Valedictory Lecture, The Open University, 15th July 2014

The Open University

Making Thinking Visible in Complex Times

Simon Buckingham Shum

Knowledge Media Institute, Open University UK

simon.buckinghamshum.net twitter: @sbskmi #OU_inaugural

KNOWLEDGE MEDIA

KMi

INSTITUTE

The Knowledge Media Institute
was opened by
Dudley Fishburn MP
on 13th December 1995

Jonathan Chung-Hin Shum ("Grandad Jon")

http://people.kmi.open.ac.uk/sbs/2011/12/jon-shum

1968

San Francisco, Fall Joint Computer Conference — Dec. 9th 1968

monday afternoon
december 9
3:45 p.m. / arena

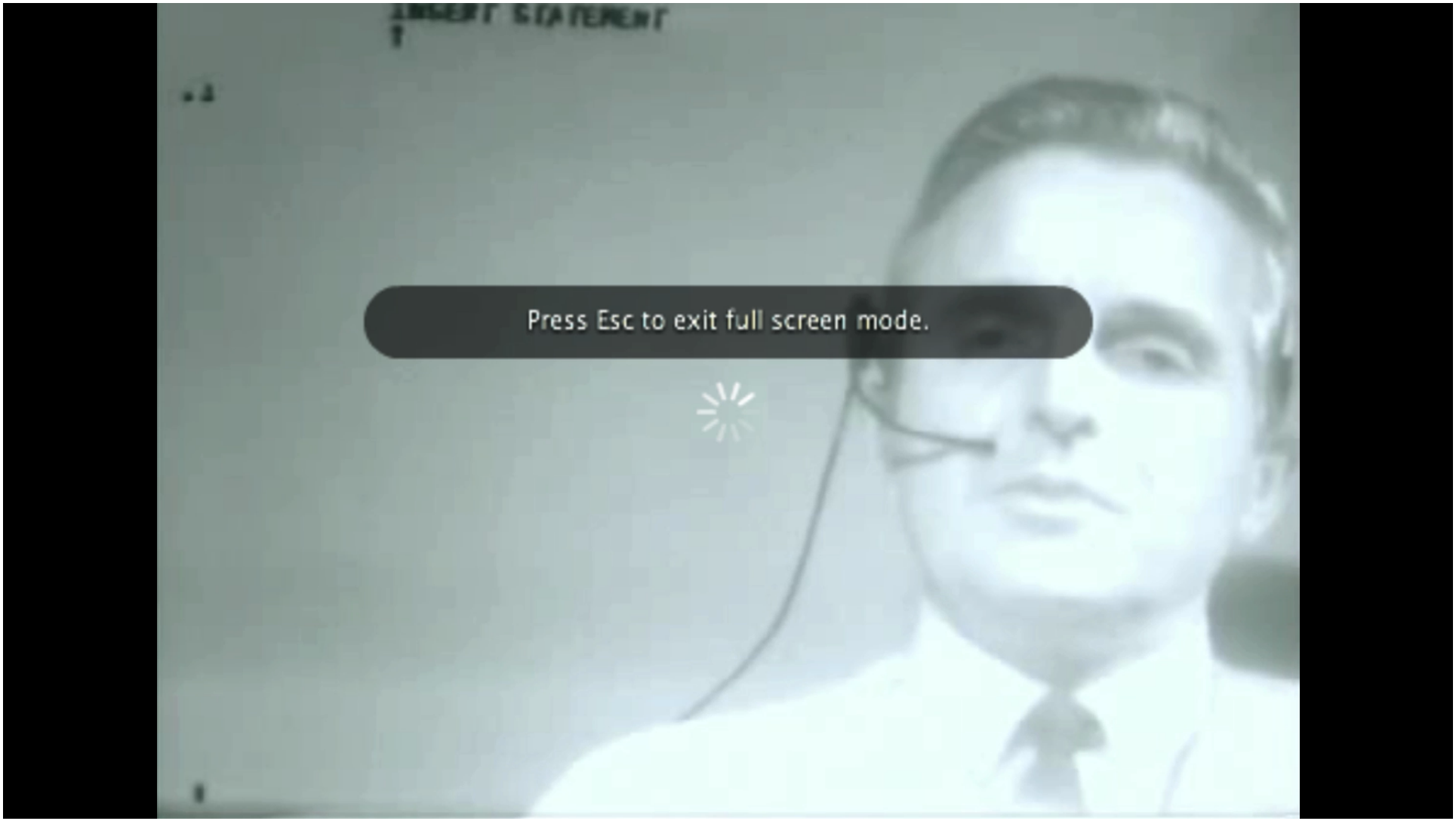
Chairman:
DR. D. C. ENGELBART
Stanford Research Institute
Menlo Park, California

a research center for augmenting human intellect

This session is entirely devoted to a presentation by Dr. Engelbart on a computer-based, interactive, multiconsole display system which is being developed at Stanford Research Institute under the sponsorship of ARPA, NASA and RADC. The system is being used as an experimental laboratory for investigating principles by which interactive computer aids can augment intellectual capability. The techniques which are being described will, themselves, be used to augment the presentation.

The session will use an on-line, closed circuit television hook-up to the SRI computing system in Menlo Park.

Following the presentation remote terminals to the system, in operation, may be viewed during the remainder of the conference in a special room set aside for that purpose.


Press Esc to exit full screen mode.

COMMAND RESET

USAGE

APPLICATION EXAMPLES

USER DOCUMENTATION:

PAPER STUDYING OR MODIFYING

PRINTOUT-DIRECTIVE GUIDE,

JOINT-FILE USAGE, MESSAGES

OPEN-HOUSE DUTY ROSTER

HARDWARE-DESIGN DOCUMENTATION,

SYSTEM-ANALYSIS RECORDS

* TWO-PERSON COLLABORATION

INFORMATION RETRIEVAL (BILL)

we need better tools to tackle
“humanity’s complex,
urgent problems”

