The Open University

EDUCAUSE: ELI Web Seminar, June 7, 2010

On Social Learning, Sensemaking Capacity, and Collective Intelligence

Simon Buckingham Shum

Knowledge Media Institute
Open University UK
http://people.kmi.open.ac.uk/sbs

My Space…

Wicked Problems

Collective Intelligence

Sensemaking

Learning

Computer-Supported…

participatory inquiry

dialogue

deliberation

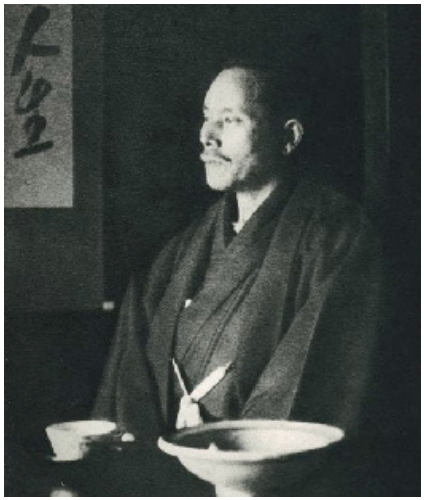
argumentation

http://media.photobucket.com/image/yinyang/penelopecassandre/Tao_YinYangEarth2.jpg

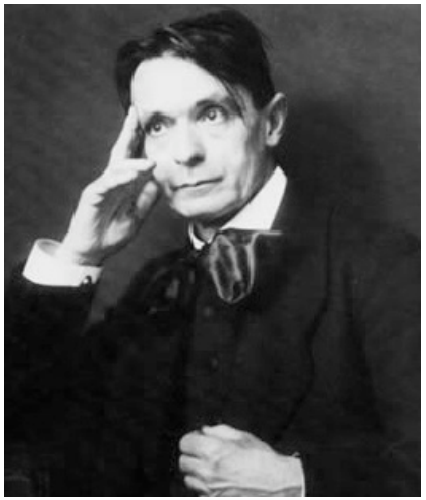
Why are these so important now?

http://media.photobucket.com/image/yinyang/penelopecassandre/Tao_YinYangEarth2.jpg

Transitional thinkers…

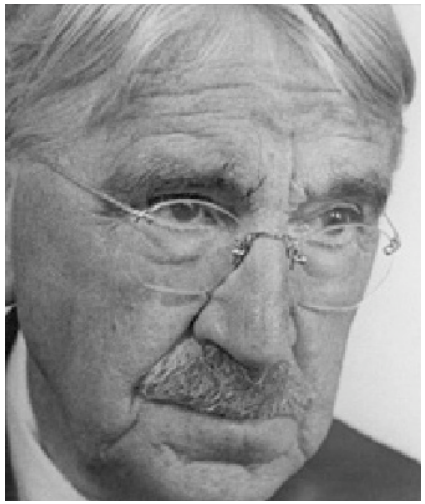


Tsunesaburo Makiguchi



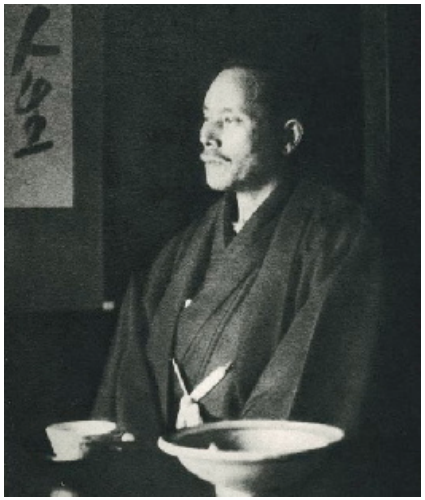
Rudolf Steiner

Maria Montessori



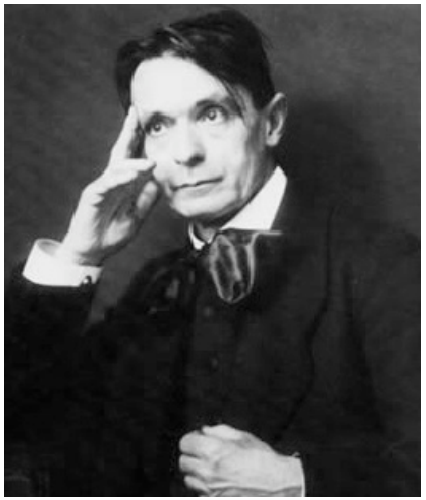
John Dewey

…are needed for transitional times…



Tsunesaburo Makiguchi

1871-1944

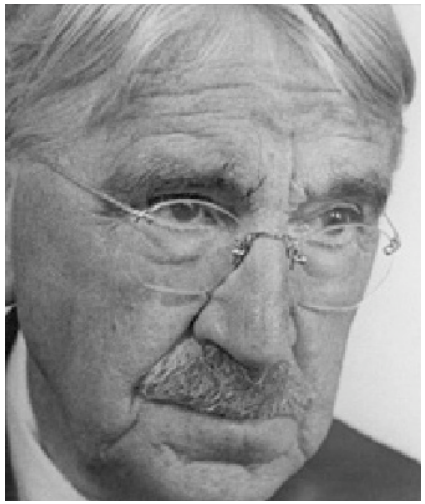


Rudolf Steiner

1861-1925

Maria Montessori

1870-1952



John Dewey

1859-1952

Acknowledgements: Roy Leighton: "Building a curriculum with soul"
Keynote Address, Milton Keynes School Governors Conference 2010
http://prezi.com/3khu_wi1rn-a/milton-keynes-govs-roy-leighton

"It is time to hold up our hands and admit that our education system just isn't working well enough.

Our emphasis needs not to be on proving the residual value of outdated curricula, tests and league tables, but on inspiring and challenging children so that they in turn can inspire and challenge us."

Lord David Puttnam
Chancellor, Open University
Introduction to the *Learning Futures Programme*
www.learningfutures.org

"To put it very crudely, the habits of mind required, and therefore cultivated, by the 19th century curriculum of mass schooling were deference, unquestioning acceptance of authority, neatness, punctuality, accurate recapitulation and 'sequestered problem-solving'"

Claxton & Lucas, 2009 UK National Inquiry into the Future for Lifelong Learning

"…adults and children alike see their worlds as complex, changing, uncertain and ambiguous, and are likely to get more, not less, so.

The obvious question, then, is: what are the epistemic mentalities and identities that will enable people to thrive in such a world? What do good learners do? What do they enjoy? How do they react when the going gets tough?"

Claxton & Lucas, 2009 UK National Inquiry into the Future for Lifelong Learning

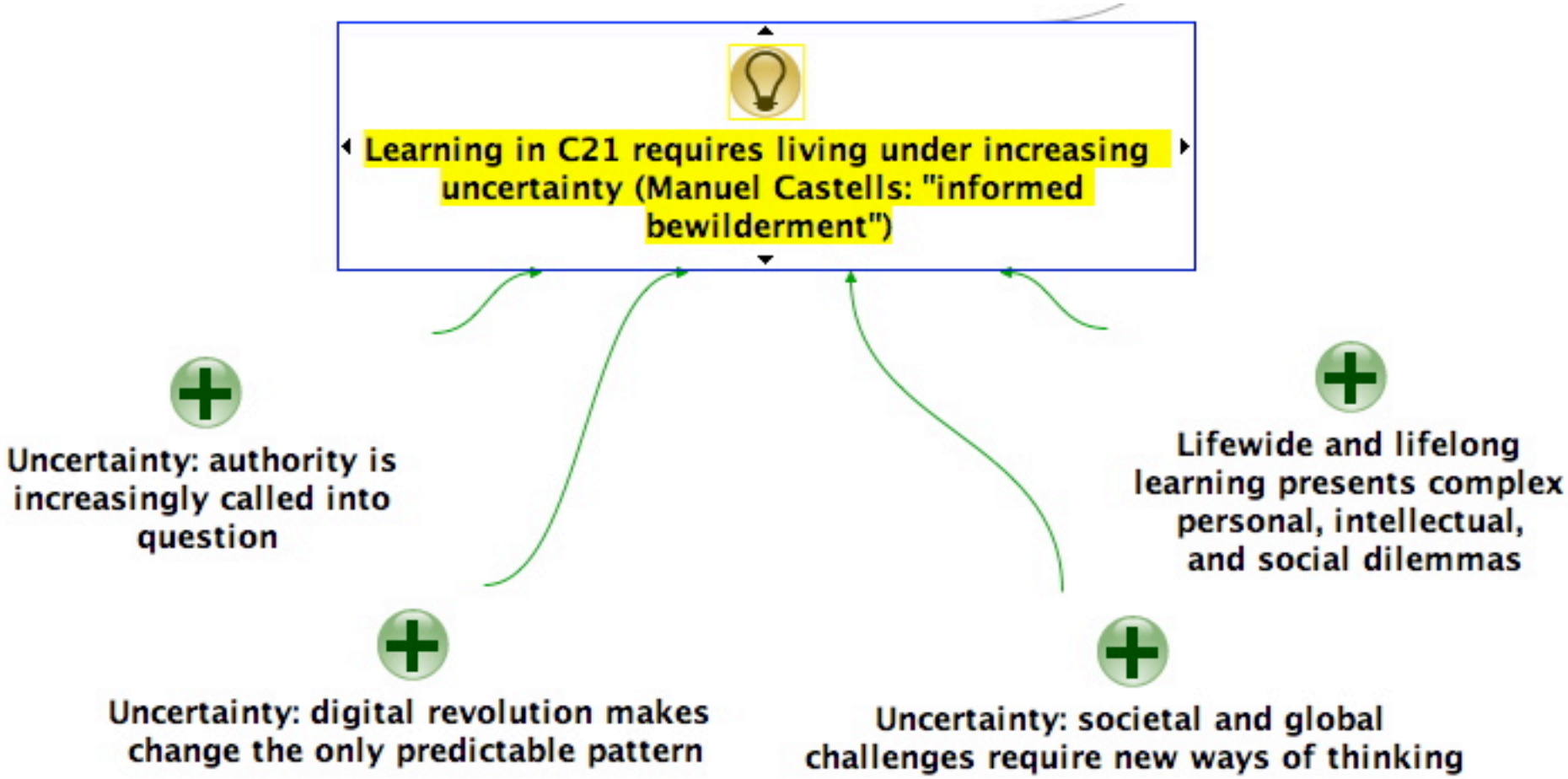
Hewlett Foundation 2010 focus: "Deeper Learning"

http://www.hewlett.org/programs/education-program/deeper-learning

"In one survey after another, business leaders complain that the majority of U.S. job applicants are ill-equipped to solve complex problems, work in teams, or communicate effectively.

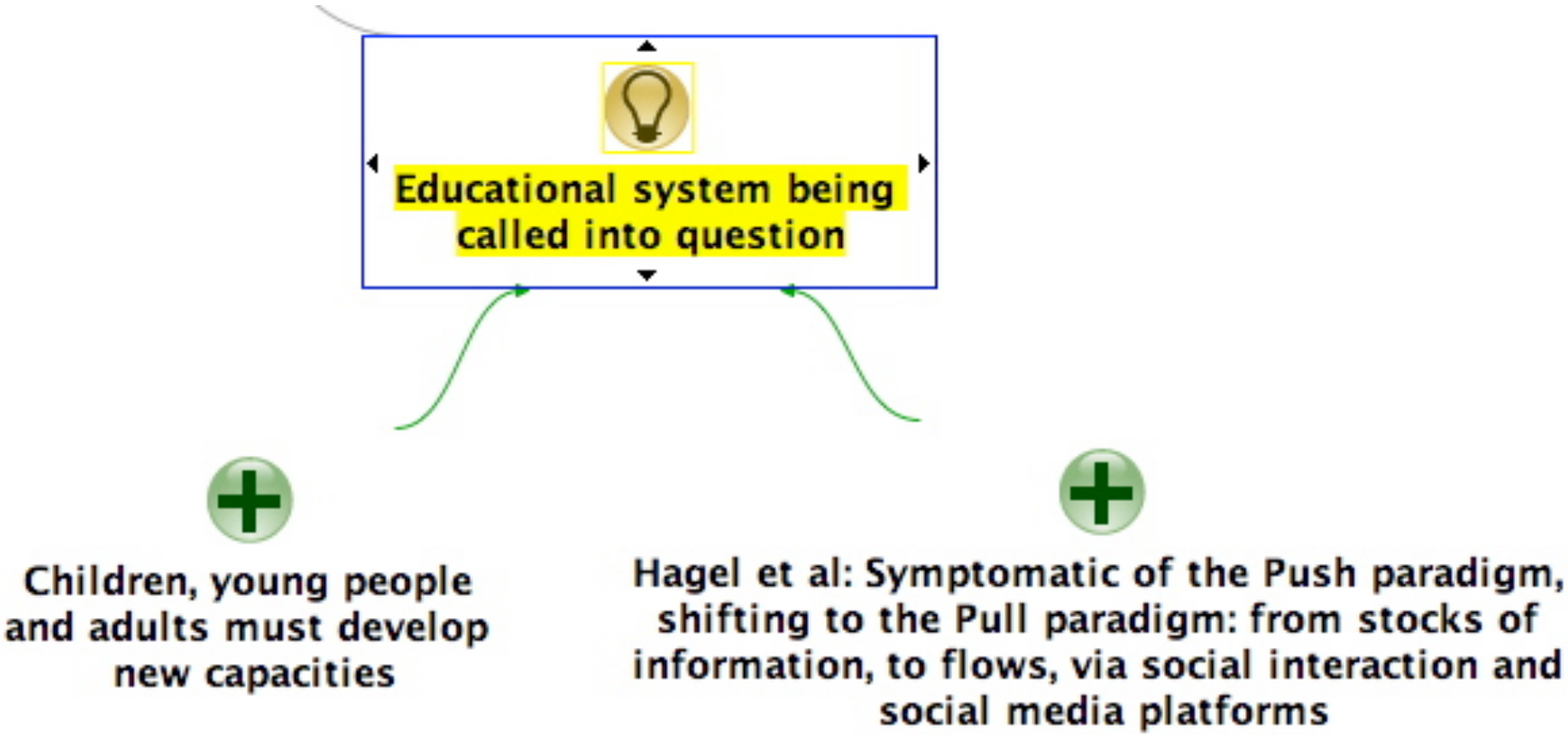
"Hewlett envisions a new generation of schools and community colleges … harness the deeper learning skills of critical thinking, problem solving, effective communication, collaboration, and learning to learn to help students develop a strong foundation in traditional academic subjects."

Uncertain futures…

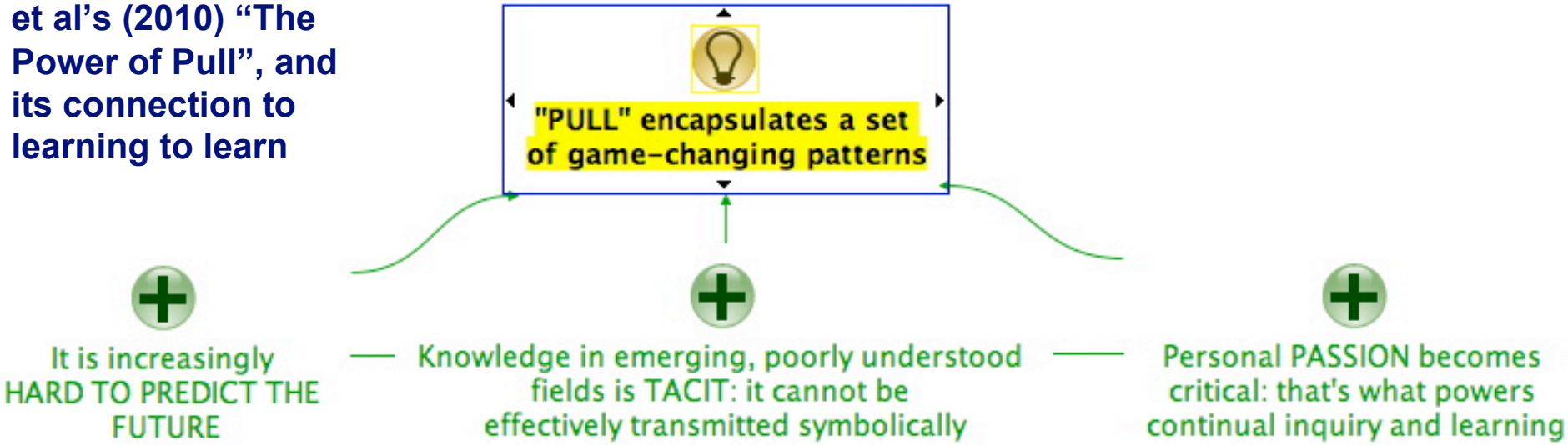


Argument Map built using Open U's *Compendium*: http://compendium.open.ac.uk

Challenge for the educational system…



Argument Map summarising Hagel et al's (2010) "The Power of Pull", and its connection to learning to learn



