

*Technology, personalisation  
and librarians:  
research and practice*

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# Overview

- *Individuals have very different information needs, and process information in different ways*
- We can leverage these differences to provide personalised information services
- *We need greater understanding of users to provide better services*
- To do this we need greater interplay between LIS “researchers” and “practitioners”

## Information needs

Solve a problem

Succeed at university

Become an evidence-based / *creative*

citizen

lawyer

engineer

etc.

## Information seeking tools

Web search engines

Scholarly search tools

Exploratory search/browse

Faceted searching

Search agents

etc.



## Information resources

Books

Journals

Evidence-summaries

Reviews of research

Web sites

Tacit knowledge

etc.

## Our role is to...

... figure out the mix of these factors that best suits each individual user



## Information needs

Solve a problem

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etc.

## We need effective user models

= valid and reliable understanding of users' information needs, behaviours and the effectiveness of these behaviours



**Models of people – their  
information needs and  
behaviour**

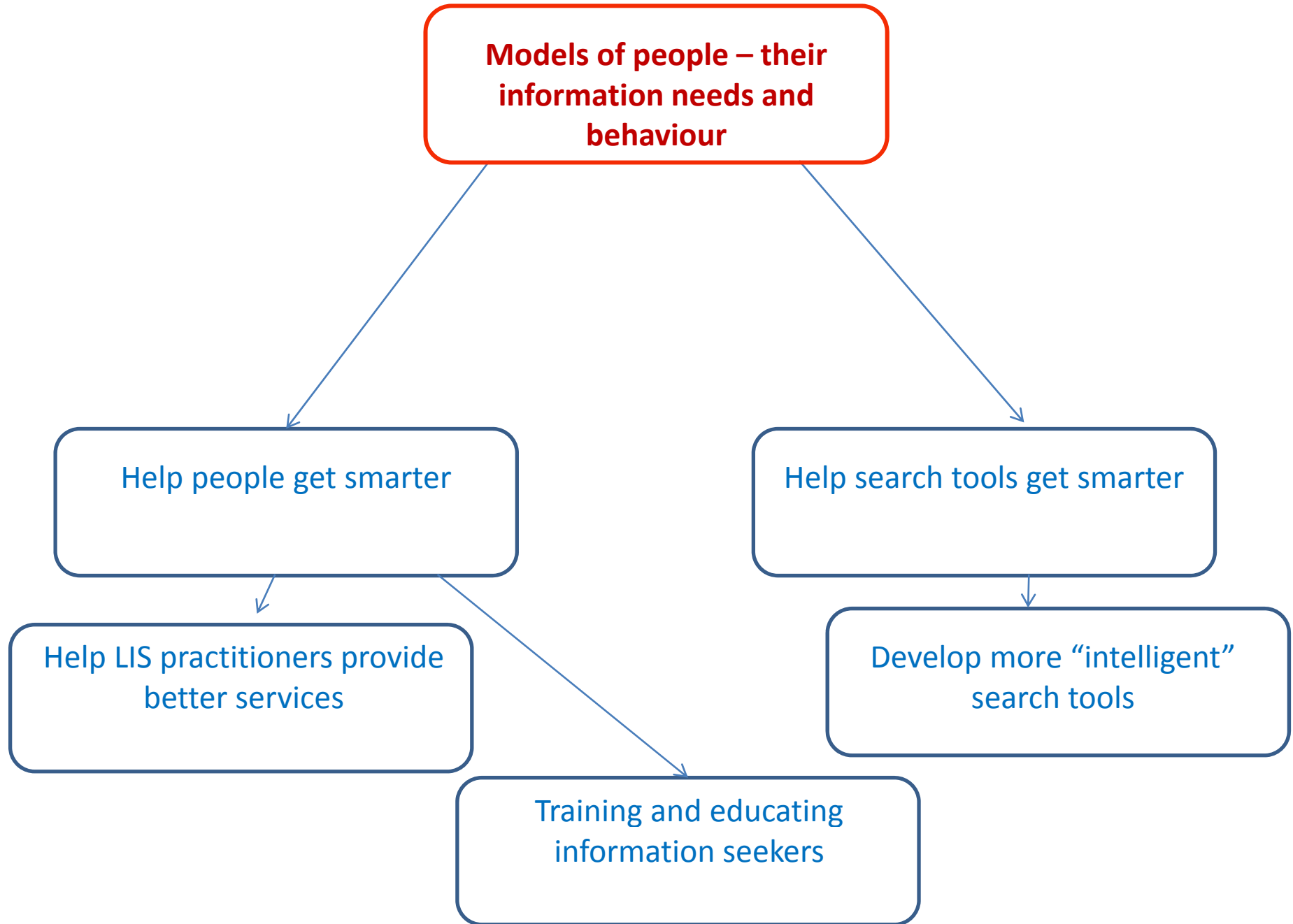
Help people get smarter

Help search tools get smarter

Help LIS practitioners provide  
better services

Develop more “intelligent”  
search tools

Training and educating  
information seekers



**Models of people – their  
information needs and  
behaviour**

- Much of my recent work has explored ways in which individuals differ in their information needs and behaviour...

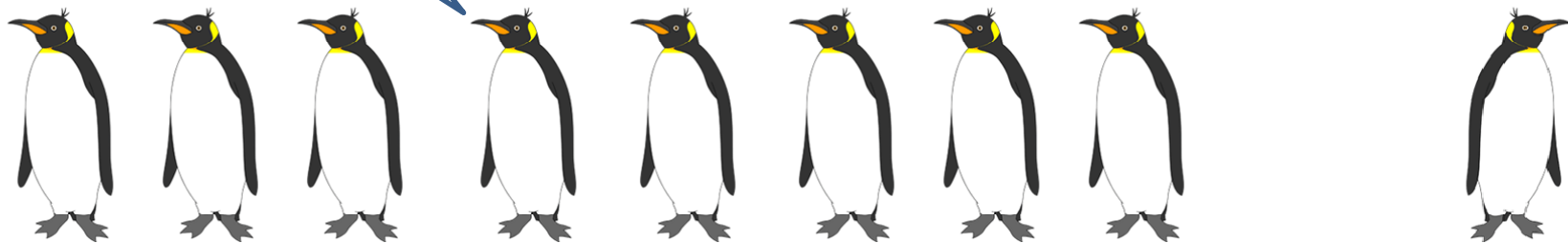
**Models of people – their  
information needs and  
behaviour**