VUCA

Volatile • Uncertain
Complex • Ambiguous

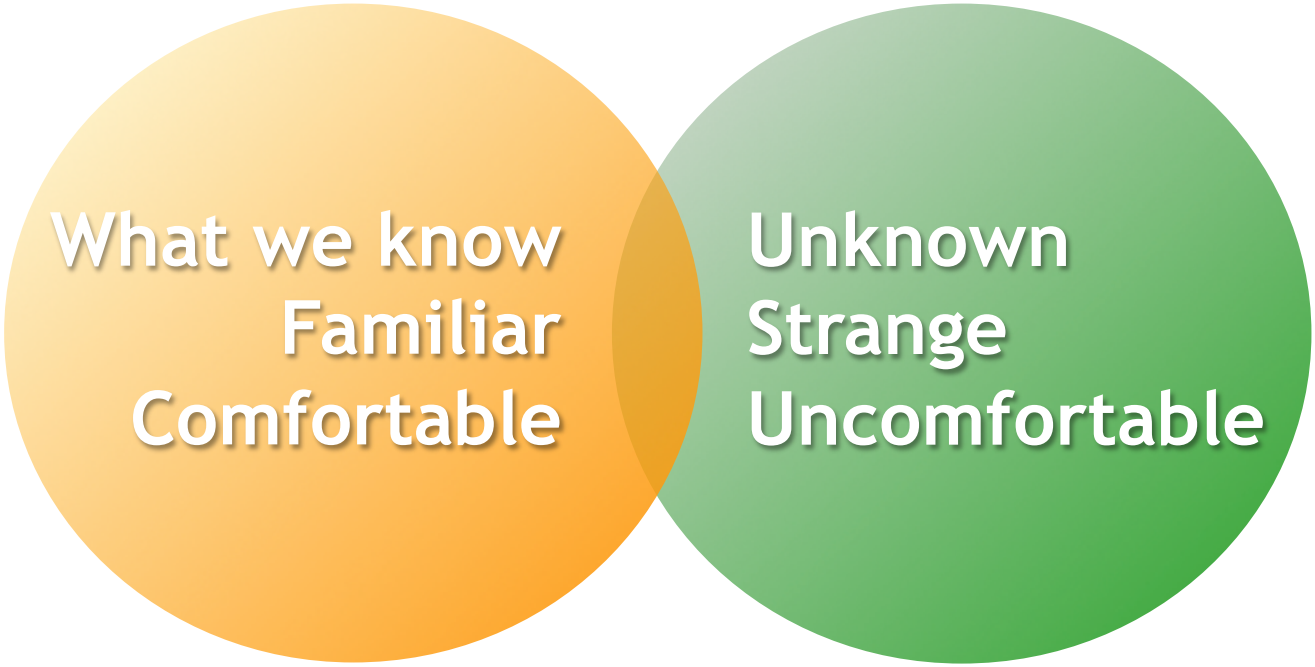
Welcome to “informed bewilderment”

“The 21st century will not be a dark age. Neither will it deliver to most people the bounties promised by the most extraordinary technological revolution in history. Rather, it may well be characterised by informed bewilderment.”

