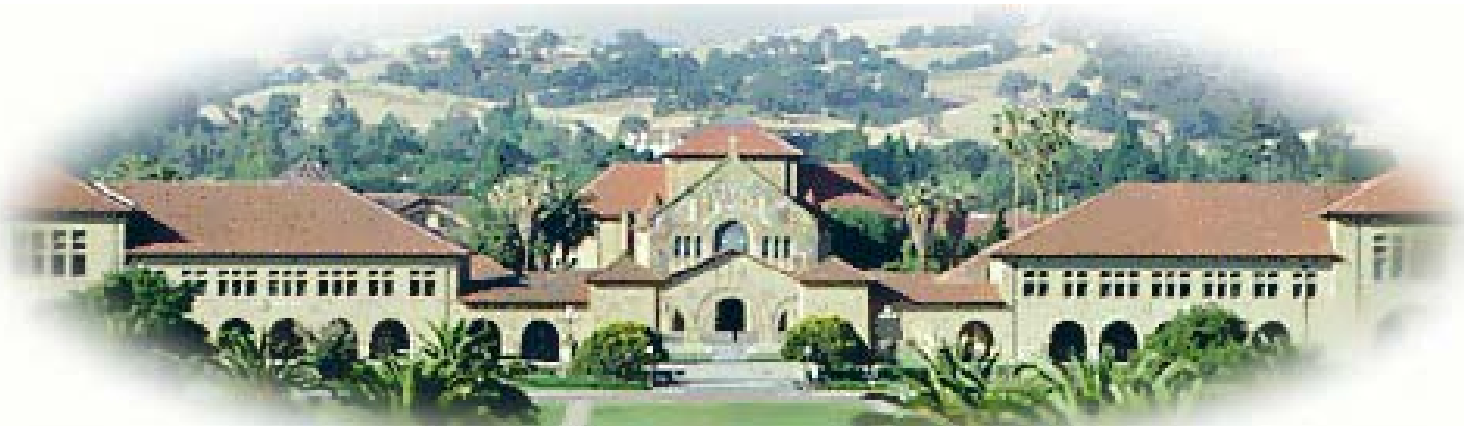


# VDT-I

## *Modeling Culture*

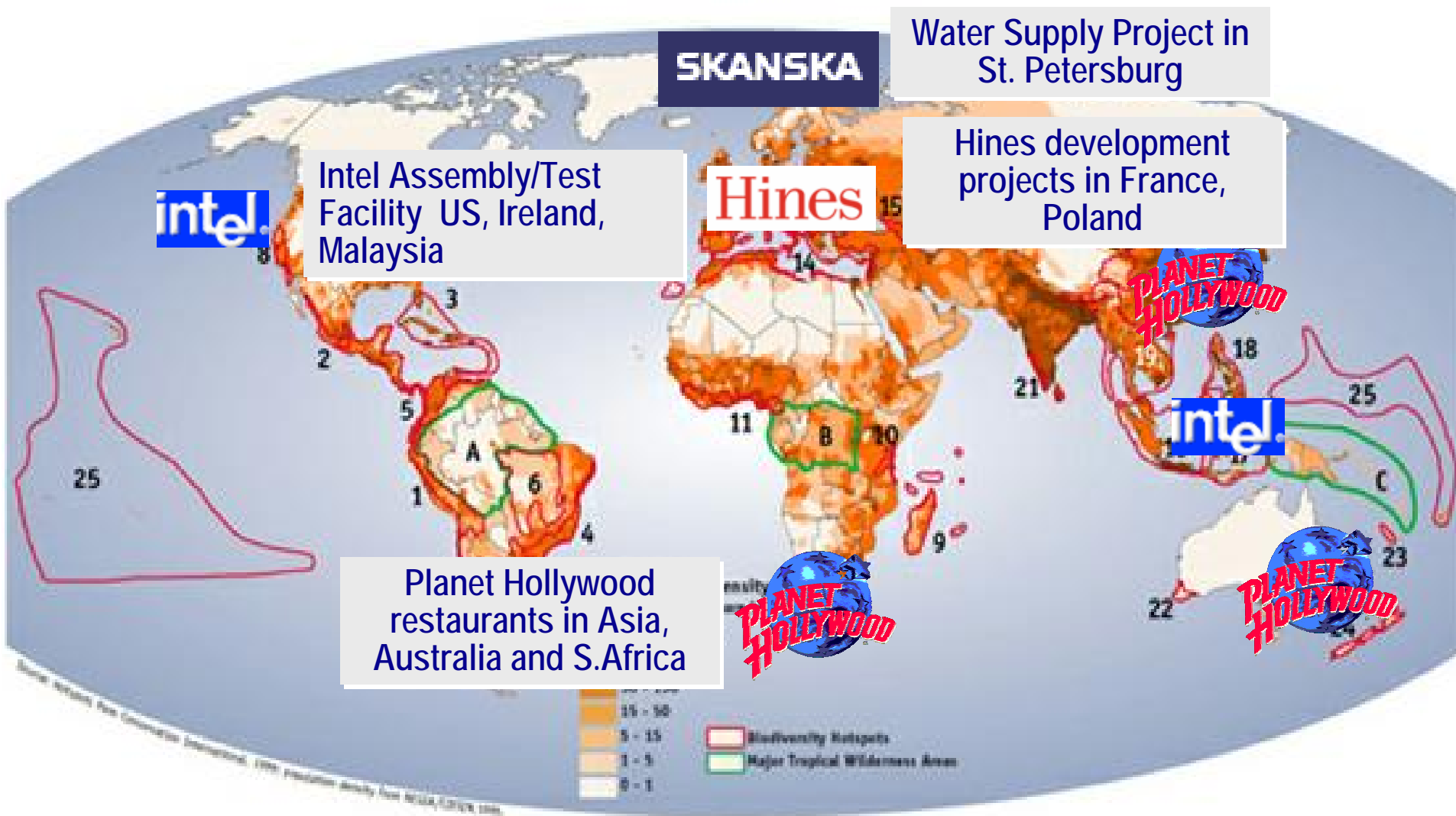


*Raymond E. Levitt and Ashwin Mahalingam  
Department of Civil and Environmental Engineering  
Stanford University*

