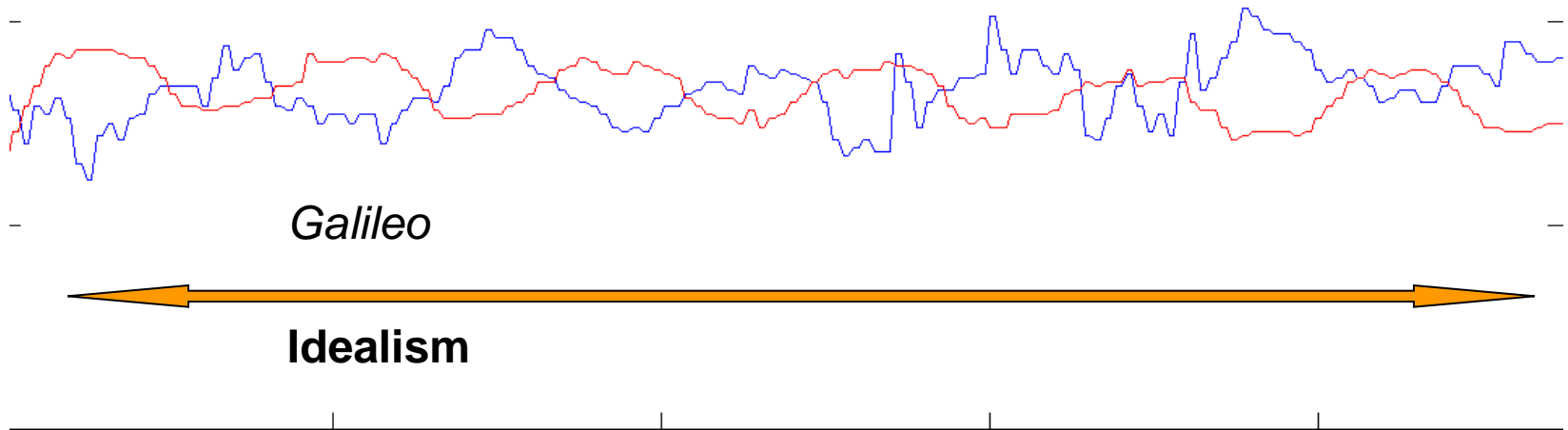


請以時間主軸排列出不同時間點的  
代表人物及其主要論點！

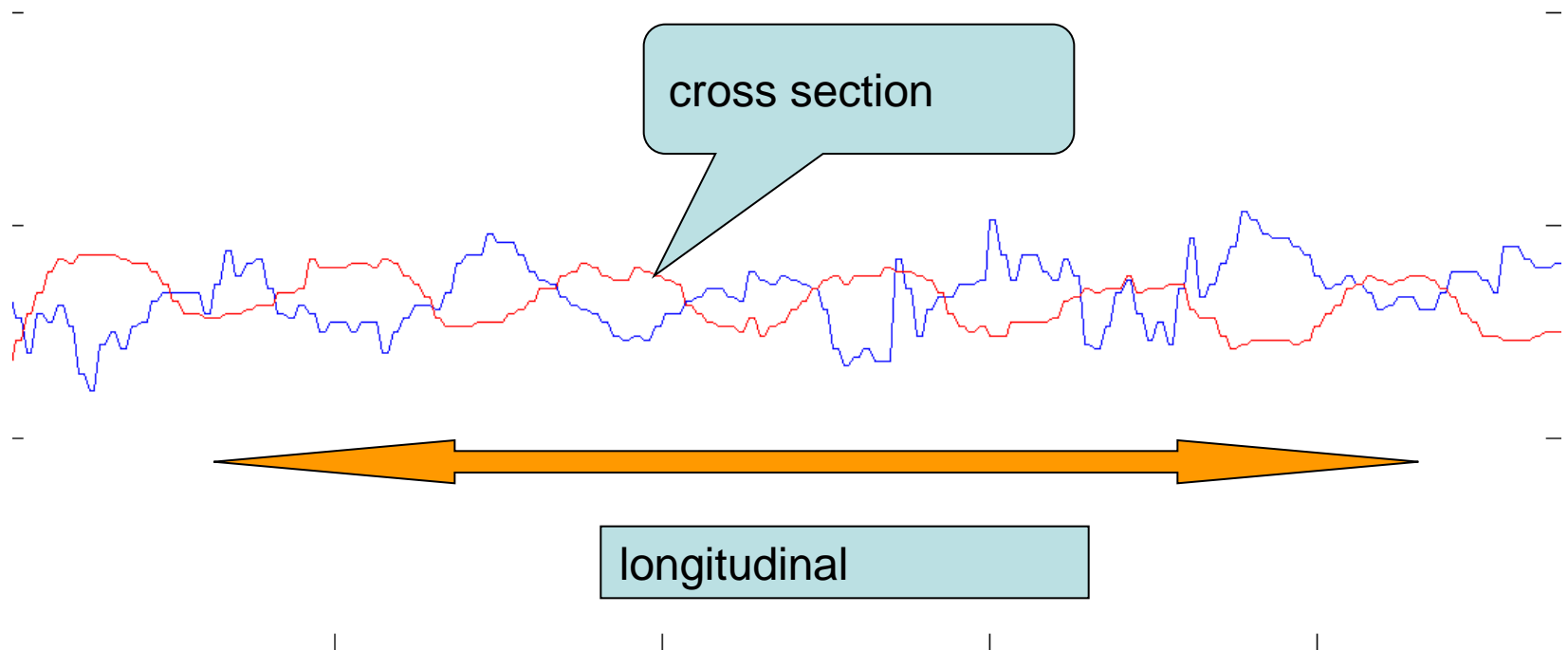
*Aristotle, Galileo.....?(1.4--1.9)*

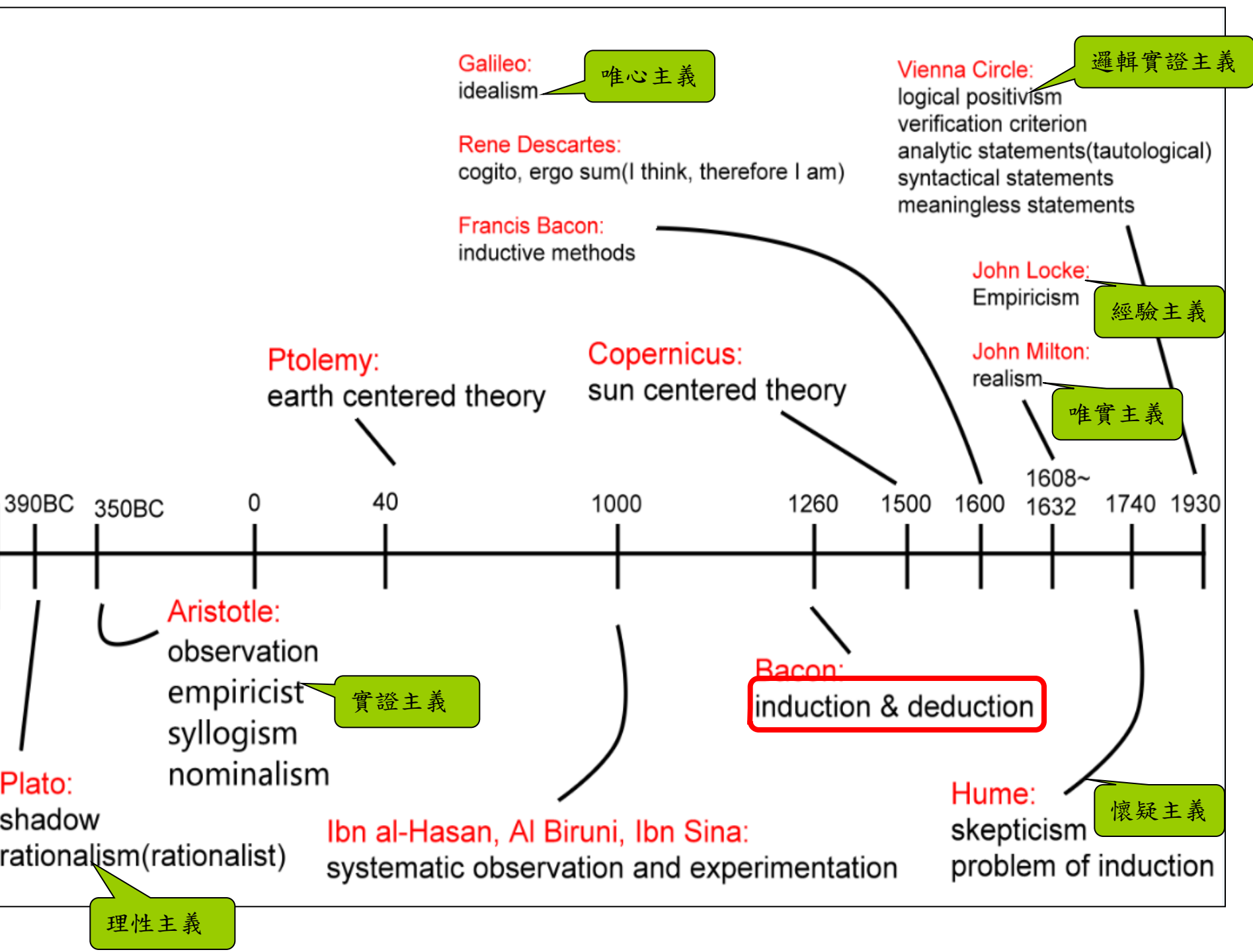
# 哲學思考發展的時問性

longitudinal



# 研究的時間性





客觀主義

Ayn Rand:  
objectivism

建構主義

Jean Piaget:  
constructivism

建構實證主義

Bas van Fraassen:  
constructive empiricism

1960

1967

1980

1990

Karl Popper:

A statement is meaningful only if it's falsifiable.

The hypothesis is provisionally supported, only if contradictory evidence is absent.

Willard van Orman Quine:

No hypothesis can be tested in isolation,  
there are always background assumptions and supporting hypotheses.

Thomas Kuhn:

framework or paradigm

10/02 24:00 due  
(Troncalss)

後面作者主要論述為何？他／她挑戰  
前面作者什麼論述？

請指出各領域知識如何產生？

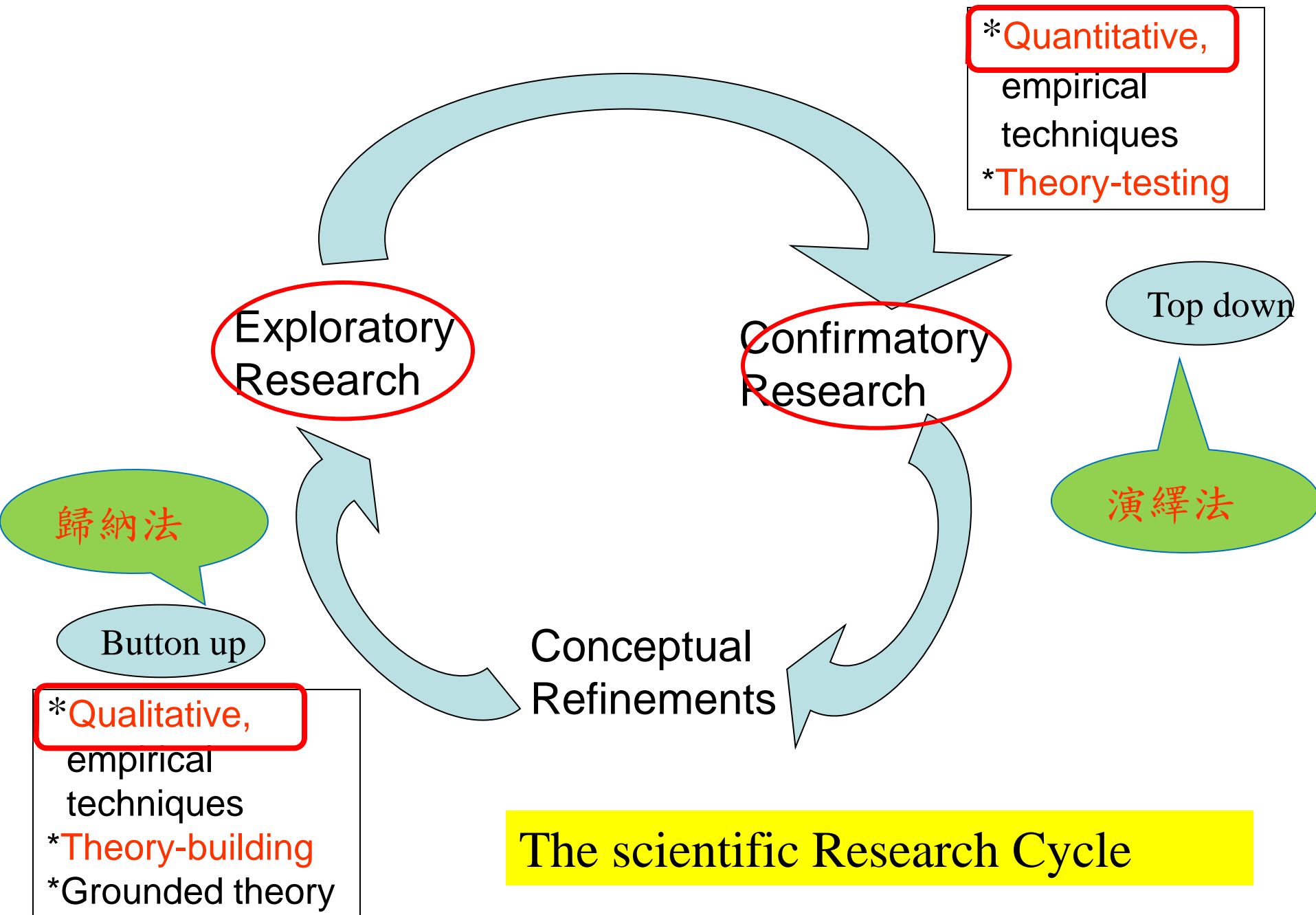
# The Philosophical Grounding of Design Research

- Ontology— fundamental **assumptions about the nature** of phenomenon
- Methodology—the nature of **ways of study** those phenomenon
- Epistemology—**nature of knowledge** about those phenomenon



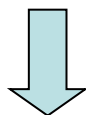
# The Philosophical Grounding of Design Research

- **Ontology:**
  - **Reality** (real world exists but we are not seeking it)
- **Methodology:**
  - Development/Design of systems, models
  - **Qualitative and exploratory** way of thinking, but could lead to **quantitative confirmations**
- **Epistemology:**
  - We can intervene in the world to improve it

