Structures and Evolution of Digital Humanities:

An Empirical Research based on Correspondence Analysis and Co-word Analysis

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International Conference of Digital Archives and Digital Humanities, Taiwan
December 1-2, 2009
Outline

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Background

Although the application of computer to the humanities has lasted about 50 years (McCarty, 2002), it's still difficult to give a clear definition to digital humanities as it remains an emergent discipline and is continually changing, developing, and redefining itself.

Even the first issue of Digital Humanities Quarterly published in 2007 (Flanders, Piez, & Terras, 2007) had to differ to give a definition of digital humanities, and addressed their goal is to answer an alternative question, "How can we shape the digital humanities?"
Intellectual Map of Humanities Computing

Fig. 1 A rough intellectual map for humanities computing. (Courtesy W. McCarty and H. Short.)
Research Purpose

- Get a clear view of the structure and evolution of digital humanities research based on the methodology of *Scientometrics*.
- Contribute to the digital humanities community from the viewpoint of *Second Order* study for cognizing research directions in the future.
**Method (1)**

- **Correspondence analysis** is an exploratory technique to analyze multi-way tables containing some measures of correspondence between the rows and columns.
- This study adopts this technique for picturing association between keywords and years in the trend of digital humanities research.
**Method (2)**

- **Co-word analysis** reveals patterns and trends in a specific discipline by measuring association strengths of terms relevant publications produced in the area.
- This study adopts this method for visualizing the intellectual structure of digital humanities research into maps of the conceptual space of the fields.
- Time-series of those maps produce a trace of the change in the research fields.
Method (3)

1. Paper Titles
2. Split Titles
3. Pick up Keywords
4. Make Keywords-Year Matrix
5. Correspondence Analysis
6. Co-occurrence Matrix
7. Equivalence Coefficient Matrix
8. Correlation Matrix
9. Co-word Network

Mixed methods + Interpretation
Data Collection (2)

Source:
- 745 papers from
  - Digital Humanities Quarterly from 2007 to 2009.

Target:
- 125 highly frequented keywords extracted from their titles.
Frequency of "humanities computing" and "digital humanities"
Results (1)

- Correspondence Analysis -
Correspondence Analysis (2)
Results (2)

- Co-word Analysis -
2005

humanities computing

digital humanities
Degree Centrality of "humanities computing" and "digital humanities"
Interpretation

- The frequency of “humanities computing” decreased in the past five years, while the frequency of “digital humanities” increased continuously.
- These phenomena suggested that "humanities computing" became less satisfying as a disciplinary representative words, and have been gradually replaced by "digital humanities."
- It is understandable that the degree centrality of “digital humanities” is decreased in the past five years. Interestingly, the degree centrality of “digital humanities” has not been very high all times.
- It is implied from the result that the keyword “digital humanities” always occurs with low frequency words, which represent recently emerging topics.
Digital humanities as a gateway for emerging research topics

- The Inhibition of Geographical Information in Digital Humanities Scholarship
- Why Take Games Seriously? Digital Humanities and the Study of Games
- Open Source and Digital Humanities
- TM4DH (Topic Maps for Digital Humanities): Examples and an Open Source Toolkit
- An Effective Cyber Infrastructure for Digital Humanities
- Killer Applications in Digital Humanities
- An Interdisciplinary Perspective on Building Learning Communities Within the Digital Humanities
- Aspects of Sustainability in Digital Humanities
- Digital Humanities ‘Readership’ and the Public Knowledge Project
- The Master Builders: LAIRAH Research on Good Practice in the Construction of Digital Humanities Projects
Discussion

- Full-text analysis vs. Keywords analysis
- Combining keywords vs. Splitting keywords
- Synonymous term vs. different term
- Inductive approach vs. Deductive approach
Conclusion

- The empirical and visual results from correspondence analysis and co-word analysis assist our understanding of the structure and development direction of digital humanities.

- The disciplinary representative nomenclature is converging from “humanities computing” to “digital humanities” in the past five years.

- It is implied that the keyword “digital humanities” has been used as a gateway for introducing new research targets in the study area.