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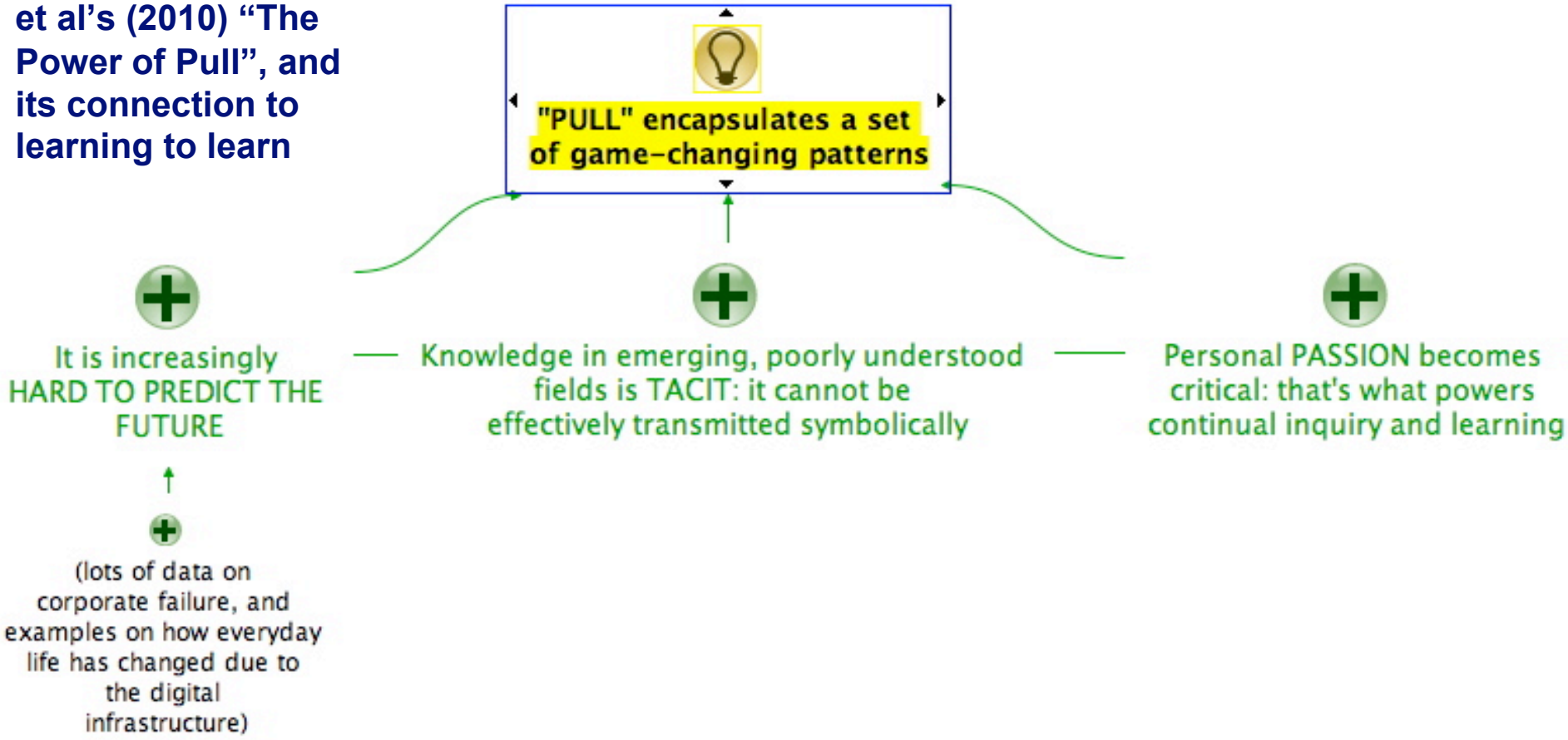

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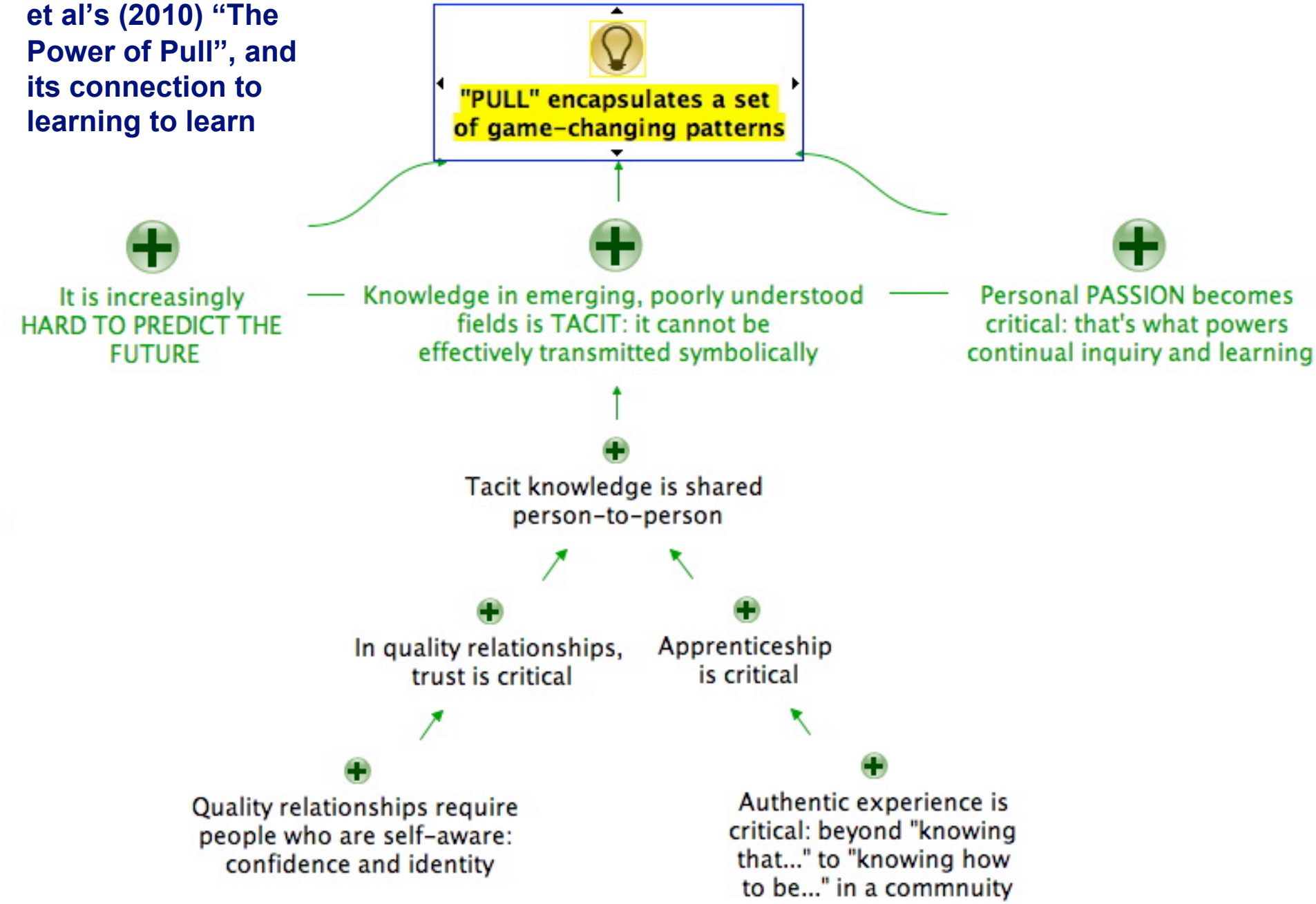

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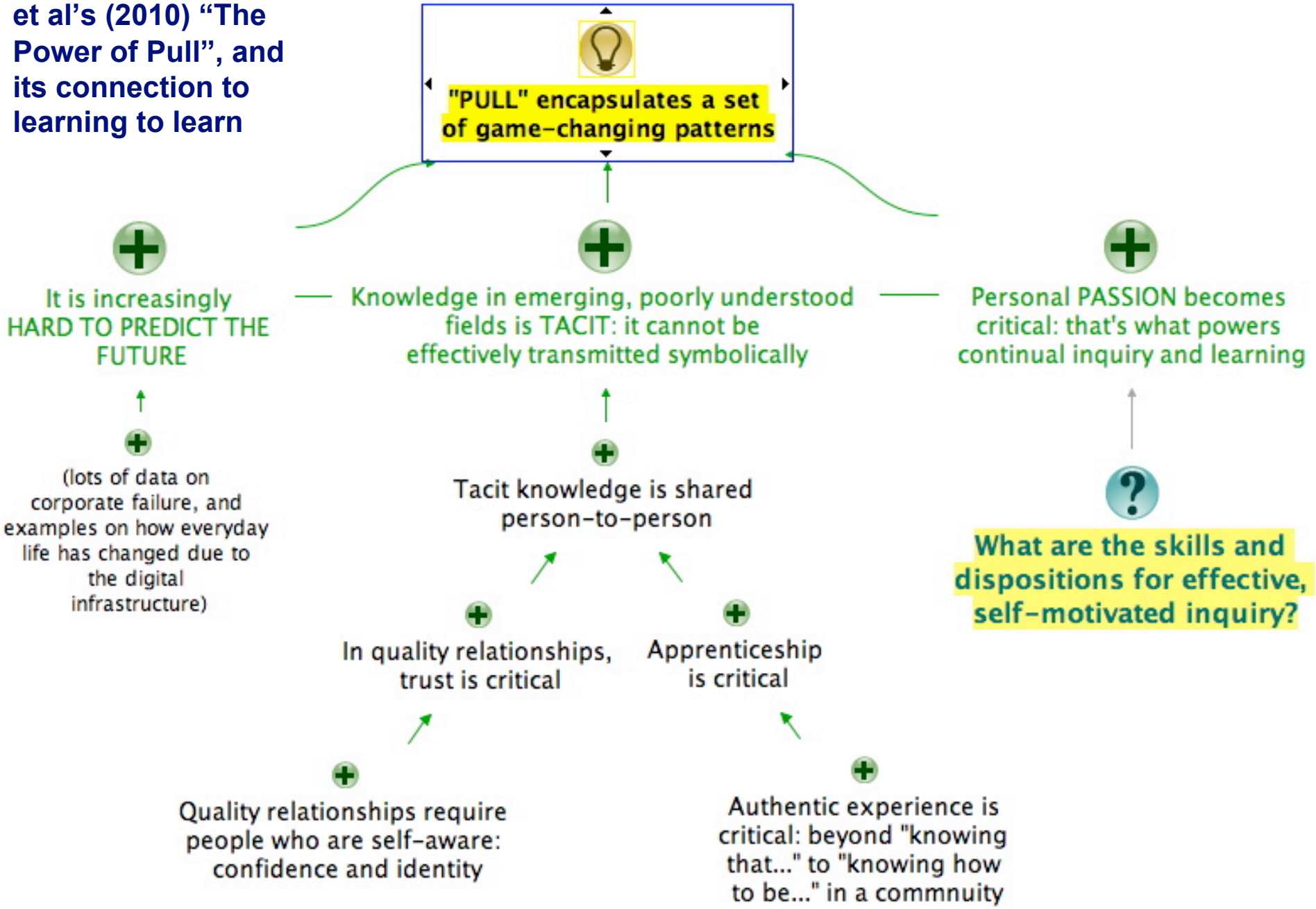

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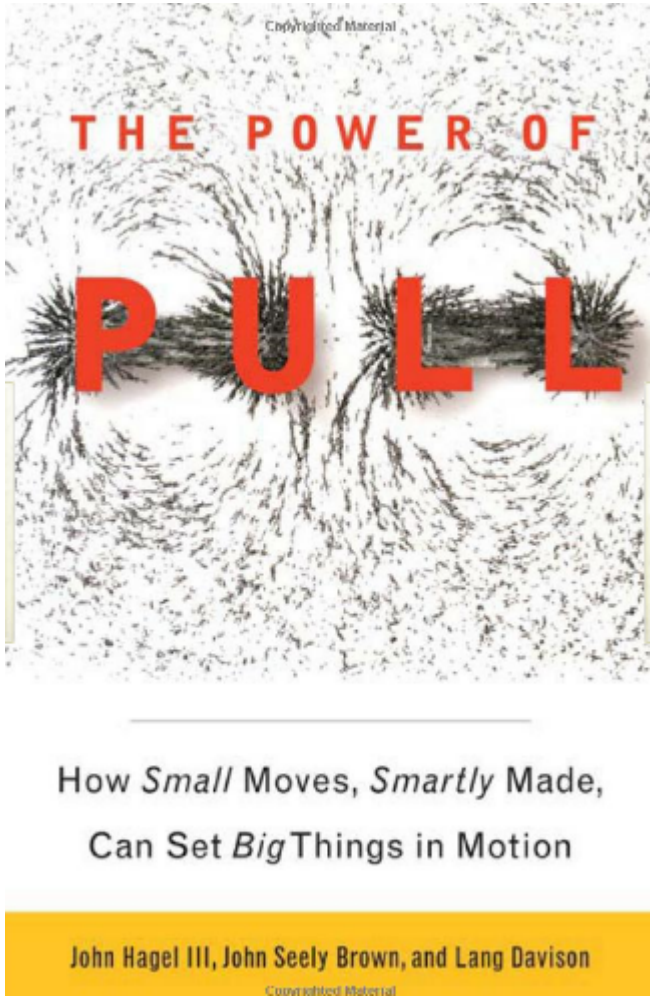


The Power of Pull

How *Small* Moves, *Smartly* Made, Can Set *Big* Things in Motion

John Hagel III
John Seely Brown
Lang Davison

Summary article in Harvard Business Review blog:
http://blogs.hbr.org/bigshift/2010/04/a-brief-history-of-the-power-o.html

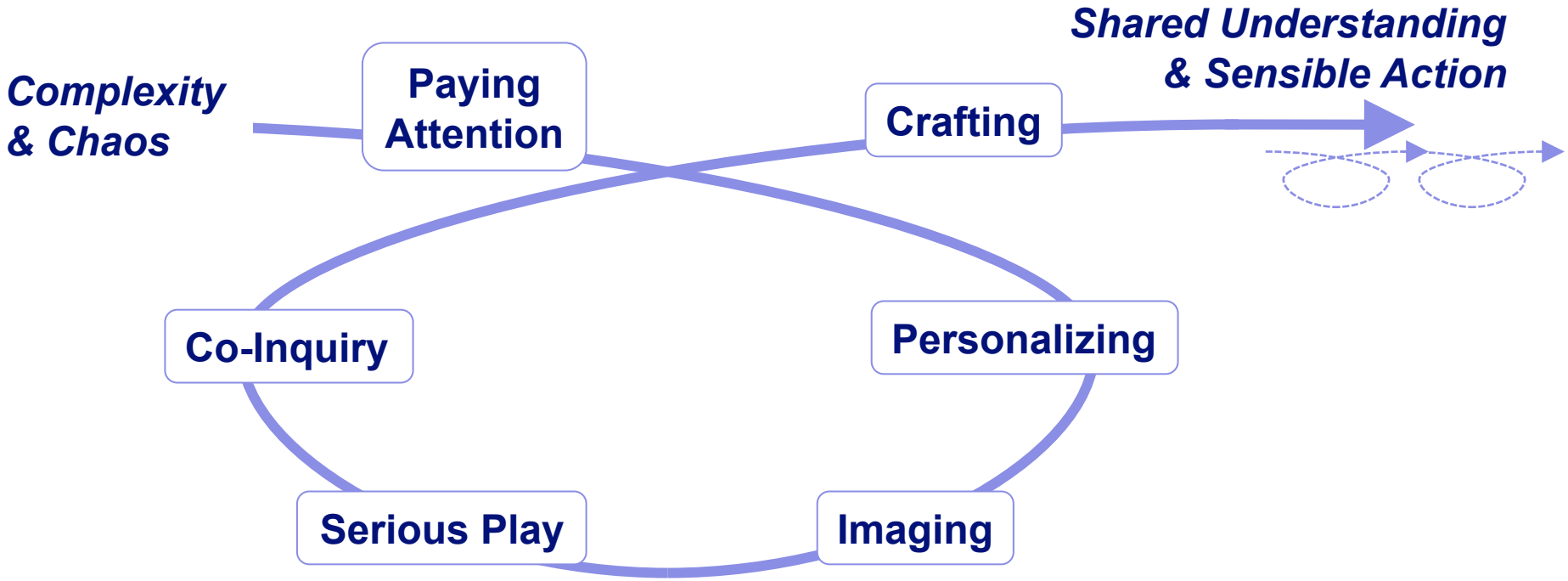
Implication?

sensemaking
is a key literacy

Creative competencies for complex challenges

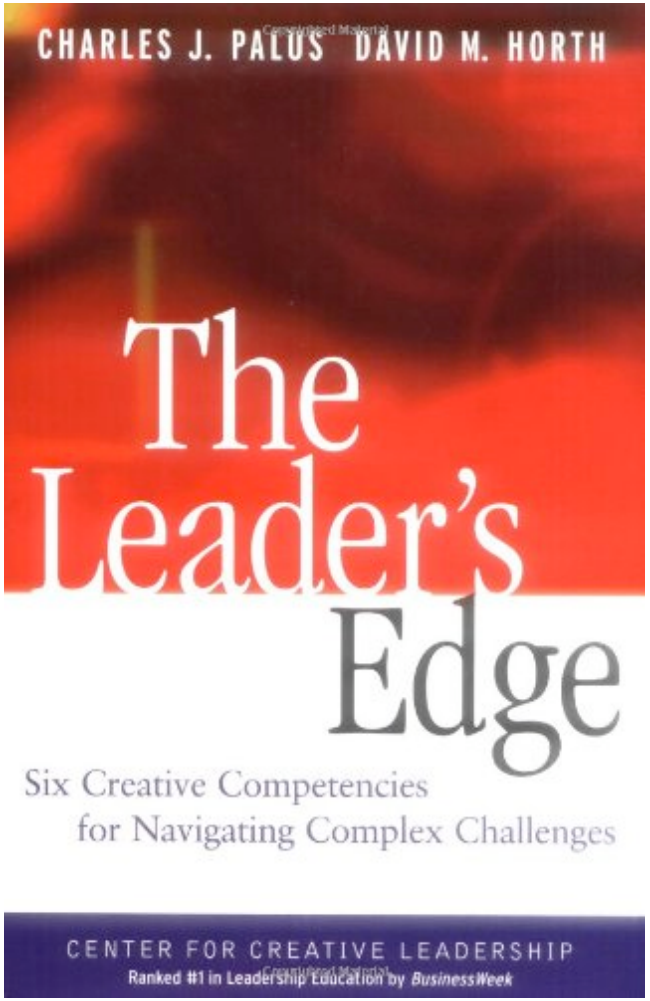
(Palus & Horth 2002: Center for Creative Leadership)

Based on analysing and mentoring many senior leaders, Palus & Horth recognise a new pattern of competencies in leaders who cope well with overwhelming complexity.
CCL has developed practical tools to scaffold these competencies



…how do we nurture these in ourselves, and the next generation?

Read this:



The Leader's Edge

Six Creative Competencies for Navigating Complex Challenges

Charles J. Palus
David M. Horth

Summary article in Ivey Business Journal:
http://www.iveybusinessjournal.com/article.asp?intArticle_ID=582

Implication?

learning to learn
is a key literacy

How do we make the future learner-centric

(but not an echo chamber where you're never out your comfort zone)?

Personalised information feeds and mobile tools

Personalised resource archives

Learner-selected peer network

Learner-selected mentors

Learning to Learn: 7 Dimensions of "Learning Power"

Factor analysis of the literature plus expert interviews: identified seven dimensions of effective "learning power", since validated empirically with learners at many levels. (Deakin Crick, Broadfoot and Claxton, 2004)

Being Stuck & Static	⟷	Changing & Learning
Data Accumulation	⟷	Meaning Making
Passivity	⟷	Critical Curiosity
Being Rule Bound	⟷	Creativity
Isolation & Dependence	⟷	Learning Relationships
Being Robotic	⟷	Strategic Awareness
Fragility & Dependence	⟷	Resilience

Professional development in schools, colleges and business:
ViTaL: http://www.vitalhub.net/vp_research-elli.htm

Learning to Learn: 7 Dimensions of Learning Power

Factor analysis of the literature plus expert interviews: identified seven dimensions of effective "learning power", since validated empirically with learners at many levels. (Deakin Crick, Broadfoot and Claxton, 2004)

Resilience

Definition

Resilient learners like a challenge. They accept that everyone can find learning hard sometimes and are not frightened by finding something difficult. They have a high degree of 'stickability'. They are not fragile and can tolerate the feelings of anger, fear, frustration and anxiety that sometimes accompany learning.