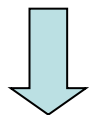


# 知識的形成 or 研究目的

- Ontology



- Methodology

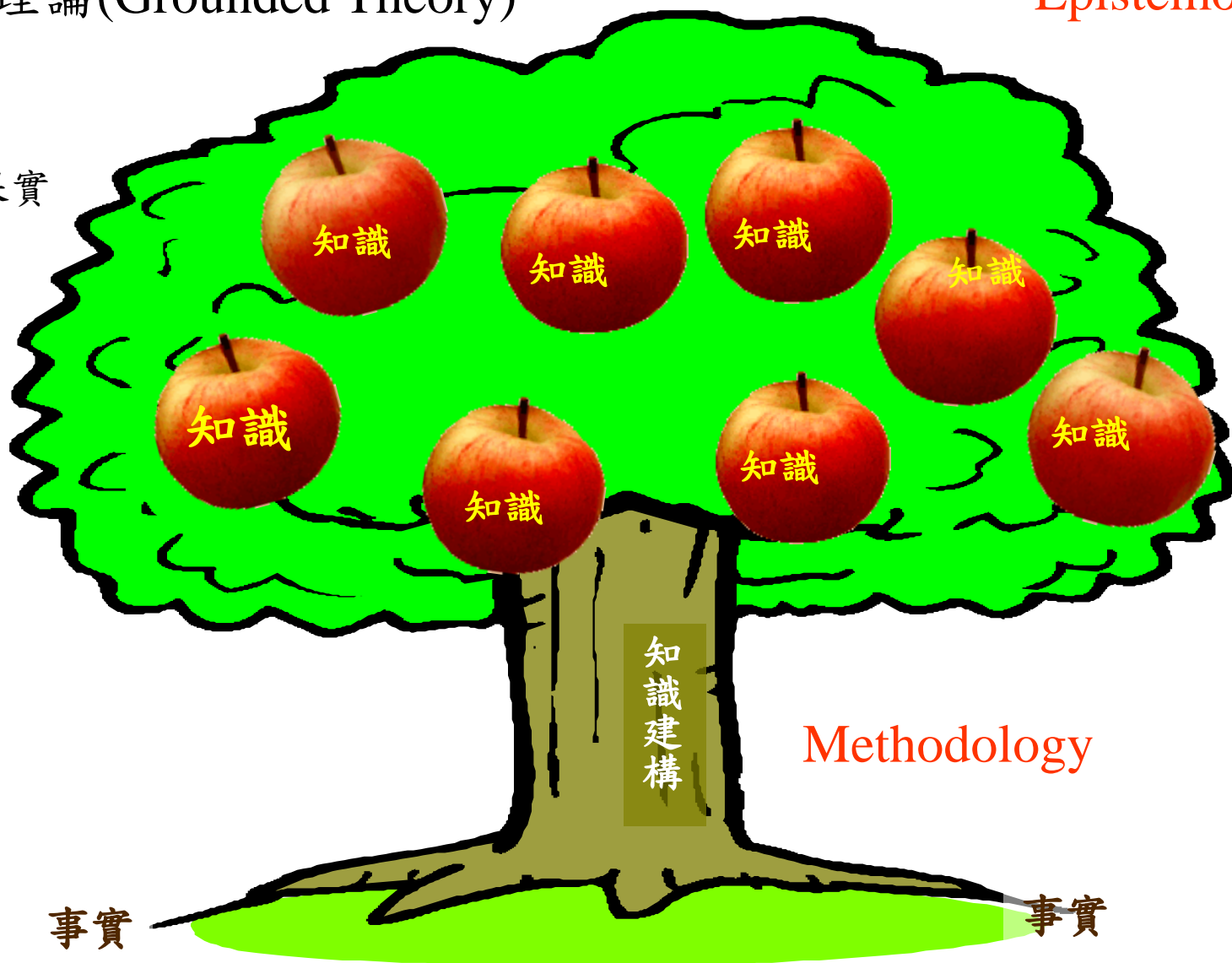


- Epistemology

# 紮根理論(Grounded Theory)

Epistemology

知識的果實



Methodology

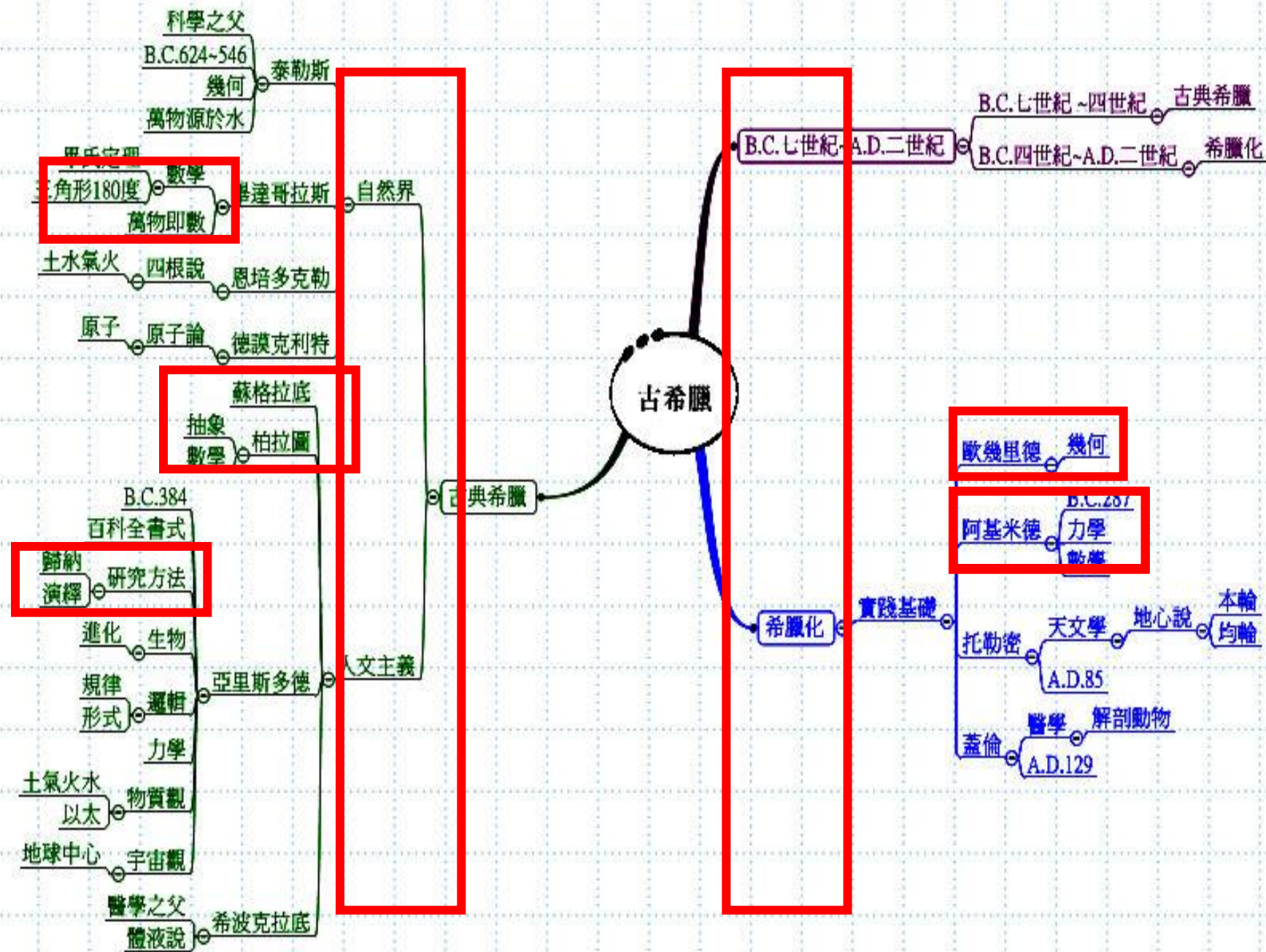
Ontology

事實

事實

事實

事實比作為土壤





# 科學革命

## 生命科學



## 力學



## 化學



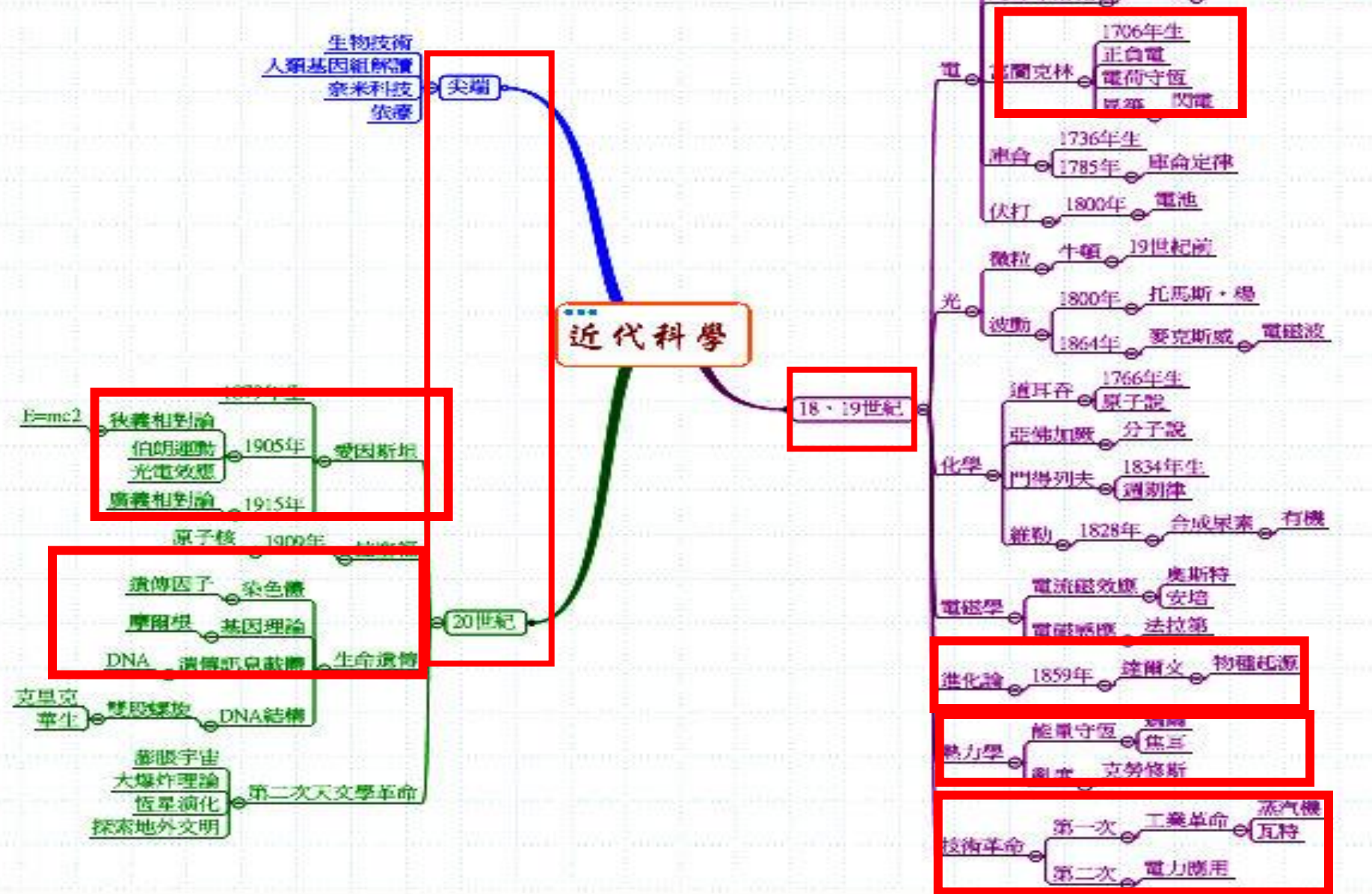
## 天文學



## 曙光



# Nature science Vs Social science (19世紀中葉)



# 資管研究

發現 VS 發明

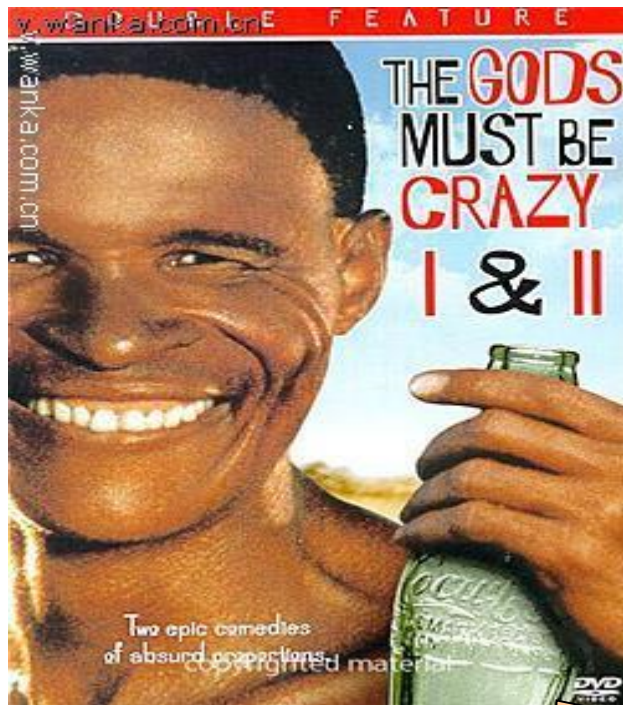


# 心智枷鎖的產生

- 實証主義@nature science→成立；
- 實証主義@social science→不成立(不客觀)

**WHY ?**

# 上帝也瘋狂



Reality is in effect a mental construct

# social science

笛卡兒：我思，故我在

- I think , therefore I am.

- being—事實(ontology)