Experience tells us that

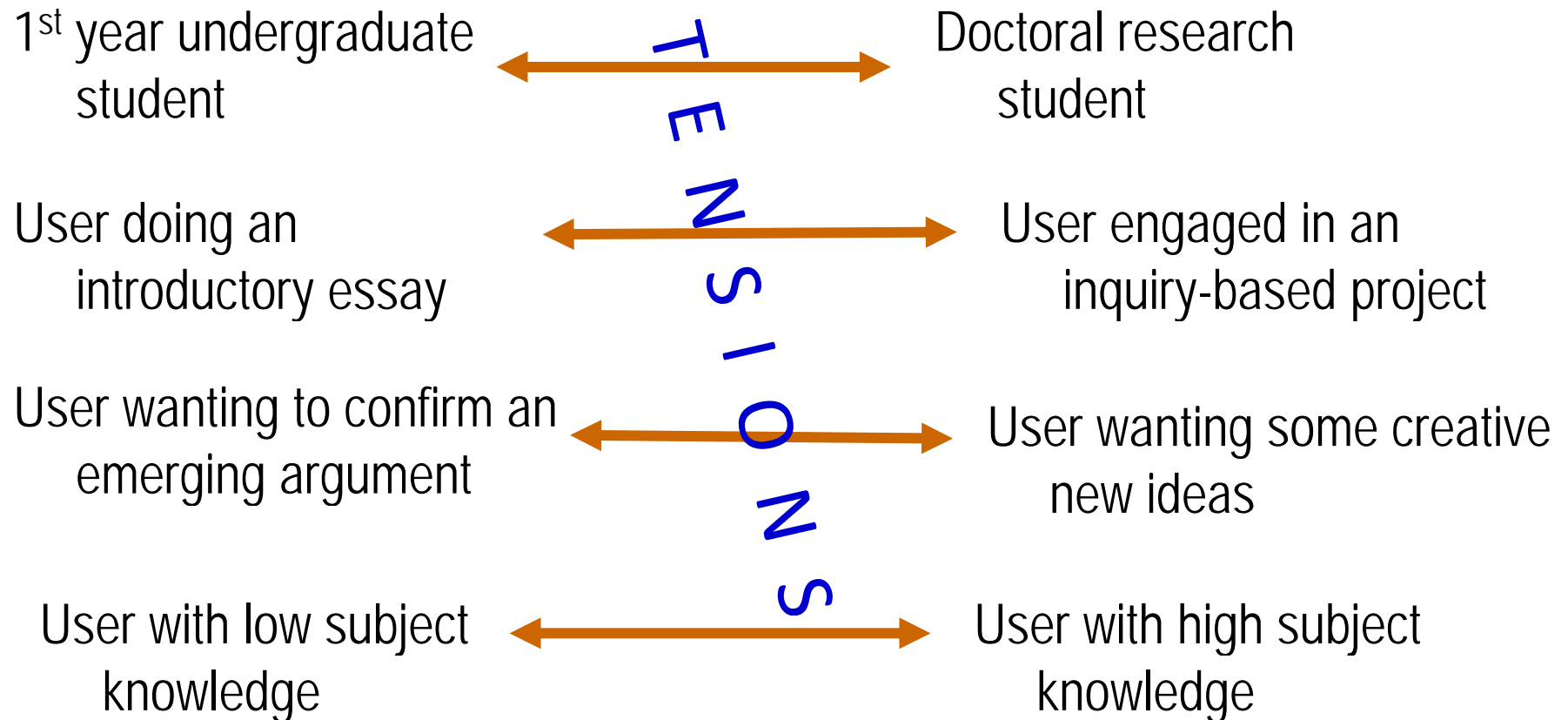
In some ways we're all the same...

... but in others each of us is unique

He's always got  
to be different...

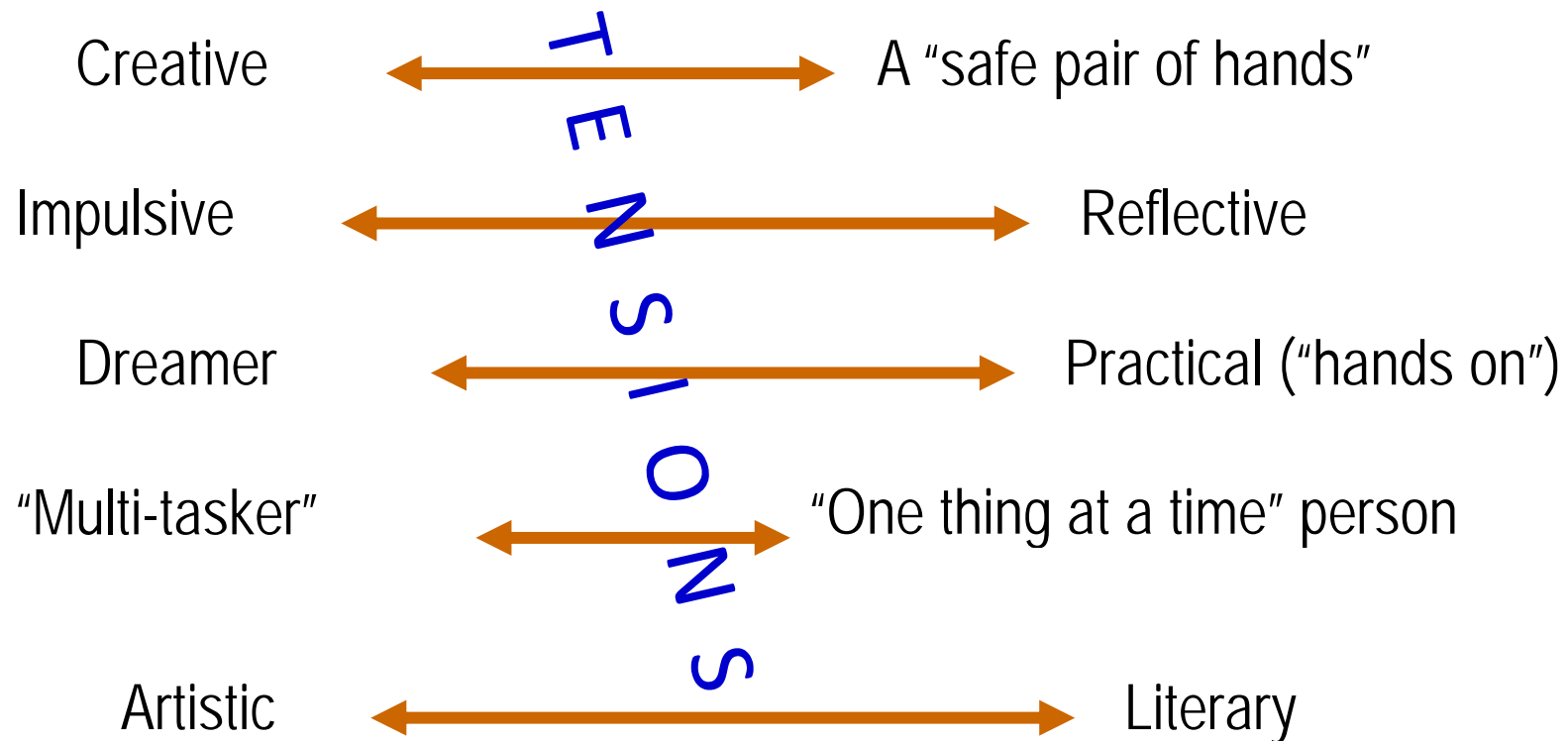


# Different tasks and needs





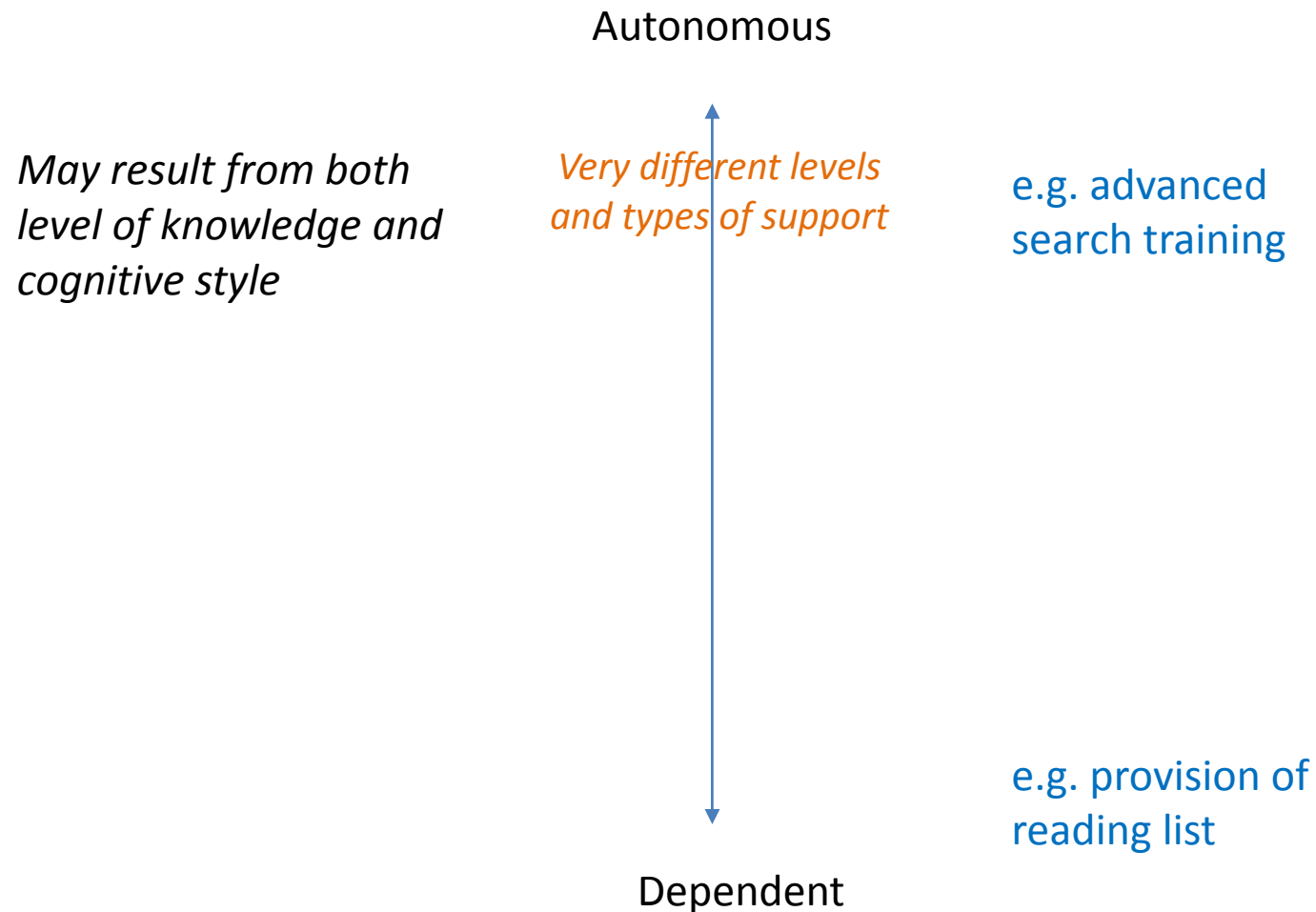
# Different styles of thinking & problem-solving