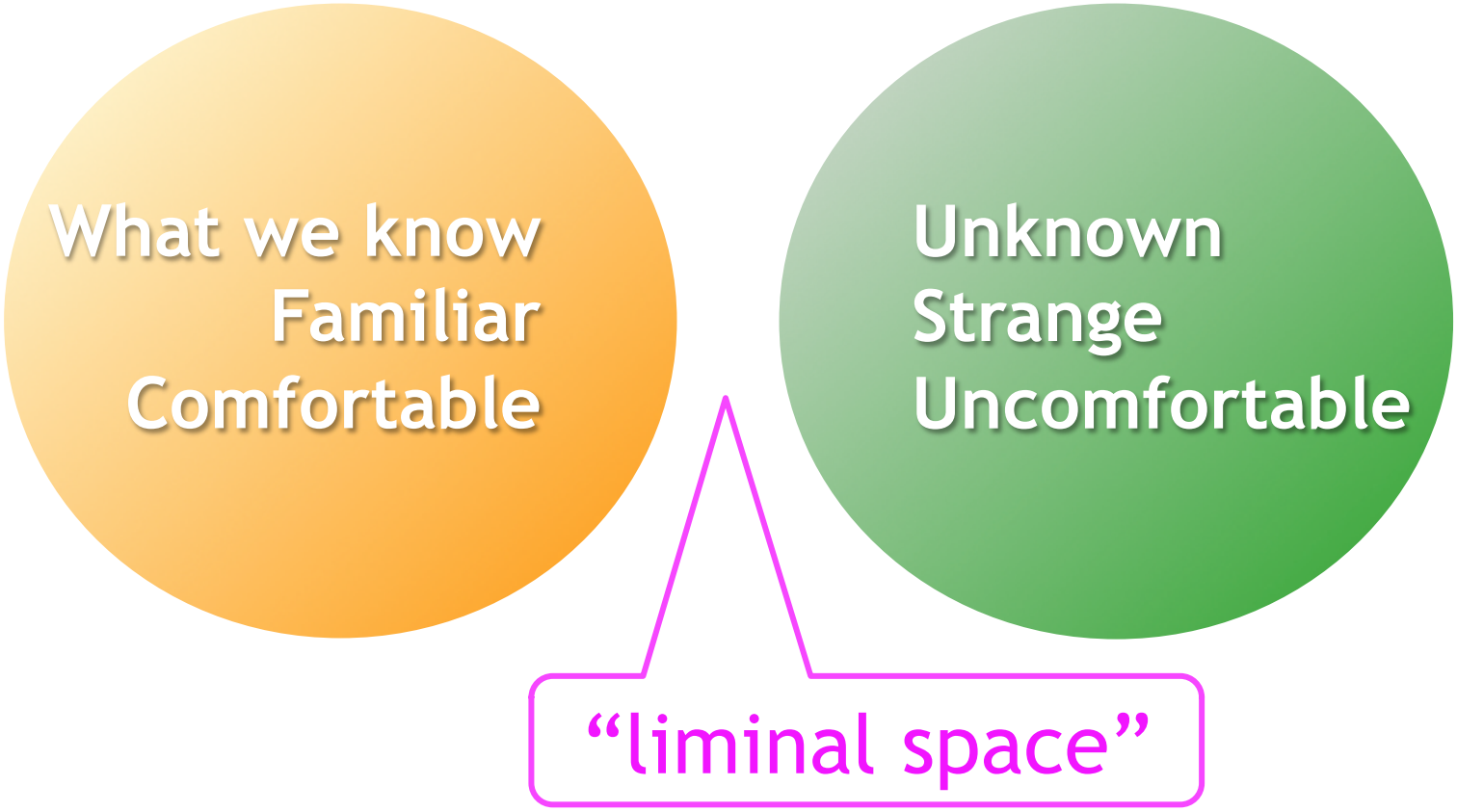
Manuel Castells

Manuel Castells, Santa Monica, 2012
© Maggie Smith

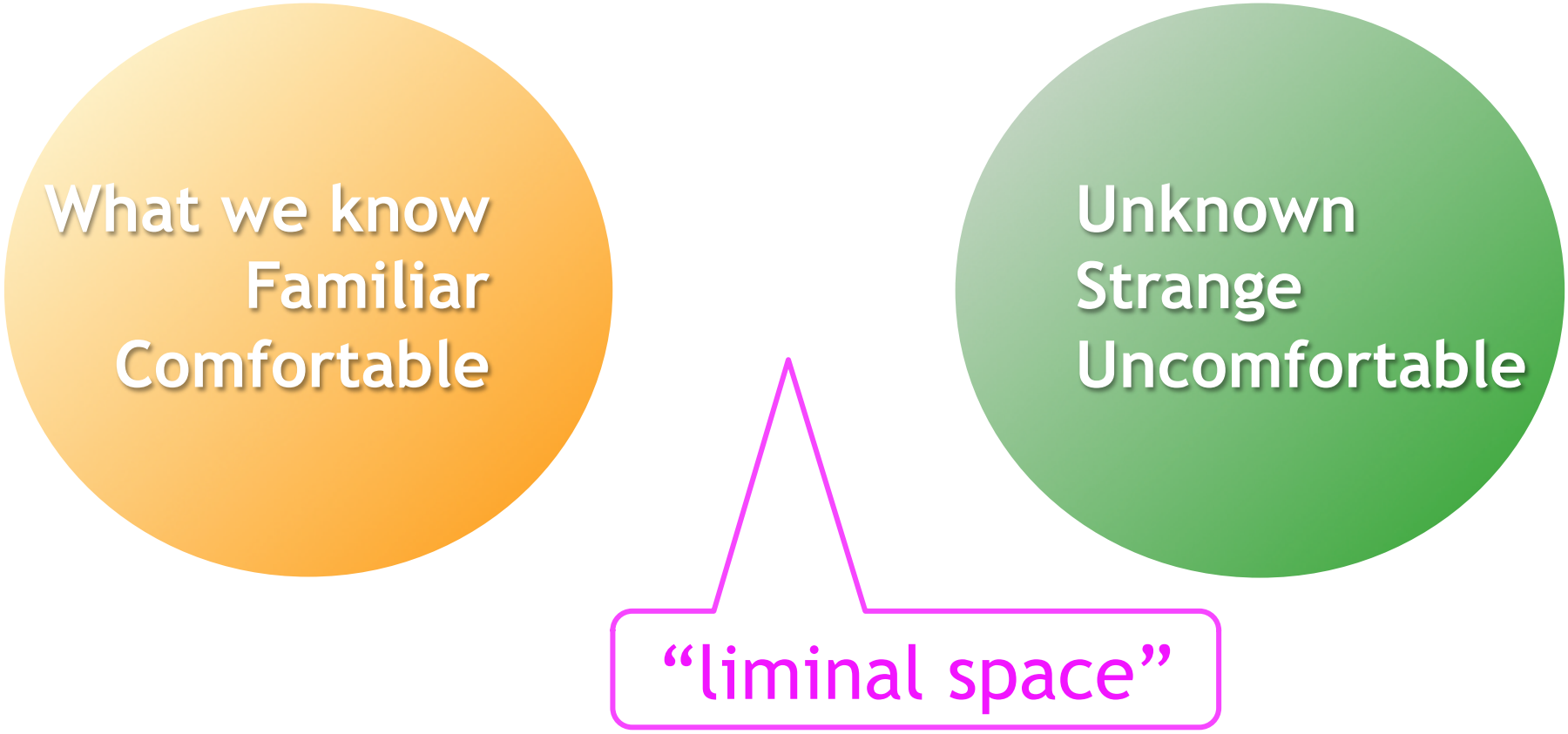
From the known to the unknown



From the known to the unknown



From the known to the unknown



"Liminal Space… when you have left the tried and true but have not yet been able to replace it with anything else.

…when you are between your old comfort zone and any possible new answer… If you are not trained in how to hold anxiety, how to live with ambiguity, how to entrust and wait, you will run…

anything to flee this terrible cloud of unknowing."

Richard Rohr O.F.M.
— on the spirituality of liminal space

Limina is the Latin word for threshold, the space betwixt and between
http://sojo.net/magazine/2002/01/grieving-sacred-space