# Presentation Outline

- Motivating problems
- What is Culture?
- How can we operationalize culture?
- Observations and Hypotheses
- Modeling
- Contributions

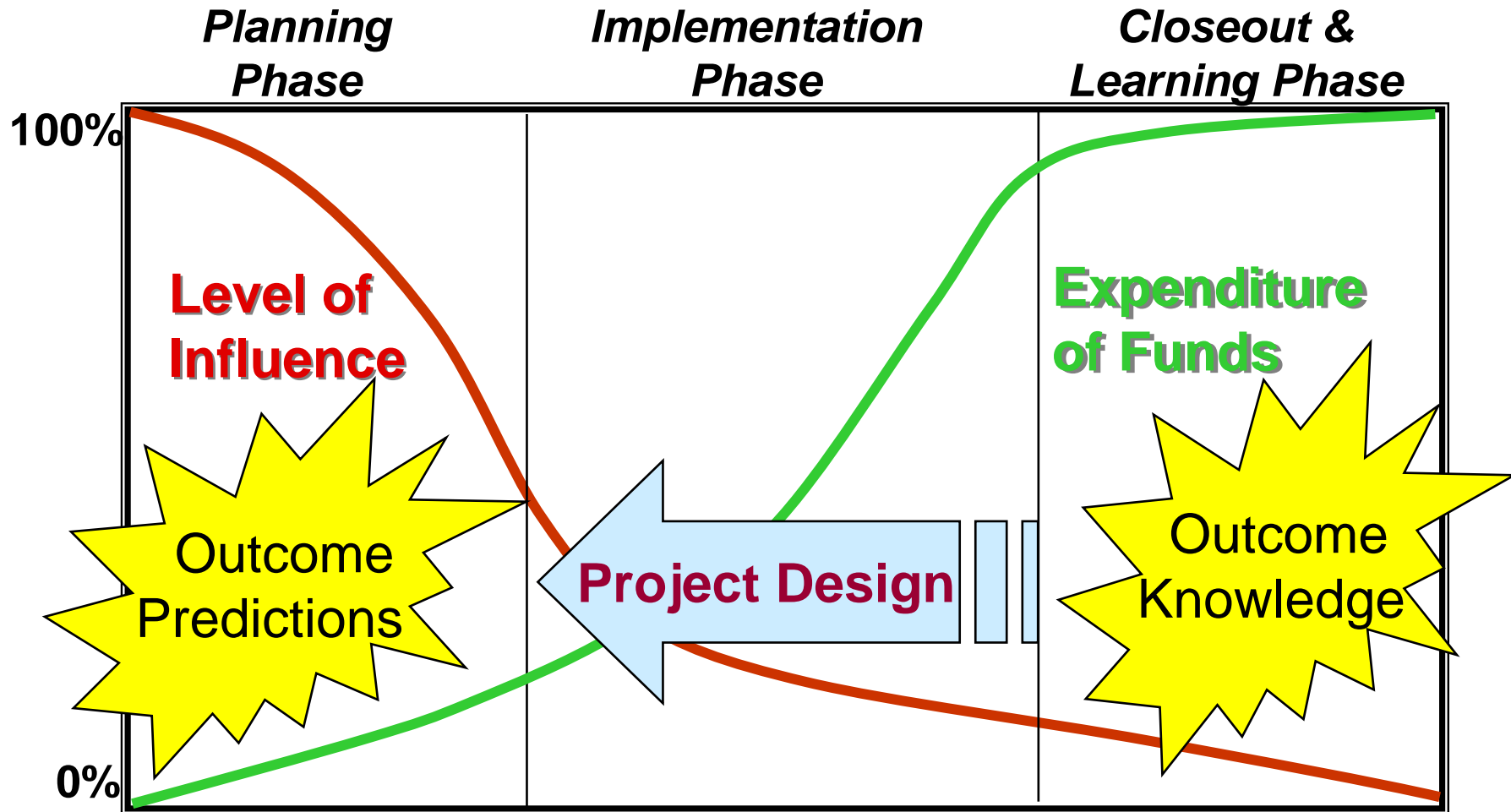
# Examples of Global Projects



# High-level Research Problems

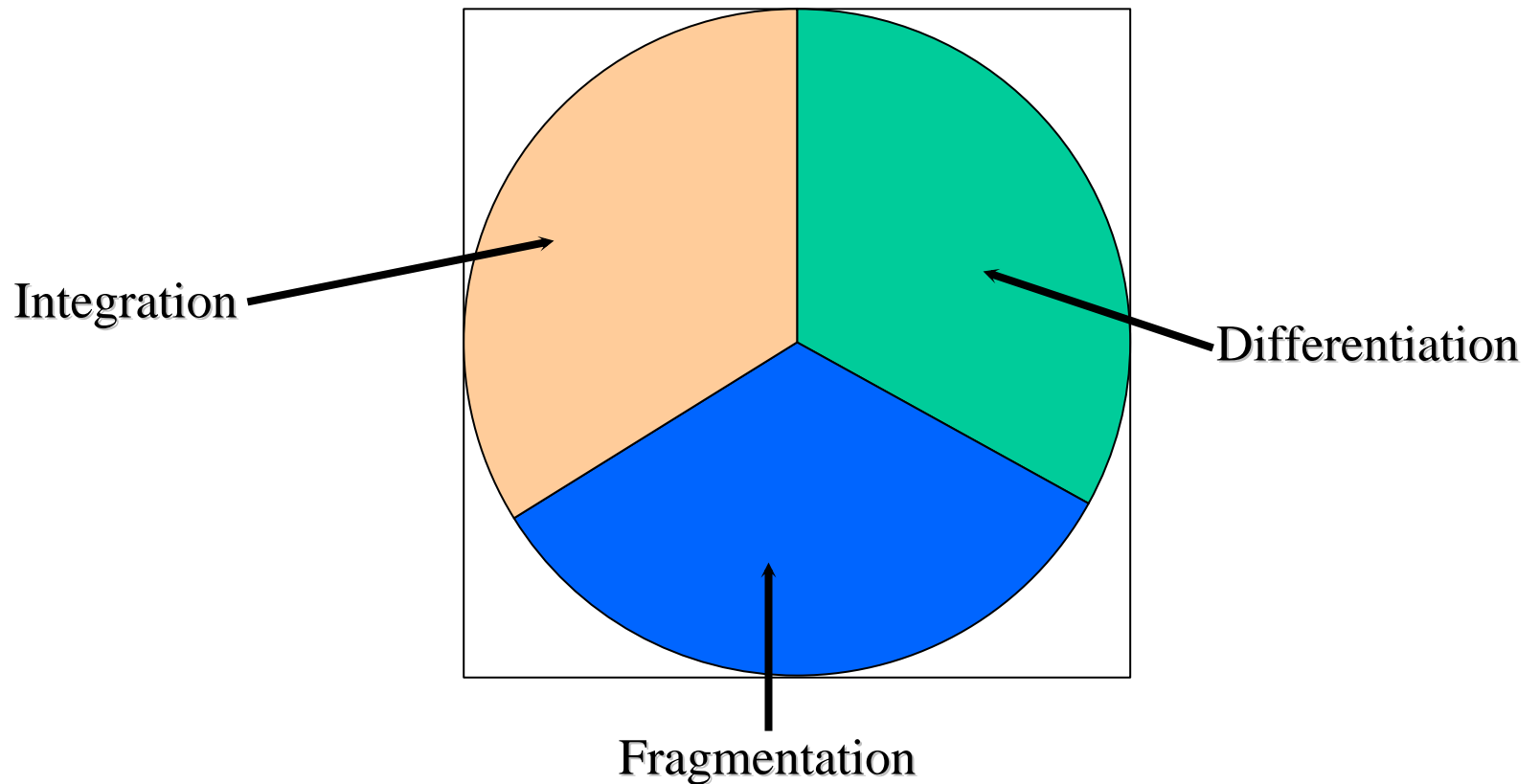