Strategic awareness

Definition

Strategic learners think about how they learn. They talk about how they will go about something and consider the habits, preferences, strengths and weaknesses they bring to the task. They are aware of their own feelings about learning and know how to manage them. They can talk about personal learning preferences.

Critical Curiosity

Definition

Effective learners in this dimension like to delve deeper to find out what is going on. They like to 'get at the truth' by asking questions such as Why? What? When? Where? How? etc.

They are less likely to accept information uncritically or just because someone says so.

Creativity

Definition

Creative learners are playful, they like a challenge and are willing to take risks. They like to look at a problem from many different perspectives and will use their imagination, letting their mind 'float free' to find creative solutions. They listen to their intuition and follow hunches in their learning.

Learning to Learn: 7 Dimensions of Learning Power

Factor analysis of the literature plus expert interviews: identified seven dimensions of effective "learning power", since validated empirically with learners at many levels. (Deakin Crick, Broadfoot and Claxton, 2004)

Meaning Making

Definition

Students who effectively make meaning can link information between subject areas and across learning contexts. They connect learning at home with learning in school and learning from previous years with learning occurring now. Effective learners in this dimension engage their own values and stories in learning and create personal relevance from information they learn.

Learning Relationships

Definition

Learners who have quality learning relationships find it useful and exciting to share thoughts and ideas with others, yet they can work equally effectively on their own. They make good use of adult sources of support and guidance at home and in the community. They draw on their community's worldviews and traditions.

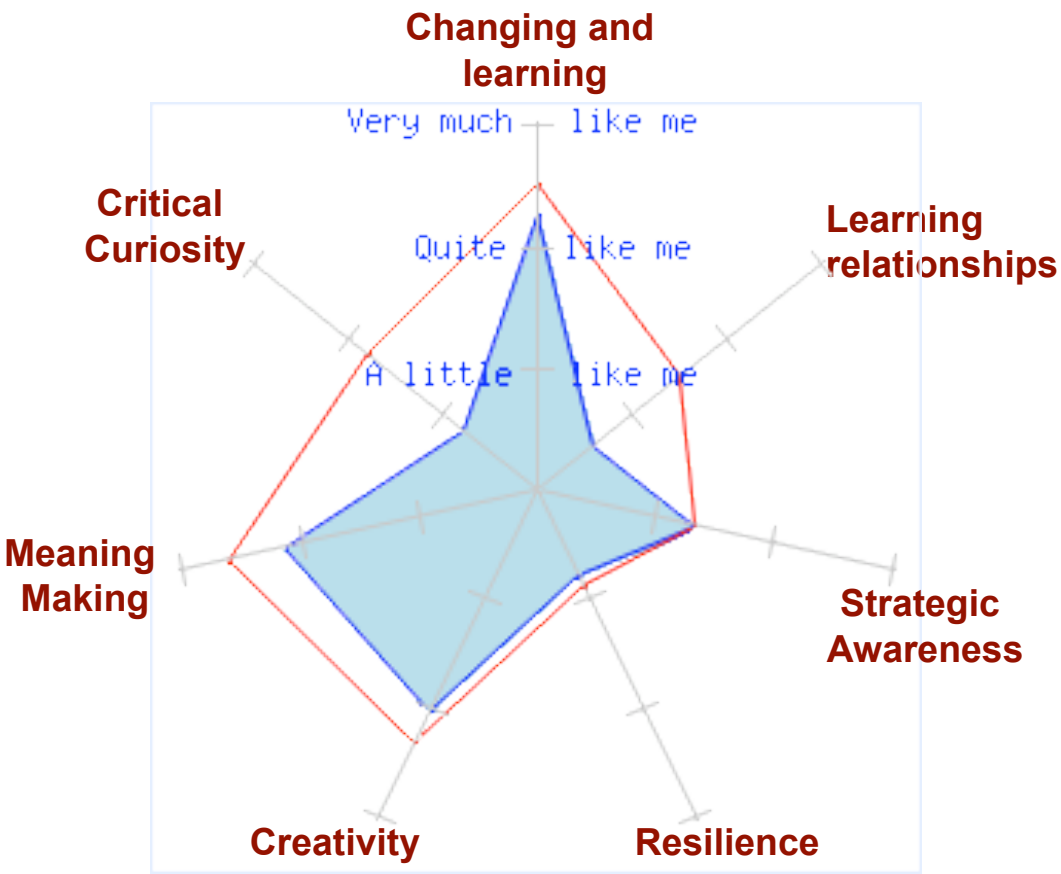
Changing and Learning

Definition

Learners who are strong in this dimension know that learning is learnable. They believe that through effort their minds can get bigger and stronger just as their bodies can. They gain pleasure and self-esteem from expanding their capacity to learn.

ELLI profile showing pre/post stretch following mentoring and targetted intervention

ELLI: Effective Lifelong Learning Inventory (Ruth Deakin Crick, U. Bristol)
A web questionnaire generates a spider diagram summarising the learner's self-perception: the basis for a mentored discussion and strategic priorities

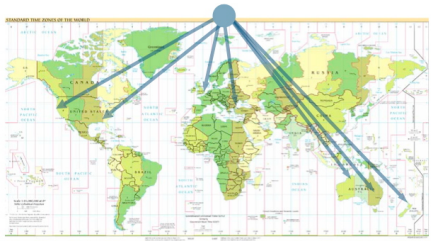


"We targeted Critical Curiosity and Learning Relationships"

"It's changed what I think I can do."

ViTaL: http://www.vitalhub.net/vp_research-elli.htm

learning warehouse



e-Science for Learning to Learn

Indexed archive of >30,000 anonymised ELLI profiles (and other validated tools) for mentoring, research and development

Learners in schools

- Learners do online survey through bespoke learning portal

Learning Futures Portal

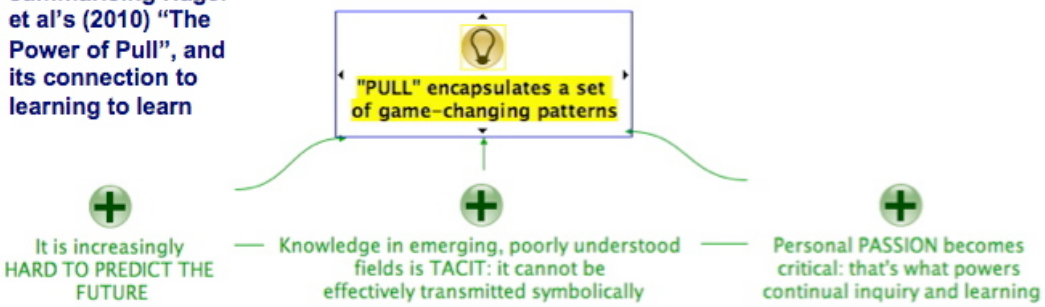
- Portal provides research validated, immediate feedback to individuals and schools to stimulate learning

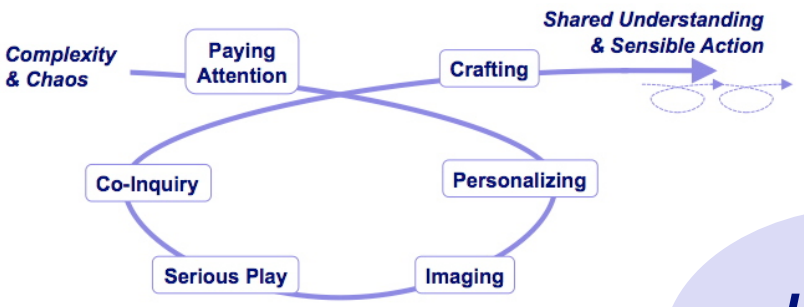
Learning Warehouse

- Researchers access anonymised data for analysis which is held in a secure online 'warehouse'

http://www.learningwarehouse.org

Argument Map summarising Hagel et al's (2010) "The Power of Pull", and its connection to learning to learn





Is this "making sense" to you?

Heard anything exciting yet?

What if our online platforms understood learning power?

Take a minute to post a thought or question to the shared chat…

Did you know?…

citizenship education

Key skills fostered by Citizenship Education

Citizenship Education Review Group, 2006. EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=129

Literature analysis concluded that Citizenship Education can foster generalisable abilities to:

- make a reasoned argument, both orally and in writing
- co-operate and work effectively with others
- appreciate others' experience and perspective
- tolerate other viewpoints
- adopt a problem-solving approach
- use technology critically to gather information
- take a critical approach to evidence and seek fresh evidence
- recognise forms of manipulation and persuasion
- respond to and influence social, moral and political challenges

Read this:

Pedagogical challenges for personalisation:

Integrating the personal with the public through context-driven enquiry.

Special Issue, *Curriculum Journal*, 2009, 20 (3), 185-306

http://bit.ly/Y8aI6

Why are these so important now?

Wicked Problems

Collective Intelligence

Sensemaking

Learning

Computer-Supported…

participatory inquiry

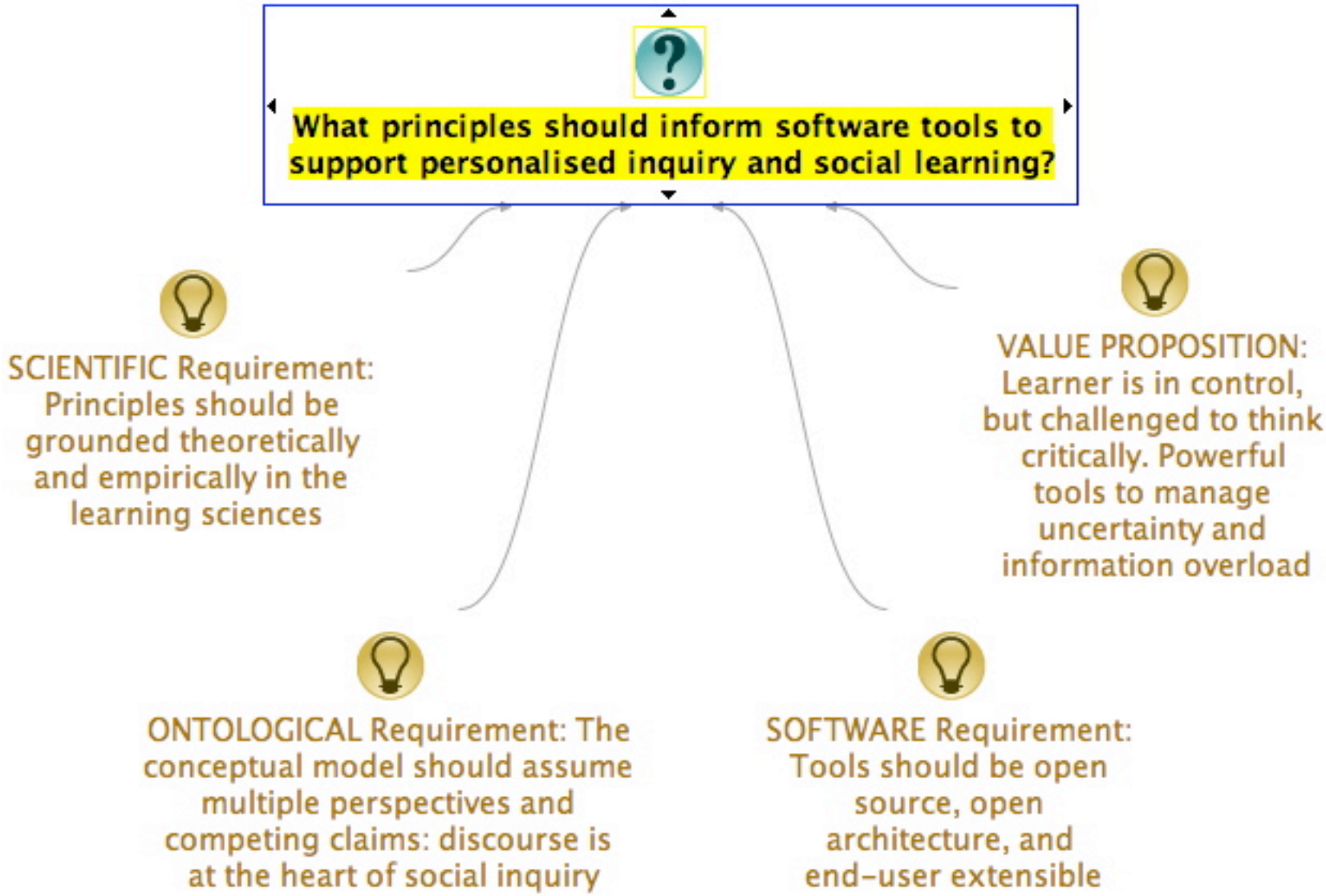
dialogue

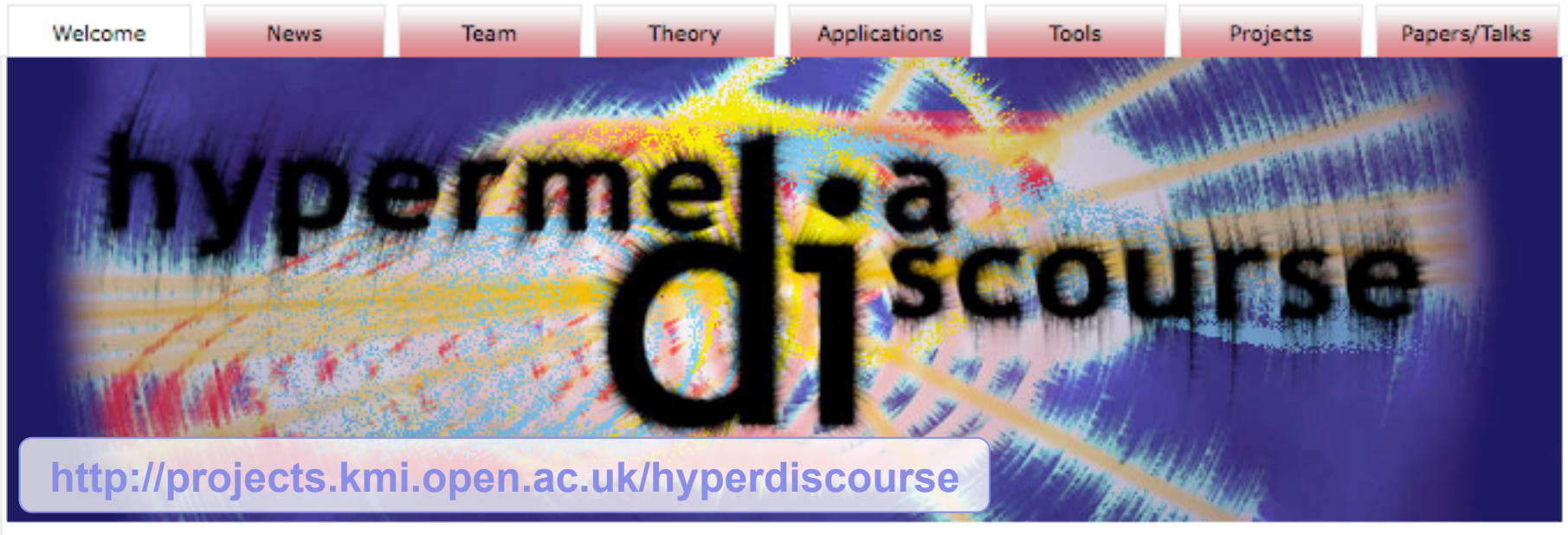
deliberation

argumentation

http://media.photobucket.com/image/yinyang/penelopecassandre/Tao_YinYangEarth2.jpg

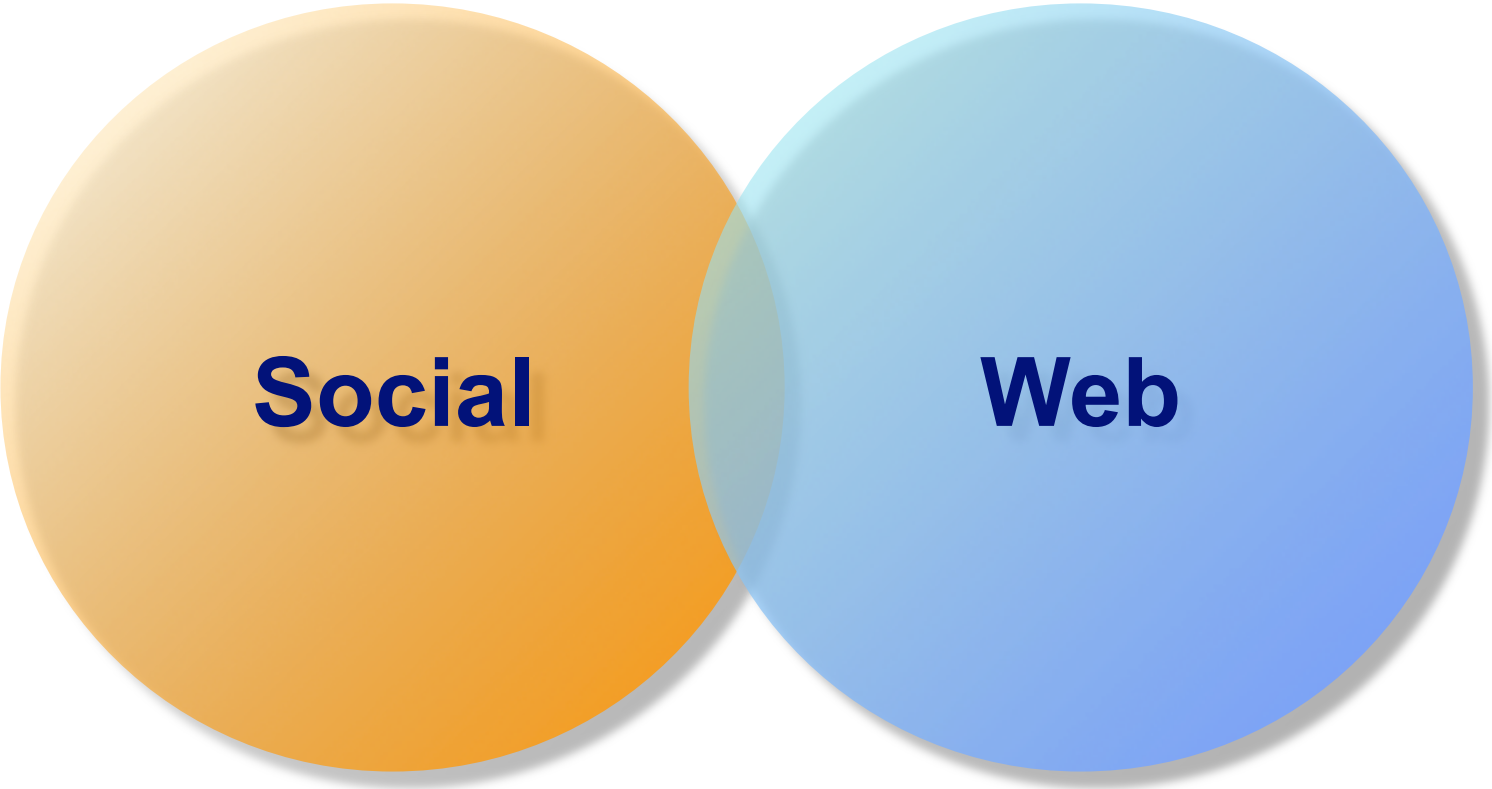
Software design for personalised inquiry and social learning