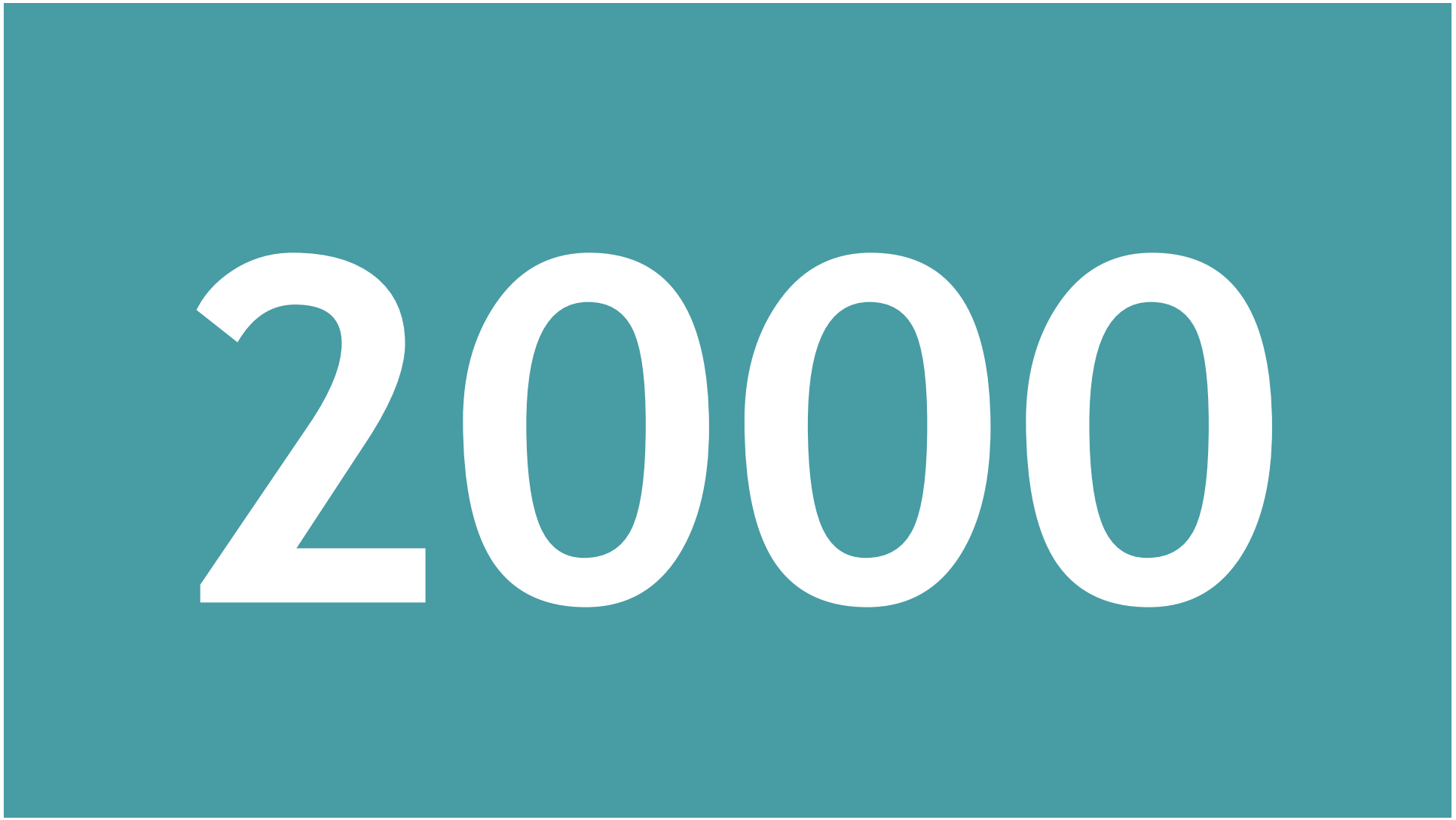
So while we initially strive to make our students feel comfortable […] we then must help them balance their desire for security with the need to take risks and explore new ideas and possibilities.

Rather than attempting to resolve the tension, a college should help students find their place on this precarious threshold, in the liminal space between the familiar and strange, the old and the new.

Johansson & Felten, 2014

what kind of person survives - even *thrives* - in liminal space?

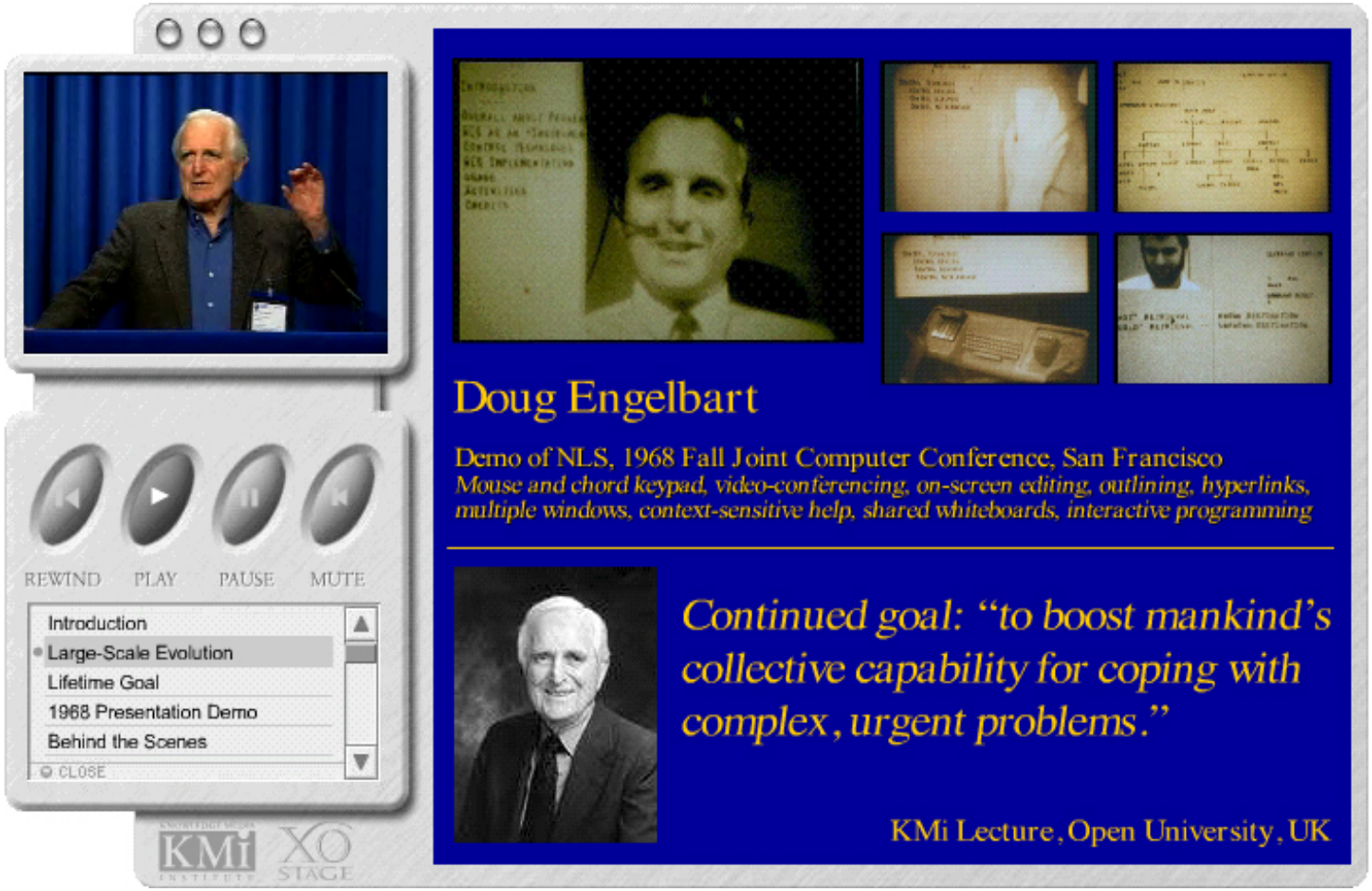
can computers help us navigate a VUCA world, and liminal space?