- How can we analyze and predict the effects of cultural differences on Global Projects?
- How can we design an organization to ensure optimal performance on a Global Project?

# How Project Design can Improve the Outcomes of Global Projects



# Theories of Culture

## Group Culture



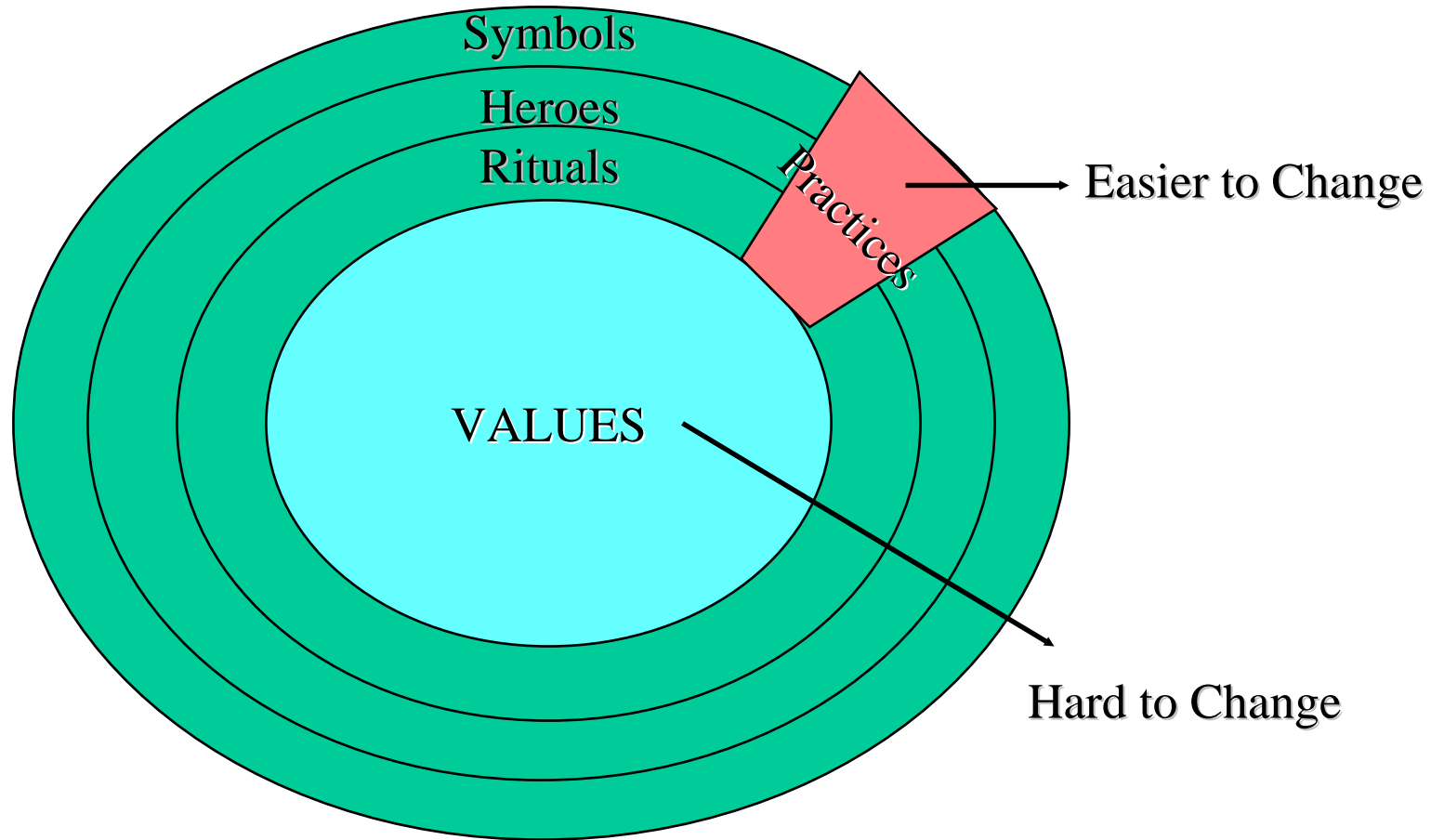
# What is Culture?