**Models of people – their  
information needs and  
behaviour**

- Much of my recent work has explored ways in which individuals differ in their information needs and behaviour...
- I've been focusing particularly on 2 dimensions of human individual difference...

# Different styles of thinking & problem-solving



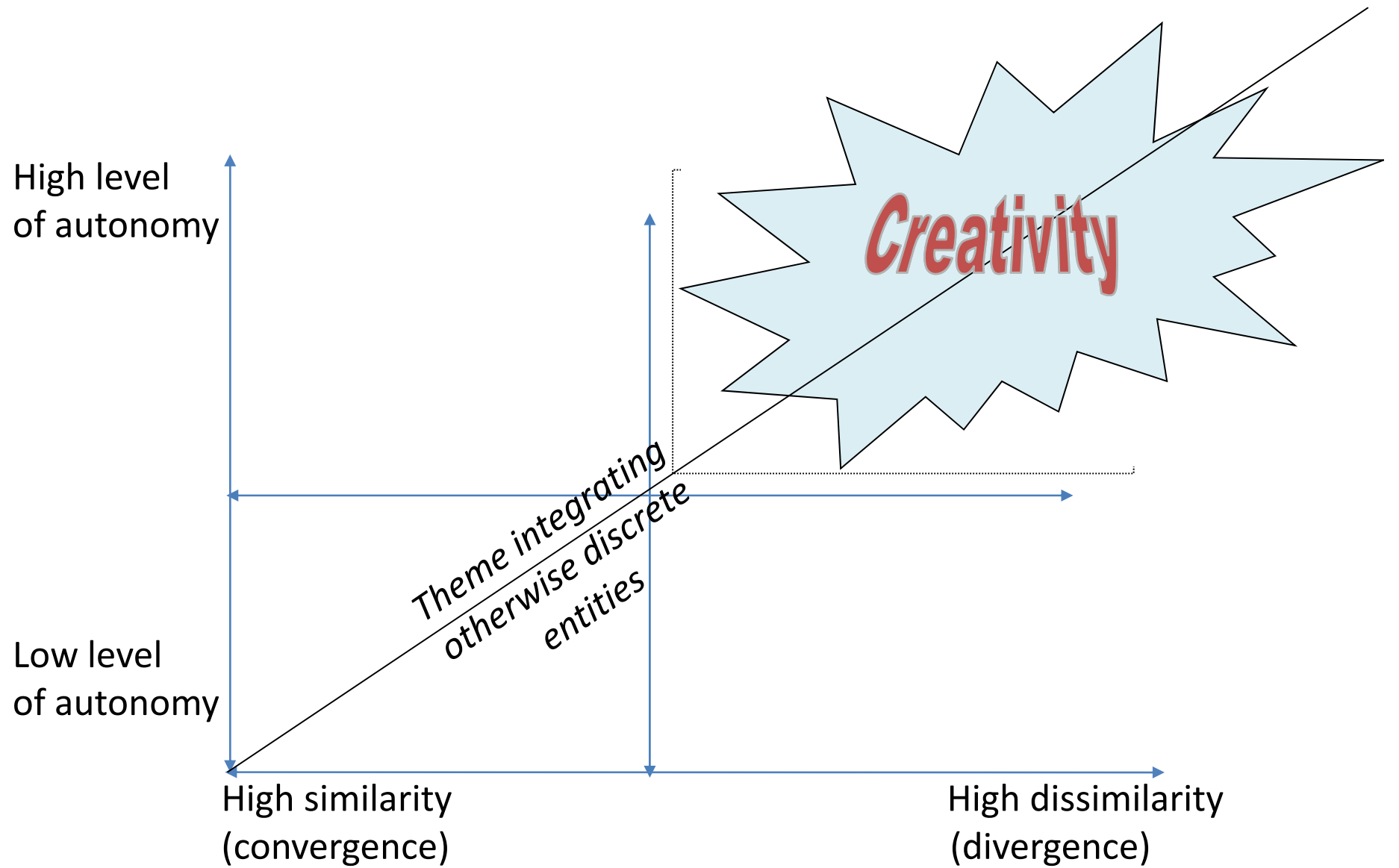
# Different styles of thinking & problem-solving



The extreme right is often associated with the sort of “divergent thinking” often equated with “creativity”

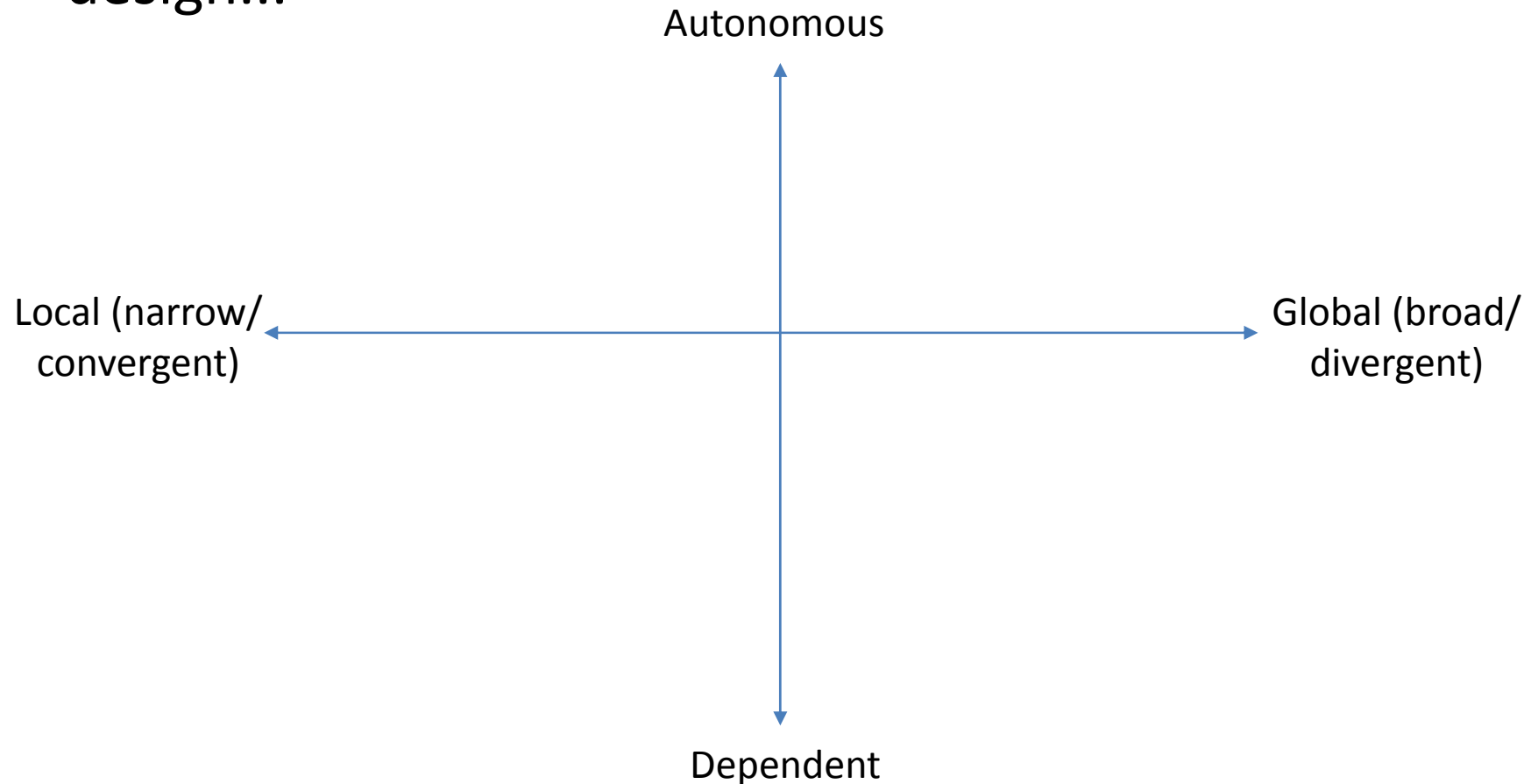
# Divergent thinking (creativity)