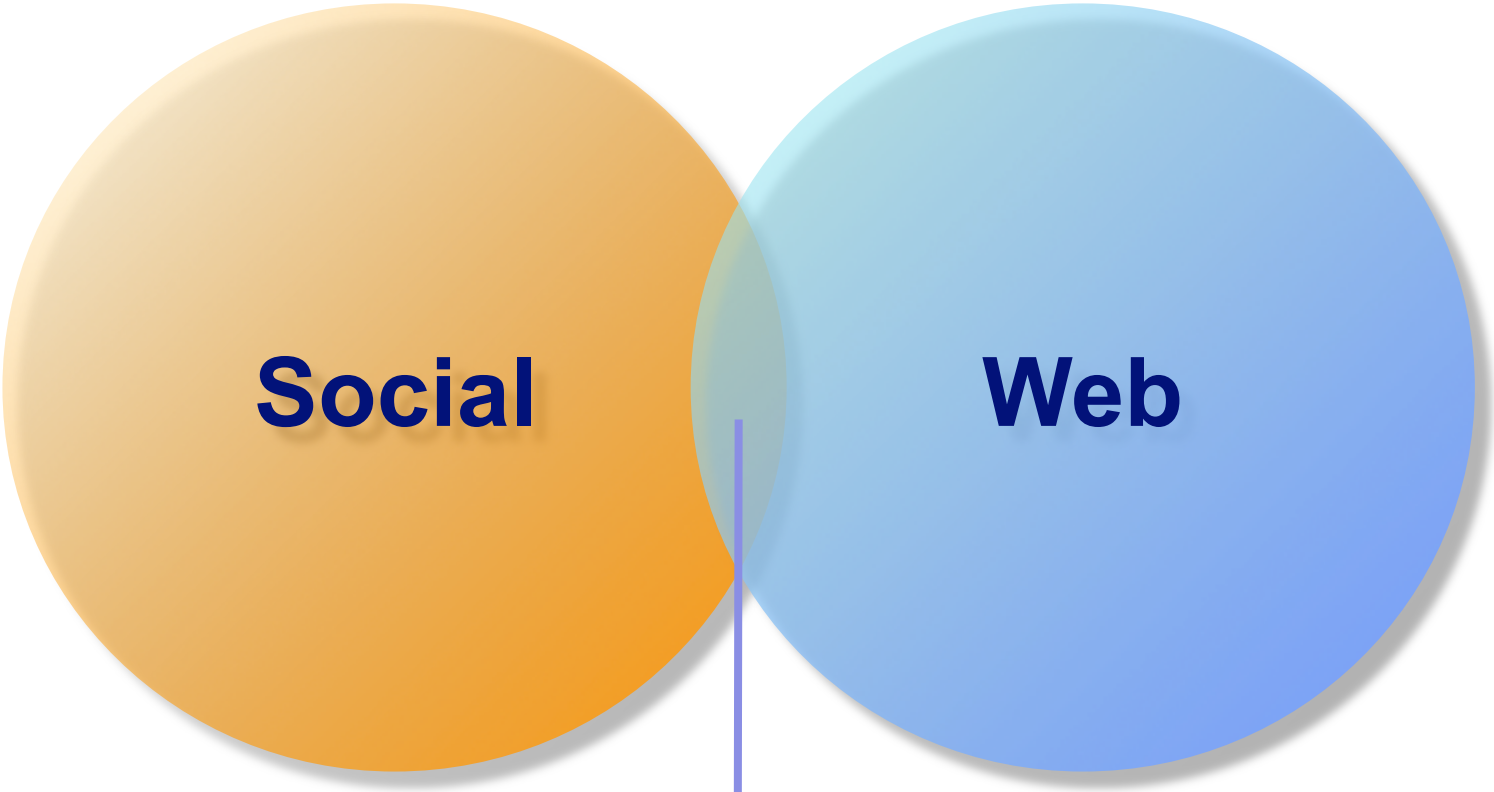




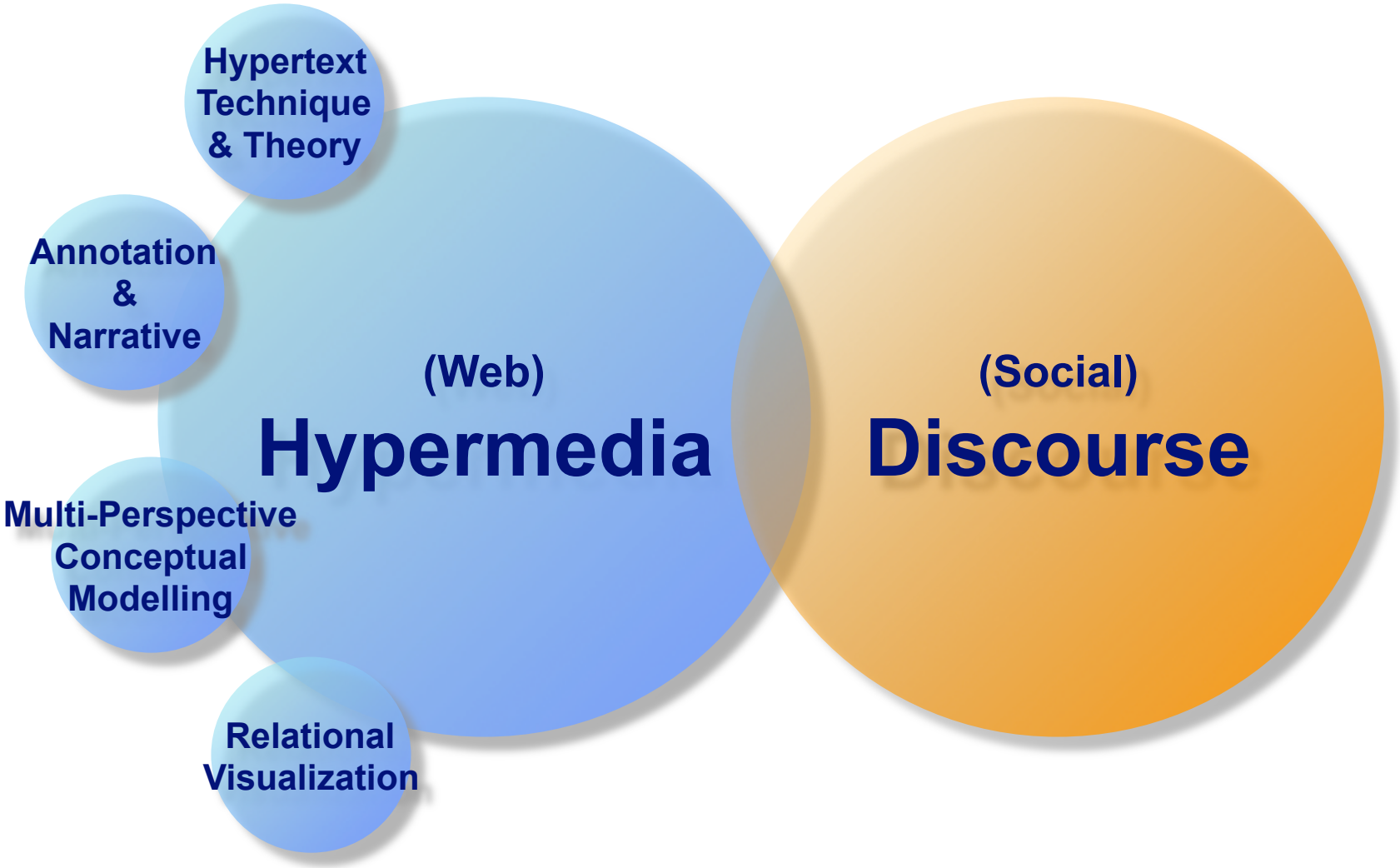
Projects span many disciplines, ranging from basic research to applications:

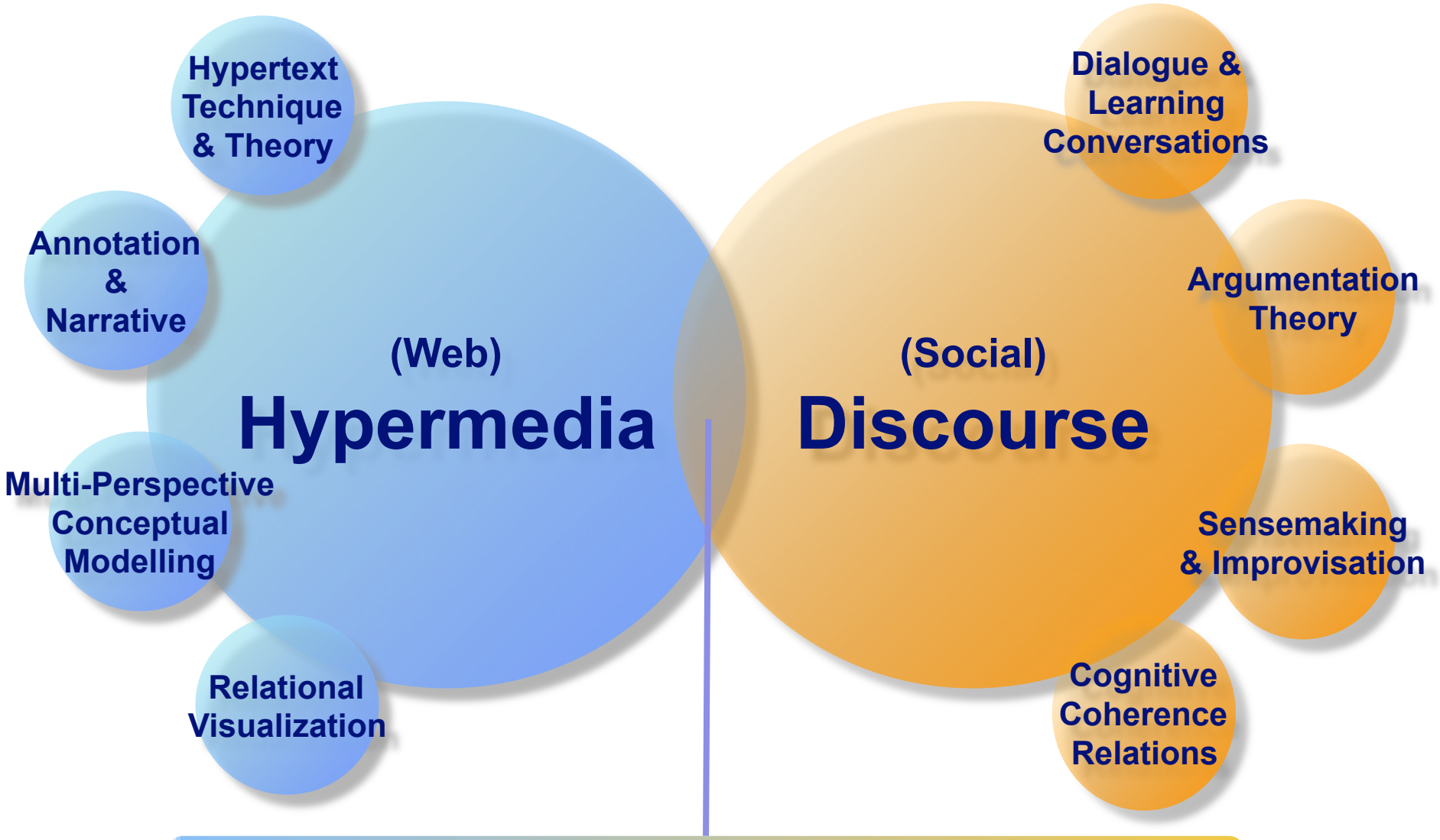
EPSRC
E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL
Arts & Humanities Research Council
JISC
e-Science dti
THE WILLIAM AND FLORA HEWLETT FOUNDATION
DARPA
NASA
ILO
World Vision International
BRITISH COUNCIL
bp


Social
Web



...tuned for knowledge-intensive work?


Hypertext Technique & Theory
Annotation & Narrative
Multi-Perspective Conceptual Modelling
Relational Visualization
(Web)
Hypermedia
(Social)
Discourse



Sensemaking for Collective Intelligence

www.open.ac.uk/sociallearn

Social learning technology: candidate dimensions of the *design space*

everyday social media		*social media tuned for learning?*
"friends" like me	→	+ learning peers/mentors who both affirm and challenge
1-many from the start	→	+ 1-1 mentoring
rapid information exchange	→	+ learning conversations
no reflection required by the UI	→	+ reflection encouraged by the UI
tag clouds	→	+ meaningful connections
generic web analytics	→	+ learning analytics (= accreditation?)
recommendations based on navigation, ratings, purchases…	→	+ recommendations based on learning profiles and activities
myriad activity traces in the cloud	→	+ a secure e-portfolio to evidence learning

