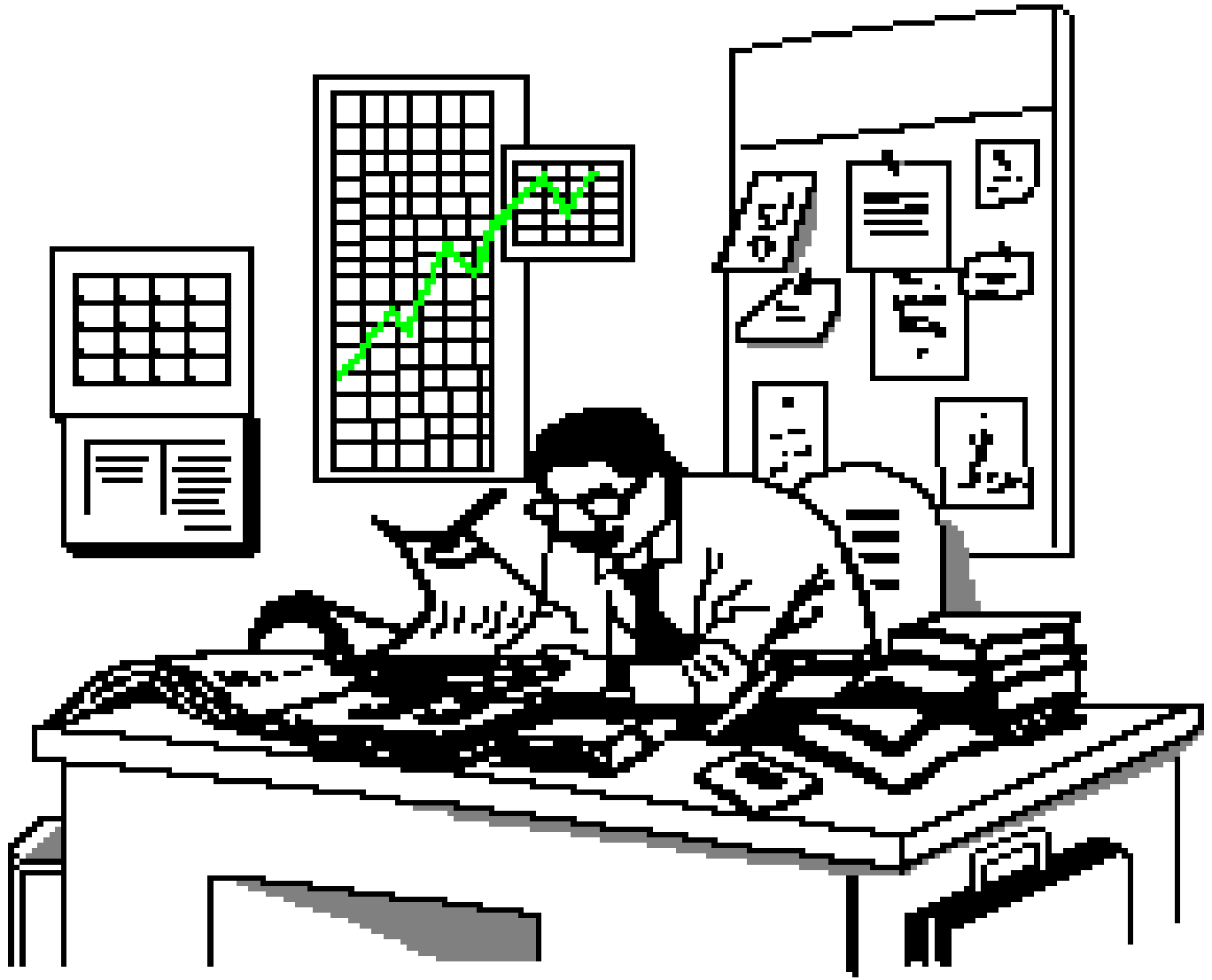



## Cerebral preferences

- Single-dominant 7%
- Double-dominant 60%
- Triple-dominant 30%
- Quadruple-dominant 3%