- “Creativity” represents seeing some new relationship (integrating theme) between previously disconnected phenomena
- The more divergent the phenomena, and the greater the autonomy with which the relationship is generated, the greater is the level of creativity



# Different styles of thinking & problem-solving

- We can map these dimensions onto information system design...



# Different styles of thinking & problem-solving

- **PATHS** (*Personalised Access To cultural Heritage Spaces*) is a 3-year EU funded project
  - University of Sheffield & Universidad del Pais Vasco
  - i-sieve Technologies (Greece) & Asplan Viak Internet (Norway)
  - MDR Partners (UK)
    - Works with libraries, archives, museums, information providers, and other cultural heritage organisations
  - Alinari (Italy)
    - A company working in photographic publishing, preserving, cataloguing and archiving, images and communication



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# Europeana

<http://www.europeana.eu>

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The project is designing and testing a system for providing personalised access to Europeana...



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# Europeana

<http://www.europeana.eu>

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Europe's Digital Library, Museum and Archive  
1,500 contributing institutions  
Over 15 million items



# PATHS

- Navigation (search and exploration) through a collection via metaphor of “pathways”

# PATHS

- Paths can be based around any theme
  - artist and media (“paintings by Picasso”)
  - historic periods (“the Cold War”)
  - places (“Venice”)
  - famous people (“Muhammed Ali”)
  - or any other topic (e.g. “Europe”, “food”)
- They provide entry points to the collection
  - can be followed in their entirety or left at any point

# PATHS

- They can be linear or branching, didactic or exploratory
- Users can jump on or off them at any point, and move flexibly between search, browse and path following/creation

# PATHS

- Paths are storable and editable, with their own metadata
- Users can find and use paths created by others (e.g. librarians, teachers, curators) and/or create their own

# Users

Heritage		Education		General		Professional (non-heritage)	
Producers	Consumers	Producers	Consumers	Producers	Consumers	Producers	Consumers
<ul style="list-style-type: none"> <li>• <b>Curator</b></li> <li>• <b>Librarian / archivist</b></li> <li>• <b>Education officer</b></li> <li>• Outreach</li> <li>• Marketing / PR</li> </ul>	<ul style="list-style-type: none"> <li>• General and enthusiast visitors</li> <li>• Family visitors</li> <li>• Tourist visitors</li> <li>• Education visitors</li> <li>• Community groups</li> <li>• Producer's professional network</li> <li>• Producer and Consumer groups from all other domains</li> </ul>	<ul style="list-style-type: none"> <li>• <b>School teacher</b></li> <li>• <b>University teacher</b></li> <li>• Other teacher</li> <li>• <b>Learners</b> (directed by teacher)</li> <li>• <b>Researcher</b></li> <li>• <b>Librarian / archivist</b></li> </ul>	<ul style="list-style-type: none"> <li>• Learners</li> <li>• Producer groups in the Education domain</li> <li>• Producer's professional network</li> </ul>	<ul style="list-style-type: none"> <li>• 'Culture vulture'</li> <li>• Creative hobbyist (e.g. photographer / artist)</li> <li>• <b>Lifelong learner</b></li> <li>• <b>Genealogist</b></li> <li>• <b>Amateur historian</b></li> <li>• <b>Tourist</b></li> </ul>	<ul style="list-style-type: none"> <li>• Producer's social network (known)</li> <li>• Other general users (unknown)</li> <li>• Producer groups from the General domain</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Tourism</b></li> <li>• <b>Creative industries</b></li> <li>• <b>Publisher</b></li> <li>• <b>Librarian / archivist</b></li> <li>• <b>Professional creative</b> (e.g. photographer / designer / journalist)</li> </ul>	<ul style="list-style-type: none"> <li>• Service users – general</li> <li>• Service users – professional</li> <li>• Producer's professional network</li> <li>• Producer groups from all other domains</li> <li>• Consumer groups from all other domains</li> </ul>

Creative    Teaching    Research    Information    Hybrid

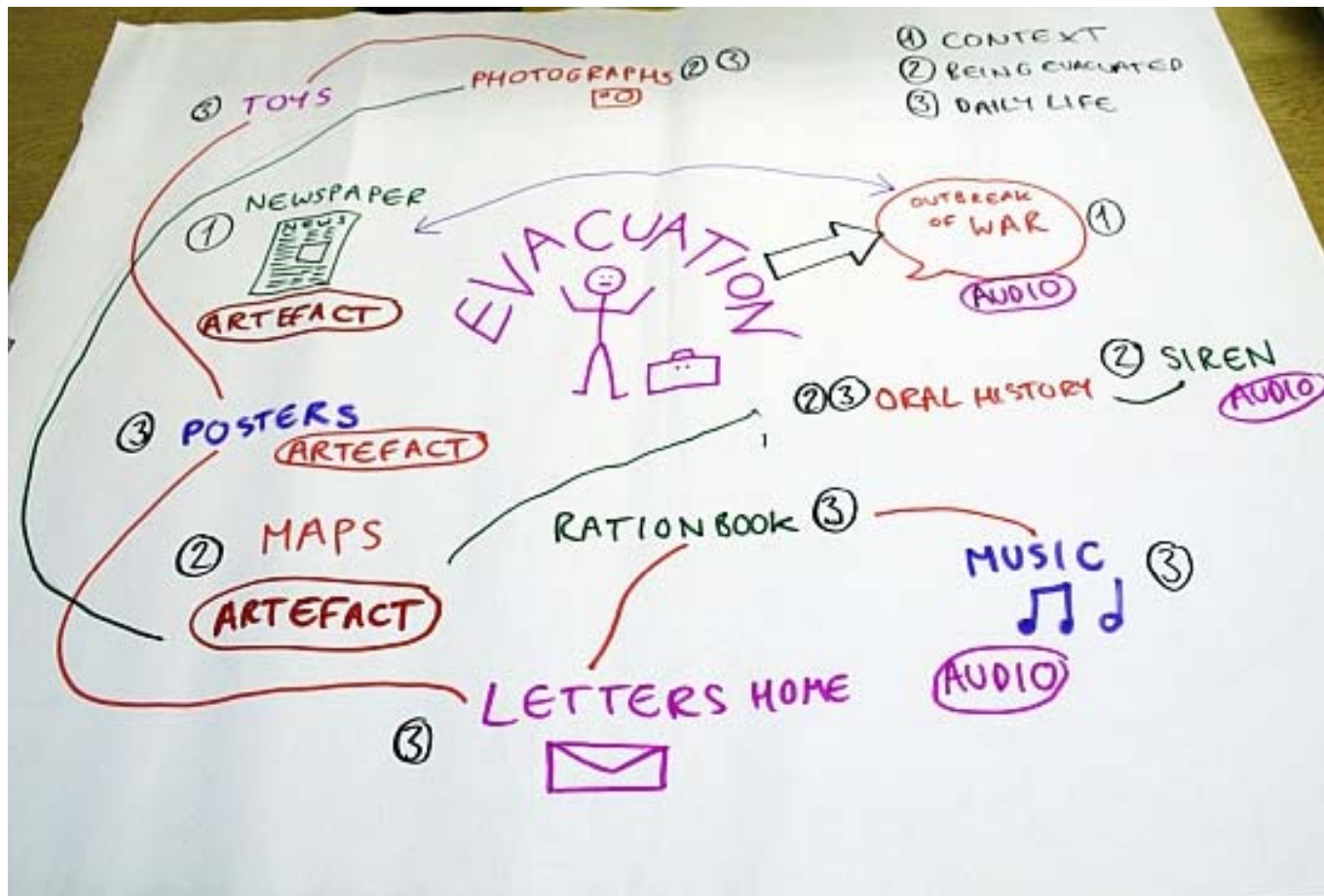
# Early experiments with potential users