principles for social learning

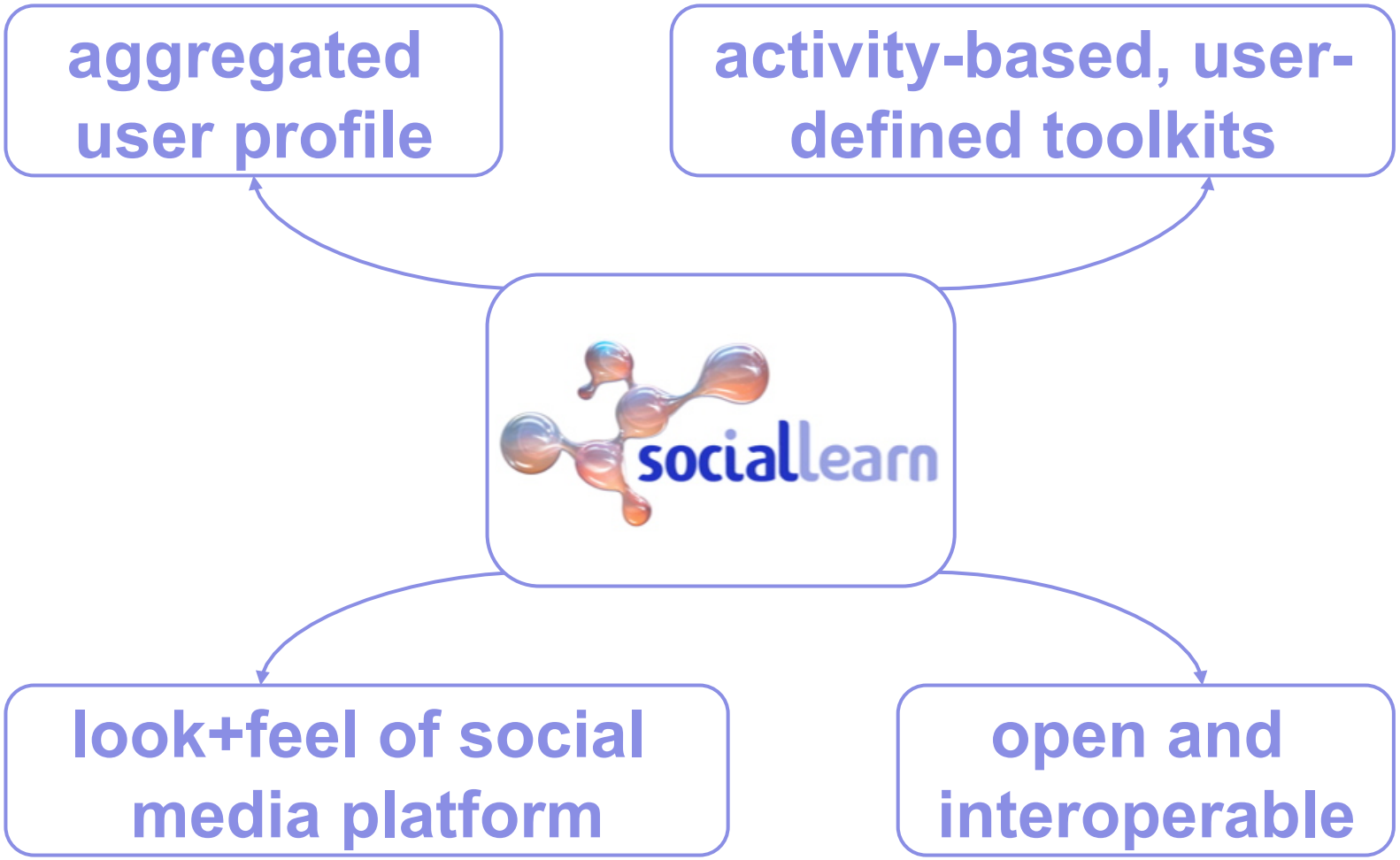
trust • affirmation • challenge

personal passion

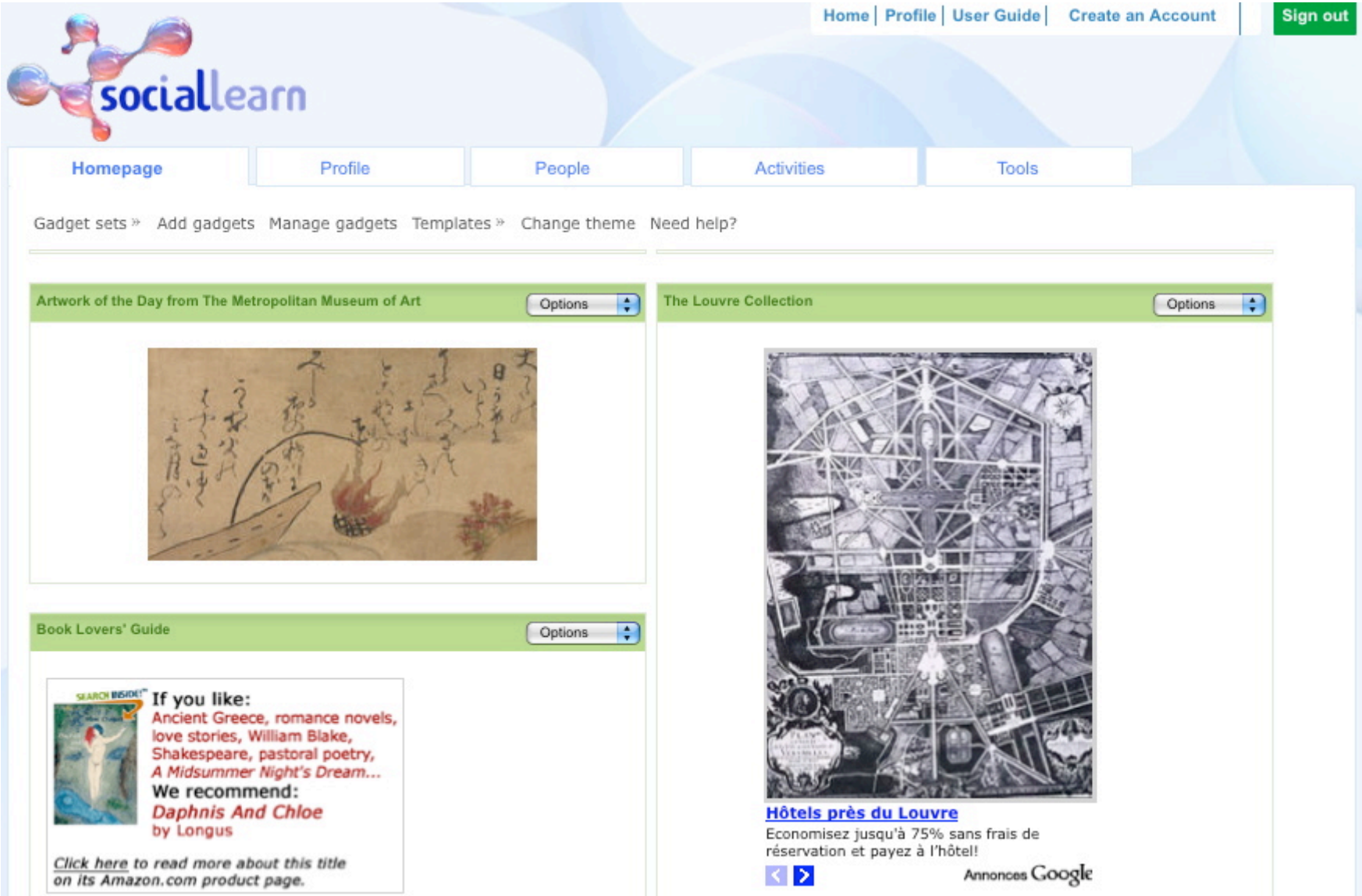
quality relationships

critical thinking

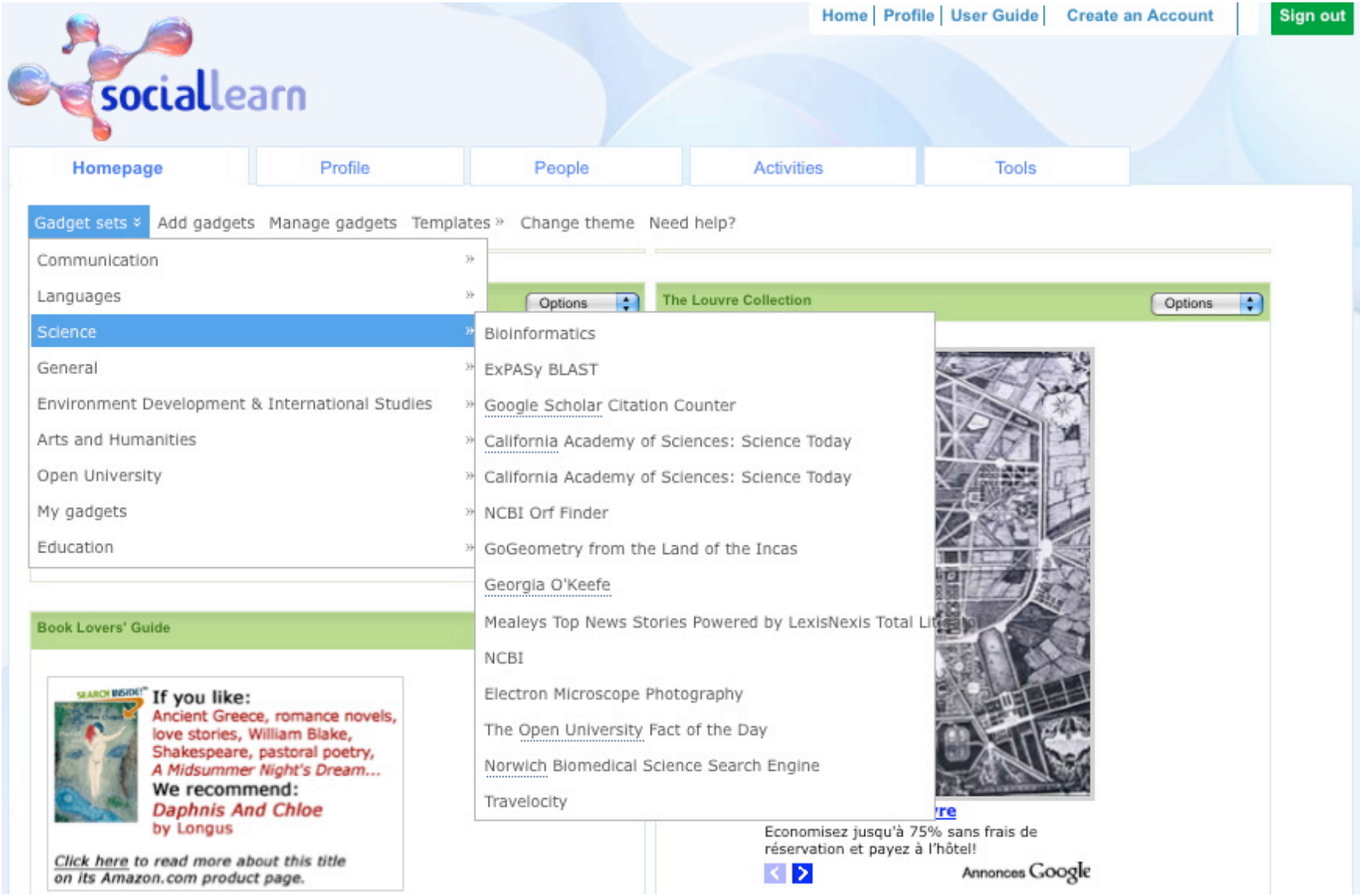
SocialLearn: key features



SocialLearn: configuring my Gadget sets

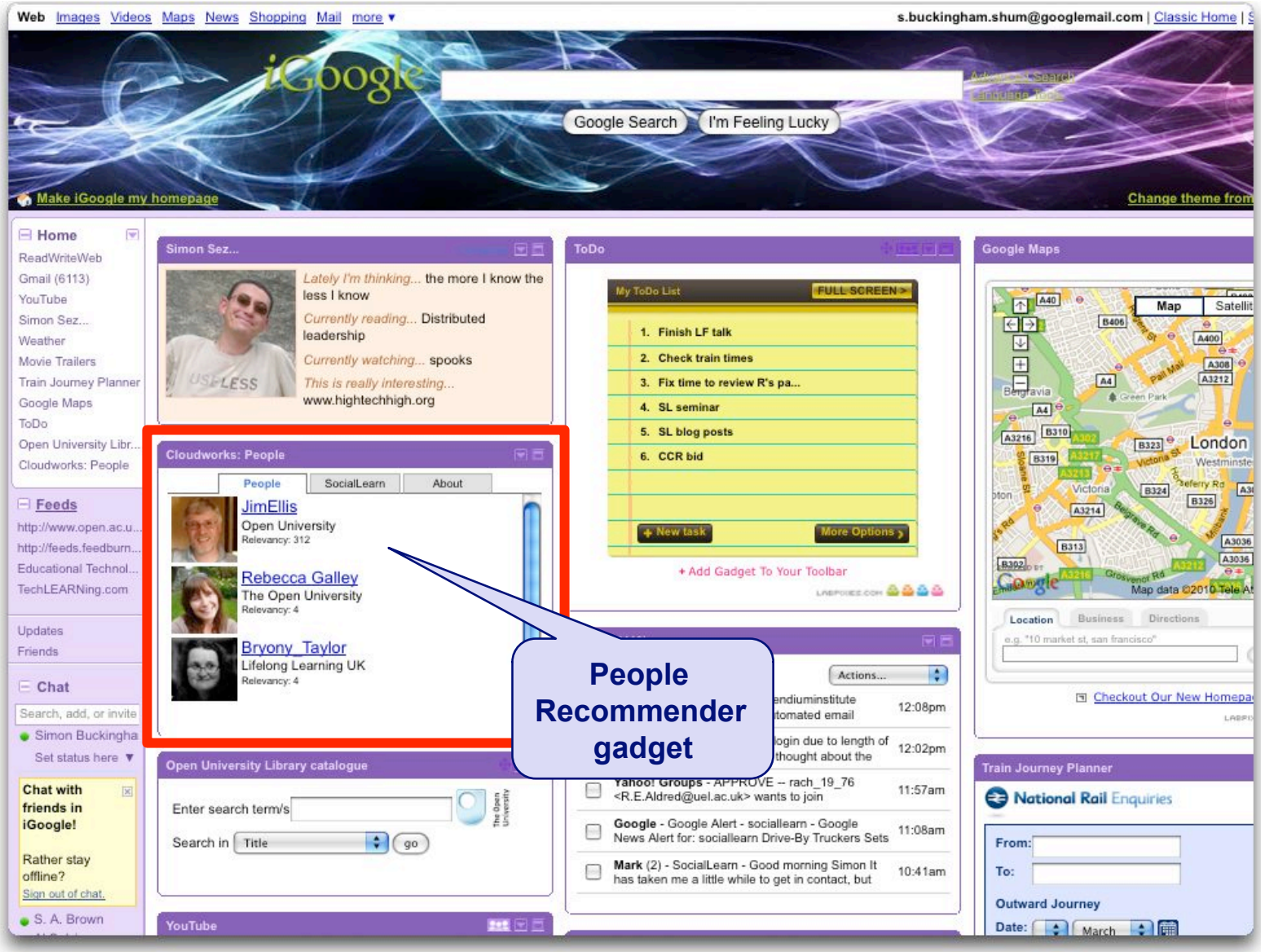


SocialLearn: configuring my Gadget sets

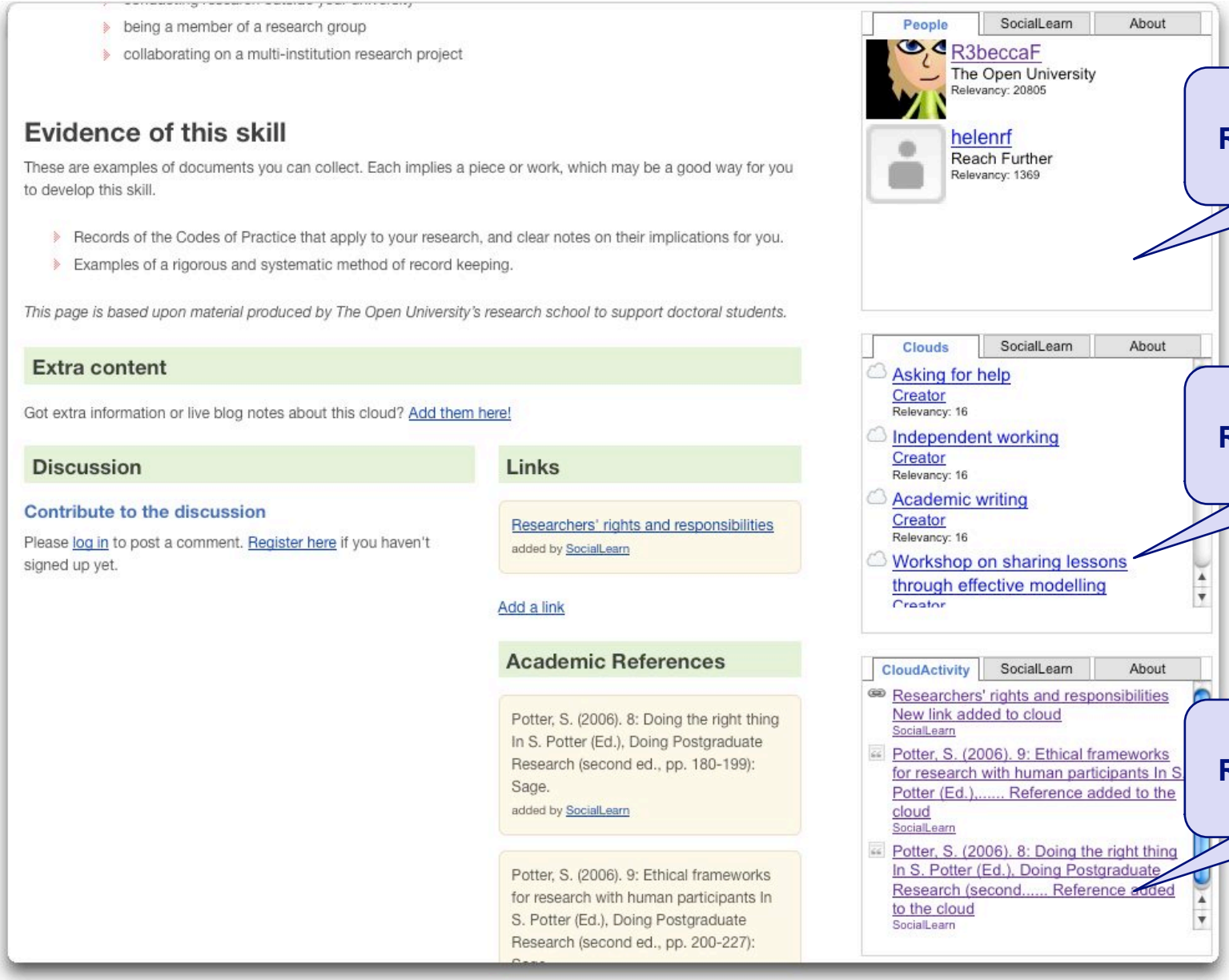


SocialLearn: accessing my Gadgets from the browser toolbar on any website

Embedding a SocialLearn gadget *(People Recommender)* in iGoogle



Embedding SocialLearn gadgets in a partner site
(the OU's Cloudworks: www.cloudworks.ac.uk)



cohere

web annotation for sensemaking

(A winner in the Mozilla/MacArthur Foundation
Jetpack for Learning Design Challenge)

http://cohere.open.ac.uk

cohere — web annotation for sensemaking

8 Ideas found for: http://www.alzforum.org/new

Select: All | My | Pro | Con | Clear

Jetpack
29 Jan 2010
Connections : 0

my cippped idea

source: current page
research suggesting correlations between high amyloid load and declining glucose metabolism (see Part 1

source: current page
This is Part 2 of a four-part series. See Part 1 and Part 3. 8 May 2009. Figuring out what high levels of brain amyloid mean for otherwise healthy older peop

Jetpack
29 Jan 2010
Connections : 0

my idea 3

Michelle Bachler
28 Jan 2010
Connections : 0

my idea24

Michelle Bachler
22 Jan 2010
Connections : 1

Testing drag and drop again 35

Michelle Bachler
11 Jan 2010

I am Jetpack. | Alzforu... | Q4: What ca... | Resilience T... | Cohere >>>

AD Hypotheses
SWAN Knowledge Base
Current Hypotheses
Hypothesis Factory
Forums
Live Discussions
Virtual Conferences
Interviews
Enabling Technologies
Workshops
Research Tools
Compendia
AlzGene
AlzRisk
Antibodies
Biomarkers
Mutations
Pathways
Protocols
Research Models
Video Gallery
Resources
Bulletin Boards
Conference Calendar
Grants
Jobs

EARLY-ONSET FAMILIAL

Overview
Diagnosis/Genetics
Research
News
Profiles
Clinics

DRUG DEVELOPMENT

Companies
Tutorial
Drugs in Clinical Trials

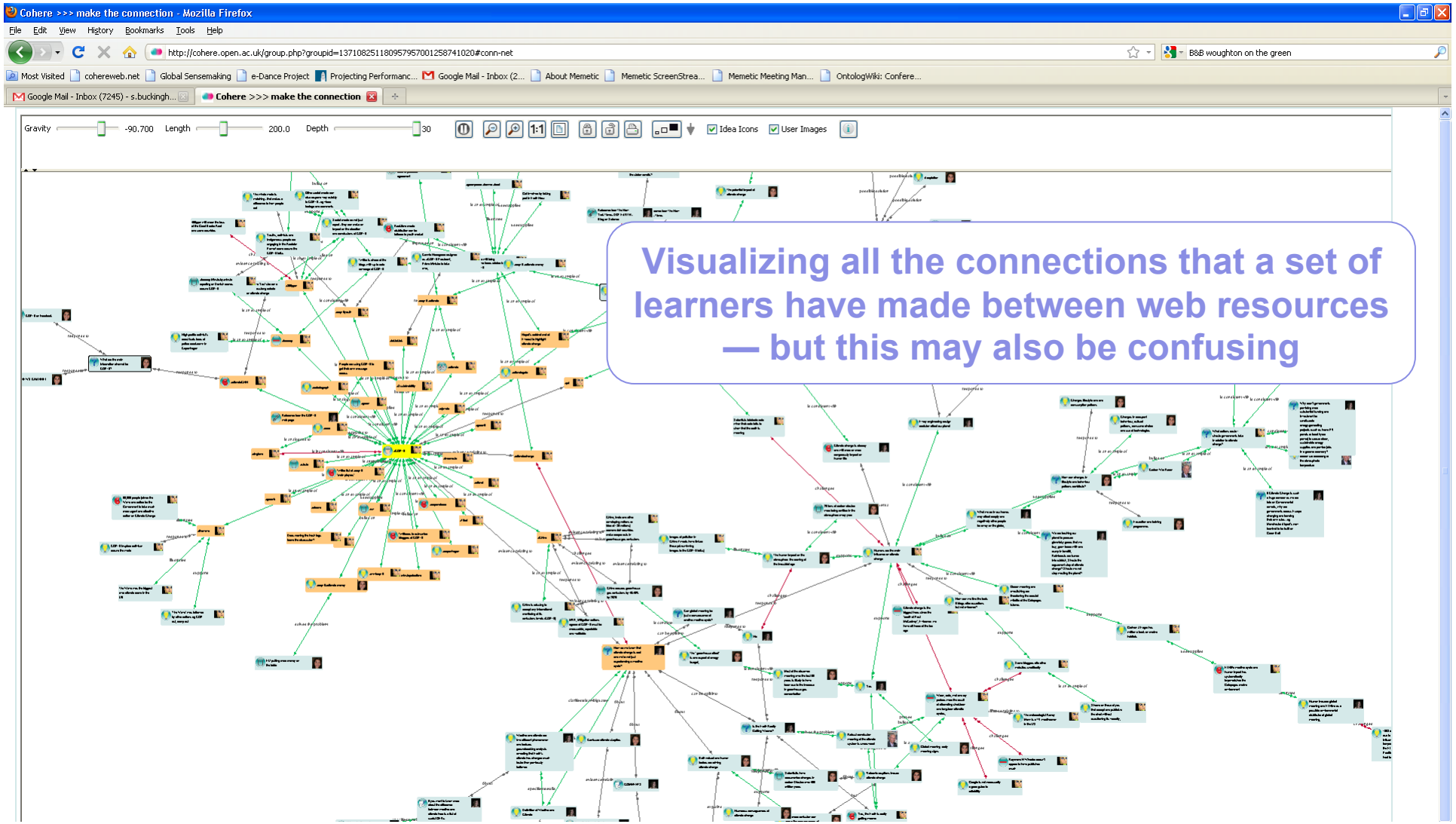
8 May 2009. Figuring out what high levels of brain amyloid mean for otherwise healthy older people was a prime focus of the Human Amyloid Imaging (HAI) conference, held 24 April in Seattle. Along with new research suggesting correlations between high amyloid load and declining glucose metabolism (see Part 1 of this series), several other studies strengthen the case that amyloid-laden brains are on the wane. These data help relate live measurements of Alzheimer disease (AD) pathology to subtle changes in brain function that may be present years before standard tests pick up cognitive decline. Understanding what happens during the critical time window between early pathology and possible dementia onset should help open the doors to future preventive therapies for AD, researchers at the conference agreed.