## The Integration Perspective

- A set of shared experiences
- That lead to the development of shared norms, beliefs and values
- That are subconsciously 'assumed' by the group
- Which leads to the generation of accepted practices and behavior

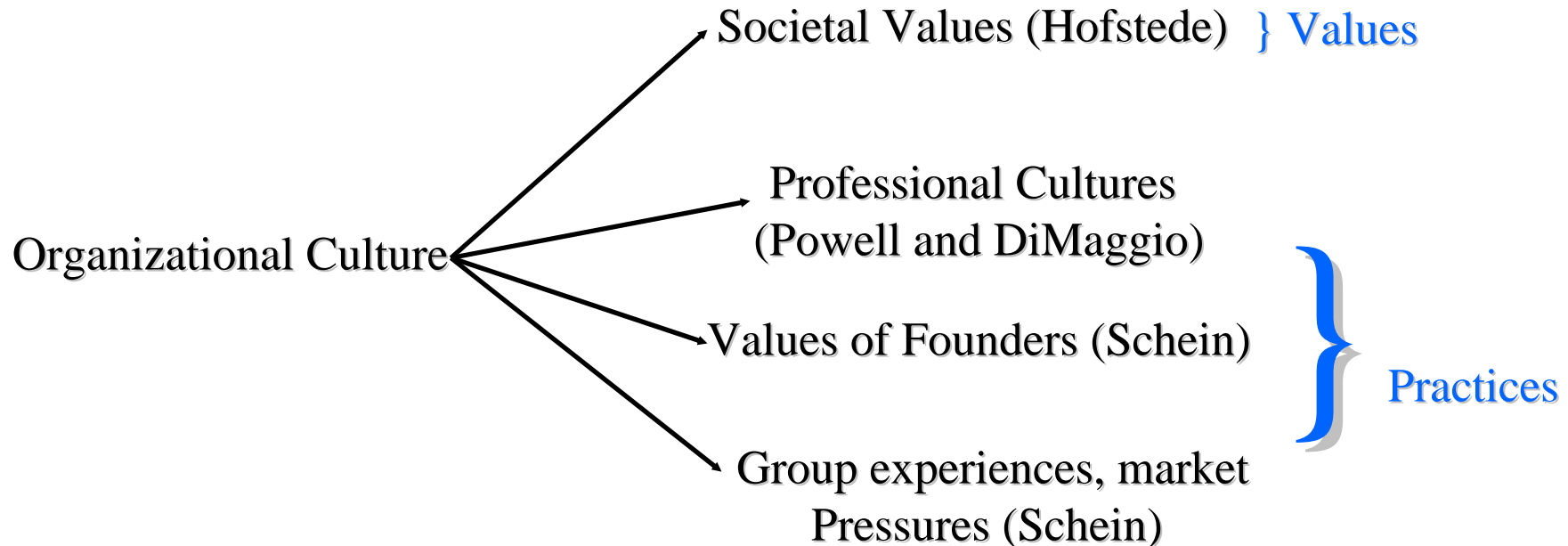
*Culture is defined on a per-group basis!!!*