- Different types of path will be required



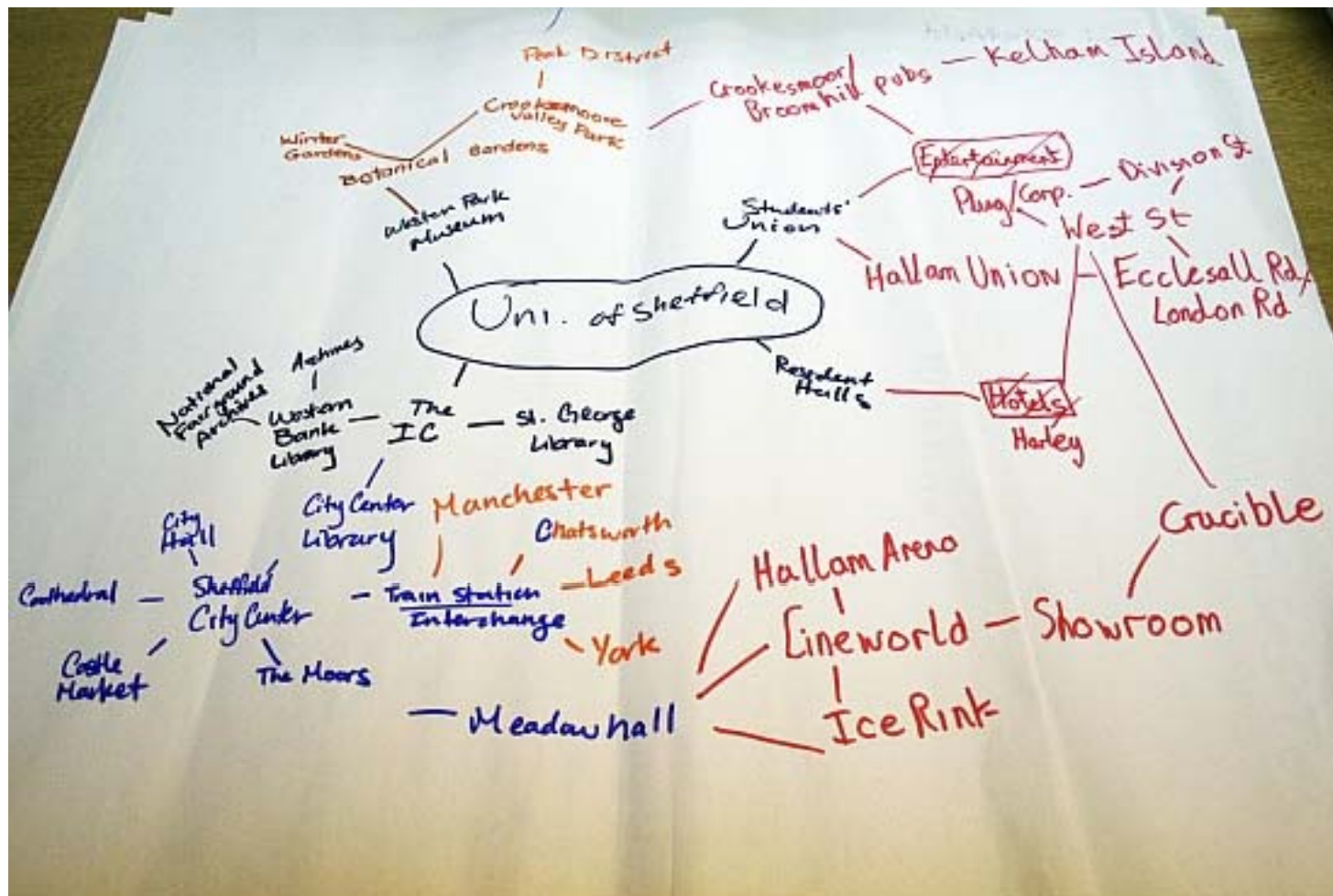
## A primary school teacher preparing a class for a trip to a museum to explore the theme of 'life in war-time Britain'

This path focuses on the child's experience of being evacuated from home during World War 2 and is organised around the 3 main themes that will be explored at the museum. Each theme is developed as a route through the path, and is comprised of a set of artefacts that build a narrative about that theme, and which can also be used as stimuli for activities that pupils will undertake to aid this informal learning experience.



## A university student creating a guide to the local area

This path is a variation of a mind-map. The university campus is used as a starting point for exploring the city, with each route exploring a specific aspect of life in Sheffield for students attending the university. Nodes are connected to web pages about each location and may be represented in the path by thumbnail images. The path is non-linear and provides a platform for exploration with routes offering multiple branches and intersecting with other routes.