Like several other speakers, **John Becker**, Massachusetts General Hospital, Boston, tackled this basic question: Does amyloid deposition correlate with diminishing brain metabolism in cognitively normal older people? Becker measured both features with positron emission tomography (PET)—the former with the amyloid tracer Pittsburgh Compound-B (PIB), the latter as fluorodeoxyglucose (FDG) metabolism—but his FDG-PET assessments focused on brain areas that make up large-scale functional networks. Among 53 participants with a Clinical Dementia Rating (CDR) of 0, 11 had high PIB uptake. As a group these folks had lower glucose metabolism in portions of the default-mode network, including the posterior cingulate-precuneus, inferior parietal, lateral temporal, and ventromedial areas. The default-mode network is a system of brain areas that fire up during rest and tone down when the person focuses on a mental task. These same brain regions are among those hit first in AD (see ARF related news story and Buckner et al., 2005), and loss of default-mode activity in the resting state seems to mark early AD (see ARF related news story and Greicius et al., 2004).

Trey Hedden, a Massachusetts General Hospital colleague and collaborator on Becker's work, used a different approach to address a similar issue. His

De Liddo, A. and Buckingham Shum, S. (2010). Cohere: A prototype for contested collective intelligence. In: *ACM Computer Supported Cooperative Work (CSCW 2010) - Workshop: Collective Intelligence In Organizations*, February 6-10, 2010, Savannah, Georgia, USA. http://oro.open.ac.uk/19554

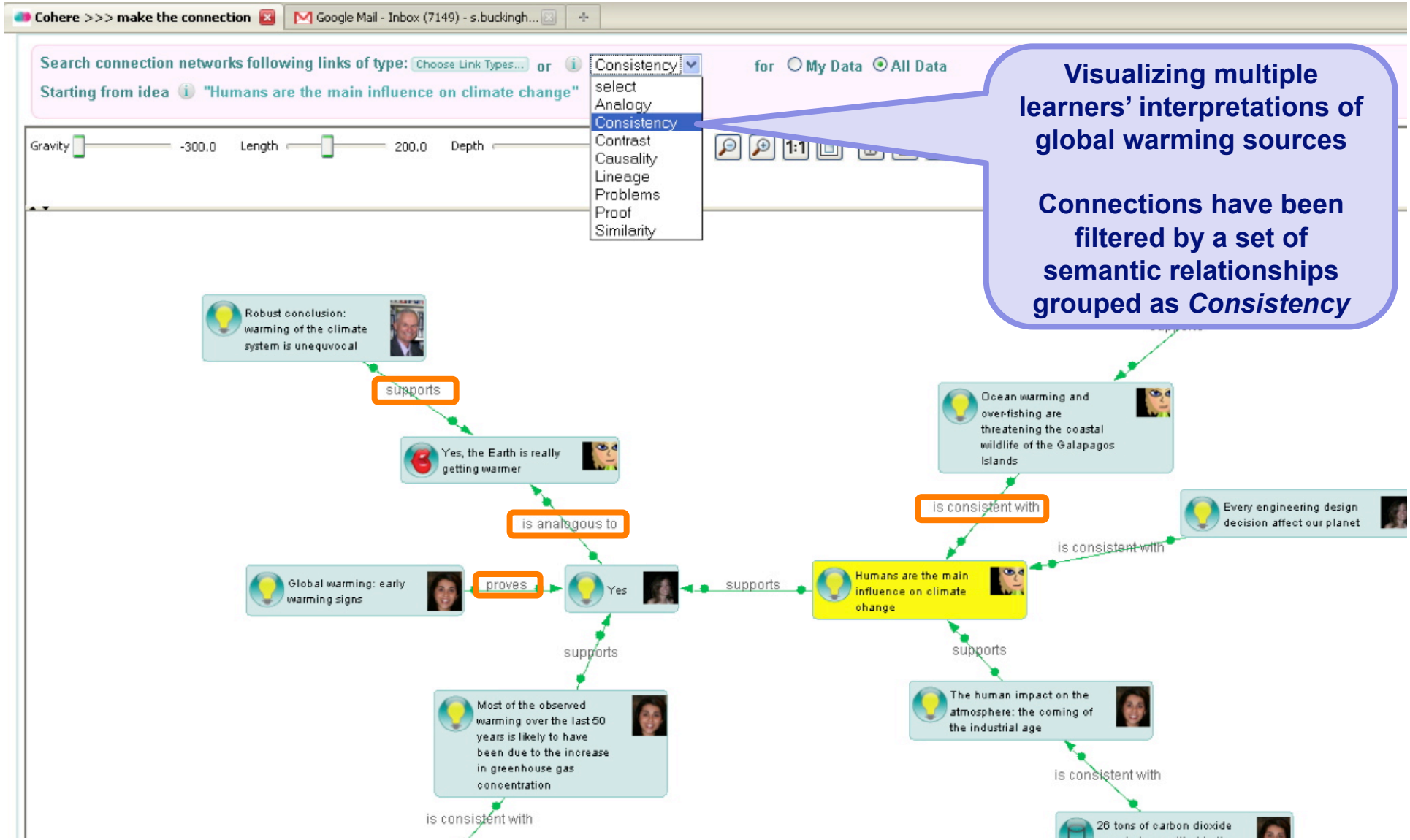
cohere seeing the connections people make as they annotate the web using Cohere



Visualizing all the connections that a set of learners have made between web resources — but this may also be confusing

De Liddo, A. and Buckingham Shum, S. (2010). Cohere: A prototype for contested collective intelligence. In: *ACM Computer Supported Cooperative Work (CSCW 2010) - Workshop: Collective Intelligence In Organizations*, February 6-10, 2010, Savannah, Georgia, USA. http://oro.open.ac.uk/19554

cohere — semantic filter of argument map



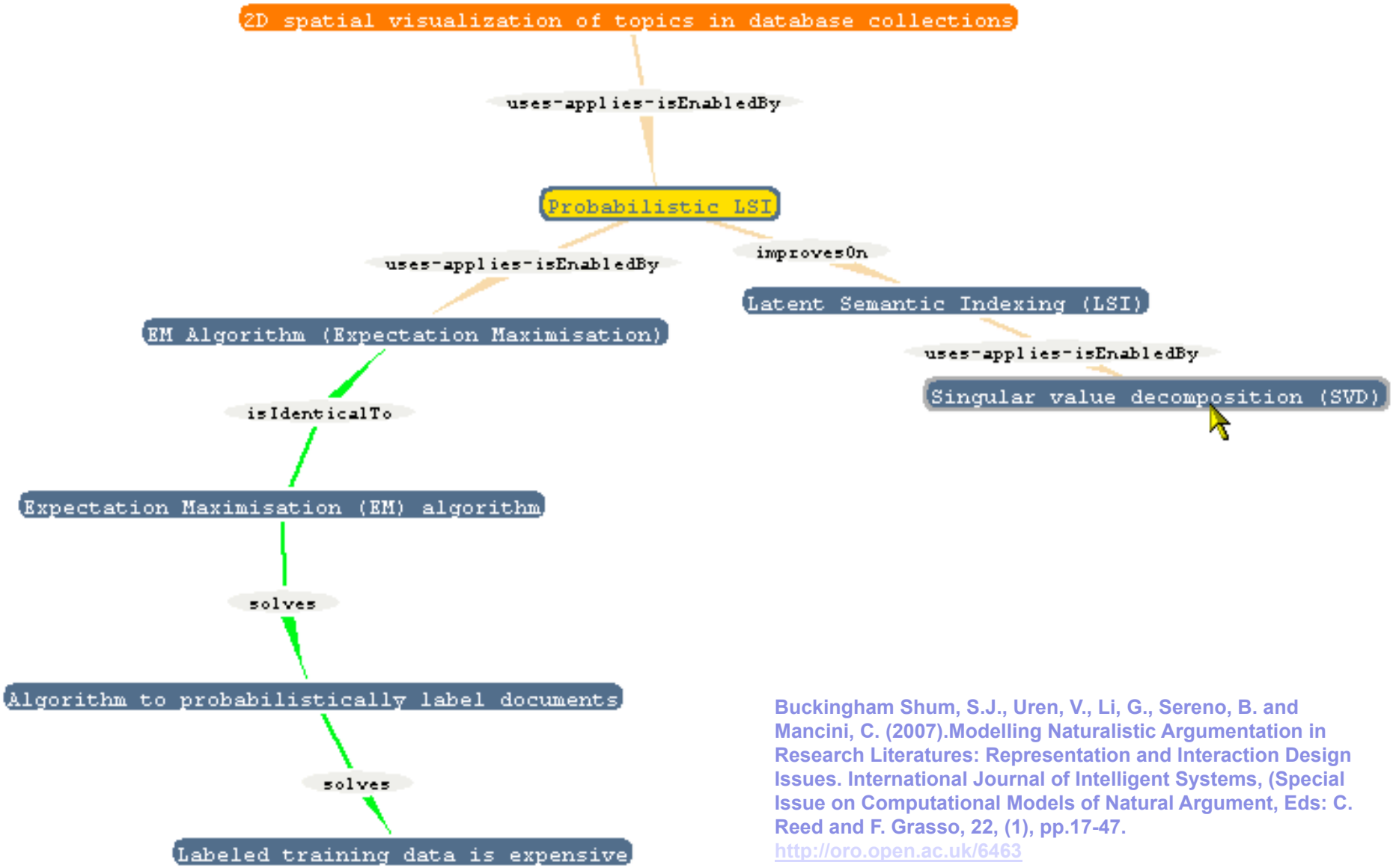
Visualizing multiple learners' interpretations of global warming sources

Connections have been filtered by a set of semantic relationships grouped as *Consistency*

De Liddo, A. and Buckingham Shum, S. (2010). Cohere: A prototype for contested collective intelligence. In: *ACM Computer Supported Cooperative Work (CSCW 2010) - Workshop: Collective Intelligence In Organizations*, February 6-10, 2010, Savannah, Georgia, USA. http://oro.open.ac.uk/19554

"Semantic Google Scholar":

Query: *What is the lineage of this idea?*



Buckingham Shum, S.J., Uren, V., Li, G., Sereno, B. and Mancini, C. (2007).Modelling Naturalistic Argumentation in Research Literatures: Representation and Interaction Design Issues. International Journal of Intelligent Systems, (Special Issue on Computational Models of Natural Argument, Eds: C. Reed and F. Grasso, 22, (1), pp.17-47.
http://oro.open.ac.uk/6463

cohere — geospatial mashup of ideas

Nodes in the semantic network containing geolocation data can be visualized in Google Maps

Cohere >>> make the connection - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://cohere.open.ac.uk/tagsea

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Screen Capturing
social dynamics society software
spatial planning sustainability
Sustainable Development
sustainable future test
timestamp-demo
UK Election TV Debates
urban plannig

Install Cohere FireFox plugin

Search results for tags "geolocation-demo"

Ideas (3) | Websites (0) | Connections (1) | People & Groups (1)

Visualize as:

Map | Satellite | Hybrid

DEMO: A piece of Data with TIMEPERIOD 1 Jan 2010 - 12 May 2010, and LOCATION Johannesburg

Canada, United States, México, Brasil, Venezuela, Colombia, Perú, Bolivia, Chile, Argentina, South Pacific Ocean, South Atlantic Ocean, Iceland, Sverige, Sweden, Norge, Norway, Polska, Poland, Deutschland, Germany, France, España, Spain, Italia, Italy, Türkiye, Україна, Ukraine, Россия, Russia, Kazakhstan, Mongolia, DR Congo, Angola, Namibia, Botswana, South Africa, Madagascar, Indian Ocean, Indonesia, Papua New Guinea, Australia, New Zealand

POWERED BY Google

GI, Inav/Geosistemas SRL, Kingway, LeadDog Consulting, MapData Sciences Pty Ltd, MapIT, MapLink, Mapa GISrael, Mapabc, ORION-ME, PPWK, Tele Atlas, Transnavicom, ZENRIN - Terms of Use

http://cohere.open.ac.uk/node.php?nodeid=137108241720458919001274346337

cohere — timeline viz. mashup of ideas

Nodes in the semantic network containing temporal data can be visualized in MIT Simile's timeline

Cohere >>> make the connection - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://cohere.open.ac.uk/

Most Visited | cohereweb.net | Global Sensemaking | Memetic Meeting Man... | OntologWiki: Confere...

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Learning Design OER policy
OLnet Online learning
organizational studies politics
regional planning
rural development
Screen Capturing
social dynamics society software
spatial planning sustainability
Sustainable Development
sustainable future test
timestamp-demo
UK Election TV Debates
urban plannig

Install Cohere FireFox plugin

DEMO: A Question with a TIME-PERIOD 20-22 May 2010 and LOCATION London

Show Description

Ideas (1) | Websites (0) | Connections (2) | People & Groups (1)

Visualize as:

DEMO: A Question with a TIME-PERIOD 20-22 May 2010 and LOCATION London
Wed, 19 May 2010 23:00:00 GMT
Fri, 21 May 2010 23:00:00 GMT

May 20 | May 21 | May 22 | May 23 | May 24

DEMO: A Question with a TIME-PERIOD 20-22 May 2010 and LOCATION London

Timeline © SIMILE

May | Jun

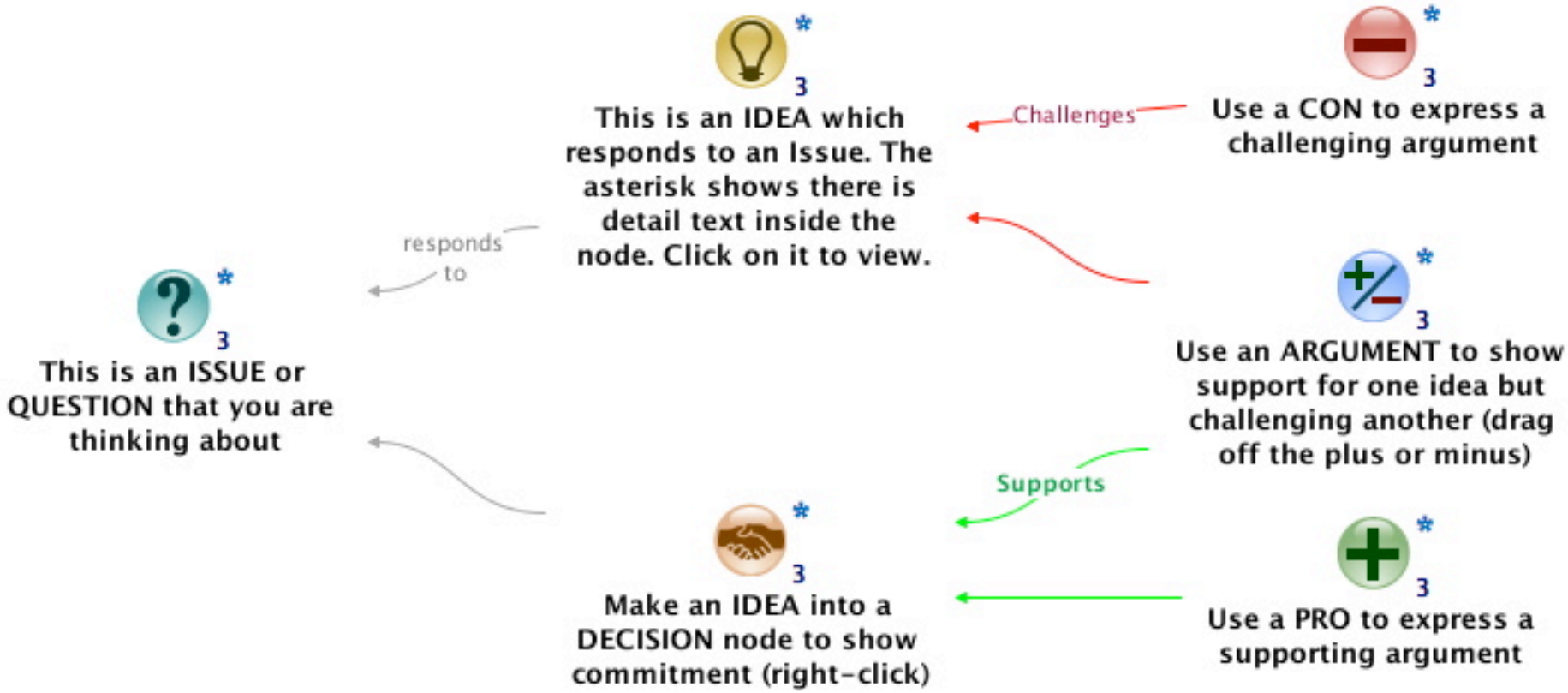
Transferring data from cohere.open.ac.uk...