# What does culture look like?

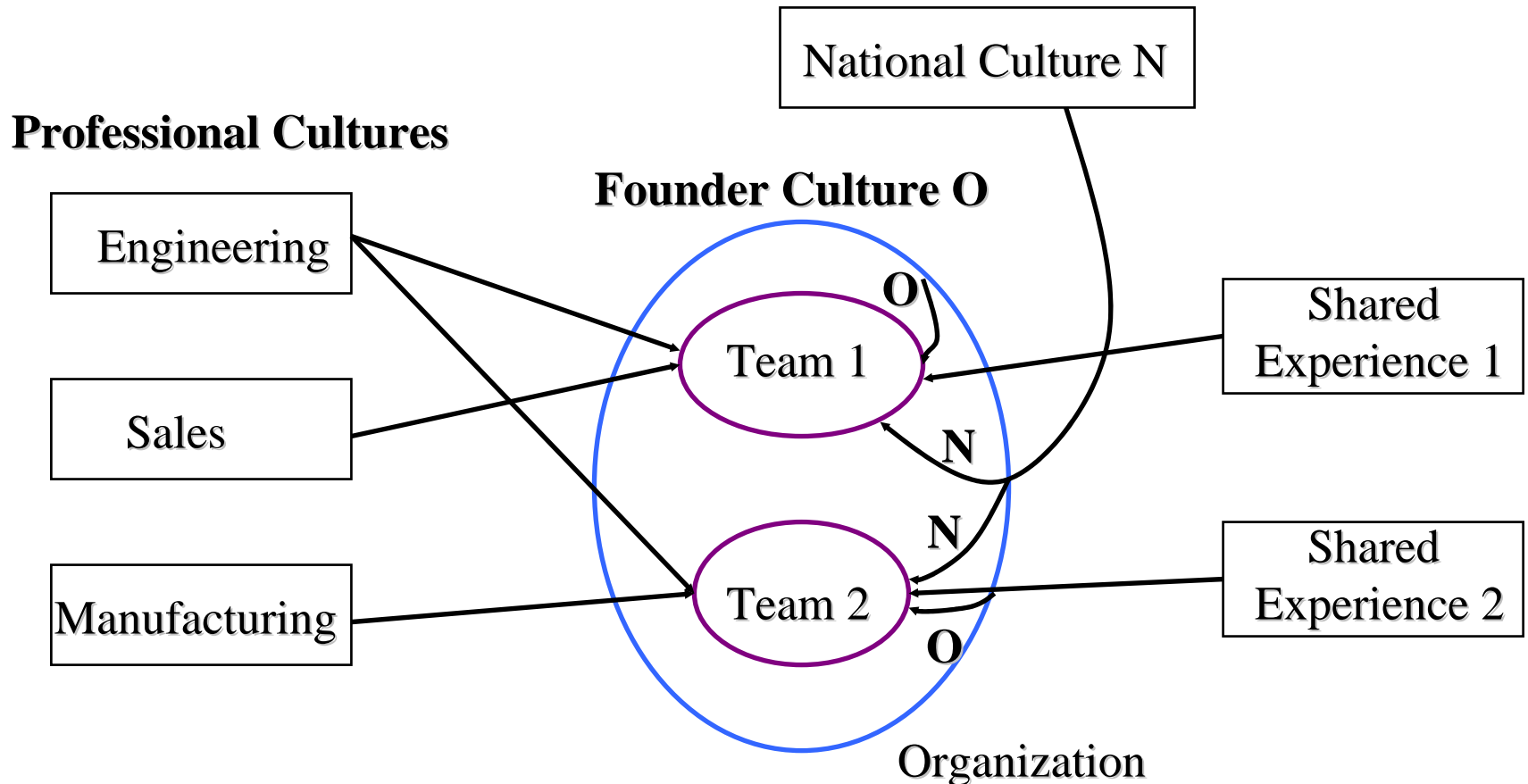


# What is Organizational Culture?

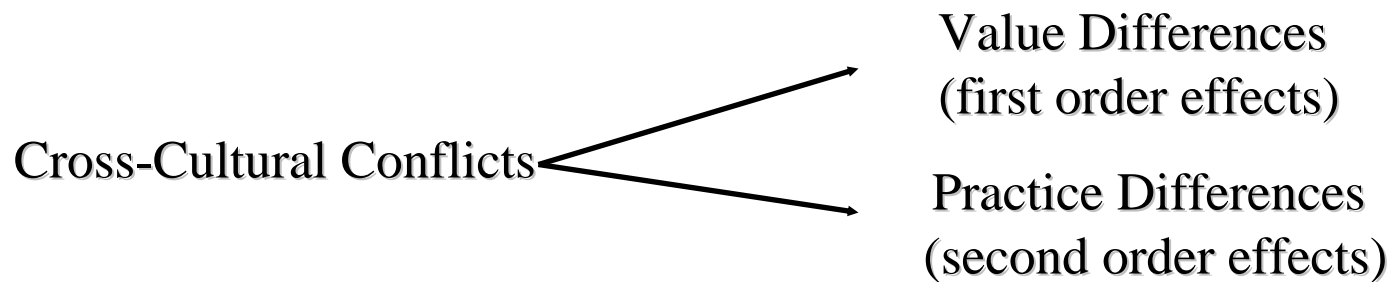
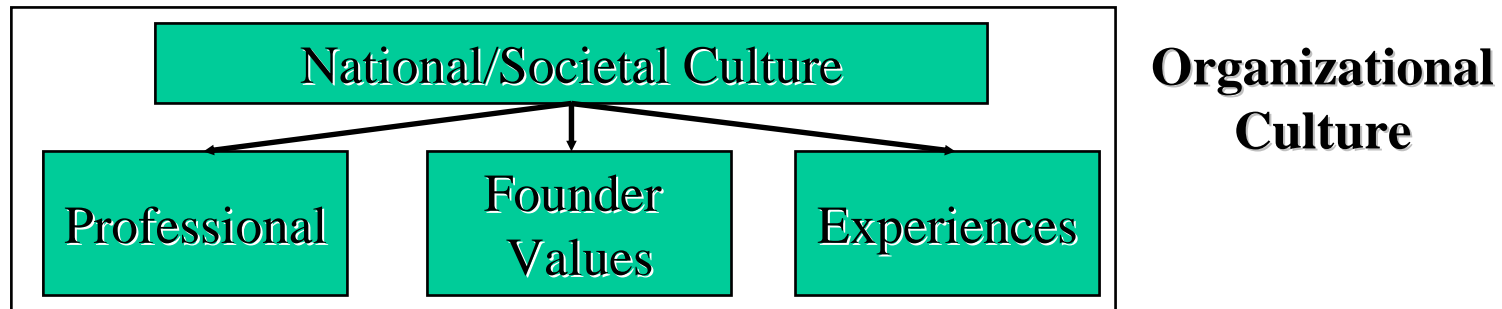
**A set of shared beliefs that drive behavior in the workplace**