# Differences in Processing Modes

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



# Decision Making Model

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

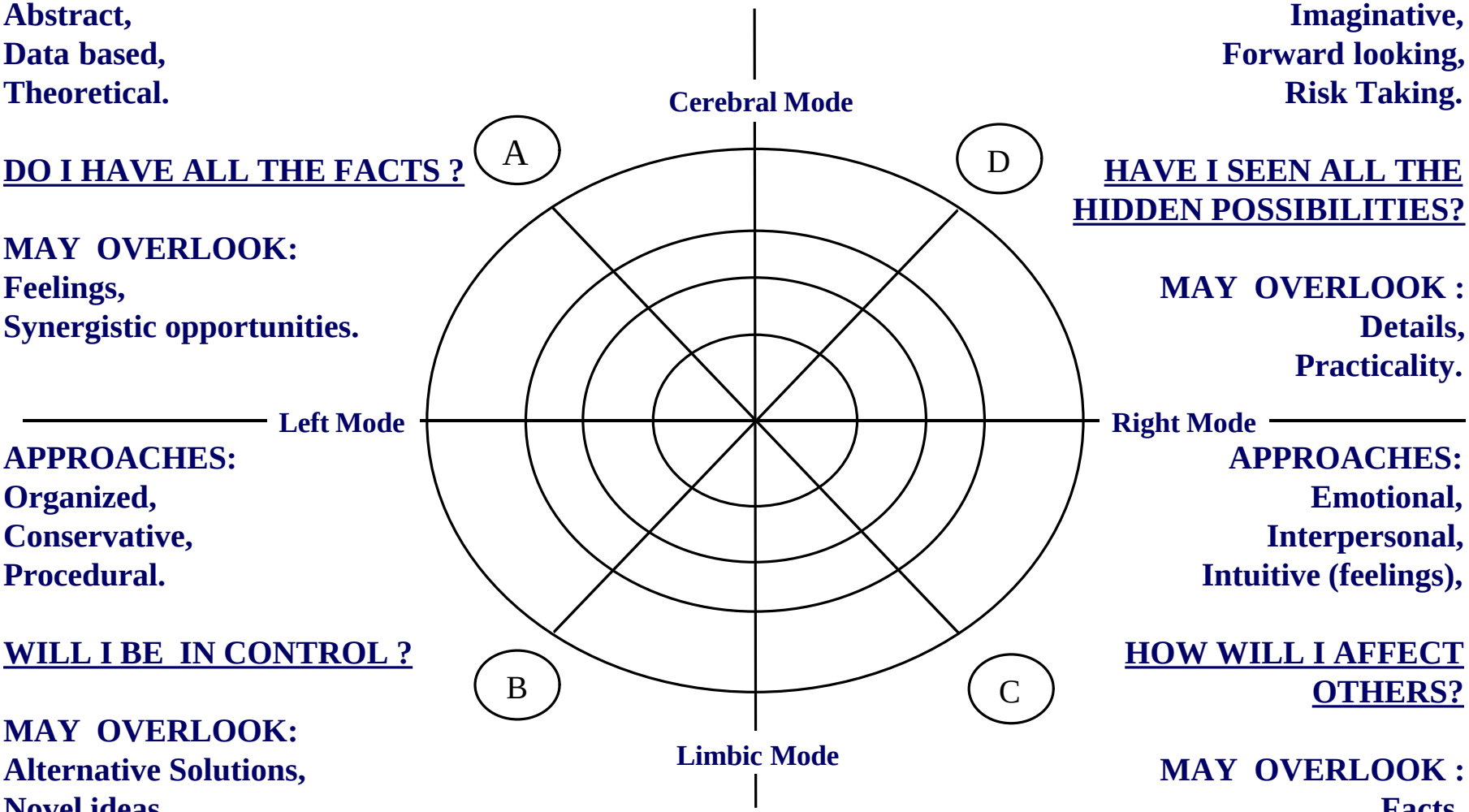
**DO I HAVE ALL THE FACTS ?**

**MAY OVERLOOK:**
**Feelings,**
**Synergistic opportunities.**

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