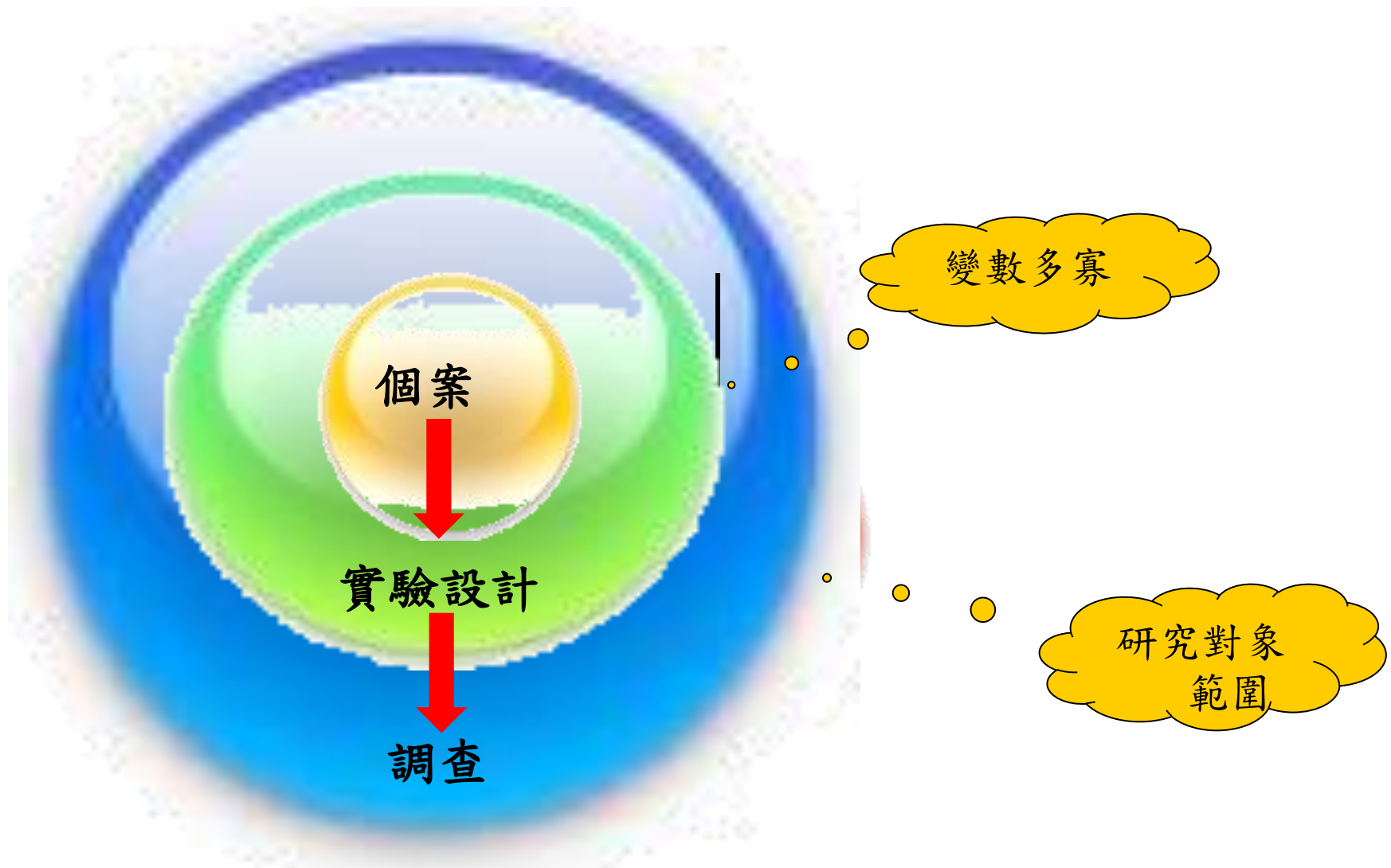


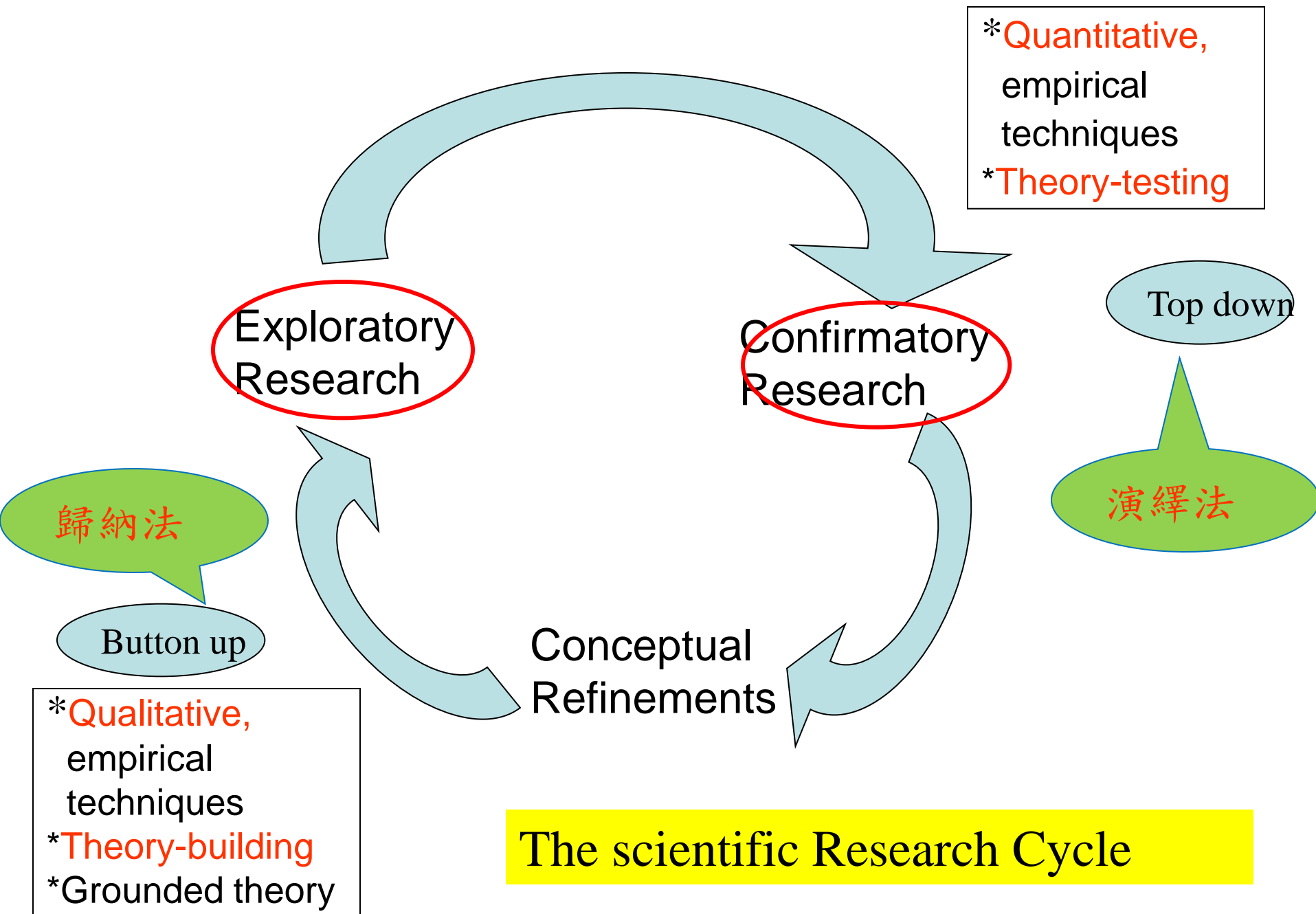
↓

- become—如何看待事實，事實就會變成我所想像的。

Paradigm shift		Paradigm shift	
管理學之研究認識論	實證論 (positivist philosophy)	詮釋說明論 (interpretive philosophy)	批判論 (critical philosophy)
對自然與社會真相的信念	<ul style="list-style-type: none"> <li>真實世界是客觀的(與個人差別無關)</li> <li>研究者試圖建立一個一對一的模式，藉以衡量並發現真相</li> </ul>	<ul style="list-style-type: none"> <li>強調主觀價值的重要</li> <li>著重人事物之交互影響及其意義</li> </ul>	<ul style="list-style-type: none"> <li>任何事情都有可改善的潛力存在</li> <li>整體觀：事件發生之觀察與了解不可片面分割去了解</li> </ul>
對知識的信念	<ul style="list-style-type: none"> <li>可以找出一個放諸四海皆準的原則</li> <li>此原則可以來解釋、預測及控制有關現象</li> </ul>	<ul style="list-style-type: none"> <li>必須親身到真實世界中觀察與體驗</li> <li>將觀察結果加以描述、解釋、分析，以便理解。</li> </ul>	<ul style="list-style-type: none"> <li>知識系根基於社會與歷史的演進過程的了解很重要</li> <li>必須經由長期性的觀察才可以獲得</li> </ul>
研究方式	<ul style="list-style-type: none"> <li>研究現象之間是否存在因果</li> <li>主要目標：理論驗證</li> <li>研究方法：是出假設</li> <li>-&gt;研究變數予以重化</li> <li>-&gt;假設檢定</li> <li>-&gt;母體推論</li> </ul>	<ul style="list-style-type: none"> <li>研究者將其主觀的見解表達出來，不試圖建立一個放諸四海皆準的原則</li> <li>主要目標：了解現象的深層結構與動態問題</li> <li>研究方法：以個案觀察為主</li> </ul>	<ul style="list-style-type: none"> <li>研究者以批評現況為己任</li> <li>主要目標：藉由批判來導正事物之現況</li> <li>對於一些早已“視為當然”的假設提出質疑，並用辯證法揭發疑點</li> </ul>
優點	<ul style="list-style-type: none"> <li>加強實證研究的品質</li> <li>可用以累積相關知識</li> <li>嚴謹、有標準</li> </ul>	<ul style="list-style-type: none"> <li>能從各方面的角連結來發掘真相</li> <li>能補實證主義的不</li> <li>注重人的互動</li> </ul>	<ul style="list-style-type: none"> <li>研究具有整體性及實際性</li> <li>能提醒我們：事物應隨環境變遷而有所改變。注重文化、社會</li> </ul>
缺點	<ul style="list-style-type: none"> <li>不接受非實證的觀點</li> <li>忽略文化、社會、政治、人性的影響</li> <li>劃地自限</li> </ul>	<ul style="list-style-type: none"> <li>沒有考慮動機與實際行為的不一致</li> <li>沒有考慮時間、歷史的構面</li> </ul>	<ul style="list-style-type: none"> <li>並非所有事物都互相對立而必須加以批評</li> <li>本身知識、理論不明確，沒標準、不確定、難評估</li> </ul>

# 研究方法的範圍







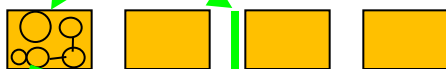
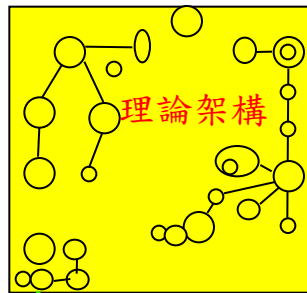
# 演繹法(induction)與歸納法(deduction)

紅龜模型

演繹法



袖珍屋minihouse888



中距理論

假設檢定

假設經驗通則

經驗的社會實相

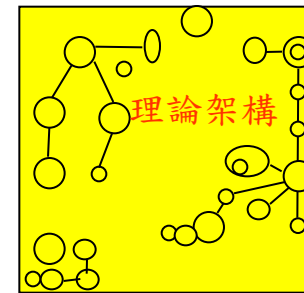
Hold on new specific instance

Epistemology



歸納法

General rules or hypothesis



Methodology

拼圖

根基的理論

概念形式經驗通則

經驗的社會實相

Ontology

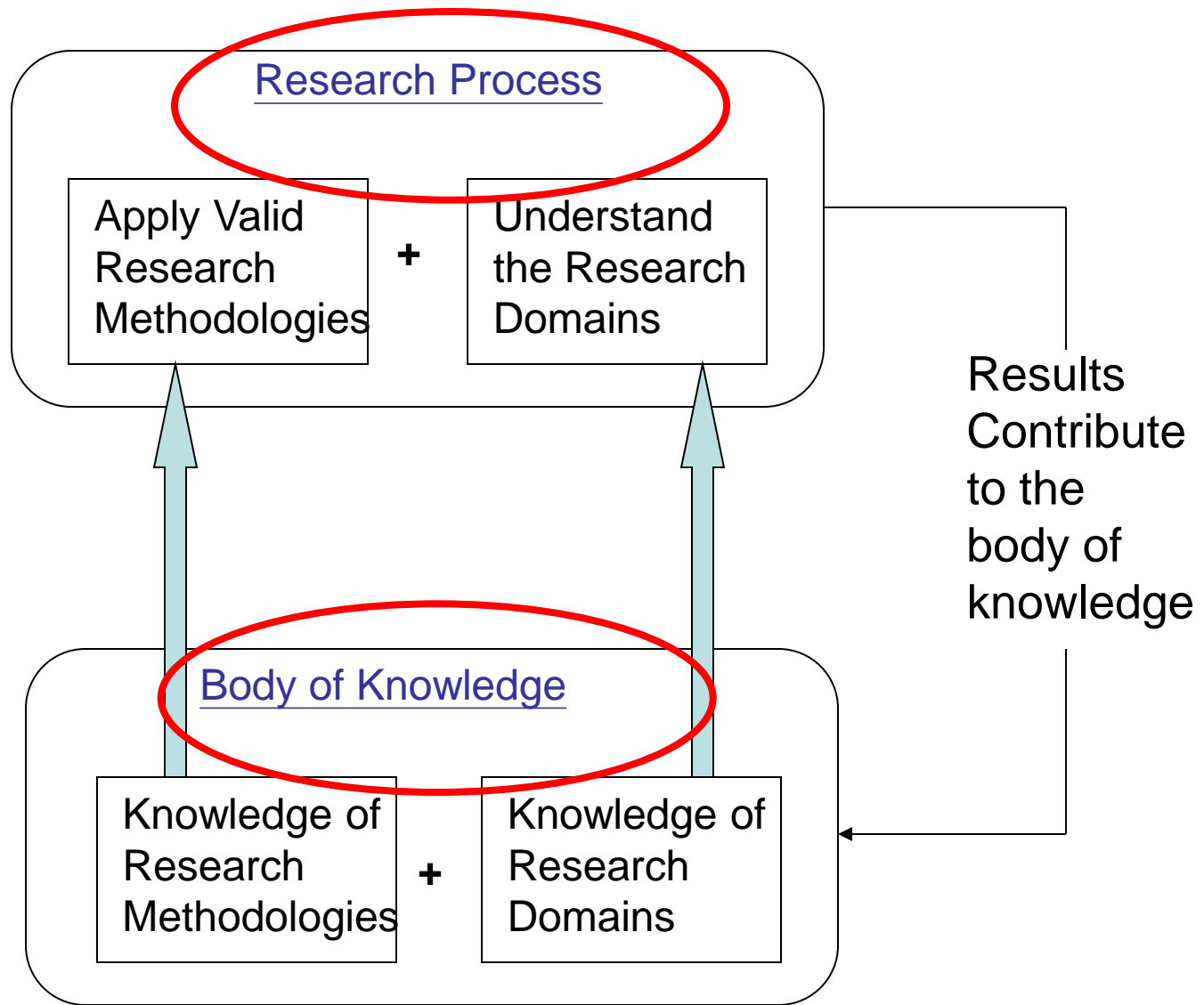


# Paradigm (ideology)

- Belief: **personal understanding**
- Value: **personal preference**
- **Zealots** (who carries ideology too far)
- **Paradigm shift**