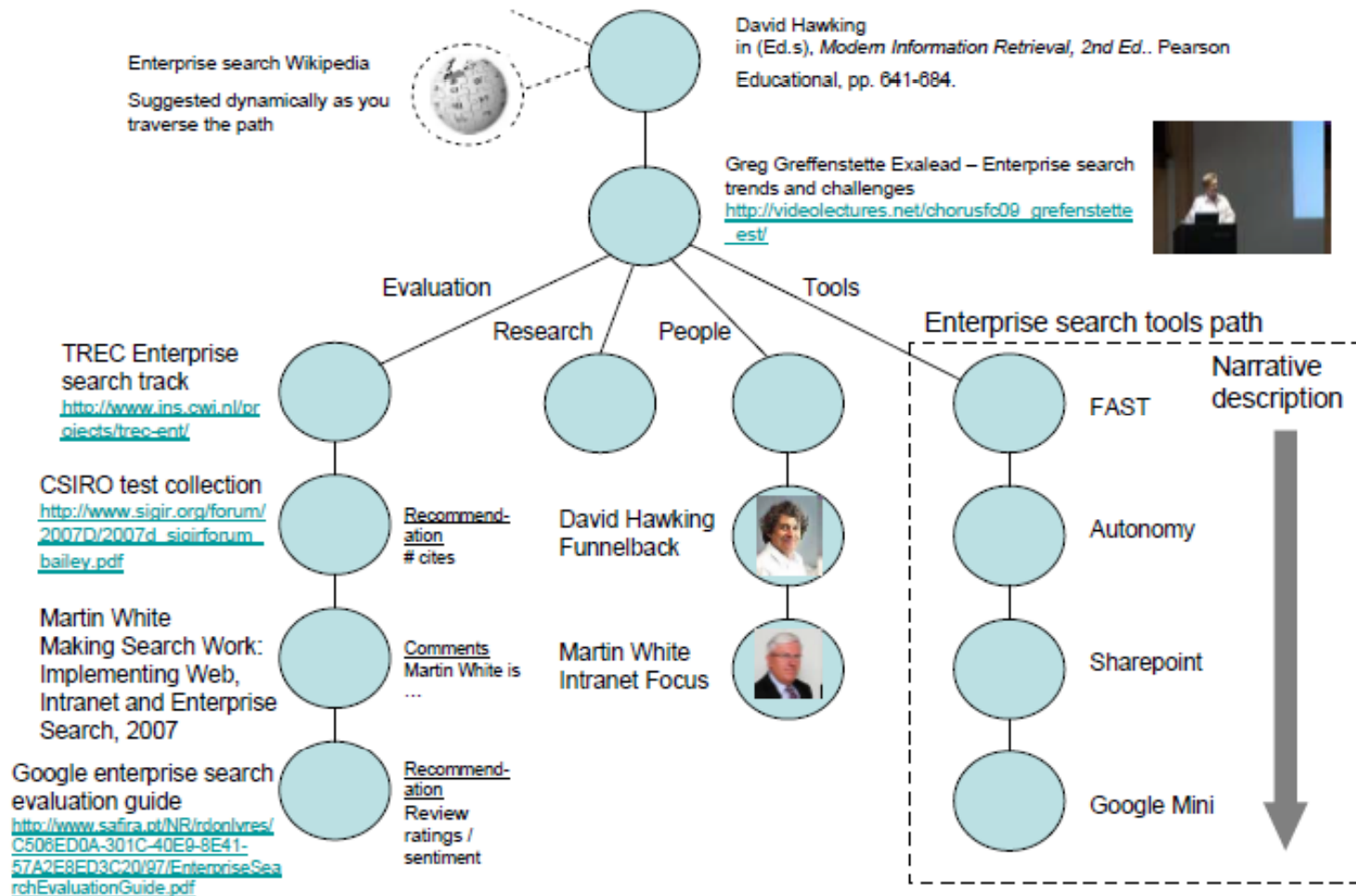


# Representation of paths

- Paths are stored in the system as nodes and links

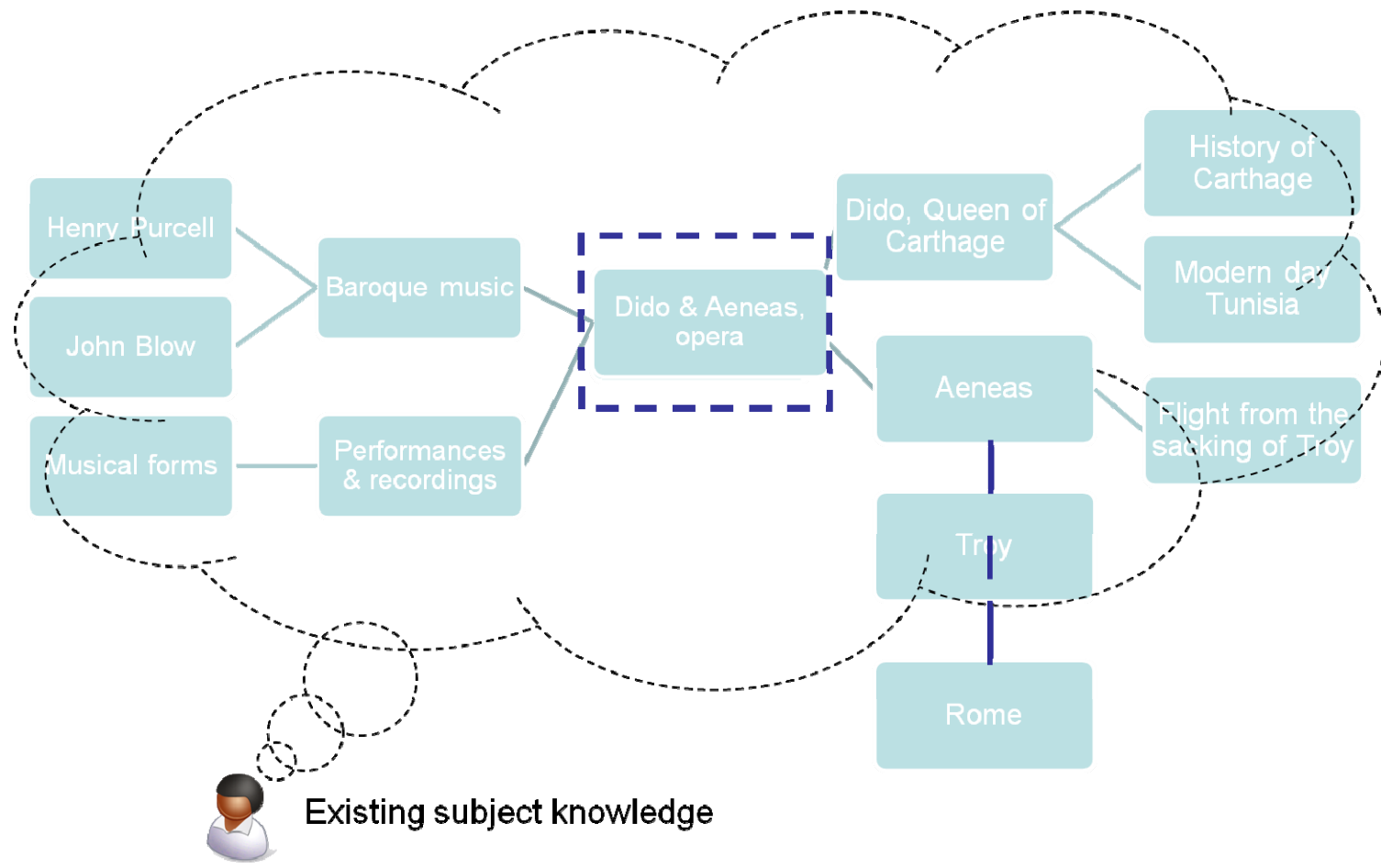
*This path has a somewhat hierarchical form, starting with linear contextual information items and then offering branches off on specific aspects of the topic. Each route leads the users through a series of nodes that develop a narrative about a theme, and are illustrated by links to a variety of digital objects*

Paul's path: enterprise search  
(example learning resource)



*From a central theme of the opera of Dido and Aeneas, this path offers a variety of routes to explore the story and characters of the opera, and also the musical genre, and the various iconic performances and recordings of the piece*

**Example produced  
by Jillian Griffiths  
(MMU/MDR)**

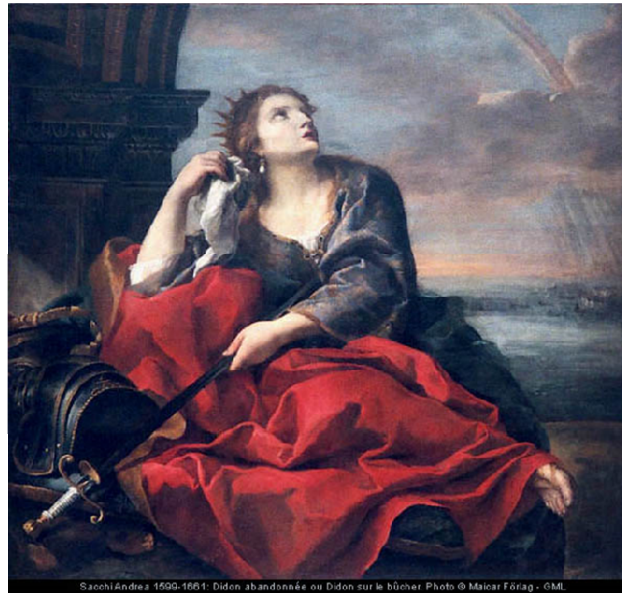




*At the node level, the record may include content from inside a digital collection, links to external sources, and a narrative input by the path creator to explain the node and/or how it fits into the overall path*