2000

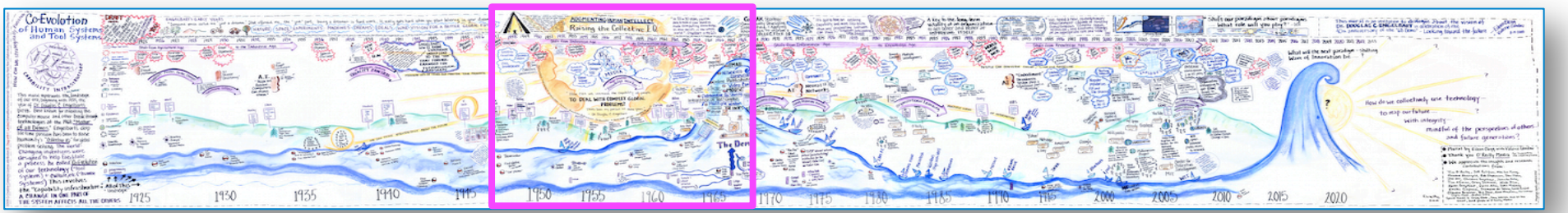
Engelbart's work has since been recognised in the highest echelons of computing…

DougEngelbart.org

Doug Engelbart, KMi Lecture, Berrill Lecture Theatre, 29 Oct. 2001



Engelbart's vision was not just personal computing, but "Collective IQ"



http://visualinsight.net/_engelbart/engelbart_mural.jpg

…and cool tools alone would never be enough:
we needed culture shifts and new ways of working

Engelbart's Vision:
AUGMENTING HUMAN INTELLECT
Raising the Collective I.Q.
"In 20 or 30 years, you'll be able to hold in your hand as much computing knowledge as now exists in the whole world." - Engelbart in the '60s
1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967
Cold War
Shift from Industrial Age to Information Age
Korean War
Hydrogen Bomb
U.S. Supreme Court Outlaws Segregation
Sputnik
Cuban Revolution
JFK elected
First Manned Space Flight
VIETNAM II
MLK "I have a Dream"
JFK assassinated
Vietnam War Escalation
Free Speech Movement
Summer of Love
SYSTEMS THINKING
DYNAMIC MEDIA
CIVIL DISOBEDIENCE
Carl Jung
Collective Unconscious
First Credit Card
Humanistic Psychology
Sustainable Design
Global Village
DYNAMIC MEDIA
Peter Drucker "Knowledge Worker"
Environmental Movement - gains momentum
Ulric Neisser
cognitive psychology
Networked Improvement Communities · Dynamic Knowledge Repositories · Co-Evolution · A facilitated peer assist · Strategy for Raising Collective IQ · scalability
"How can we increase the capability of people TO DEAL WITH COMPLEX GLOBAL PROBLEMS?
That's been my pursuit all these years"
- Dr. Douglas C. Engelbart
Turing
Miller
Machine Intelligence by Alan Turing
Orwell
1984 by George Orwell
Cousteau
Maslow
Nature Conservancy Founded
Air Pollution Control
First Worldwide Conference on
Campaign for Nuclear Disarmament
Albee
Carson
Silent Spring by Rachel Carson
Kuhn
Structure of Scientific Revolutions by Thomas Kuhn
Popper
Malcolm X
Autobiography of Malcolm X by Malcolm X
Radio Shack
We Shall Overcome - Pete Seeger
I WANNA HOLD YOUR HAND - The Beatles
The Times They Are A-Changin' - Bob Dylan
EMAIL
NETWORKED COMPU
Online Publis
Video
MOUSE
Collaborative Doc Sharing
Integration of Text & Graphics
Multiple Windows
LINK
Chorded Keyset
The '68 Demo developed from Engelbart's Vis

one day we may
talk online
— for free…

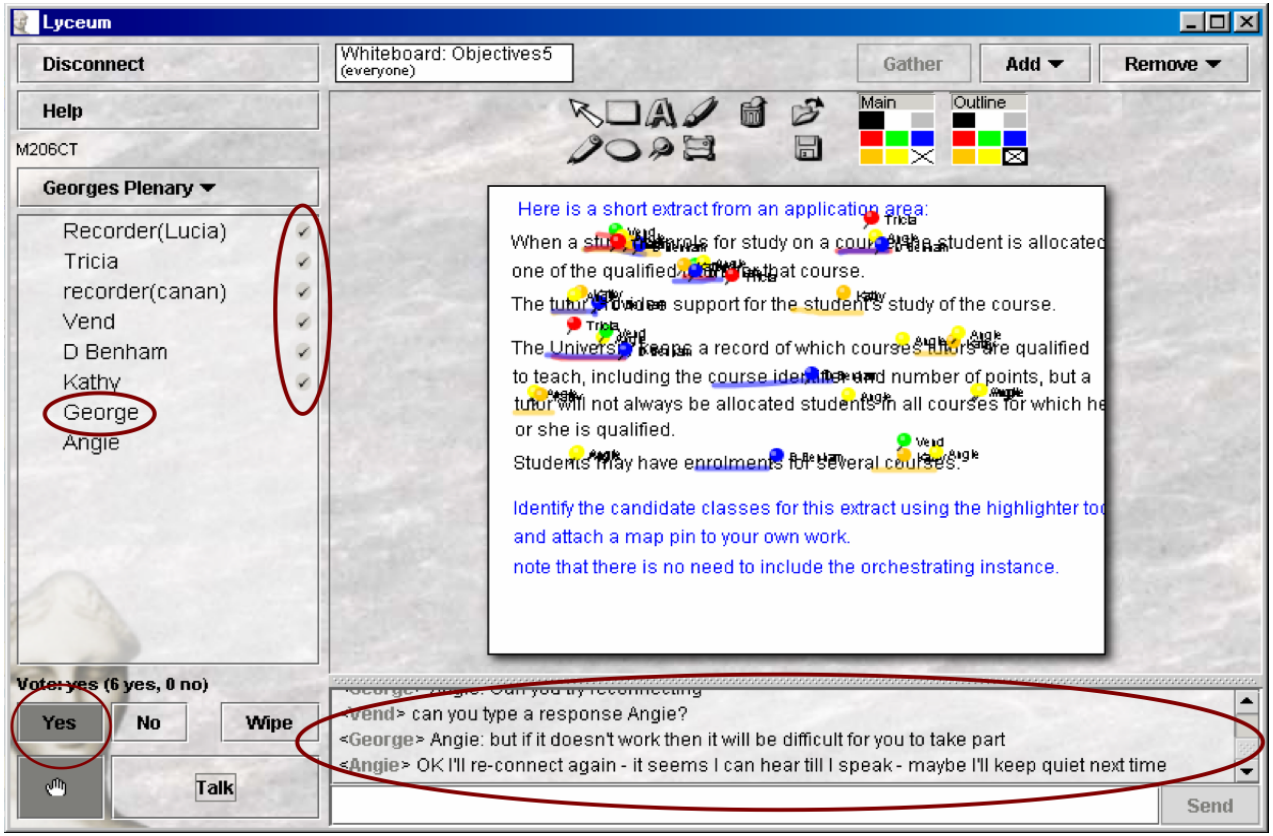
one day we may even sketch ideas together