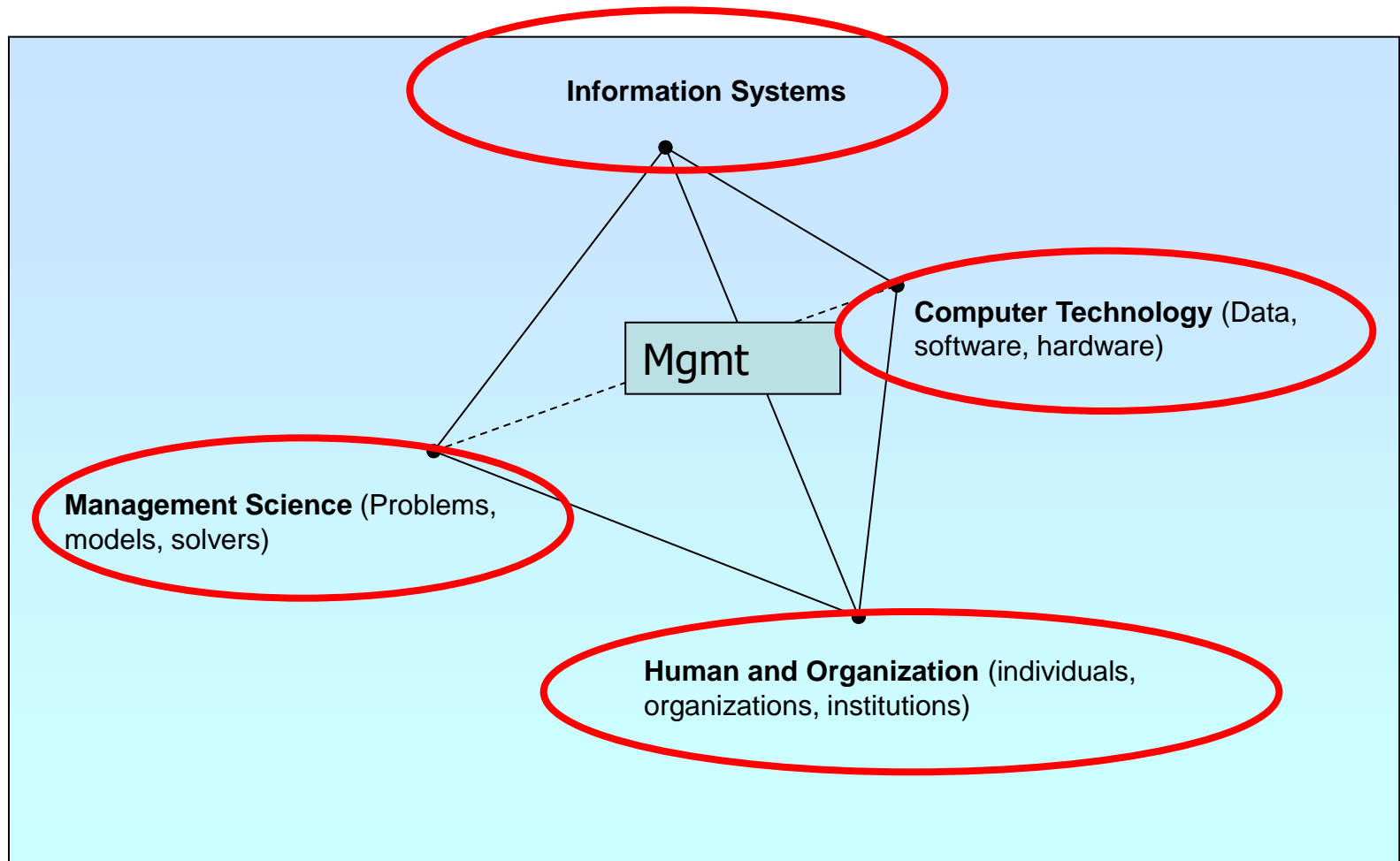


如何充實資管領域的知識？



A Framework of Research

# 資管的構成要素

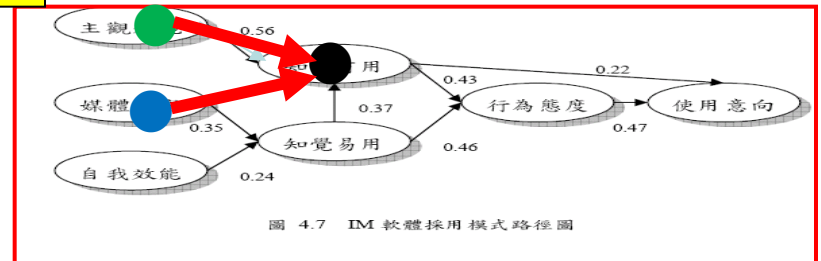


# 點、線、面、趨勢考量

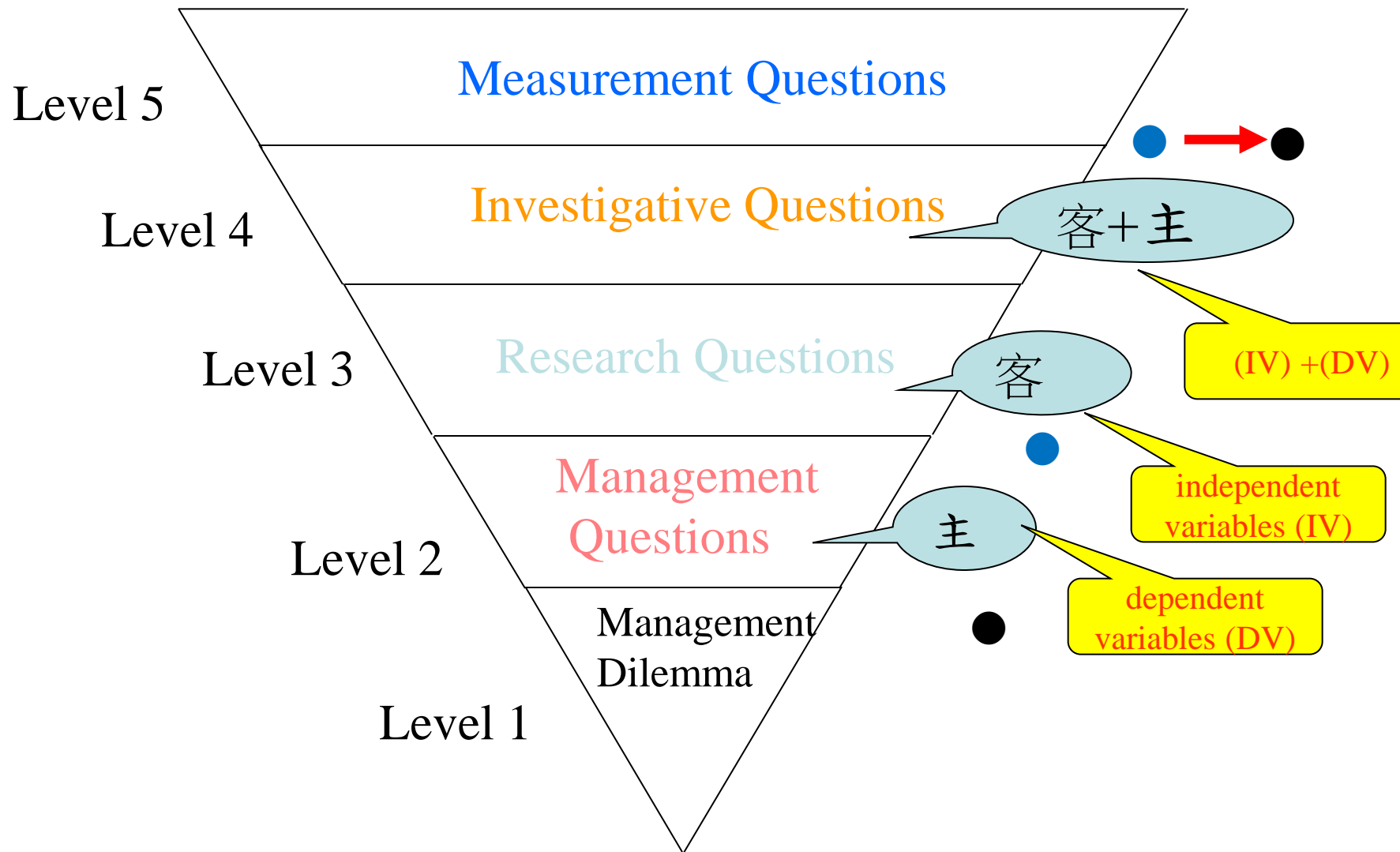
點：IS keywords ● variables

線：IS themes ● → ● related between variables

面：IS theories model



趨勢：IS Key Issues trend



Management-Research Question Hierarchy

# MIS Quarterly, 1993

- 1987—1992
- MIS Quarterly, JMIS, Information & Management, Management Science, & Communication of ACM.(1300)

# A Keyword Classification Scheme for IS Research Literature

- A REFERENCE DISCIPLINES
- B EXTERNAL ENVIRONMENT
- C INFORMATION TECHNOLOGY
- D ORGANIZATIONAL ENVIRONMENT
- E IS MANAGEMENT
- F IS DEVELOPMENT AND OPERATIONS
- G IS USAGE
- H INFORMATION SYSTEMS
- I IS EDUCATION AND RESEARCH

# E IS Management

- EA Data Resource Management
- EB Personnel Resource Management
- EC Hardware Resource Management
- ED Software Resource Management
- EE IS Project Management
- EF IS Planning
- EG Organizing IS



# E IS Management

- EH IS Staffing
- EI IS Evaluation
- EJ IS Control
- EK IS Security
- EL IS Management Issues

# EI02 EVALUATION CRITERIA

(1/4)

- E10201 Effectiveness
  - UF System effectiveness ●
- E10202 Efficiency
  - UF System efficiency ●
- E10203 User friendliness
  - UF User orientation
- E10204 IS performance
  - UF EDP performance
  - UF Performance incentives
- E10205 Productivity
  - E10205.01 Programmer productivity
  - E10205.02 Managerial productivity
  - E10205.03 Office productivity
  - E10205.04 Organizational productivity
  - E10205.05 Group performance



variable

# EI02 EVALUATION CRITERIA(續) (2/4)

- E10206 Quality
  - E10206.01 System quality
    - UF Software quality
  - E10206.02 Information quality
    - USE Information attributes
  - E10206.03 Service quality
- E10207 User satisfaction
  - UF User information satisfaction
- E10208 IS Utilization
  - UF IS Use
  - UF System use
  - UF Computer use
  - UF Information utilization
- E10209 IS Reliability
  - UF Software reliability
- E10210 IS flexibility

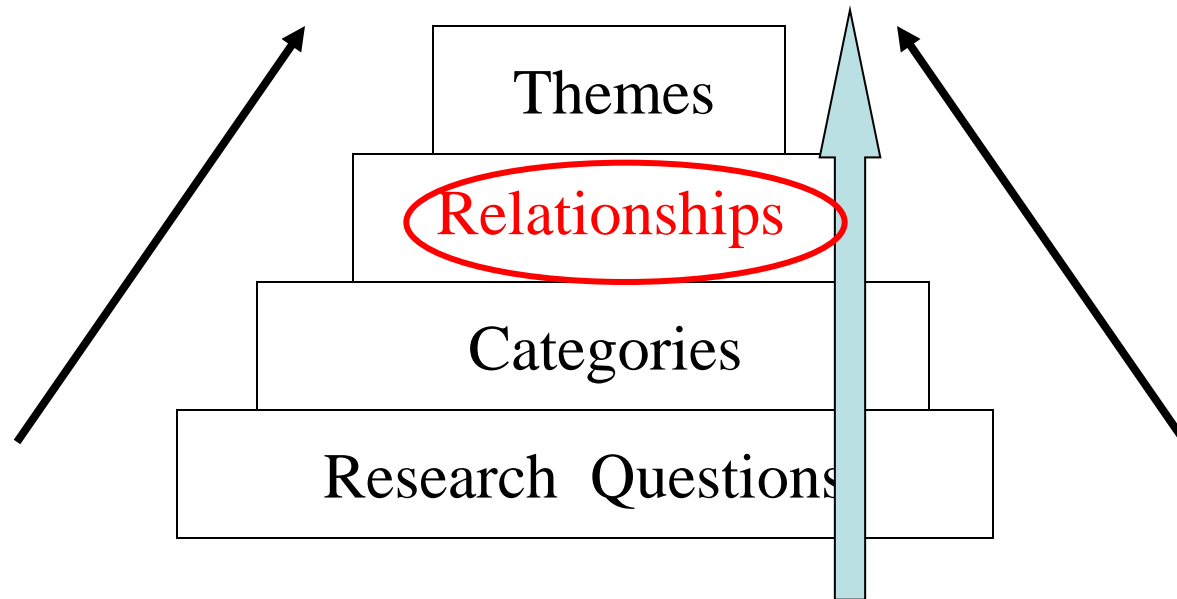
# EI02 EVALUATION CRITERIA (續) (3/4)

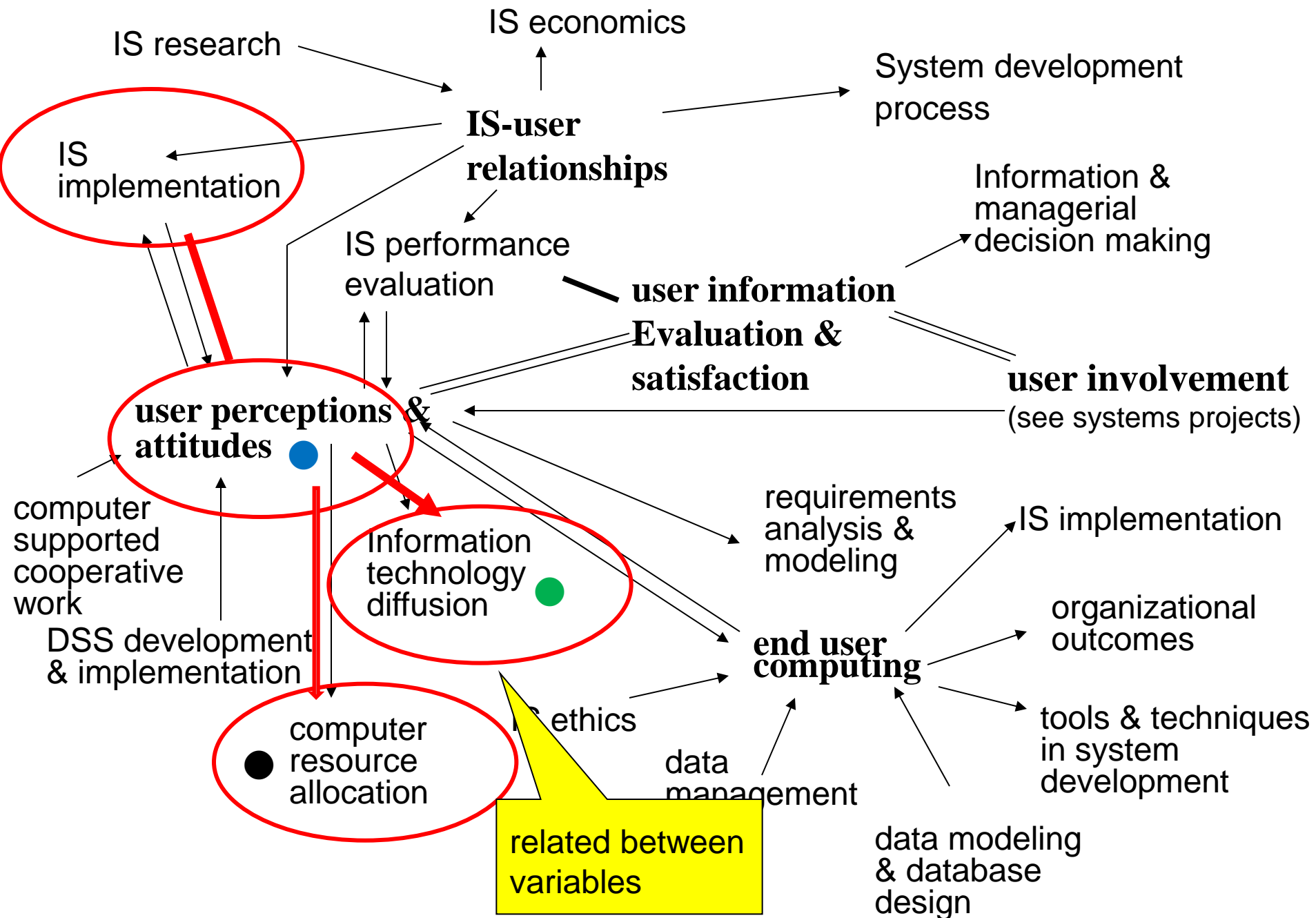
- E10211 IS impacts
  - E10211.01 Organizational impacts
  - E10211.02 Social impacts
- E10212 Size of backlog
- E10213 Cost
- E10214 Computer performance
  - E10214.01 Response time
  - UF Turnaround time
- E10215 Ease of learning
- E10216 Information overload
- E10217 System errors
  - E10217.01 Program correctness
- E10218 IS development time
  - UF Software development time
- E10219 Semantic integrity
- E10220 IS development effort
  - UF Software development effort

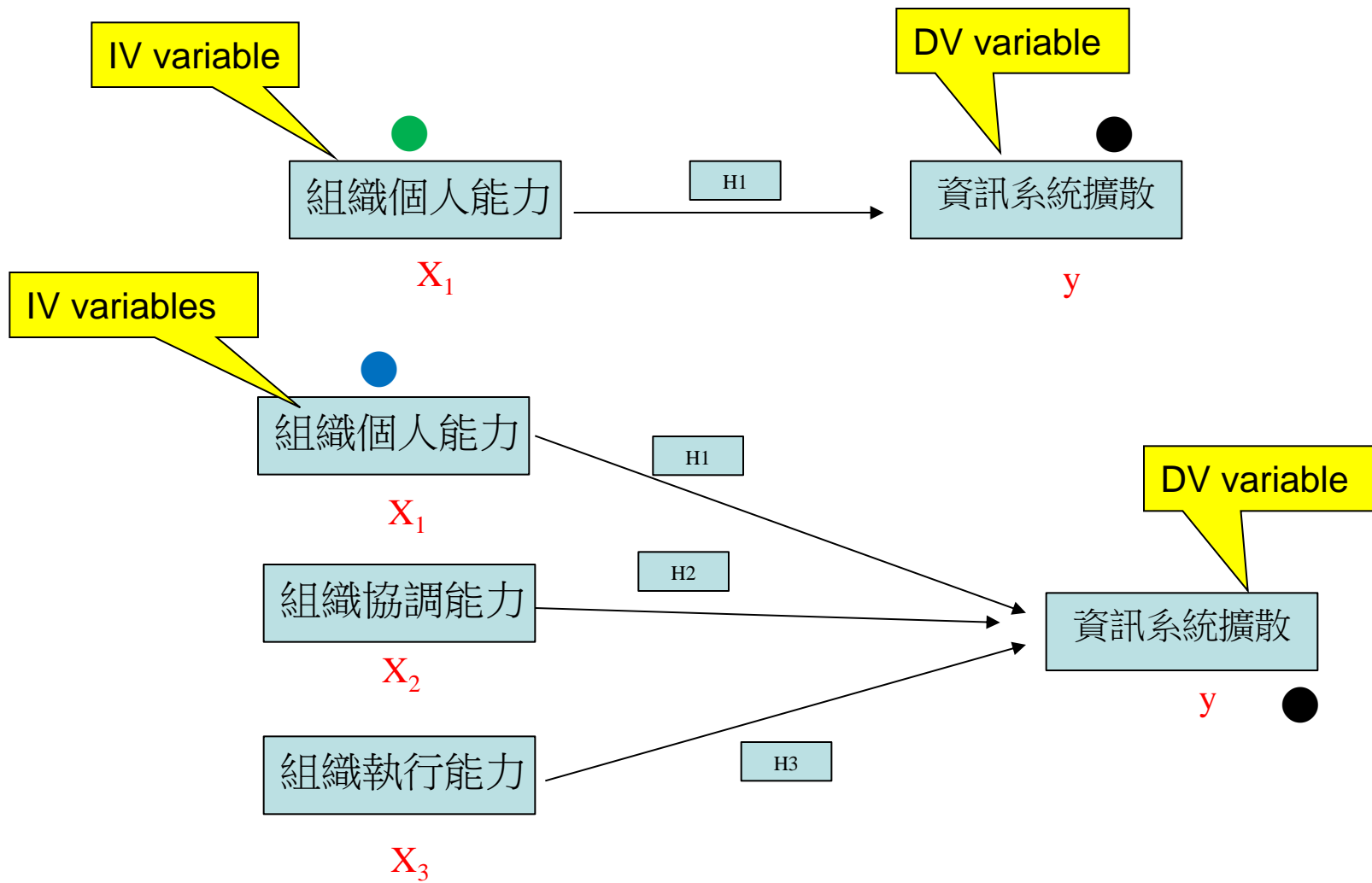
# Information System Research, 1993

- 1987—1992
- ISR submissions (397)