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

**MAY OVERLOOK :**
**Details,**
**Practicality.**




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

**WILL I BE IN CONTROL ?**

**MAY OVERLOOK:**
**Alternative Solutions,**
**Novel ideas,**
**Big Picture.**

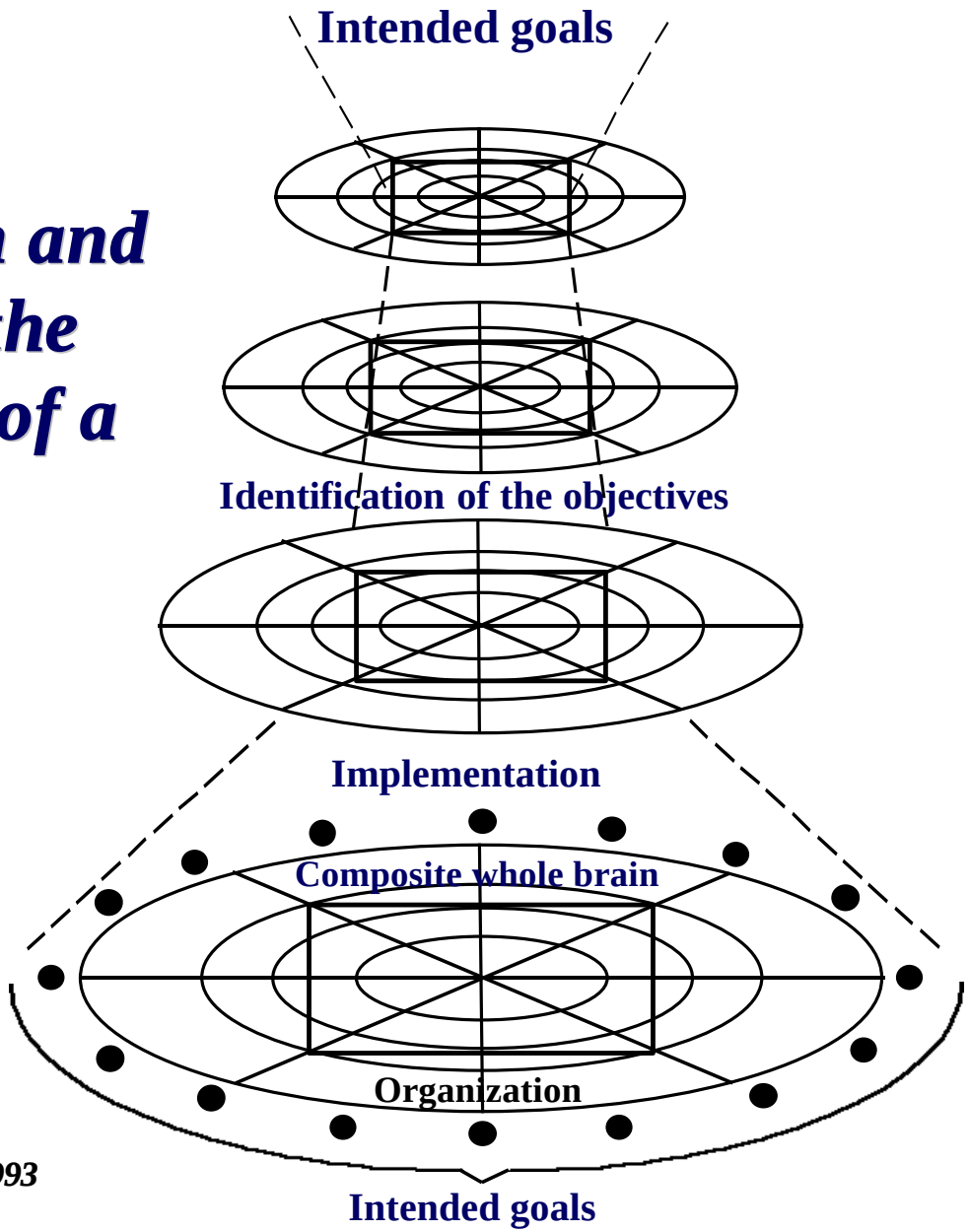
**APPROACHES:**
**Emotional,**
**Interpersonal,**
**Intuitive (feelings),**