Compendium

"it's like Excel, but for knowledge"

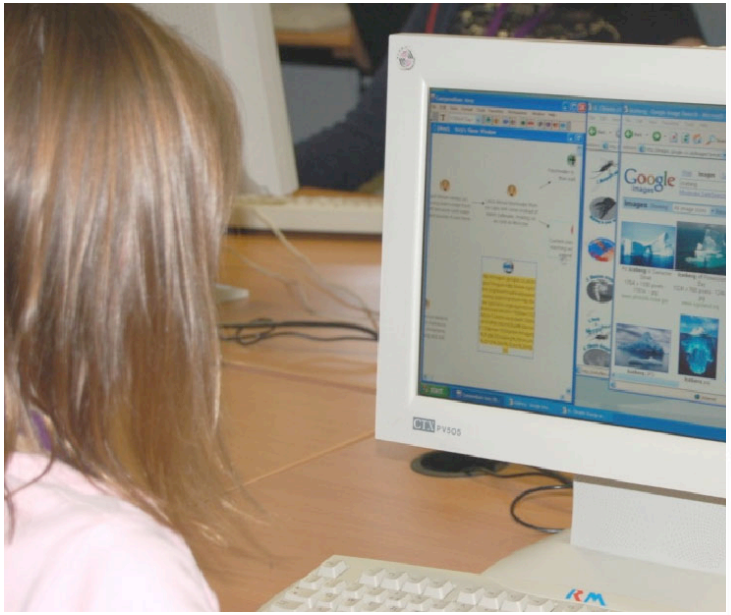
http://compendium.open.ac.uk
http://compendium.open.ac.uk/institute

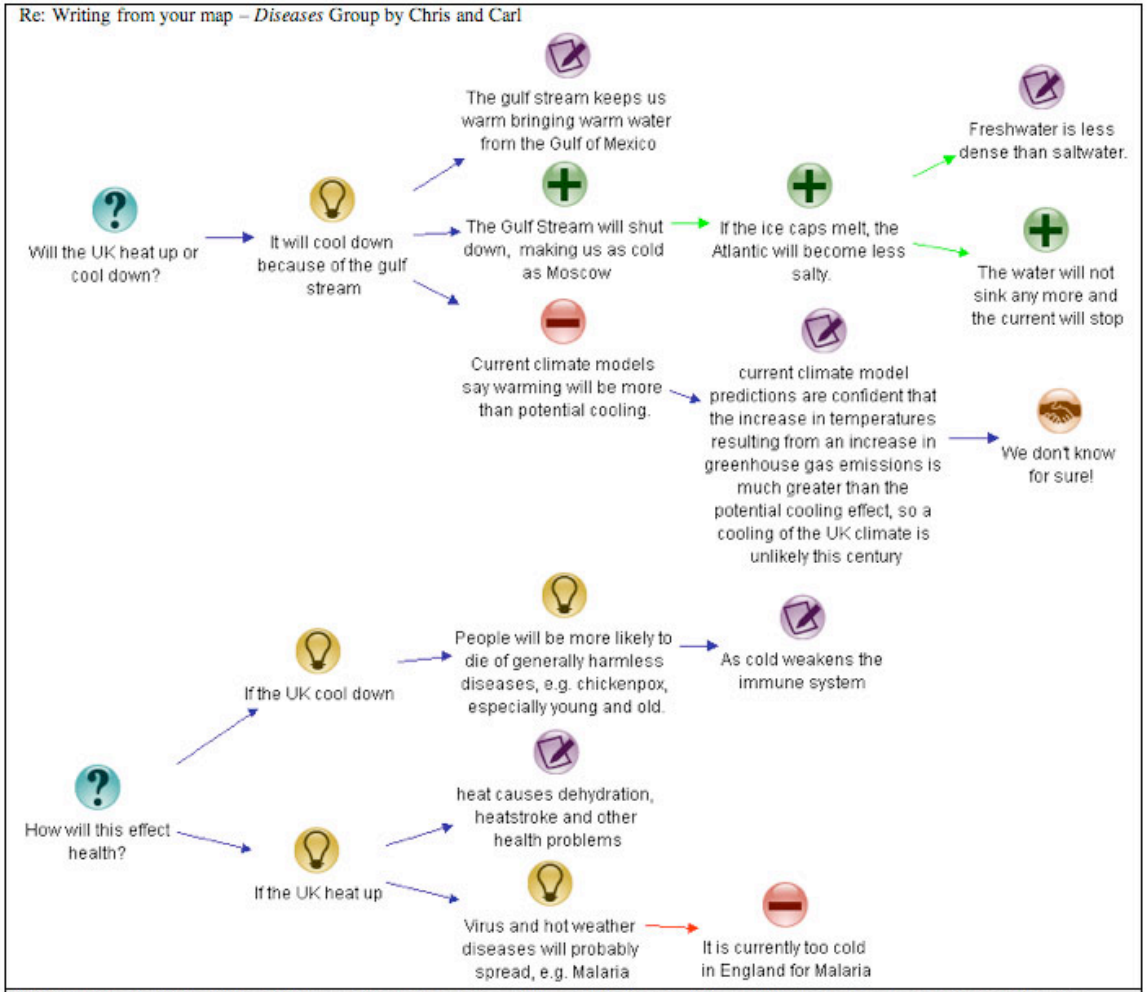
Compendium: visual hypermedia for managing the connections between ideas flexibly



Buckingham Shum, S., Selvin, A., Sierhuis, M., Conklin, J., Haley, C. and Nuseibeh, B. (2006). Hypermedia Support for Argumentation-Based Rationale: 15 Years on from gIBIS and QOC. In: *Rationale Management in Software Engineering* (Eds.) A.H. Dutoit, R. McCall, I. Mistrik, and B. Paech. Springer-Verlag: Berlin. http://oro.open.ac.uk/3032

Teaching teenagers evidence based scientific deliberation through Dialogue Mapping



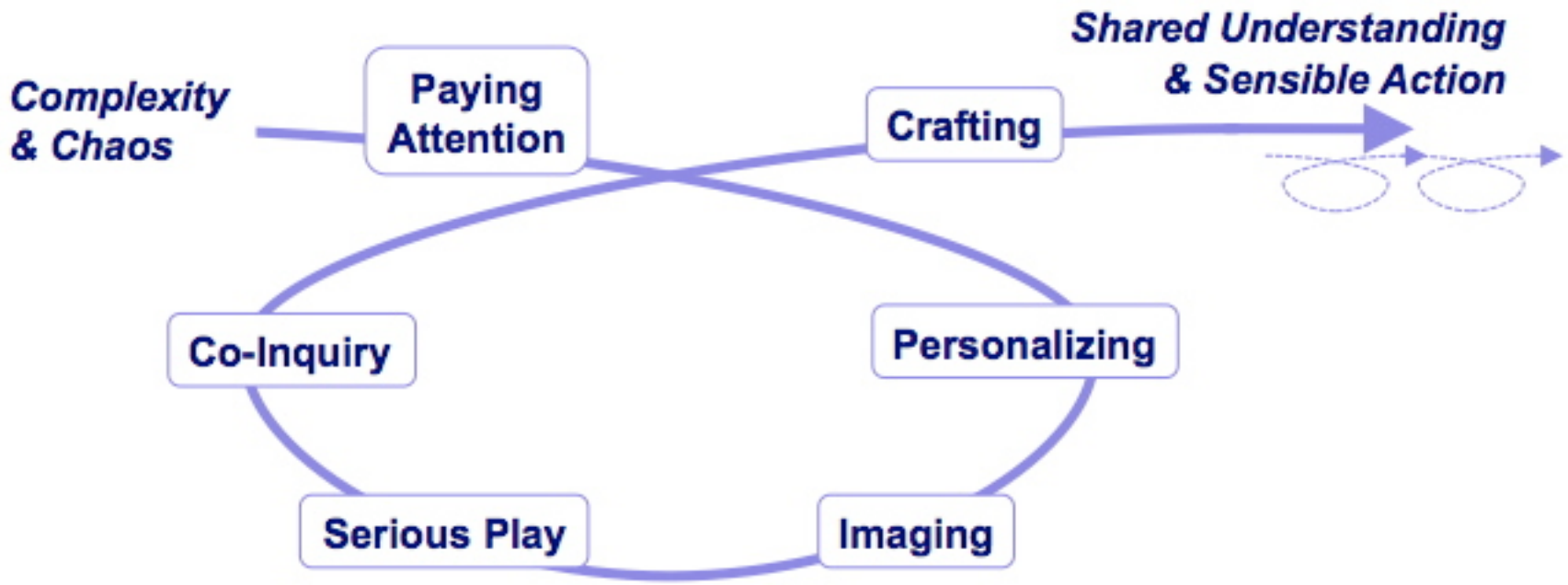


"We think that the UK might cool down because of the gulf stream. The gulf stream keeps us warm bringing warm water from the Gulf of Mexico but the gulf stream might shut down, making us as cold as Moscow. This is because if the ice caps melt, the north Atlantic will become less salty. Freshwater is less dense than salt water so salt water normally would sink allowing the freshwater to pass above it. But if the water becomes less salty, the water will not sink anymore and the current will stop making the UK cool down rather than heat up.
However, current climate models say warming will be more than potential cooling. Current climate model predictions are confident that the increase in temperatures resulting from an increase in greenhouse gas emissions is much greater than the potential cooling effect, so a cooling of the UK climate is unlikely this century. We don't know for sure!
How will this effect health? If the UK cool down, people will be more likely to die of generally harmless diseases, e.g. chickenpox, especially young and old because cold weakens the immune system. If the UK heat up, heat causes dehydration, heatstroke and other health problems. Virus and hot weather diseases will probably spread,

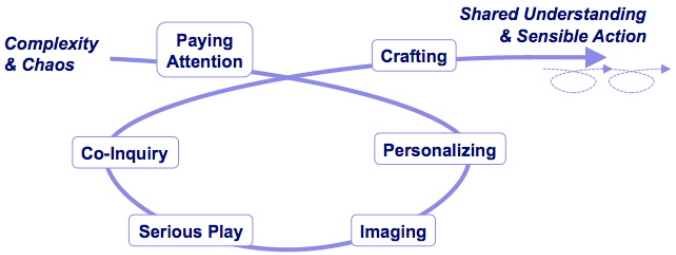
Okada, A. and Buckingham Shum, S. (2008). **Evidence-Based Dialogue Maps as a Research Tool to Investigate the Quality of School Pupils' Scientific Argumentation**, *International Journal of Research and Method in Education*, 31(3), pp. 291–315 (Special Issue: Coffin, C. and O'Halloran, K.A, (Eds.) *Researching Argumentation in Educational Contexts: New Methods, New Directions*). Article PrePrint: http://oro.open.ac.uk/11773

Compendium to scaffold CCL's C2 Competencies

Recall the sensemaking cycle comprising six new literacies:



Compendium to scaffold CCL's C2 Competencies

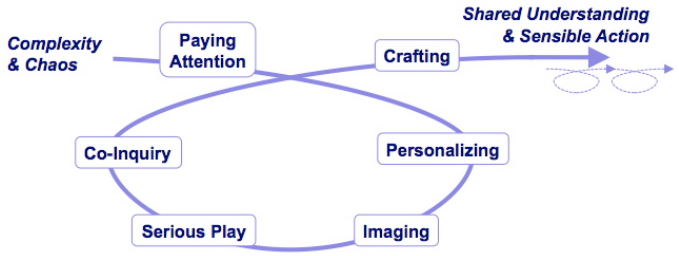


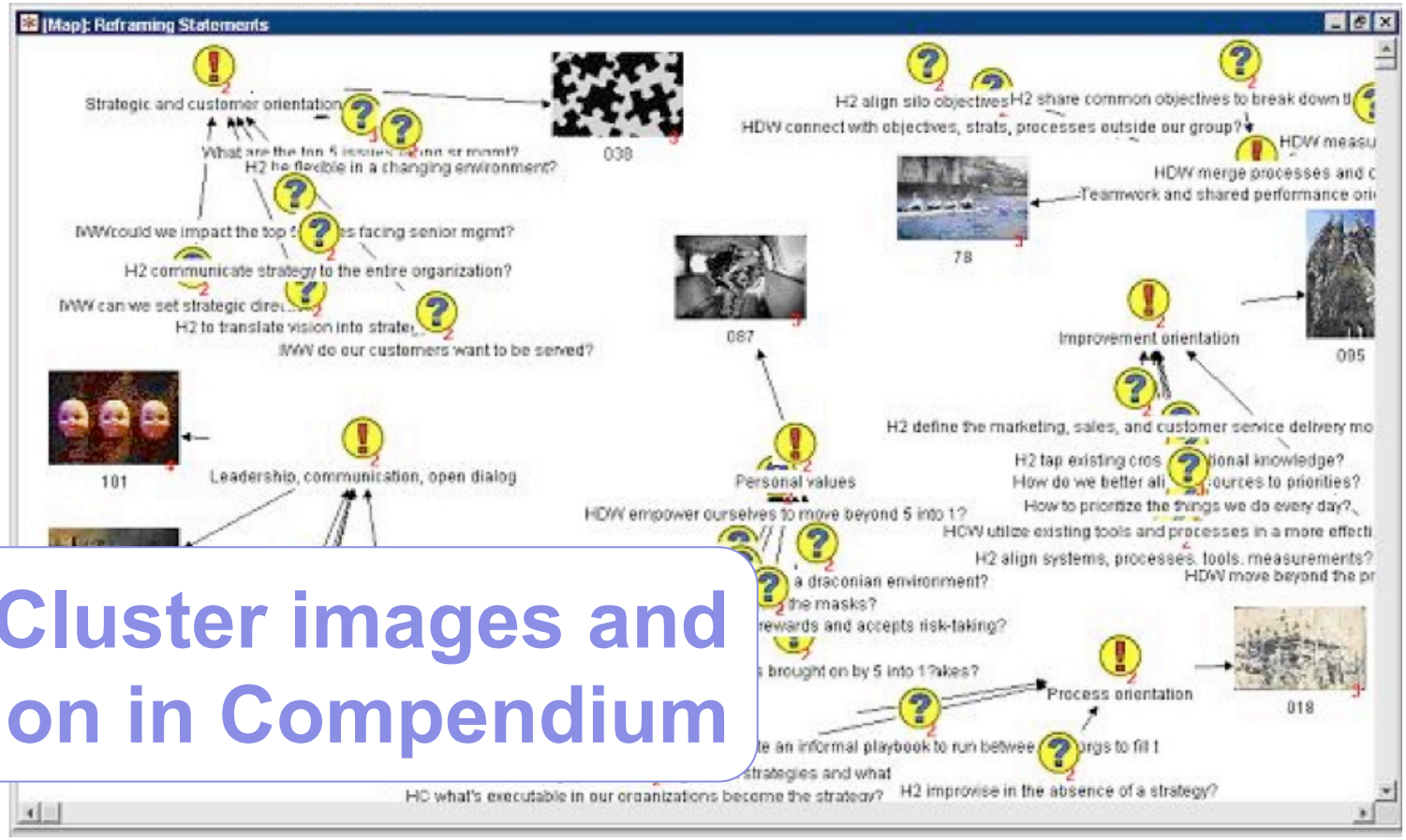
2 images from *Visual Explorer*

http://cclve.blogspot.com

Selvin, A., Buckingham, S., Horth, D., Palus, C. & Sierhuis, M. (2002). **Knowledge Art: Visual Sensemaking Using Combined *Compendium* and *Visual Explorer* Methodologies.** Presented at: *The Art of Management and Organisation Conference,* King's College London, 3-6 September 2002. http://compendium.open.ac.uk/institute/compendium/papers/aomo2002Compendium.doc

Compendium to scaffold CCL's C2 Competencies

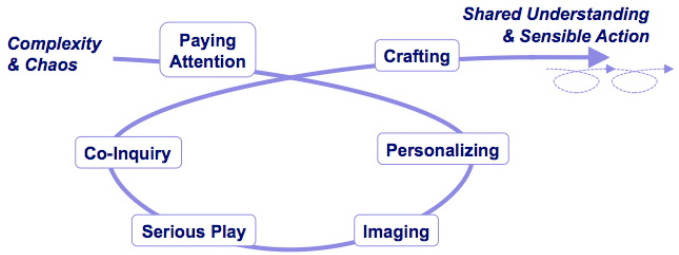


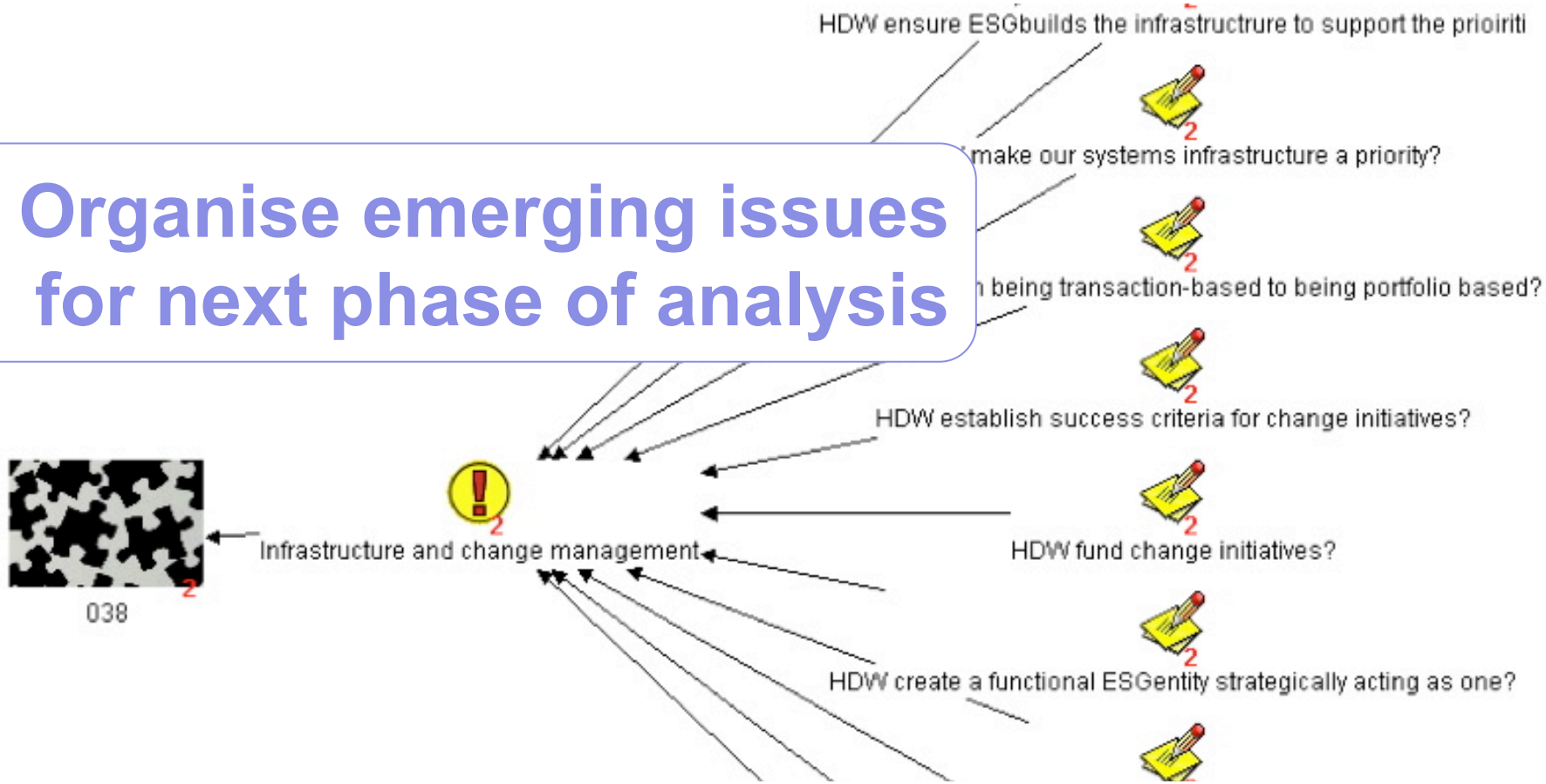


Cluster images and discussion in Compendium

Selvin, A., Buckingham, S., Horth, D., Palus, C. & Sierhuis, M. (2002). **Knowledge Art: Visual Sensemaking Using Combined *Compendium* and *Visual Explorer* Methodologies.** Presented at: *The Art of Management and Organisation Conference,* King's College London, 3-6 September 2002.
http://compendium.open.ac.uk/institute/compendium/papers/aomo2002Compendium.doc