# Information Systems Research Thematics





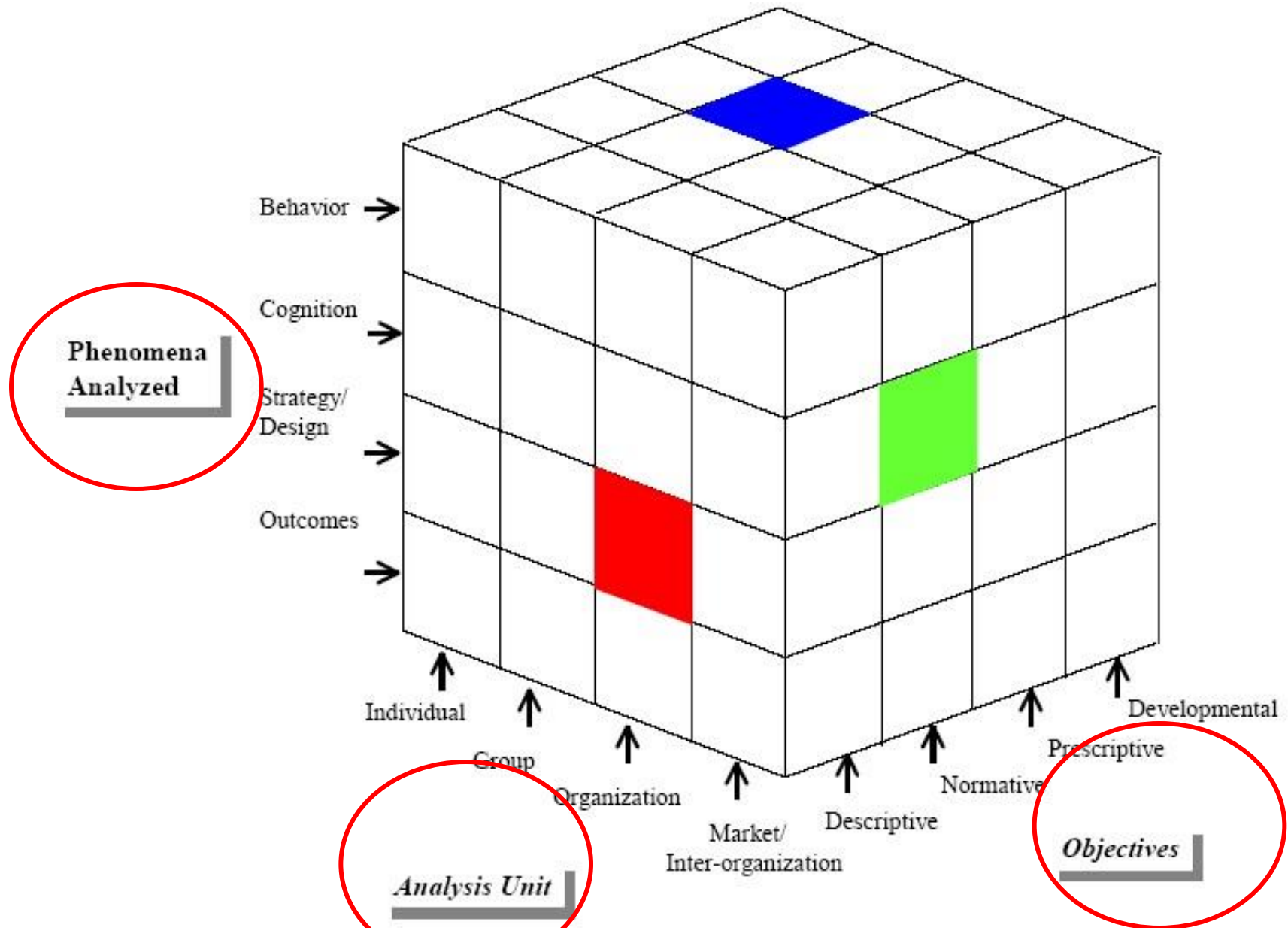




# CAIS (Communication of the Association for Information Systems), 2004

- 1991--2000
- ISR, MISQ, JMIS, MS, Decision Science(993)
- 203 theories

# An Ontology of IS Theories



# List of IS Theories

model

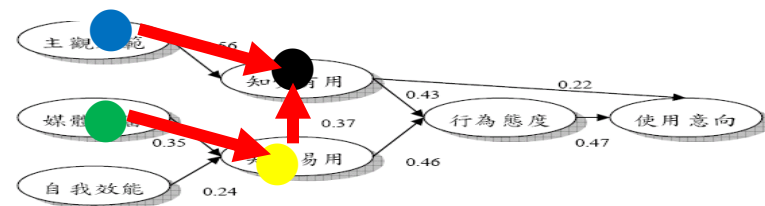


圖 4.7 IM 軟體採用 模式路徑圖

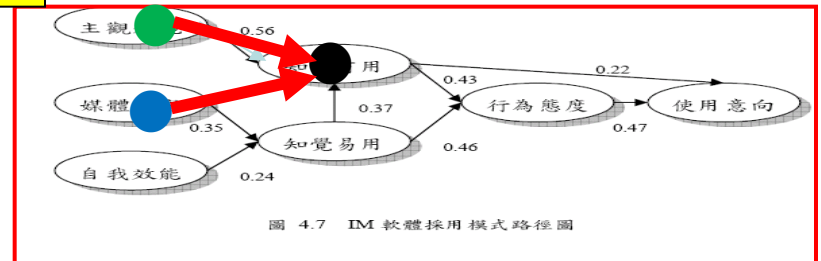
	THEORY	Origin of Theory	Theore-tical Frame-work	Pheno-mena Analy-zed	Anal-y-sis Unit	Objec-tives	Reference
1	Absorptive Capacity Theory	SOC/OB	26	O	O	P	Boynton et al. (1994)
2	Action Theory	SOC	27	O	N/A	D	Clemons et al. (1994)
3	Activation Theory of Learning and Recall	PSY	2	C	I	D	Hsinchun and Kim (1995)
4	Activity Based Accounting Theory	ACC	25	O	O	N	Stuchfield and Weber (1992)
5	Actor-Network Theory	SOC	7	D	N/A	DV	Walsham and Sahay (1999)
6	Adaptation Level Theory	IS/OB	10	O	I/O	D	Kettinger and Lee (1994)
7	Adaptive Structuration Theory	OB/SOC	26	O	O	P	Gopal et al. (1993)
8	Agency Theory	ECON/FIN	1	B	O	N	Choudhury and Sampler (1997)
9	Alienation Theory	OB	5	O	O	D	Abdul-Gader and Kozar (1995)
10	Alignment Theory	OB	5	O	M	P	Reich and Benbasat(2000)
11	Amabile-4P model	OB	8	O	O	P	Couger et al. (1993)
12	Anonymity Theory	PSY	2	B	I	D	Pinsonneault and Nelson (1998)
13	Assimilation Theory	OB	10	B	I/O	D	Davis and Bostrom (1993)
14	Attribution Theory	PSY/ETHIC	30	B	I	D	Igbaria and Baroudi (1995)
15	Auction Theory	ECON/MKG	1	O	I	N	Kauffman and Wang (2001)

# 點、線、面、趨勢考量

點：IS keywords ● ● variables

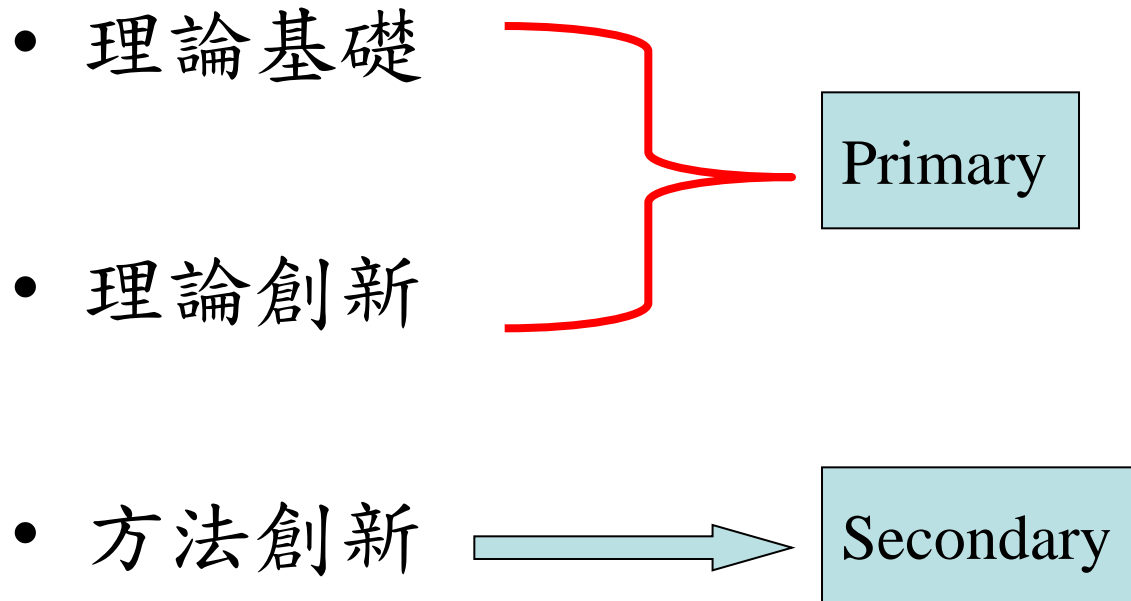
線：IS themes ● → ● related between variables

面：IS theories model



趨勢：IS Key Issues trend

# 博碩士班的研究層次



# IS Key Issues

- Problems
- Challenges
- Opportunities

# IS Key Issues Related Work

- 1982
- 1984
- 1986
- 1989
- 1992
- 1995
- 2000
- 2006
- 2010



trend

# key-Issue Framework in USA(1995)

軍方internet商業

Rank	Key Issue	Mean Rating	Standard Deviation
1	Building a Responsive <b>IT Infrastructure</b>	9.10	0.096
2	Facilitating and Managing <b>Business Process Redesign</b>	7.79	1.19
3	Developing and Managing <b>Distributed Systems</b>	7.73	1.38
4	Developing and Implementing an Information Architecture	7.62	1.50
5	Planning and Managing Communication Networks	7.58	1.40
6	Improving the Effectiveness of Software Development	7.50	1.86
7	Making Effective Use of the Data Resource	7.46	1.62
8	Recruiting and Developing IS Human Resources	7.31	1.70
9	Aligning the IS Organization Within the Enterprise	7.11	2.02
10	Improving IS Strategic Planning	6.82	2.02



# 影響資管研究的力量

- 資訊科技的發展
  - Mainframe, PC, Internet, Social Media
  - 3GL, 4GL, 5G Visual development, Web services
- 實務應用的演進
  - TPS, DSS, AI/ES, SIS, e-Business/EC /Mobile-Business
- 理論建立的需求
  - Generalization of observations

# 未來驅使研究方向

- 科技的變化與應用，如platform 的改變(Web services, mobile computing)
- 管理面的探討（如EC/MC對business的Impact, Internet marketing, Social Media).
- 理論（本土, 深耕）的深化發展

# 資訊管理的發展階段

時期	研究重點	研究方法	處境與關鍵因素
萌芽期 (1980—1984)	建立研究架構 發掘研究方向	架構分析 意見陳述 研究方法不慎重視	借用其他領域的理論
發展期 (1985—1991)	行為認知研究減少 系統面研究增加	引入個案支持論點 重視歸納性實證研究 方法嚴謹	研究的質與量增加 MIS交流園地成立， MIS Quarterly， ICIS，
茁壯期 (1992-1998)	創新性與影響性	選擇最適合的研究方法	研究主題、方法繁多 ISR出版
紮根期 (1999-20??)	一般性與科學性	多元研究方法 研究結果的嚴謹性	理論的建構與驗證 學域自主性與相關性的建立

請檢視自己生活周遭所面臨的問題

請問如何以研究的角度與程序解決上述的問題？

針對上述的問題，請進一步指出各種可能型態的變數？

# Where does your problems come from?

- Researcher-oriented Study


- User-oriented Study

A green thought bubble with a black outline and three small circles leading to it. It contains the text "FB, IG".

FB, IG

An orange thought bubble with a black outline and three small circles leading to it. It contains the text "Online game".

Online  
game

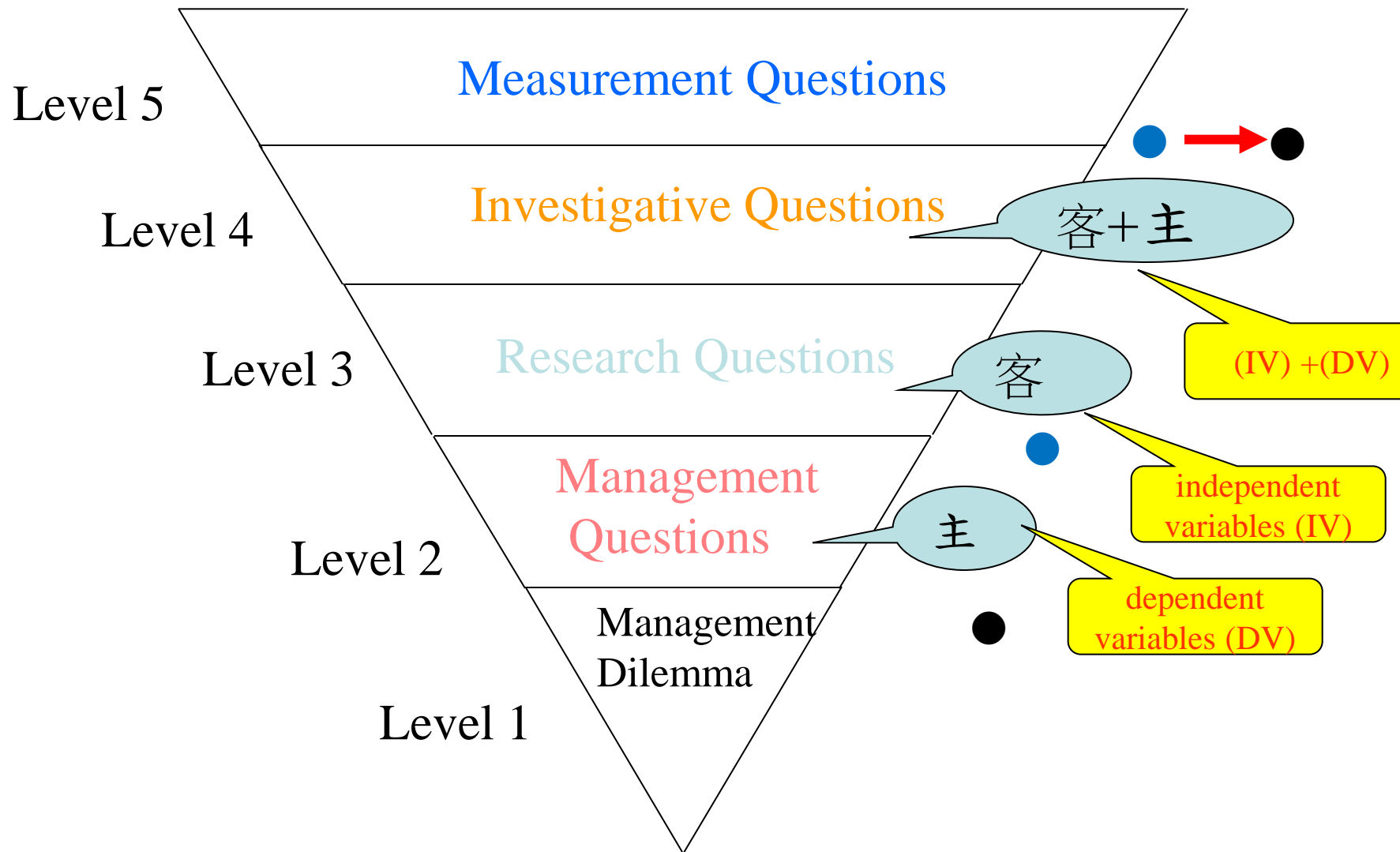
A light green thought bubble with a black outline and three small circles leading to it. It contains the text "Blog, Line".

Blog, Line

# 以誰為師？

- 大自然提供了很多研究的靈感，只是被人們忽略了
- 身邊週遭有許多細節，都可以是研究巧思的來源





Management-Research Question Hierarchy

# 自變項 vs. 依變項

客-level 3

- 自變項（**independent variables**）：研究者選擇研究（常加以操弄）的變項，以評估它們對另一個或多個變項可能的影響。
- 研究者預設中會被影響的變項，則稱為依變項（**dependent variables**）（或結果變項）。

主-level 2



IVs

自變項  
(預設的或可能的因素)

影響

DVs

依變項  
(預設的結果)

# Where can find **variables** ?

- In yourself



X?