**HOW WILL I AFFECT OTHERS?**

**MAY OVERLOOK :**
**Facts,**
**Planning.**

**"I appreciate your fresh, innovative, and perceptive thinking. Unfortunaltly, here we prefer stale, tried-and-true thinking."**

# *Impact of Design and Management in the Implementation of a Measurement Program*




***Ned Herrmann Group 1986-1993***
***Adapted by Michelle Rivet***

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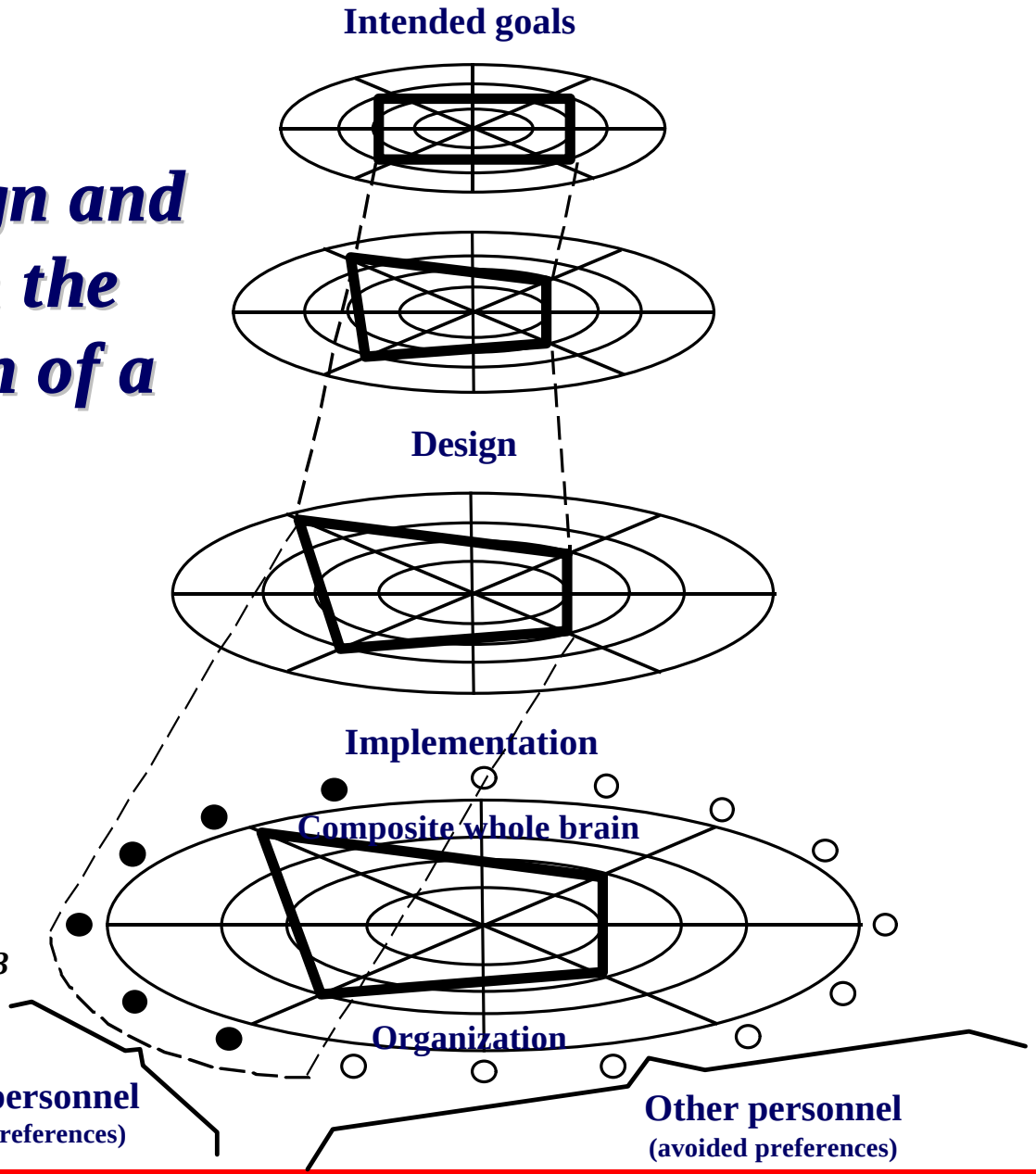