with Marc Eisenstadt, Sam Marshall, Craig Rodine, John Brier and B823's vision led by Paul Quintas

1979: Shared screens and voice over the phone

http://bit.ly/r3wr75

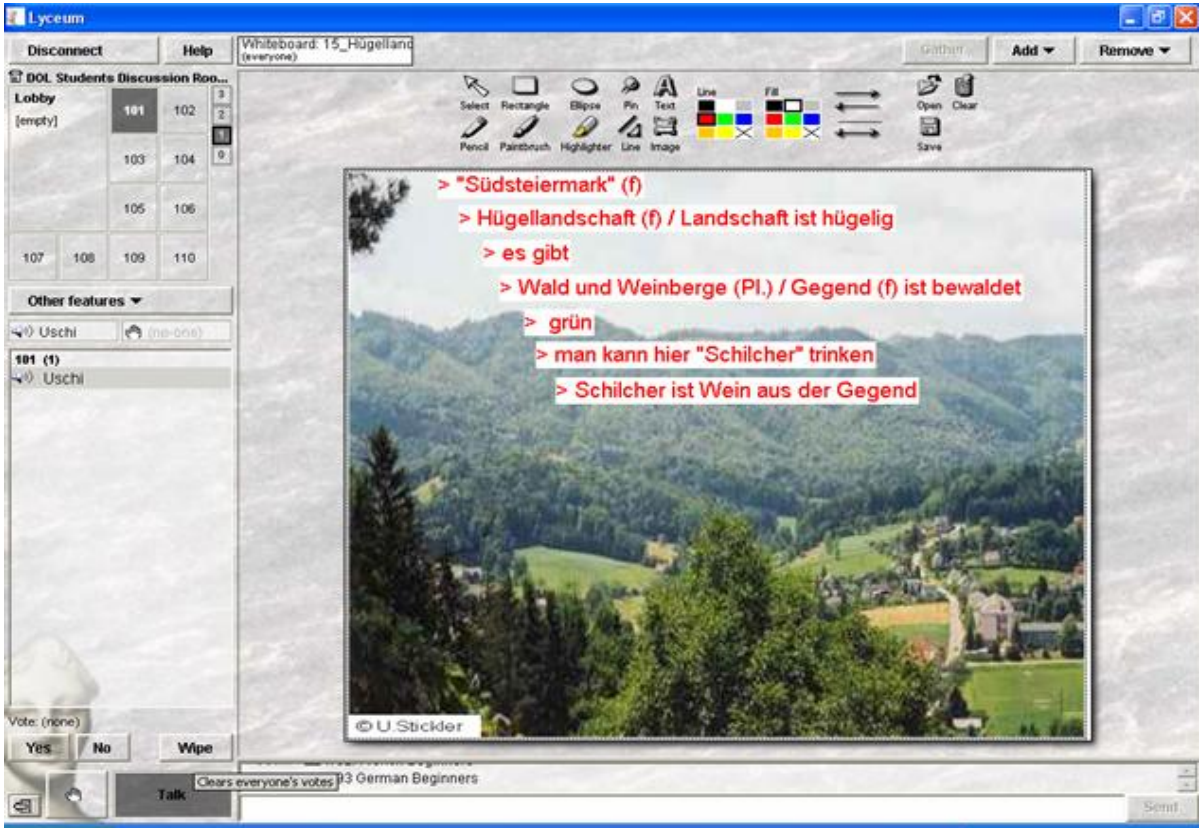
1998: *Lyceum* synchronous meetings and collaboration tools over 56k modems



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

http://dl.acm.org/citation.cfm?id=544451

1998: *Lyceum* synchronous meetings and collaboration tools over 56k modems



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

http://www.eurodl.org/?article=277

Lots of pilot experiments and AL training

KMi

Knowledge Media Institute

B823 Experiences with Lyceum

Simon Buckingham Shum

Knowledge Med

Technical Not

Pedagogical design and training

Voice conferencing groupware is a new medium for tutors tutors to use Lyceum to deliver four online tutorials (abou tutorials. This required intensive work to prepare tutorial r training sessions to give tutors hands-on experience and awa use the medium effectively. A tutorial working group was fo expertise. Over several months, materials were prototype structuring of tutorials.

Tutorial resource packs

A resource pack was provided (paper and electronic) for sessions (ranging from a single hour to several sessions), asynchronous textual discussion, and for the tutorial itself.