- In your society

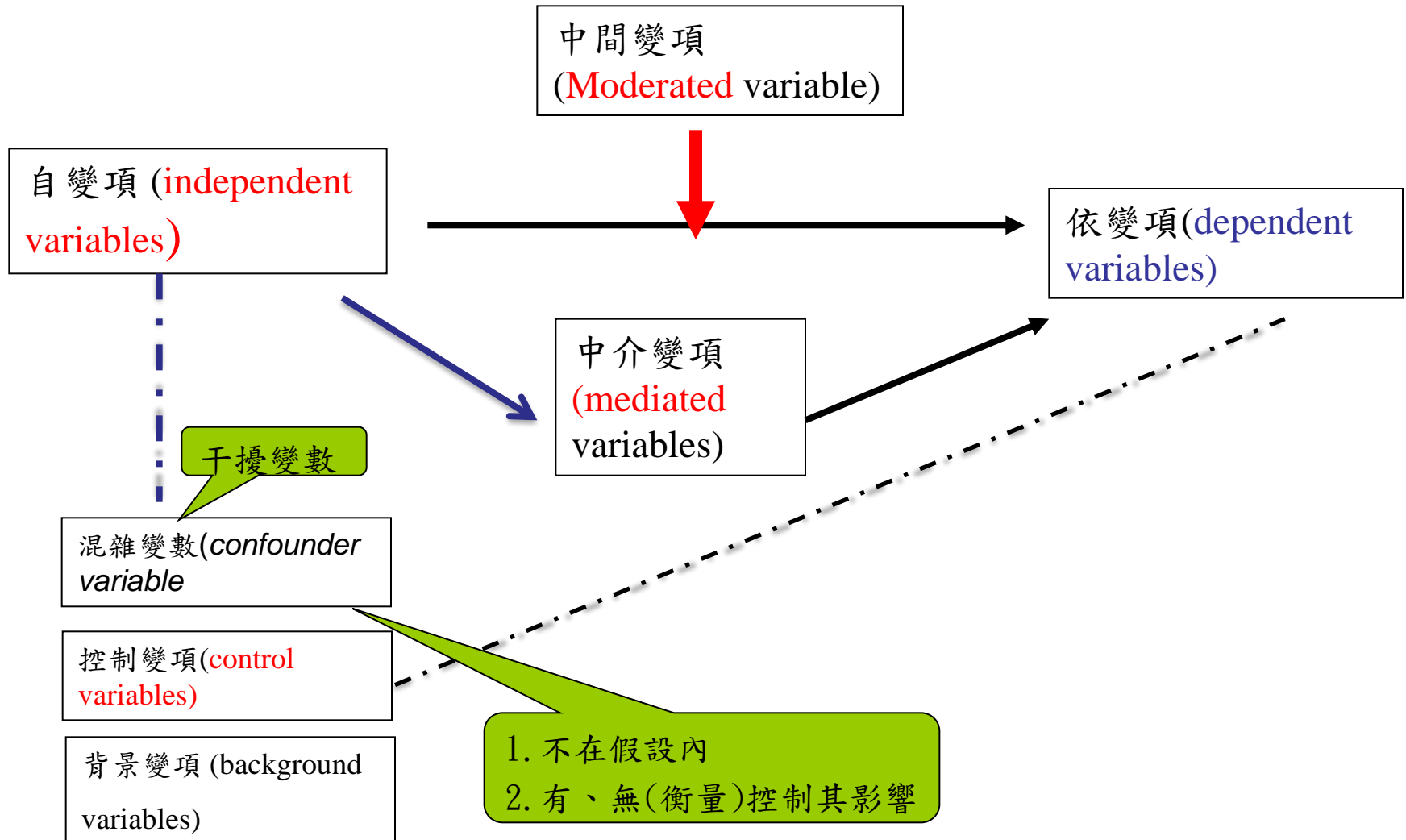


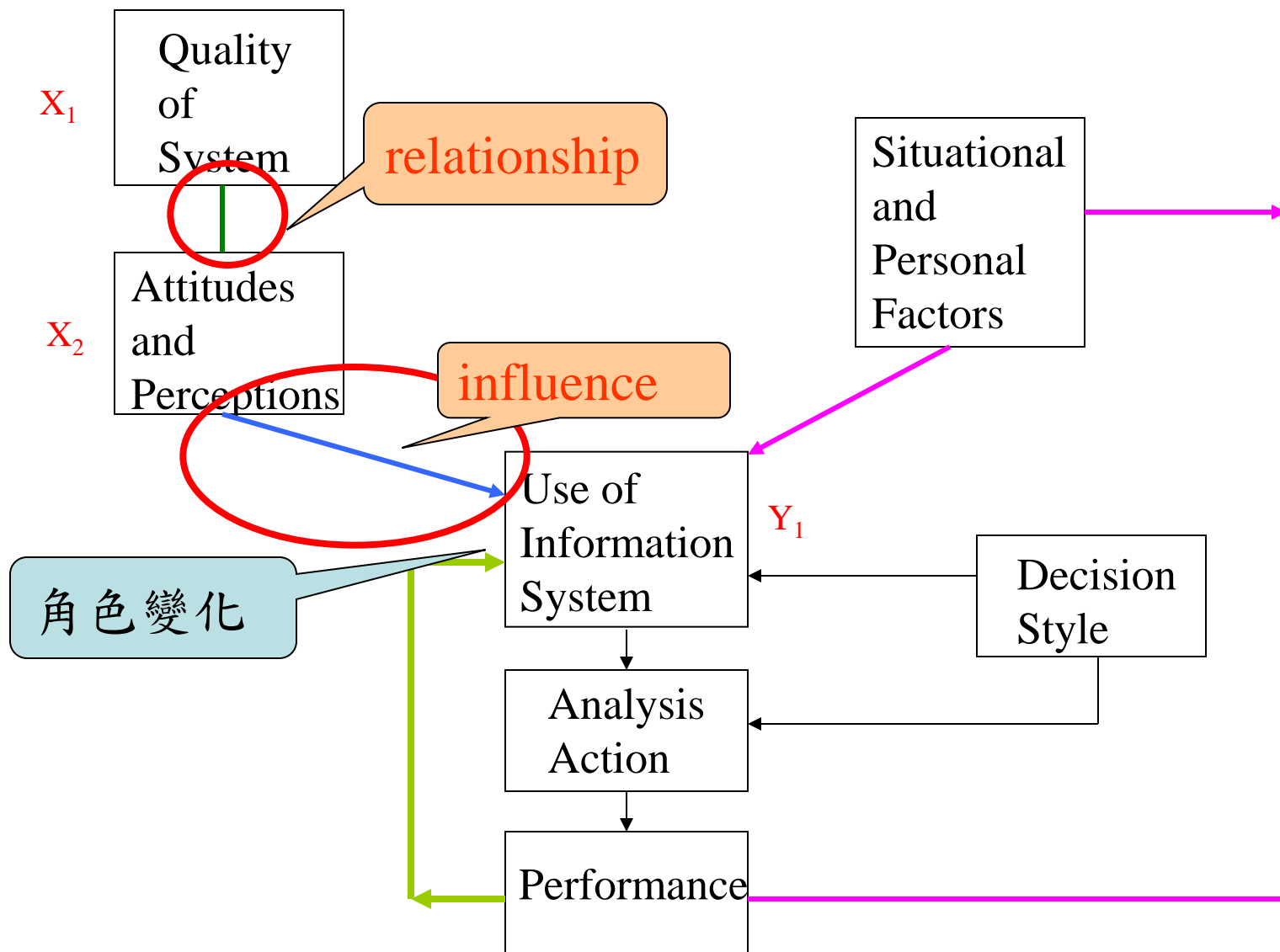
X?



Y?

# 研究的各種變數項





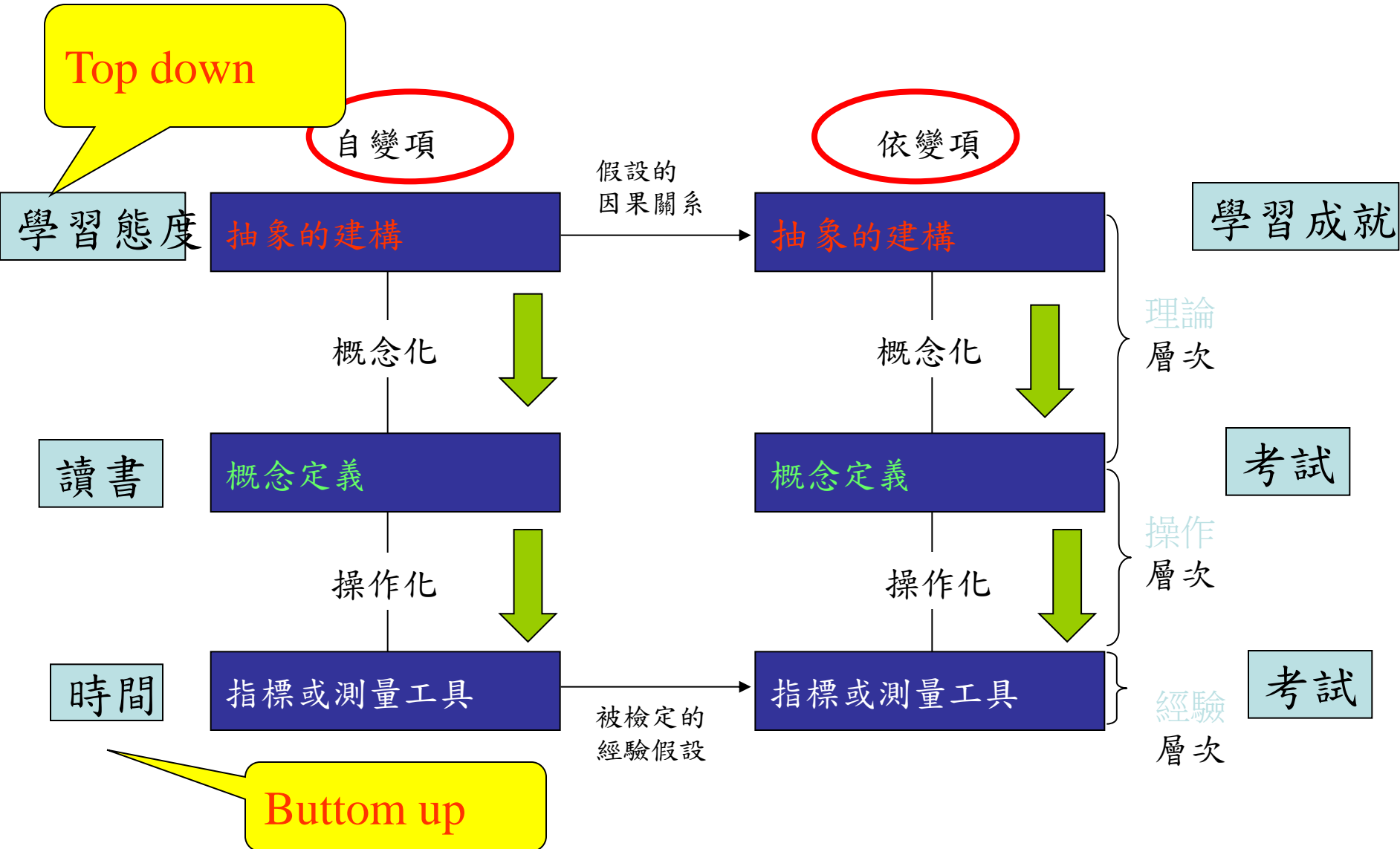
# 操作性定義 operational definition

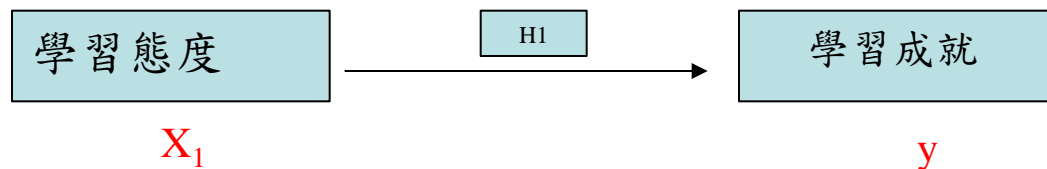
- 研究者提出研究假設後，須對研究變項或名詞提出一種可以測量、量化、具體、可重複試驗的基本說明與解釋，亦即將抽象的概念具體化