Item node

Content



*The Death of Dido, by  
Andrea Sacchi*



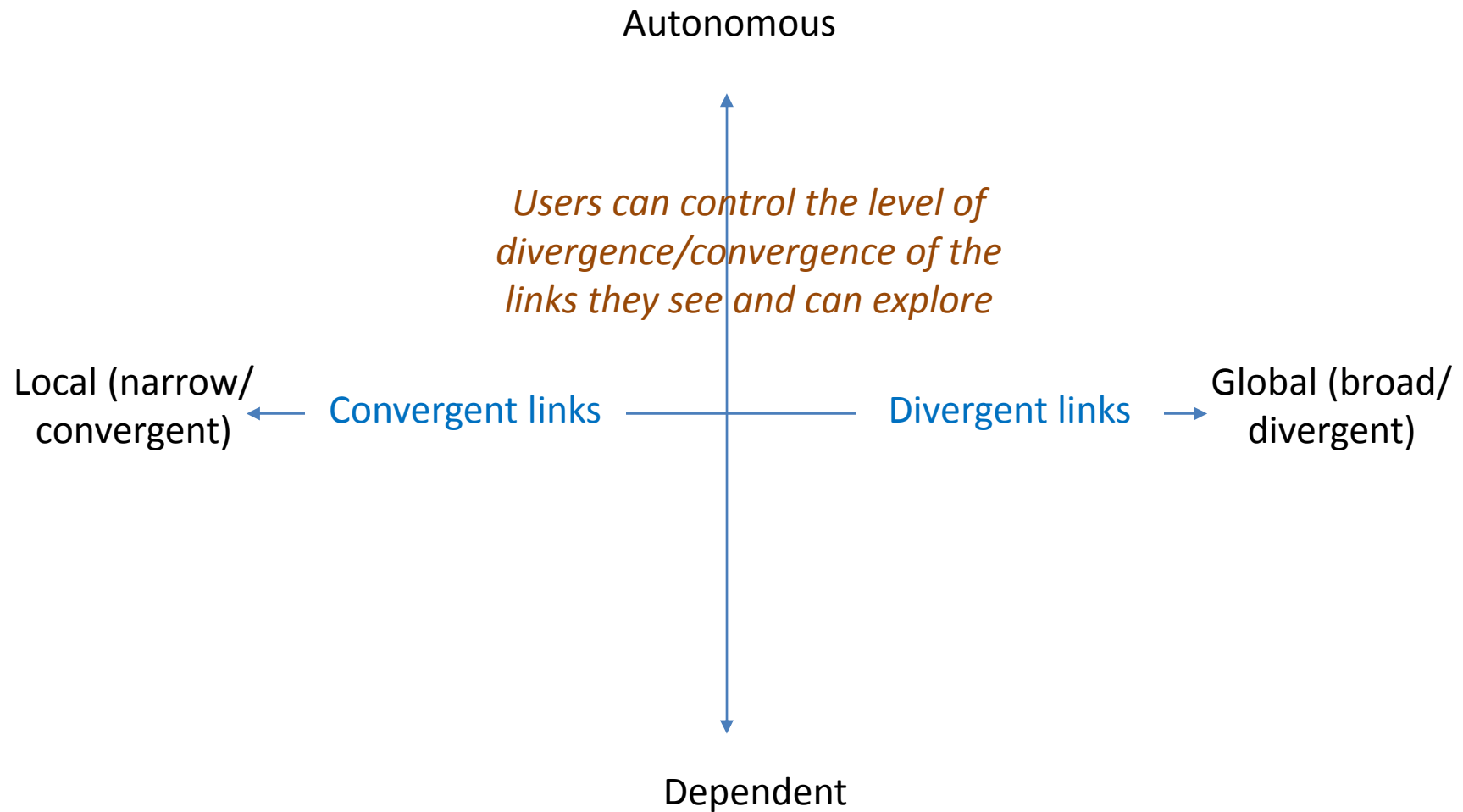
Narrative

**Dido, also known as Elissa, was, according to ancient Greek and Roman sources, the founder and first Queen of Carthage (in modern-day Tunisia). She is best known from the account given by the Roman poet Virgil in his Aeneid.**

# PATHS

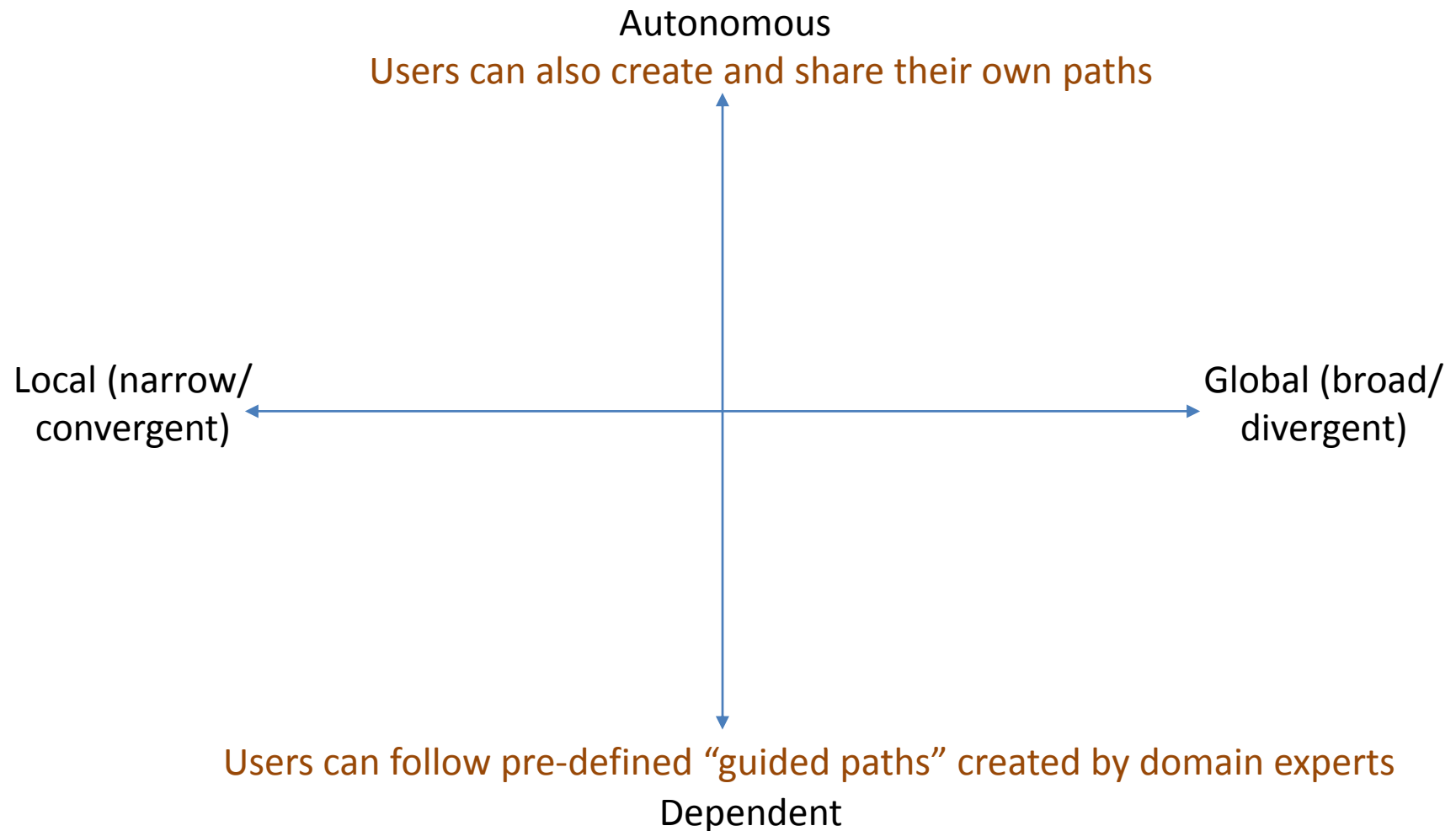
- Paths are storable and editable, with their own metadata
- Users can find and use paths created by others (e.g. librarians, teachers, curators) and/or create their own
- Paths can be based on broad/divergent relationships between topics or more conservative/convergent links

# PATHS





# PATHS



# Future research agenda

- To explore the extent to which the system can make helpful suggestions relating to links and “next moves” ...
- ... based on its knowledge of users, including their cognitive styles, expressed information needs and navigation behaviour

