

# TRANSFORMATIVE TEACHING AND LEARNING

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UNIVERSITY

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Oakland University in Rochester, MI



University  
of Windsor

## Using Threshold Concepts as a Means for Transformative Teaching: Experiences from an Undergraduate IS Course

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# Agenda

- Introducing Threshold Concepts at our school
- Need for Threshold Concepts in Info. Systems
- Searching for Threshold Concepts
- Implementation
- Conclusions



# Introduction of Threshold Concepts

- October 15, 2015 (Teaching Enhancement Workshop on Threshold Concepts)
  - Dr. Julie Timmermans from University of Waterloo, Michael Potter, CTL Lorie Stolarchuk, Allyson Skene and Erika Kustra, CTL
- November 8, 2015 (Threshold Concepts in Required Courses)
  - Dr. Maureen Gowing

# Need for Threshold Concepts in IS

## ➤ What is the appropriate course title?

- Management Information Systems
- Managing Information Systems
- Business Information Systems
- Information Systems Management
- IT and Organizations
- IT, People and Organization
- Information Technology in Business





# What do students say?

- *I hope to learn some programming because there are lot of jobs in this field.*
- *I hate coding. I hope I won't be bored in this class.*
- *Is it similar to Organization Behavior (OB) class?*
- *Do you teach Excel? My friends got jobs because of Excel and Access.*
- *Why is it not called Information Technology class?*
- *Do I need strong math background to excel in this class? I am kind of worried because I am not good at math and computer.*



# Need for Threshold Concepts in IS

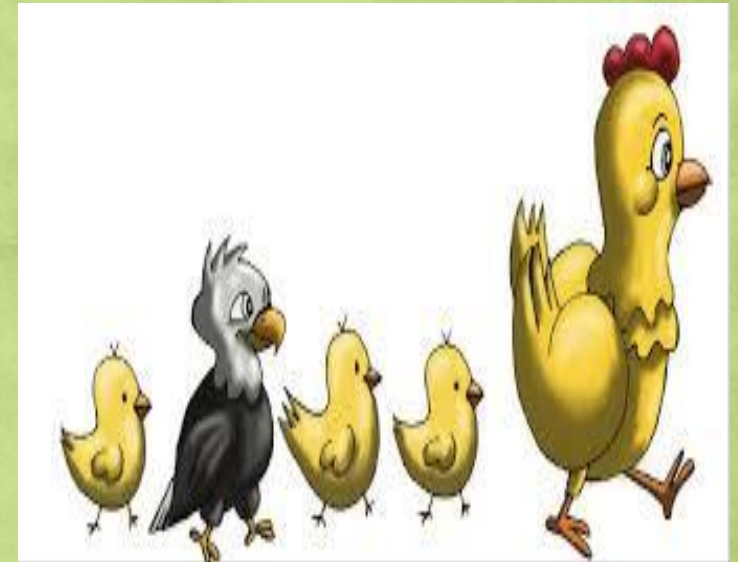
# Systems

Enterprise Cloud-Computing Behavior  
Media Facebook Security Database  
Privacy Programming Big Database  
Excel Social Information Value-chain  
Data Analytics Encryption  
Strategy Virus  
Porter's-5-Forces Google Source  
Open Technology People  
Amazon Network-Effects  
Knowledge  
Organization