Variables—價格

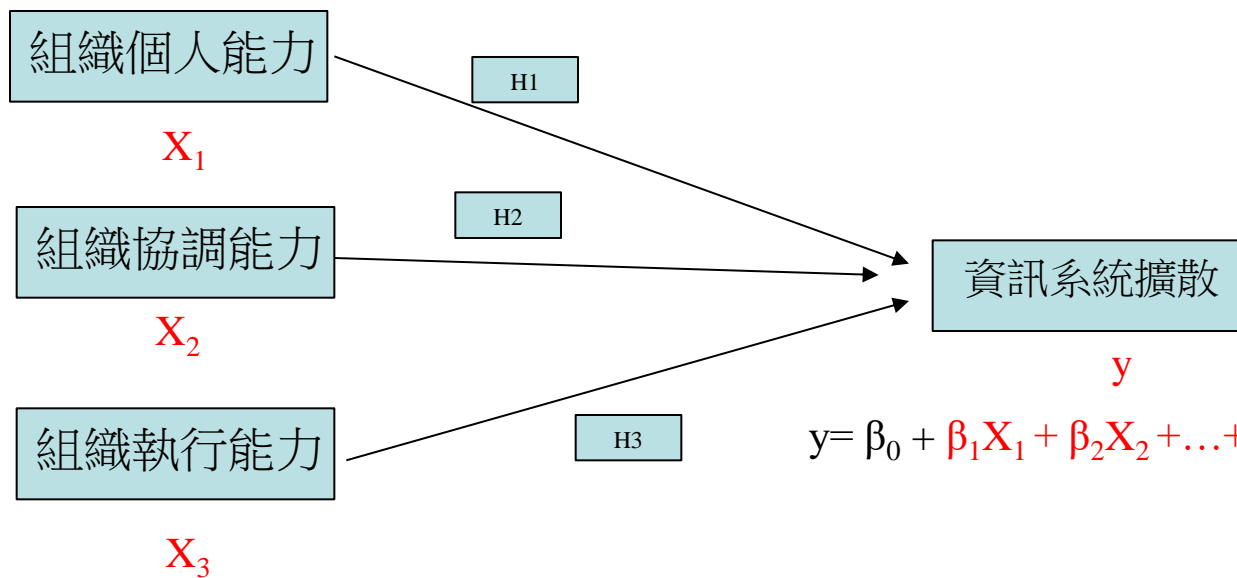
測量方法

# 從抽象建構到具體的測量工具

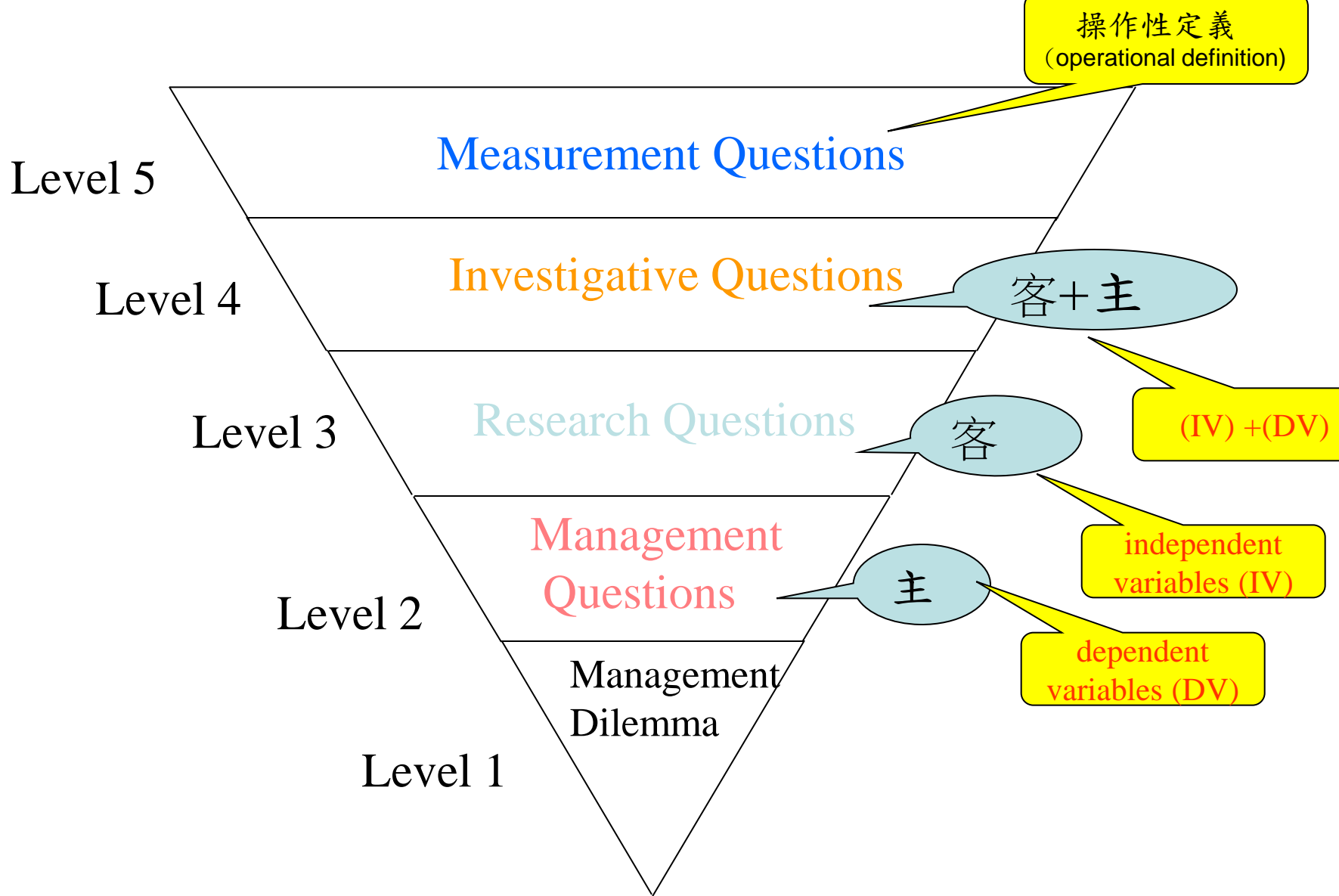




$$y = \beta_0 + \beta_1 X_1 + \varepsilon$$



$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i + \varepsilon$$

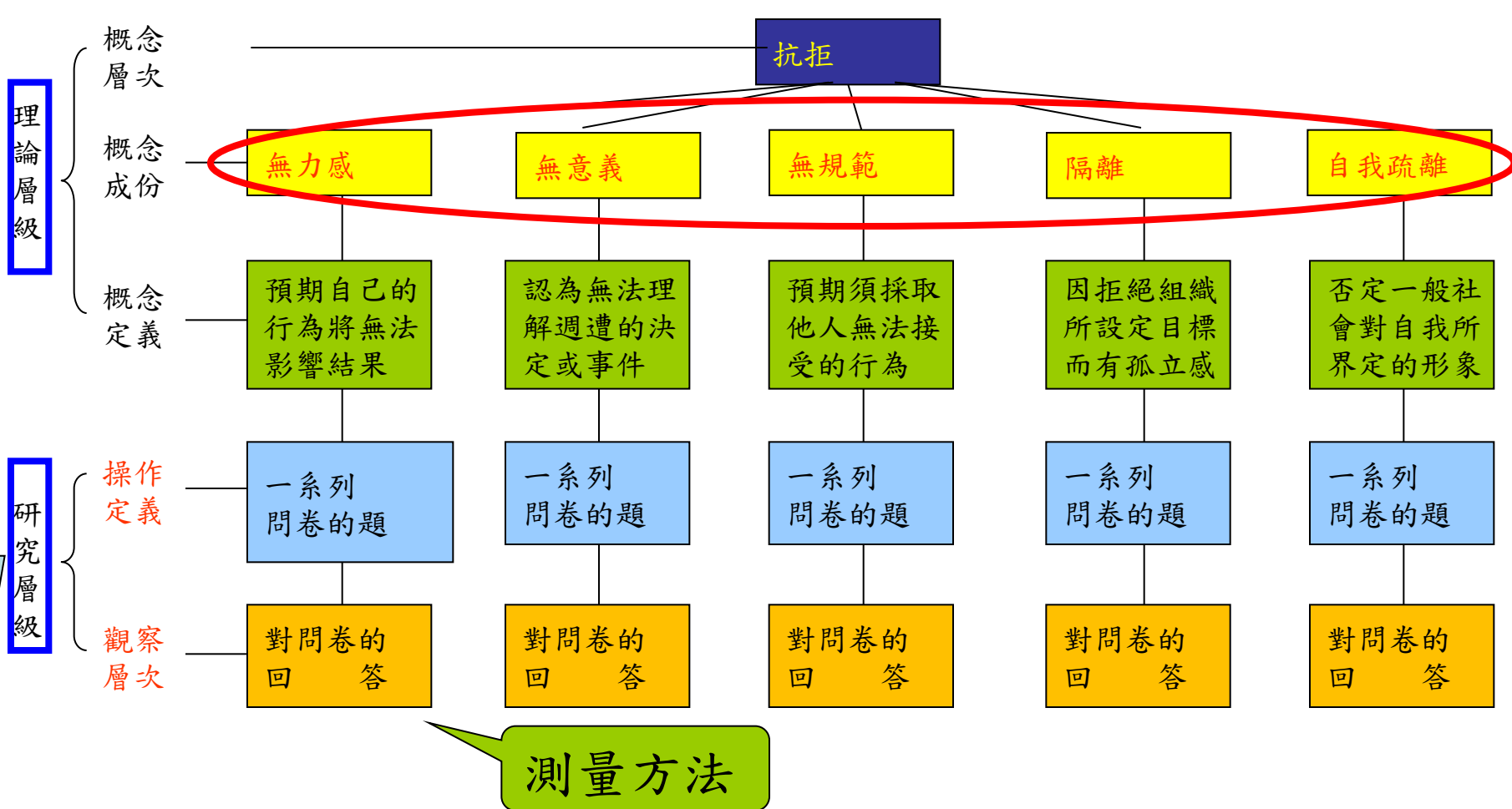


Management-Research Question Hierarchy



# Factor , latent , vs variable

## 由概念轉變成觀察的層級 使用者抗拒的研究



# 概念性定義

## conceptual definition

- 依照概念上或假設上的標準來界定研究變項或重要名詞意義，以文字界定文字，用一個概念界定另一概念，並非根據可觀察或可操弄的特徵來界定概念

Variables, Factors—  
服務品質, 喜好

# Same mean using different norm

- Factor
- Construct
- Latent

# Basic Concept

- Dimension

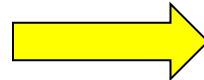
➤ Second order

- factor



Axial coding

- Variable

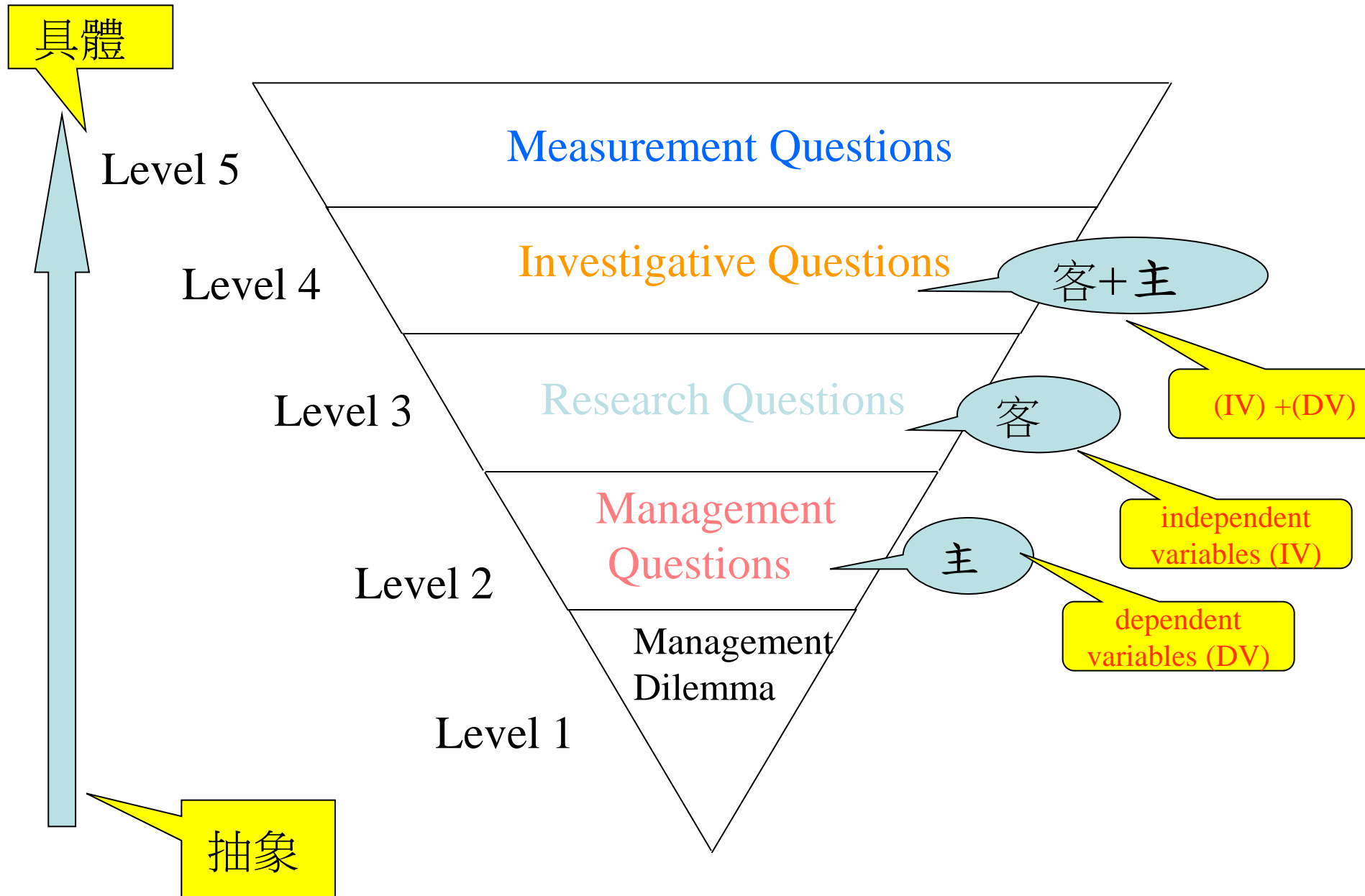


➤ Axial coding

➤ Open coding

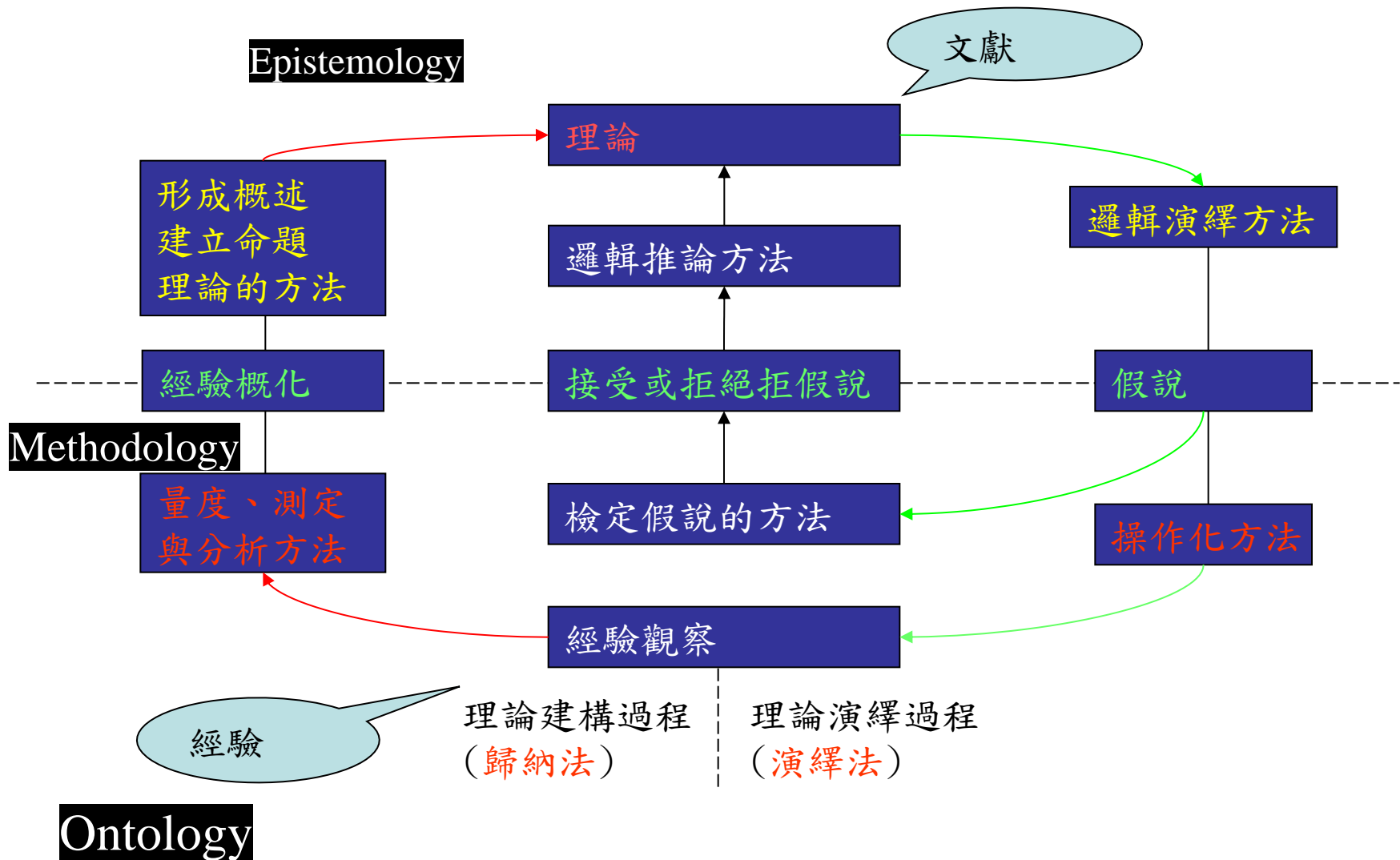
量化(數字)

質化(文字)



Management-Research Question Hierarchy

# 研究的邏輯模型



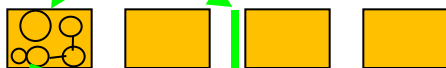
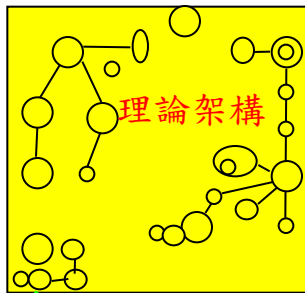
# 演繹法(induction)與歸納法(deduction)

紅龜模型

演繹法



袖珍屋minihouse888



中距理論

假設檢定

假設經驗通則

經驗的社會實相

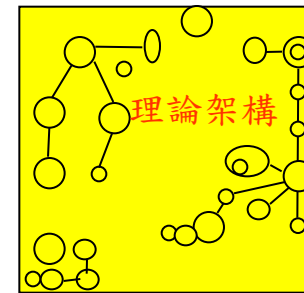
Hold on new specific instance

Epistemology



歸納法

General rules or hypothesis



Methodology

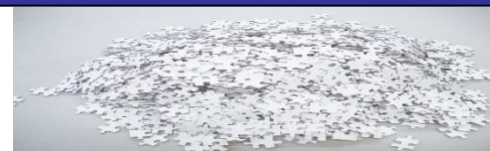
拼圖

根基的理論

概念形式經驗通則

經驗的社會實相

Ontology



# IT Workforce Trends: Implications for Curriculum and Hiring

Given the panel reports on IT workforce from AMCIS, please carefully re-check yourself (your staffs) what capabilities you (they) possess/not possess now? If not possess, how to improve them?