# What does Organizational Culture look like?



# Sources of Organizational Culture and cultural conflict



## Global Project Costs

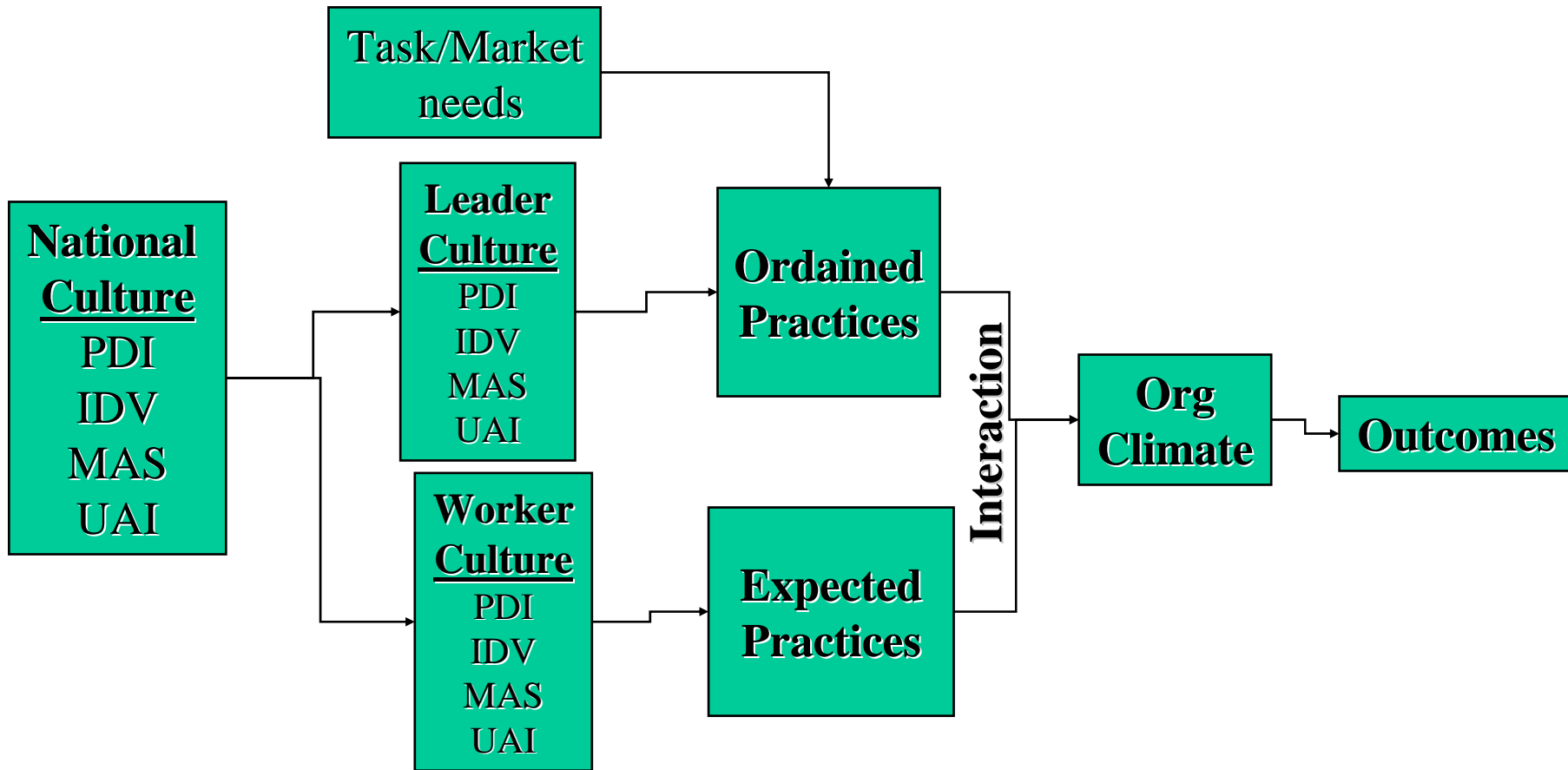


# How can we operationalize National culture differences?

*Hofstede's cultural dimensions*

- Power Distance
- Collectivism vs. Individualism
- Masculinity vs. Femininity
- Uncertainty Avoidance
- Long Term vs. Short Term

# A model for cross cultural interaction



# Case Studies, Observations and Intuition

- Gerald Hines – lack of communication between Texan and Parisians
  - Planet Hollywood
    - miscommunication costs in Asia
    - Loss of motivation in Japan
  - Hofstede
    - UAI and PDI define organizational structure
    - Less IDV cultures communicate more implicitly
    - MAS dimension affects personality conflicts
  - Increased error rate, decrease in productivity
-