Voice Conferencing. Headsets (headphones plus microphone) are posted as part of the course materials. On logging into the Lyceum server, students can see the names of any others present in the initial Common Room. shows the welcome screen. Clicking the *Talk* button at the bottom-left of the window activates the mic for speaking, and all others in the room can hear them (the quality is similar to AM radio, but good enough for foreign language students to be to practise oral skills). ace in *Rooms* which have missions (see [Lucia] for deration and permissions

Figure 1: Logging into the Common Room and speaking to someone (active speaker icon shows who is speaking)

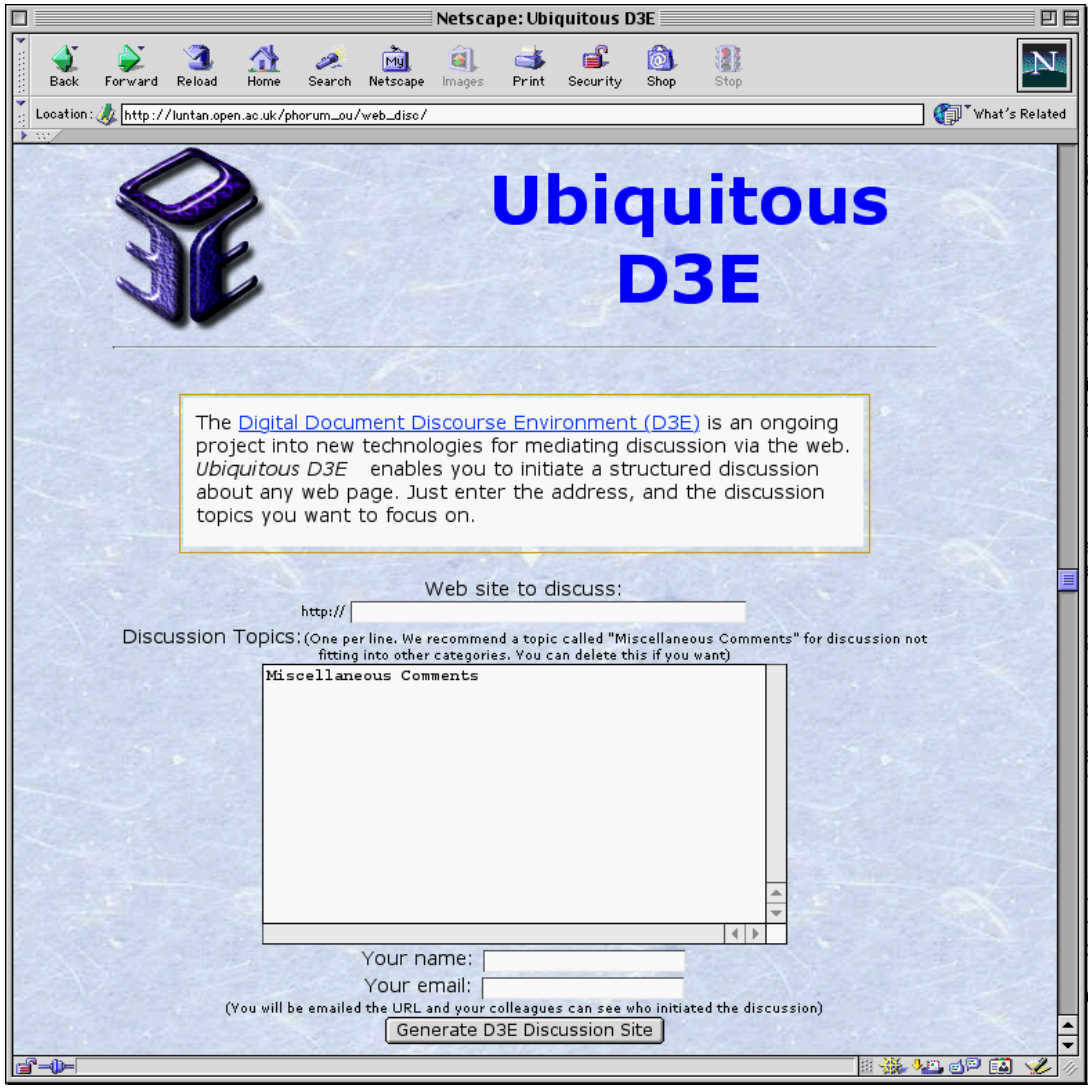