# Future research agenda

- To explore the extent to which the system can make helpful suggestions relating to links and “next moves” ...
- ... based on its knowledge of users, including their cognitive styles, expressed information needs and navigation behaviour

challenging

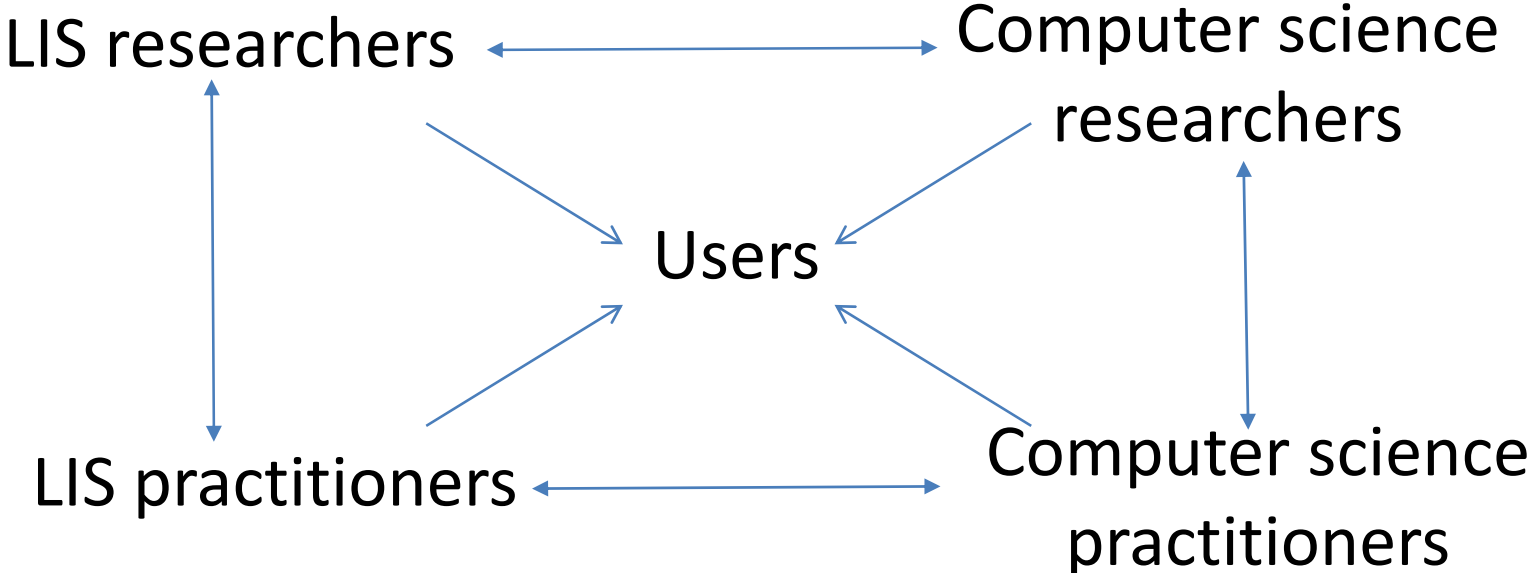
creative

annoying? ☹️

# PATHS

- This project is particularly interesting in terms of my second theme because it entails interactions between...

# Interactions

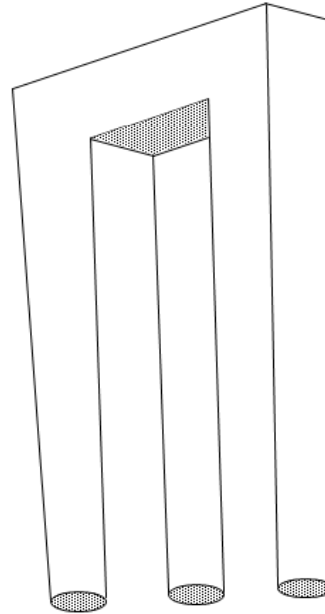


# Interactions

- But all too often...

Practitioners

*disconnect*



Researchers

Practitioners

Denise Koufogiannakis (Editor-in-Chief: *Evidence Based Library and Information Practice*) draws a distinction between “science” and “art”

Koufogiannakis, Denise (2011). *Evidence Based Practice: Science? Or Art? Evidence Based Library and Information Practice 2011*, 6.1

Researchers



Practitioners

“**Art** = professional knowledge of your craft, intuition, experience, tacit knowledge, reflection, creativity, values, people-skills”

“**Science** = systematized knowledge, explicit research, methodological examination, investigation, data”

Koufogiannakis, Denise (2011). *Evidence Based Practice: Science? Or Art? Evidence Based Library and Information Practice 2011, 6.1*

Researchers

Practitioners

70% art  
30% science

“My purely unscientific judgement as a practitioner is that LIS practice is probably 30% science and 70% art (more or less depending upon the specific topic).”

Koufogiannakis, Denise (2011). *Evidence Based Practice: Science? Or Art? Evidence Based Library and Information Practice 2011, 6.1*

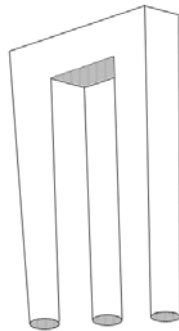
Researchers

? % art  
? % science

# Research and professional experience

Practitioners' professional knowledge, intuition, experience

Rich and "real" but often not formalised and empirically tested



Researchers' systematised knowledge based on academically rigorous methodologies

Often academically rigorous but lacking real world usefulness

# Perceptions

## Academic researchers...

- “—academic researchers work on toy problems
- they see things in non-human terms
- they are hyper-critical
- they live in ivory towers, disconnected from the everyday
- their research foci driven too much by self-interest and money
- their research is not useful to system design and practice

## Practitioners...

- they are forced to focus [...] on the bottom-line
- they are institution-centric
- they, too, have rules and standards they must meet
- they have to meet deadlines that preclude rigorous research”

Dervin, B. & Reinhard, C.D. (2006). "Researchers and practitioners talk about users and each other. Making user and audience studies matter—paper 1" *Information Research*, **12**(1) paper 286. [Available at <http://InformationR.net/ir/12-1/paper286.html>]

# We need both...

- “We need to embrace both the **science** and the **art** of evidence based practice – otherwise, we will overlook important elements of the whole situation that practitioners work within.
- **Doing so is not neat and tidy, but does that really matter?**
- LIS is a social science, and the "social" implies "messy" because people and real-life situations are not easily controlled. ”

Koufogiannakis, Denise (2011). *Evidence Based Practice: Science? Or Art?*  
*Evidence Based Library and Information Practice 2011, 6.1*

# Arguably...

- We need...
  - Research that is useful (applicable) yet scientifically robust
  - Larger-scale coordinated (as opposed to sporadic small scale) research efforts
  - Studies leading to cumulative understanding... as opposed to small scale, fragmented, snapshot studies

# Arguably...

- We need...
  - Research that is useful (applicable) yet robust
  - Greater critical mass, with more replication studies, and more reporting of negative results
  - Larger-scale coordinated (as opposed to sporadic small scale) research efforts
  - Studies leading to cumulative understanding... as opposed to small scale, fragmented, snapshot studies
- And importantly...
  - More interaction between “practitioners” and “researchers” (both ways)

# But much is happening...

- Increasing pressure on academics to prove the real world impact of their research, and to involve practitioners and users in research projects
- Increasing acceptance of research methods that are more accepting of real world complexity and “messiness”



# But much is happening...

- Library and Information Research Group (LIRG)
- LIS Research Coalition
  - *Research in Librarianship – Impact Evaluation Project* (RiLIES)
- Evidence-based librarianship & information practice



Home > Current > Vol 6, No 1 (2011)

# Vol 6, No 1 (2011)

## Table of Contents

### Editorial

[Evidence Based Practice: Science? Or Art?](#)

*Denise Koufogiannakis*

[ABSTRACT](#) [PDF](#)

1-2

[Editorial Responsibilities](#)

[ABSTRACT](#) [PDF](#)

3

### Articles

[Evidence or Evidence Based Practice? An Analysis of IASL Research Forum Papers, 1998-2009](#)

*Marcia A. Mardis*

[ABSTRACT](#) [PDF](#)

4-23

[Image-Seeking Preferences Among Undergraduate Novice Researchers](#)

*Laurie Bridges, Tiah Edmunson-Morton*

[ABSTRACT](#) [PDF](#)

24-40

[The Usefulness of Related Functions in Web of Science and Scopus](#)

*Dorothy C.P. Char, Isola Ajiferuke*

[ABSTRACT](#) [PDF](#)

41-52

[OPEN JOURNAL SYSTEMS](#)

[Journal Help](#)

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# But much is happening...

- And some great examples of both useful (real world applicable) and rigorous research in sessions given at this conference e.g.
  - Emma Hadfield's session on social media in schools
  - Lucy Gildersleeves' session on school libraries
  - David Streatfield's session also on school libraries
  - and Ian Rowland's work on the Google Generation

# Arguably...

- We need more interaction between “practitioners” and “researchers” (both ways) if we are to
  - generate scientifically rigorous yet ecologically valid / applicable knowledge
  - achieve critical mass
  - and an integrated cumulate-able knowledge base