Compendium to scaffold CCL's C2 Competencies

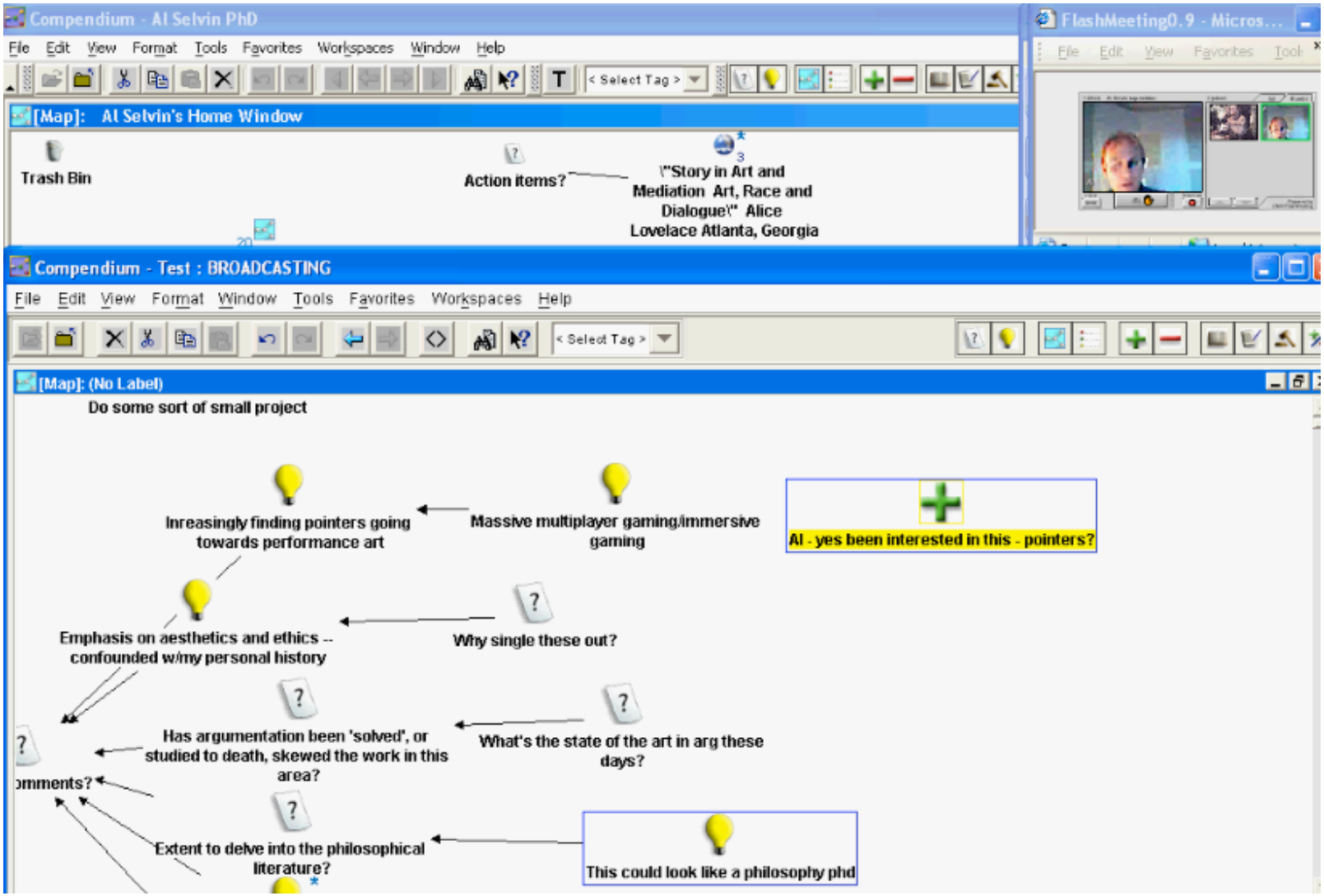




Organise emerging issues for next phase of analysis

Selvin, A., Buckingham, S., Horth, D., Palus, C. & Sierhuis, M. (2002). **Knowledge Art: Visual Sensemaking Using Combined *Compendium* and *Visual Explorer* Methodologies.** Presented at: *The Art of Management and Organisation Conference,* King's College London, 3-6 September 2002.
http://compendium.open.ac.uk/institute/compendium/papers/aomo2002Compendium.doc

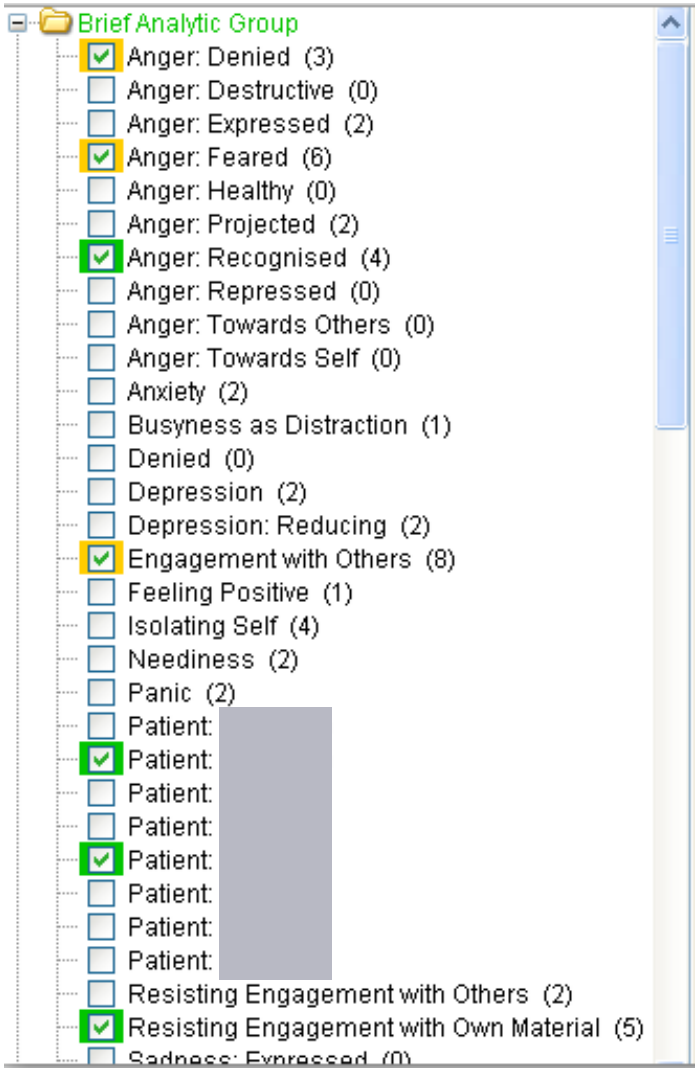
Compendium to map e-PhD supervision

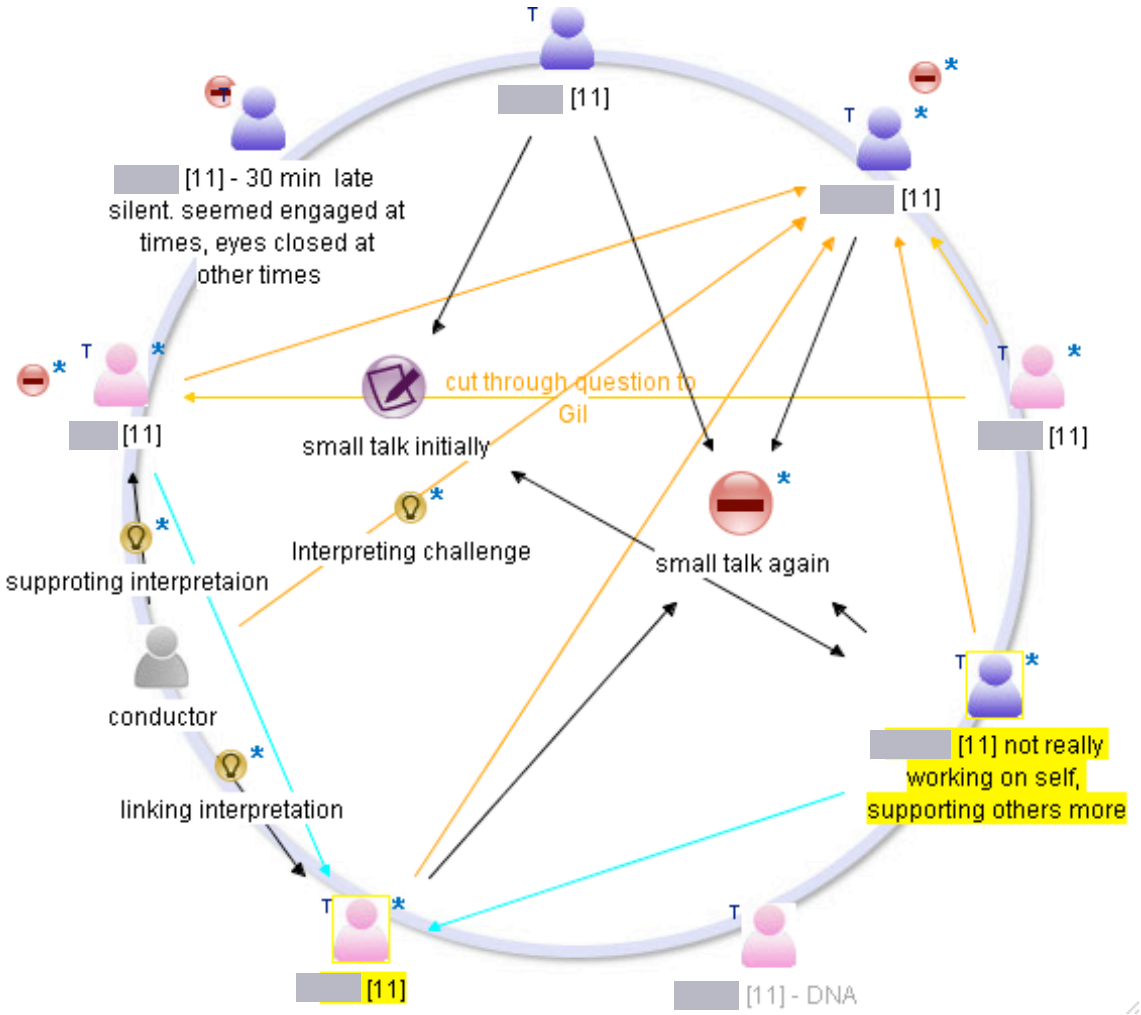


This and other e-PhD tools: http://projects.kmi.open.ac.uk/e-phd

Making sense of group dynamics

Building collective intelligence about therapeutic group interactions





http://people.kmi.open.ac.uk/sbs/2010/03/compendium-mapping-group-dynamics/

Tool Poll! From what you've seen so far, which tool would you most like to try out?

- ***SocialLearn***
- ***Compendium***
- ***Cohere***
- ***Visual Explorer***

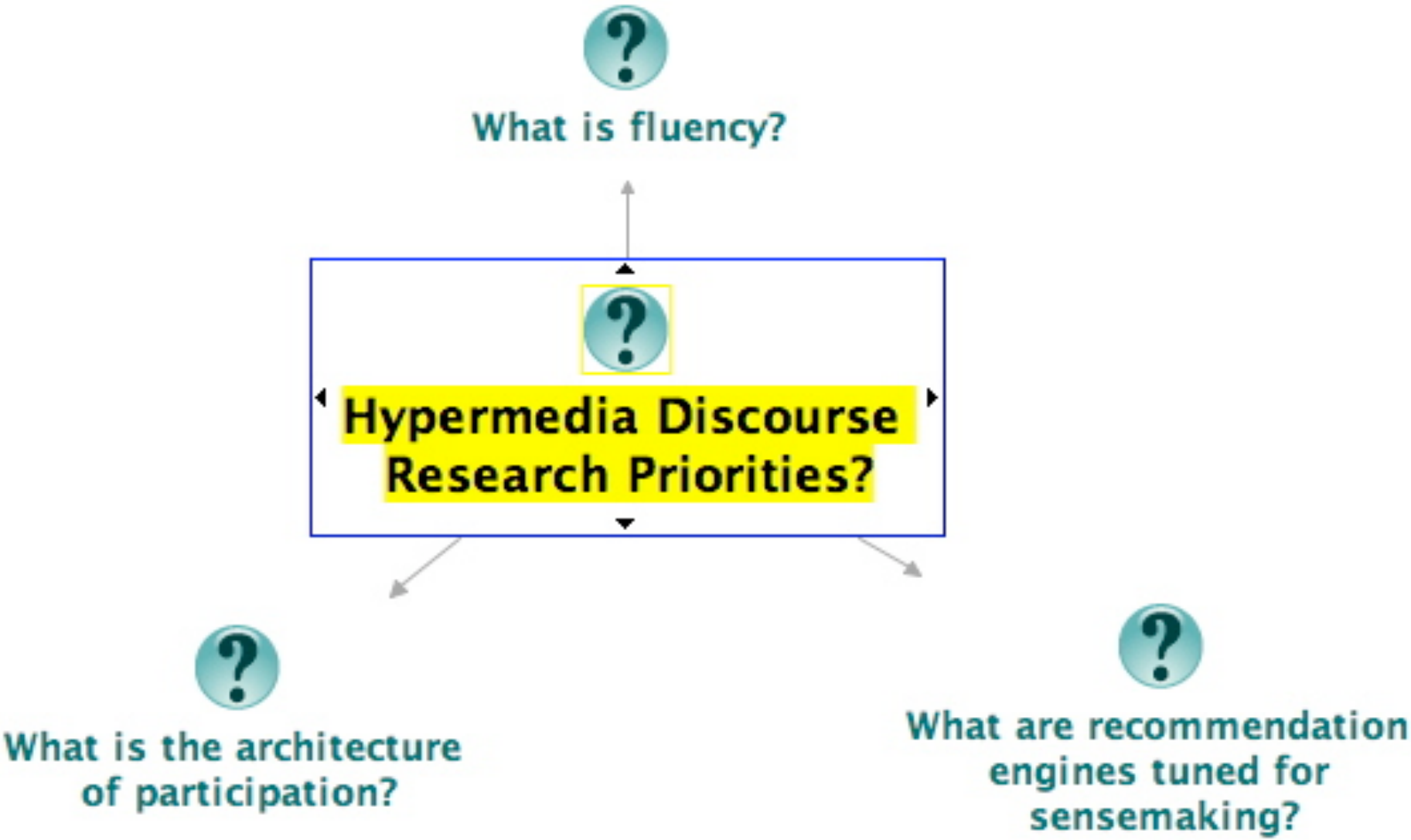
How might you use these tools in your context?

Have you had good or poor experiences with similar tools?

Take a minute to post a thought or question to the shared chat.

Ongoing research questions

Ongoing research questions



Ongoing research questions

"Knowledge Art" & other user evaluations

Reading and Writing Ideas+Discourse as Networks: What is the learning curve from beginner to virtuoso?

What is fluency?

Hypermedia Discourse Research Priorities?

What is the architecture of participation?

What are recommendation engines tuned for sensemaking?

Online Deliberation 2010; ESSENCE; SocialLearn

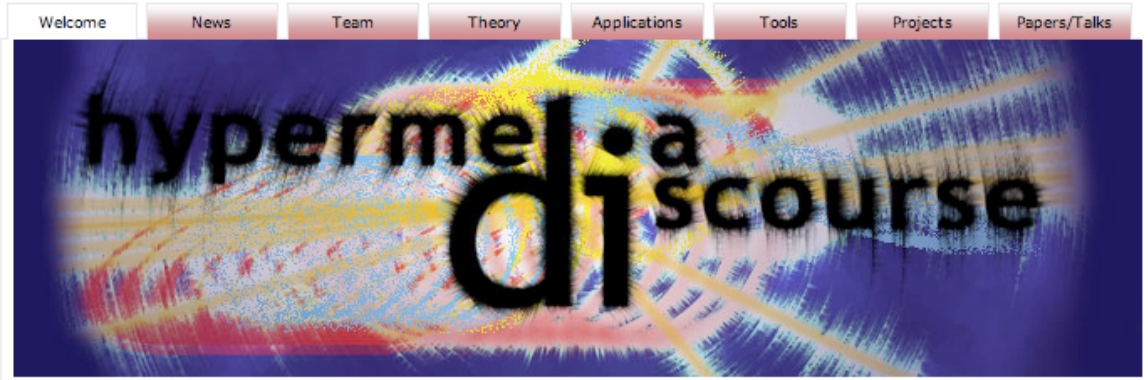
Cohere/ SocialLearn

Structuring Deliberation to foster Reflection is harder work than tweeting or web-boards! What is the AoP for online environments such as these, esp. outside of formal learning?

We need Analytics and Recommendation Engines tuned for learning and sensemaking. How do we embed learning theory into our tools?

Articles, books, news, movies, software, community…

The Open University



http://projects.kmi.open.ac.uk/hyperdiscourse

Compendium Institute

cohere