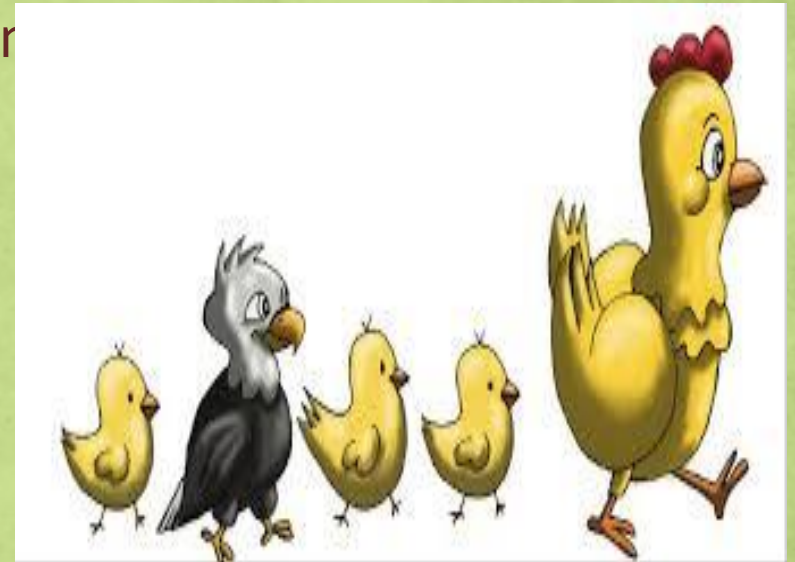
# Need for Threshold Concepts in IS

- Identity crisis in Information Systems discipline
  - Benbasat, I., & Zmud, R. W. (2003). The identity crisis within the IS discipline: Defining and communicating the discipline's core properties. *MIS quarterly*, 183-194.
    - ✓ *Research concern in IS*
    - ✓ *under-investigating phenomena intimately associated with IT-based systems*
    - ✓ *and over-investigating phenomena distantly associated with IT-based systems*



# Need for Threshold Concepts in IS

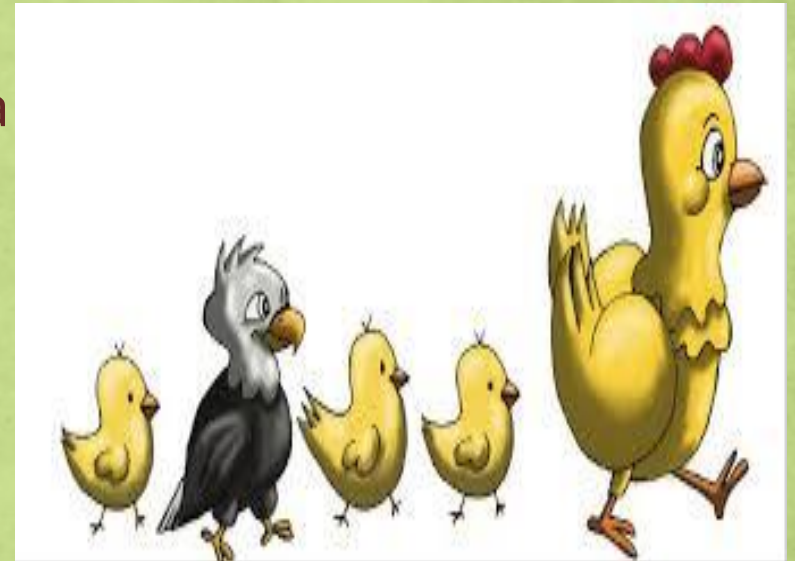
- Identity crisis in Information Systems discipline
  - Agarwal, R., & Lucas Jr, H. C. (2005). The information systems identity crisis: Focusing on high-visibility and high-impact research. *MIS quarterly*, 381-398.
    - ✓ *Will lead to micro focus*
    - ✓ *Potentially dangerous for the field*
    - ✓ *Elimination of IS from academic programs*
    - ✓ *Propose alternative heuristics*
    - ✓ *Emphasize transformational aspect of IT (Macro focus)*
    - ✓ *With deep knowledge of underlying artifact*





# Need for Threshold Concepts in IS

- Identity crisis in Information Systems discipline
  - Sidorova, A., Evangelopoulos, N., Valacich, J. S., & Ramakrishnan, T. (2008). Uncovering the intellectual core of the information systems discipline. *MIS Quarterly*, 467-482.
    - ✓ *IT and Organizations*
    - ✓ *IS Development*
    - ✓ *IT and Individuals*
    - ✓ *IT and Markets*
    - ✓ *IT and Groups*
    - ✓ *Conclusion: Relatively stable research identity*



# Need for Threshold Concepts in IS

- All papers are about IS research
  - The conclusion was that IT TRANSFORMS
    - ✓ Organization
    - ✓ Individuals
    - ✓ People and Society
- *How about TEACHING?*



# Searching for Threshold Concepts in IS

## Features of Threshold Concepts

- **Transformative** - Once understood, a threshold concept changes the way in which the student views the discipline
- Troublesome
- Irreversible
- Integrative
- Bounded
- Reconstitutive
- Discursive
- Liminal

# Searching for Threshold Concepts in IS

## Classical Hierarchy




- ✓ Data
- ✓ Information
- ✓ Knowledge
- ✓ Wisdom

*"Where is the Life we have lost in living?  
Where is the wisdom we have lost in knowledge?  
Where is the knowledge we have lost in information?"*  
T.S. Eliot (*The Rock*)