- T-Shaped people vs I-Shaped person

- Career path

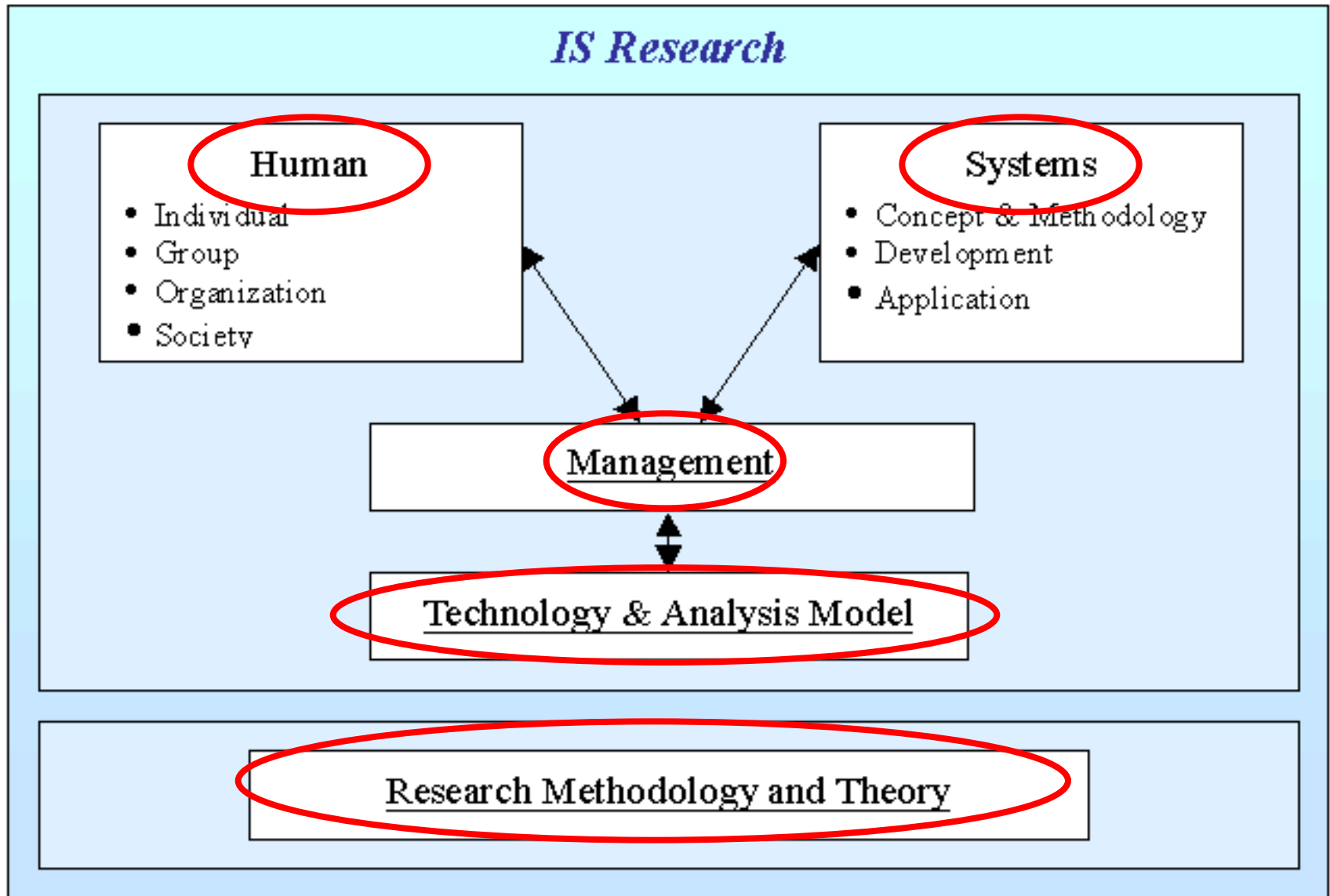
- Entry-level vs mid-level

- Rotating, Internship experience

# 資管研究的生態調查 (梁定澎教授)

- 針對過去資管國外主要期刊的分類整理，共調查3841國外期刊論文
- 調查期刊包括：MIS Quarterly, JMIS, ISR, CACM, MS, DS, DSS, I&M共8種

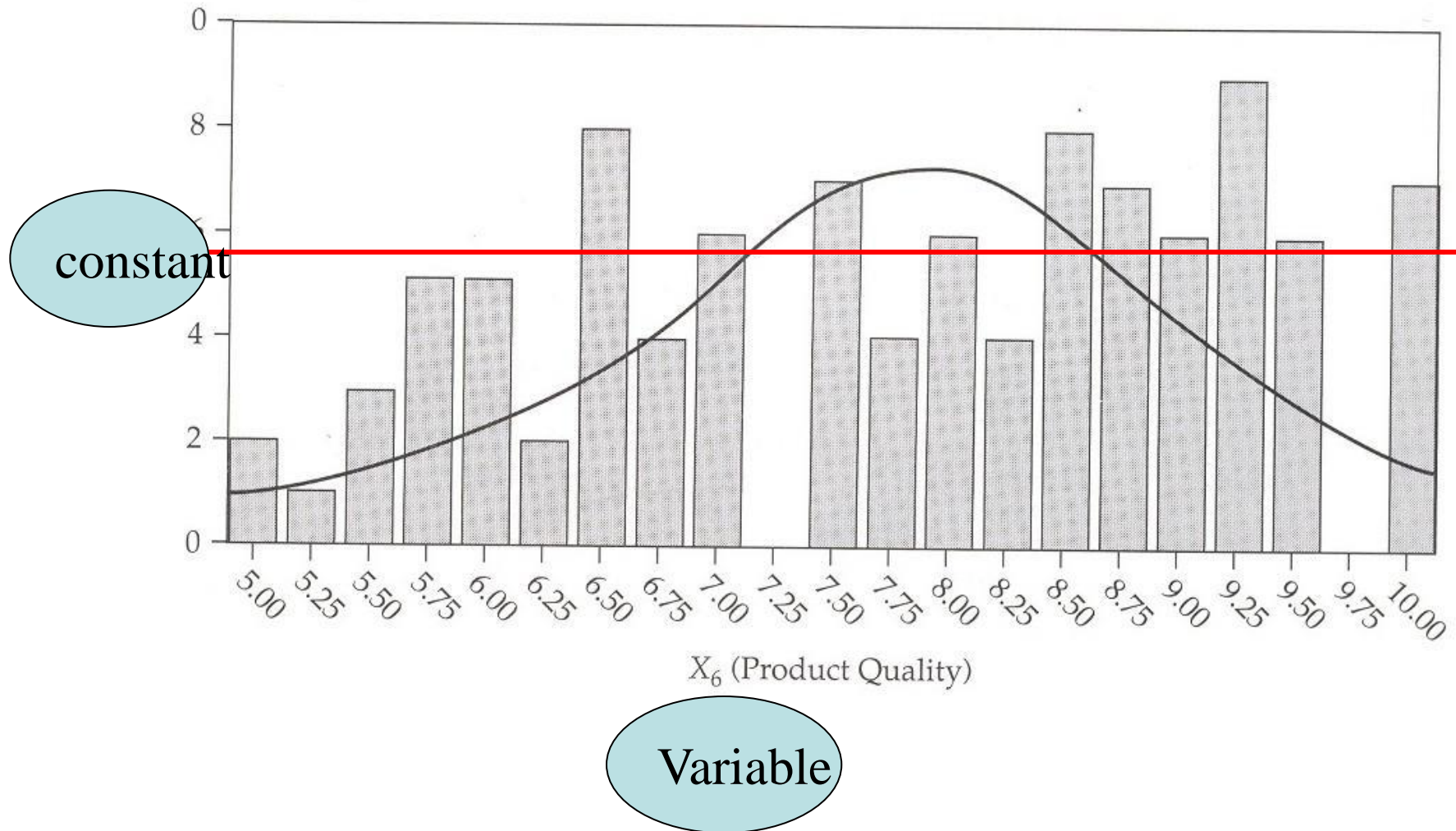
# Classification Scheme



# Distribution of Research Topics

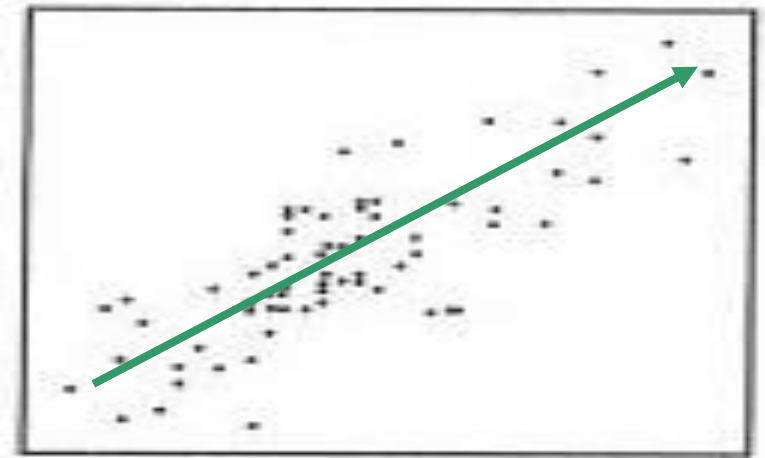
	Human		System		Technology & Analysis Model		Management		Research Methodology and Theory	
	Paper counts	%	Paper counts	%	Paper counts	%	Paper counts	%	Paper counts	%
1980~1984	85	18.0%	231	49.0%	38	8.1%	65	13.8%	52	11.0%
1985~1991	398	17.2%	1027	44.4%	262	11.3%	414	17.9%	212	9.2%
1992~1998	740	20.9%	1358	38.4%	467	13.2%	595	16.8%	378	10.7%
1999~2001	531	26.6%	670	33.6%	283	14.2%	327	16.4%	186	9.3%

# Univariate Distribution



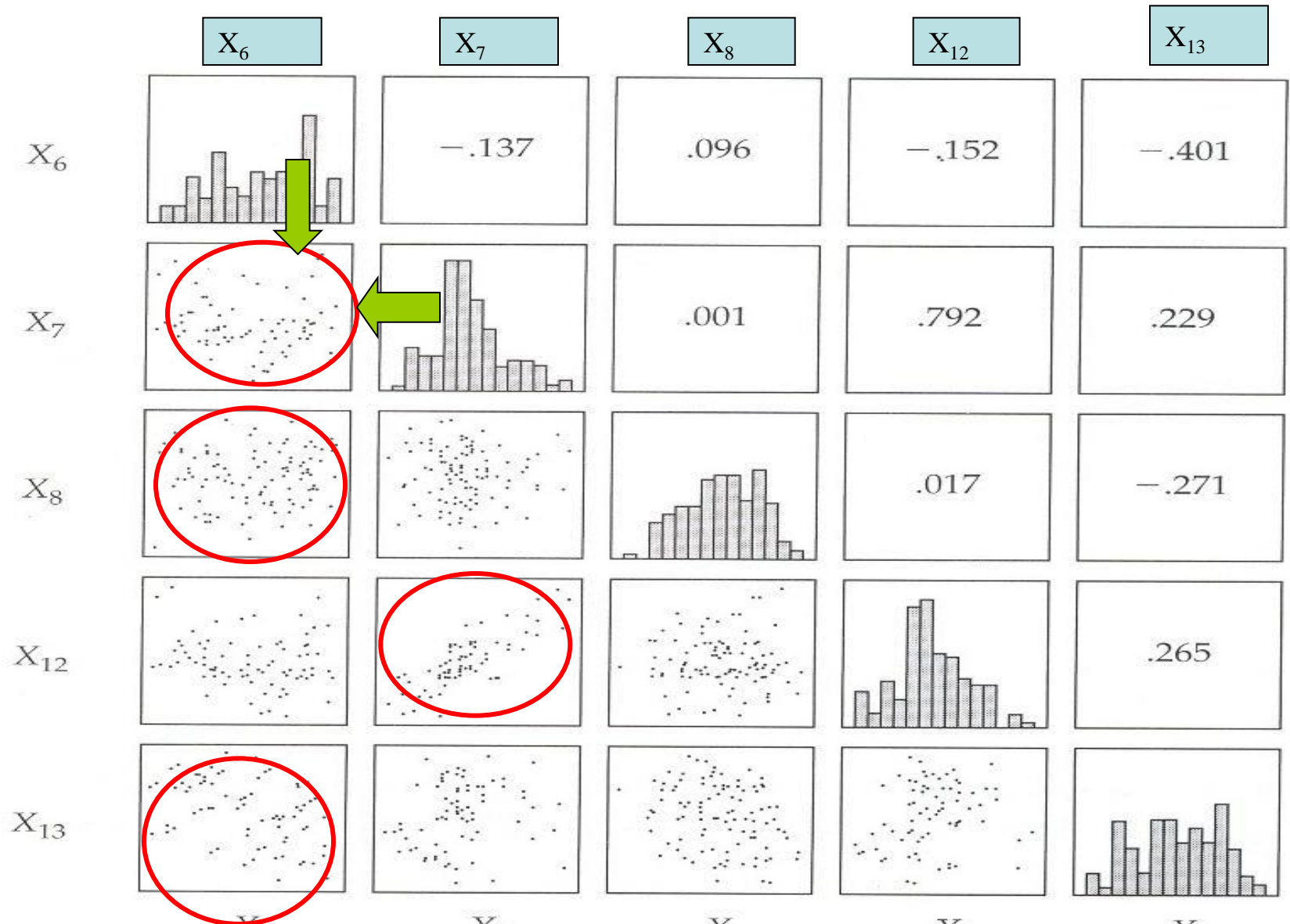
- $(X_7, X_{12}) = (1, 2)$
- $(X_7, X_{12}) = (2, 3)$
- $(X_7, X_{12}) = (3, 2)$
- $(X_7, X_{12}) = (3, 5)$
- $(X_7, X_{12}) = (1, 5)$
- $(X_7, X_{12}) = (4, 2)$
- $(X_7, X_{12}) = (3, 6)$
- .....
- .....

$X_7$



$X_{12}$

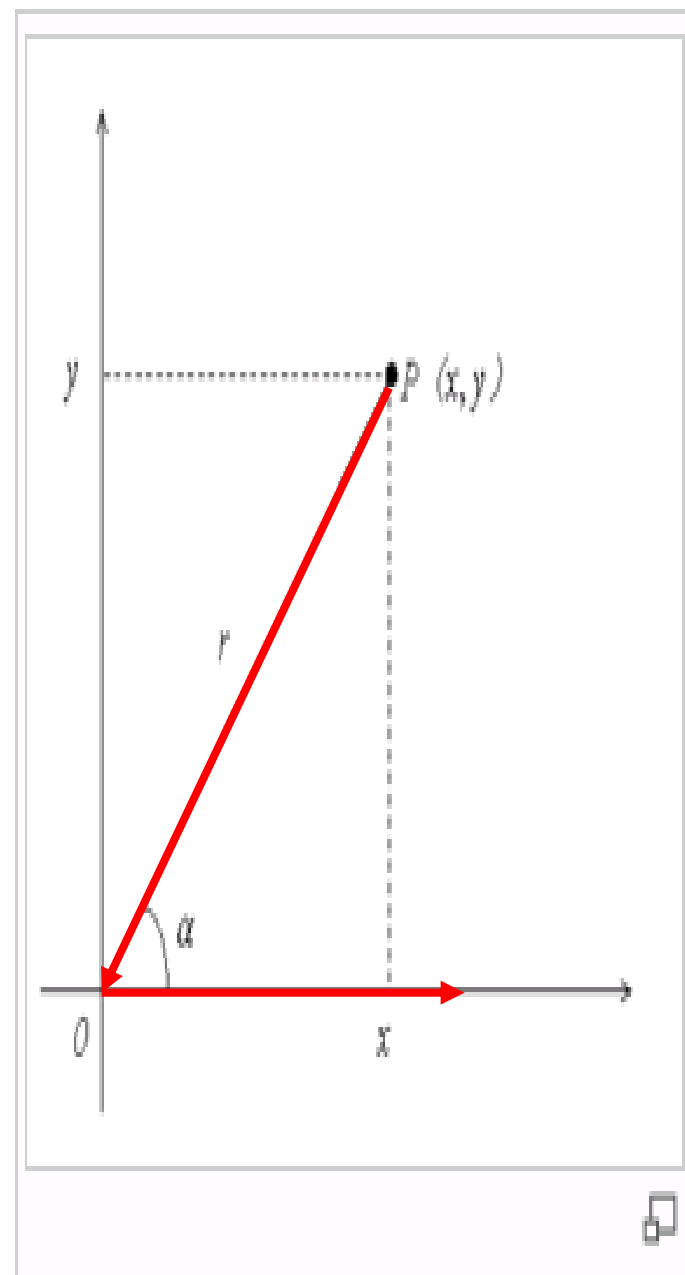
# Bivariate Profiling of Relationship between variables





$\alpha$  是平面直角坐標系  $xOy$  中的一個象限角， $P(x, y)$  是角的終邊上一點，  
 $r = \sqrt{x^2 + y^2} > 0$  是  $P$  到原點  $O$  的距離，則  $\alpha$  的六個三角函數定義為：

函數名	定義	函數名	定義
正弦	$\sin \alpha = \frac{y}{r}$	餘弦	$\cos \alpha = \frac{x}{r}$
正切	$\tan \alpha = \frac{y}{x}$	餘切	$\cot \alpha = \frac{x}{y}$
正割	$\sec \alpha = \frac{r}{x}$	餘割	$\csc \alpha = \frac{r}{y}$



直角三角形中

[編輯]