*Ned Herrmann Group. 1986-1993*
*Adapted by Michelle Rivet*

# 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

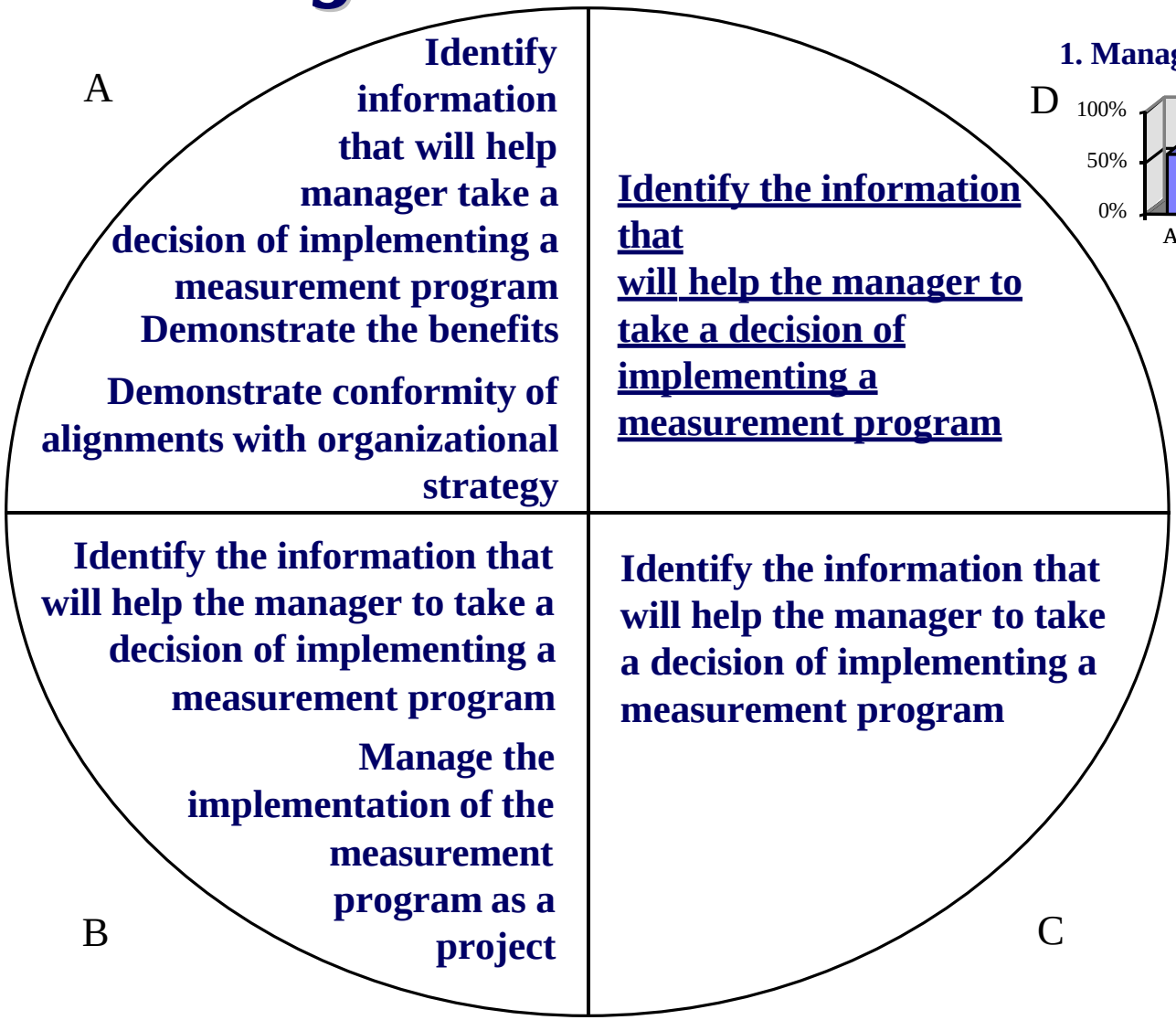
# Application: Measurement Program

Identification of cognitive requirements for each step in the design.

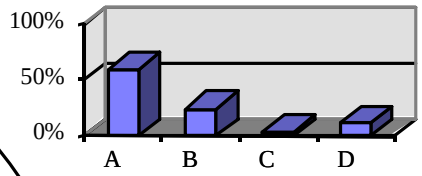
Examples:

- Management commitment build-up
- Staff commitment build-up
- Deployment of the measurement program