# Searching for Threshold Concepts in IS

## Levels of understanding of IS Concepts (Cope & Prosser, 2005)



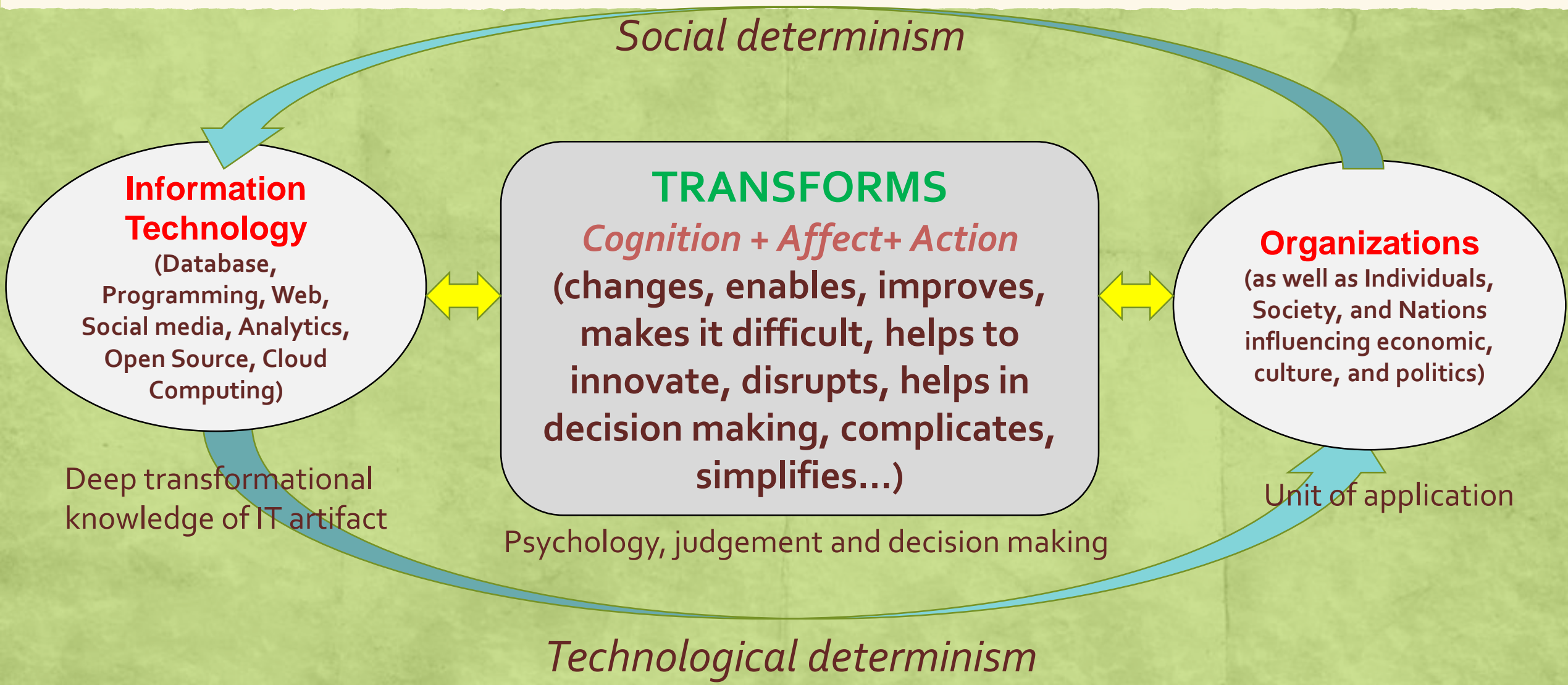
Level	Meaning
6	A number of communicating information systems within a single organisation
5	A computerised data manipulation system and people gathering data, disseminating information and communicating to support a single organisational function.
4	A computerised data manipulation system supporting many people within a single organisational function.
3	A data manipulation system supporting an individual within a single organisational function
2	A simple information retrieval system.
1	A personal search of a static information source

Eureka! The Threshold Concept in IS

**INFORMATION TECHNOLOGY**  
**TRANSFORMS**  
**ORGANIZATIONS.**



# The Threshold Concept in IS



# Implementation

## Winter 2016, 2 Sections

- Same text book as before *(Information Systems: A Manager's Guide to Harnessing Technology (Version: 3.0) by John Gallaugher eISBN: 978-1-4533-6657-8 Publisher: Flatworld Knowledge.*
- Same chapters covered as before
- Lecture method and focus changed
- Lab focus changed
- Learning objectives and assignments changed
- Evaluation emphasis changed



# Focus on IT (Transformational aspect)

- What is so TRANSFORMATIONAL about a particular technology?
- Dynamics of Open Source Software development
- Data analytics -> Visualization & architecture
- How does social media transform? Collaboration, peer production, network effects.