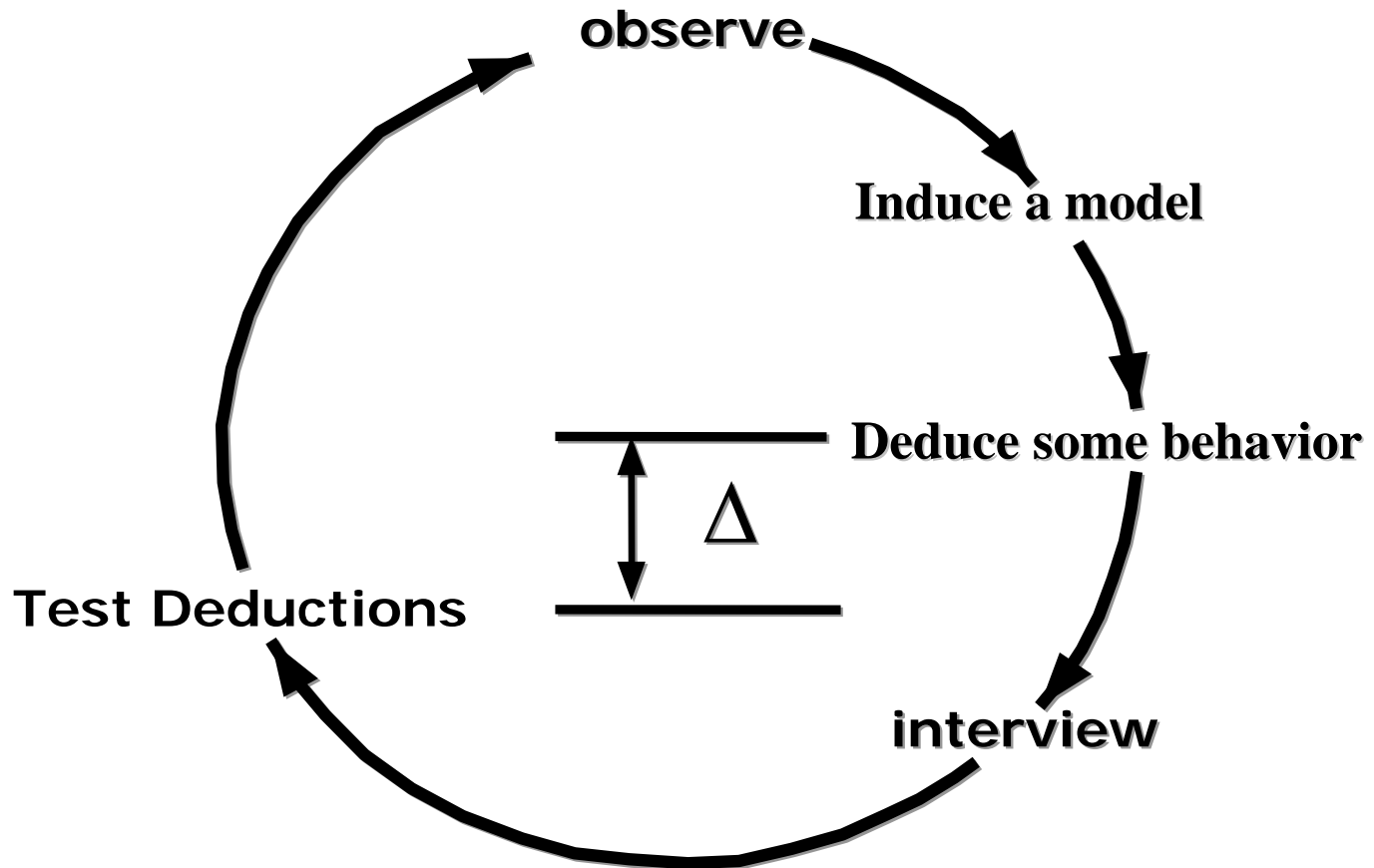
# Case Studies

<b>Technological Problems</b>	<b>Political/Legal Problems</b>	<b>Sociocultural Problems</b>	<b>Economic Problems</b>
Gerald Hines - France		Gerald Hines - France	
Gerald Hines - Spain	Gerald Hines - Spain		
Bechtel - Chile		Chile	
Planet Hollywood – Philippines	Planet Hollywood – Philippines		
Planet Hollywood – Singapore		Planet Hollywood – Singapore	
New Chinese Hotel		New Chinese Hotel	
Water Supply plant – Nigeria			Water Supply plant – Nigeria
Factory – Sri Lanka	Factory – Sri Lanka		

# Hypotheses

- Lack of fit between a person's culture and the organizational structure would lead to **motivational problems**
- Differences in the IDV scale will lead to **unclear communications**
- Differences in the MAS scale will lead to **Personality conflicts**