# Management Commitment Build-Up




**1. Management Commitment Built-Up**



# Staff Commitment Build-Up

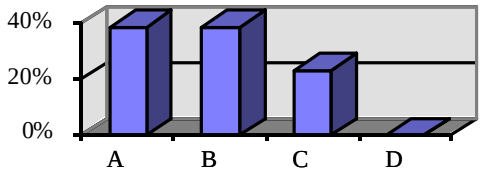
A

**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.**

D

**2. Staff Commitment Buid-Up**




B

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

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

C

**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.**



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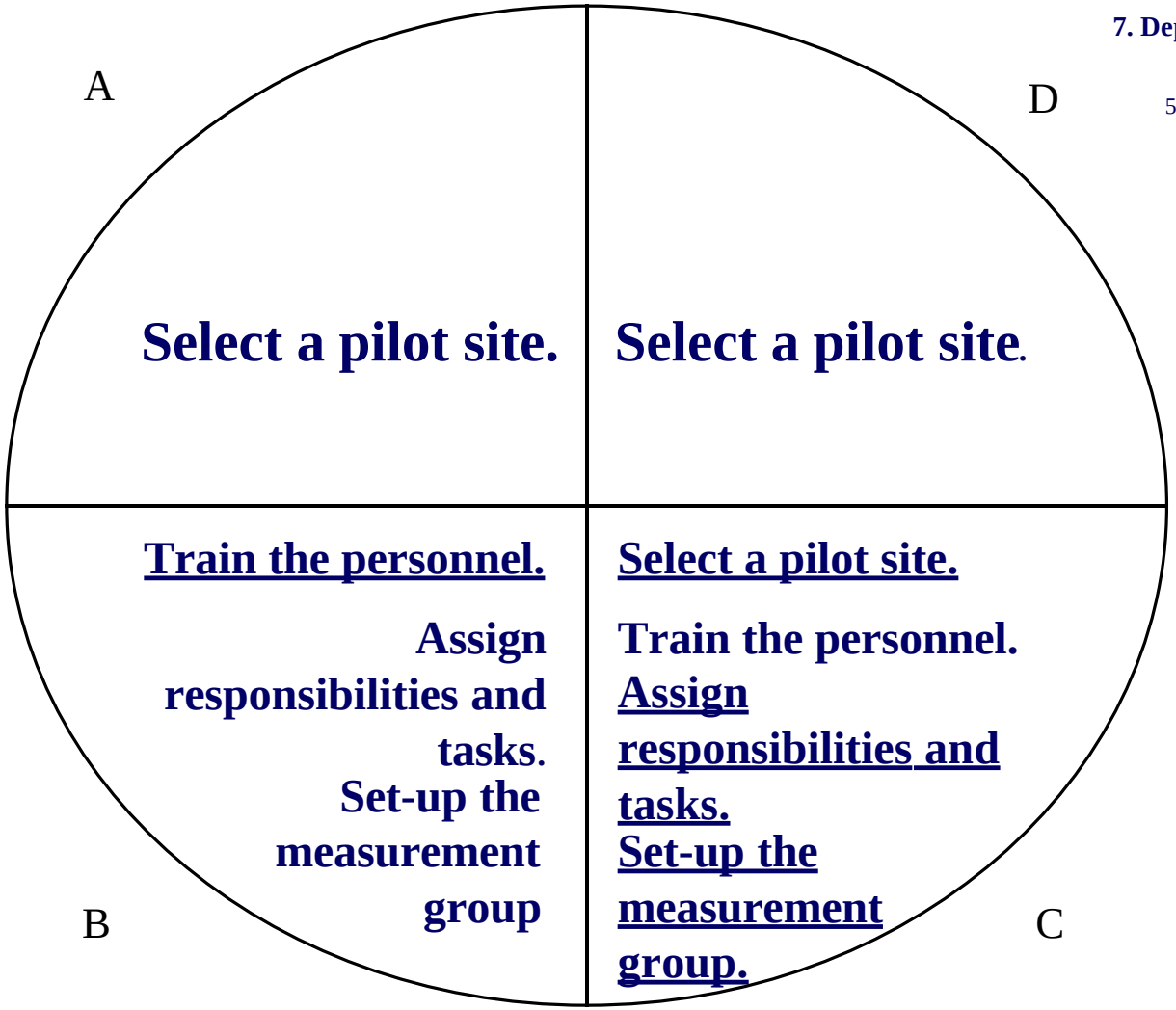
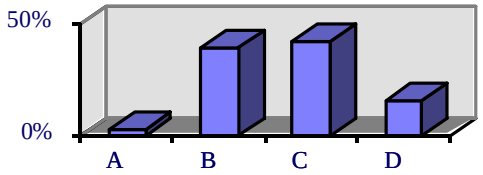
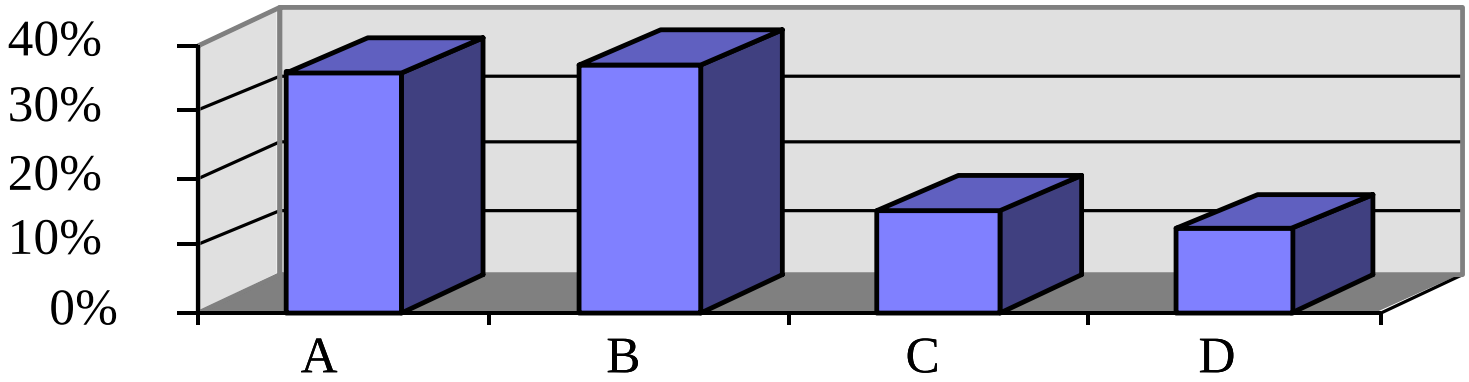
# Deployment of the Measurement Program




7. Deployement of the Measurement Program



# Synthesis



# 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

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