# Nature of Transformation

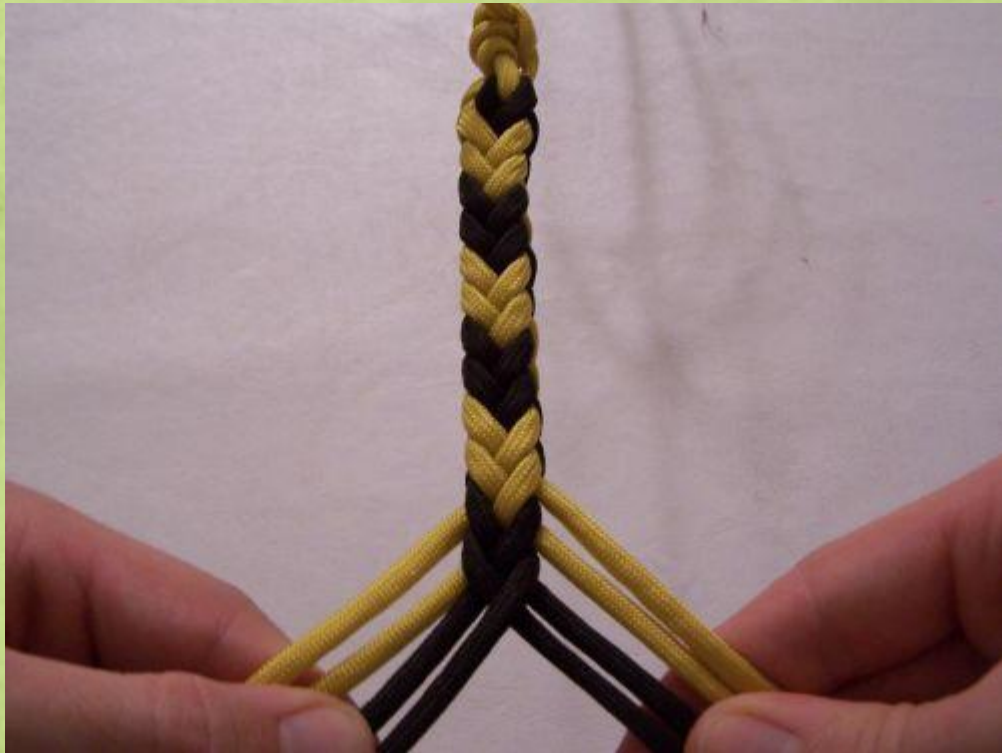
- Invention? Innovation?
- Disruption?
- Failure?
- Challenges? Privacy & security?
- Change management?
- Adoption/resistance?



# Unit of application

- Organization (small, medium, large)
- Individuals and society (demographics, culture)
- Nation (Culture, economy, politics, governance)

# Overarching pedagogical philosophy



*Weaving of  
Information Technologies,  
Organization,  
and People  
to bring about transformations.*



# Outcomes

- Lectures are better organized and integrated
- More leeway in creating assignments/tests (fewer MCQs)
- Consistent theme across all seemingly disparate chapters and lab exercises
- Synthesized resources (video, cases, data)
- Easy to frame and structure case studies
- Better student attendance and engagement
- Informal feedback (Positive)

# Key take-aways

- Threshold concept is not necessarily about content always
- Granularity, focus, and reinforcement are also critical
- In my case:
  - ✓ Threshold = Transformative = Integrated
  - ✓ Synthesis = Threshold ([Video](#))
- It is discipline specific ( Micro → Macro)



# References

- Cope, C. J., & Prosser, M. (2005). Identifying didactic knowledge: An empirical study of the educationally critical aspects of learning about information systems. *Higher Education*, 49(3), 345-372.
- Land, R., Smith, J., & Meyer, J. (Eds.). (2008) *Threshold concepts within the disciplines*. Rotterdam: Sense Publishers.
- Meyer, E., & Land, R. (2003). *Threshold concepts and troublesome knowledge: Linkages to ways of thinking and practising within the disciplines*. ETL Project, Occasional Report 4. Edinburgh: Universities of Edinburgh, Coventry and Durham. Retrieved from <http://www.etl.tla.ed.ac.uk/docs/ETLreport4.pdf>
- Meyer, E., & Land, R. (2005). *Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning*. *Higher Education*, 49, 373–388. Retrieved from <http://www.springerlink.com/content/q302w85n8217185k/fulltext.pdf>
- Meyer, J., & Land, R. (Eds.). (2006). *Overcoming barriers to student understanding: Threshold concepts and troublesome knowledge*. London and New York: Routledge.