# Modeling Process



# The Model

VDT - I

VDT

Cross-cultural interaction  
model

Computational  
Modeling  
Theory

Organizational  
Theory

Observations

Institutional  
Theory,  
Hofstede et al

Modeling Project Organizations

Modeling Cross-cultural interaction

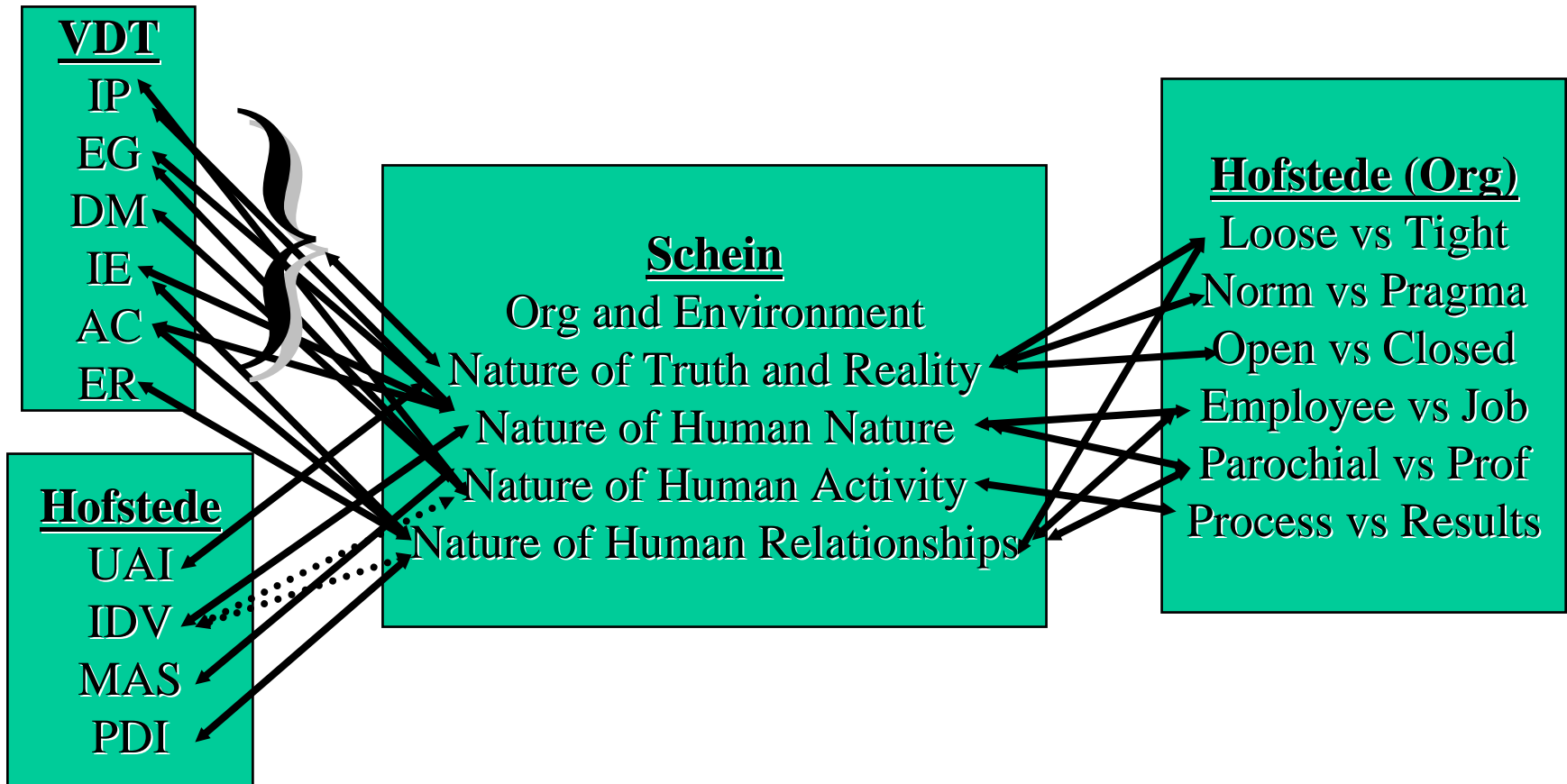


Currently Available



To be researched

# Relating Culture to VDT



# Modeling the Hypotheses

- Lack of Motivation
  - Slower processing speed
  - Higher error rate
- Unclear communication
  - Increase in errors on attending communication
  - Recommunication requests
- Personality conflicts
  - Ignoring communications (to and fro)

# VDT Modeling Theory

- New Variables
  - UAI, PDI, IDV, MAS
  - At both individual and Organizational levels

- Current Actor Behavior

- Information Processing
- Exception Generation
- Decision Making
- Information Exchange
- Attending Meetings
  - (and communications?)
- Reporting Exceptions

} Actor - Org  
PDI, UAI

} Actor – Actor  
IDV, MAS

# Behavior Matrix Transformation

- $AB = \{IP, EG, DM, IE, AM, ER\}$
- $CV = \{PDI, IDV, UAI, MAS\}$
- $\Delta AB = [m]CV$ 
  - $[m]$  – Transformation matrix
  - $\Delta IP = m PDI + n IDV + o UAI + p MAS$
- $\Delta AB = \Delta AB_O + \Delta AB_{AO} + \Delta AB_{AA}$ 
  - $\Delta AB_{AO} - IP, EG, DM$
  - $\Delta AB_{AA} - IE, AM, ER$

# Example Transformation

## Information Exchange Attendance

- High PDI, UAI cultures attend to information more seriously
- Low IDV cultures trust and regard information exchange highly
- Low IDV attends to high IDV communication
  - Higher quality of communications
  - VFP decreases
- High IDV attends to low IDV communication
  - Lower quality of communications
  - VFP increases

# Transformation matrices

Cultural Matrix

PDI, UAI, IDV	H (3)	M (2)	L(1)
<b>IE</b>	0.95	1	1.05
<b>AM</b>	0.95	1	1.05
<b>N</b>	1	1	1

Cross- Cultural Matrix

$\Delta IDV$	-2	-1	0	1	2
<b>IE<sub>AA</sub></b>	.95	.98	1	1.02	1.05
<b>AM<sub>AO</sub></b>	1.05	1.02	1	1.02	1.05
<b>N</b>	1	1	1	1	1

# Specific Steps

- Use anecdotes, Hofstede's book, intuition to generate a set of Hypotheses
- Use these hypotheses to generate initial Behavior Matrices for testing
- Conduct interviews to test behavior matrices and hypotheses
- Model Behavior in VDT
- Use real project data to calibrate and validate new VDT model

# Research Contributions

- Integration and synthesis of the current literature on organizational and national cultures
- Generation of validated hypotheses that describe behavior effects due to cultural differences
- Development of a computational model that can predict how and when cultural differences will affect project outcomes
- Development of theory that will help project managers optimize organizational performance on Global Projects



# Questions