make *any* web page discussable

with Tammy Sumner, Mike Wright, Malcolm Story, Gangmin Li

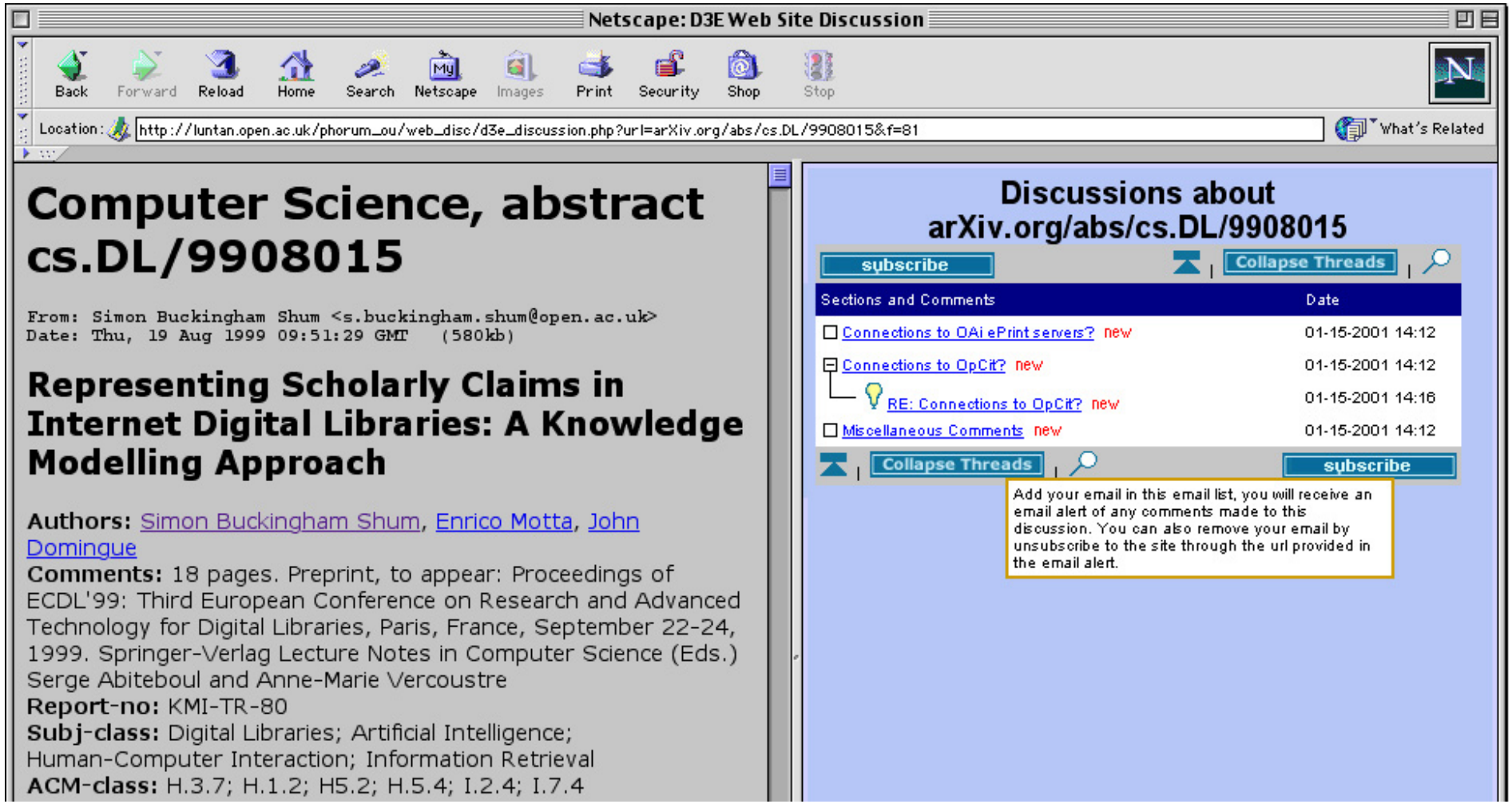
Enter URL

Enter discussion topics

Press Go



Generating a peer review discussion space for an eprint document



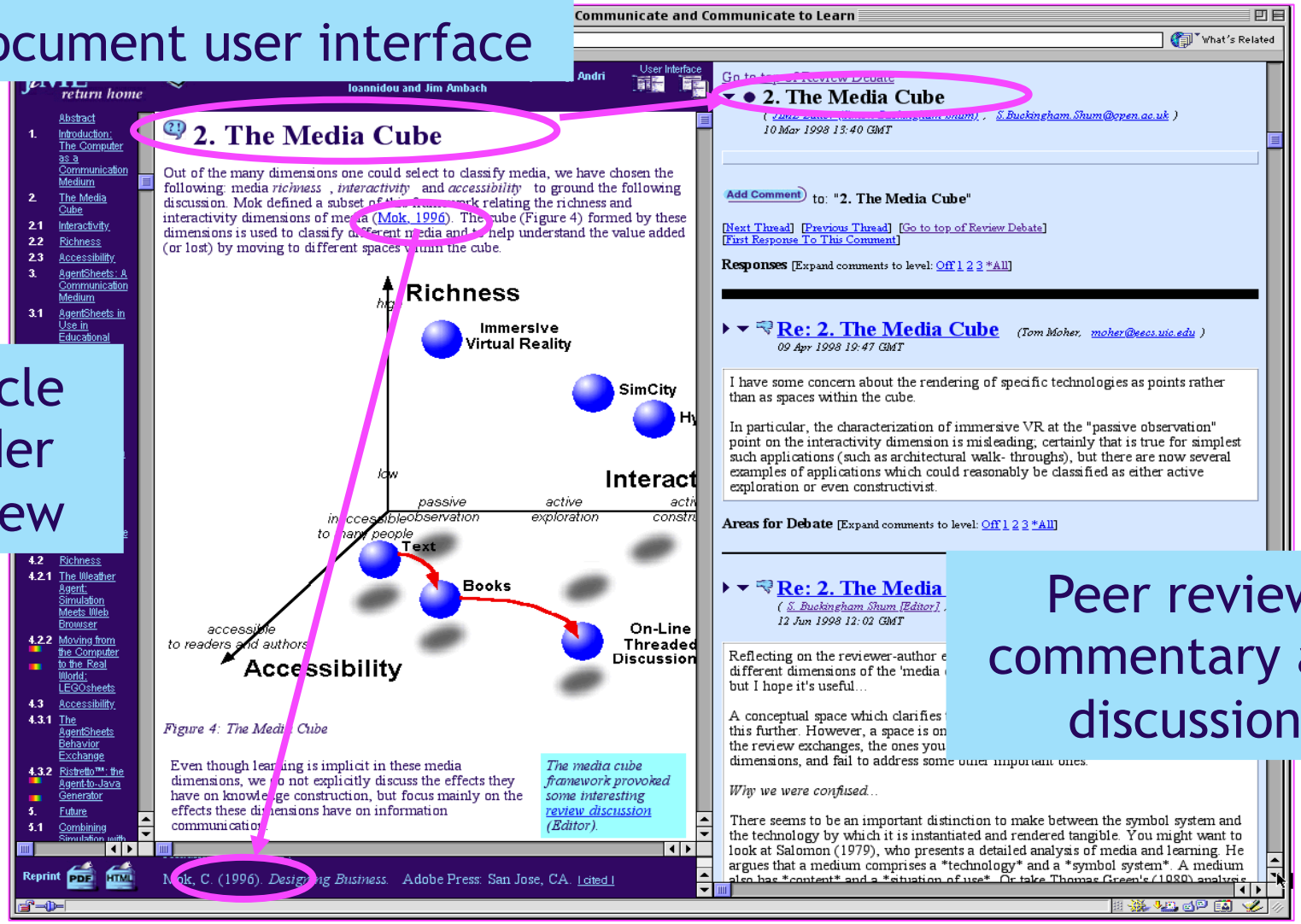
Journal of Interactive Media in Education

An Interactive Journal
for Interactive Media

jime.open.ac.uk

JIME document user interface

Article under review

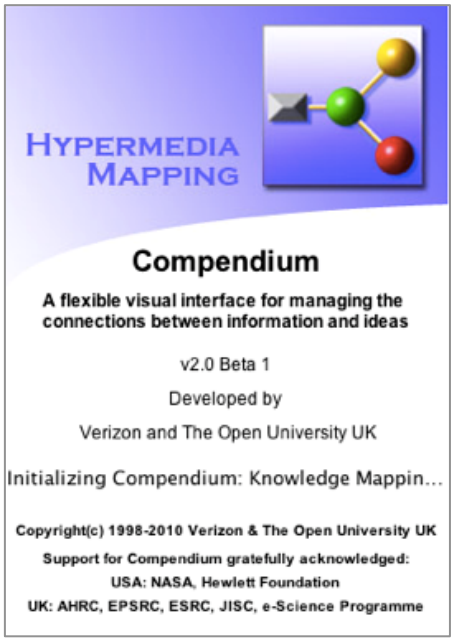


Peer review commentary and discussion

digital webs of ideas + arguments?

Compendium software (open source)

visual hypermedia for managing the connections between ideas flexibly



Acknowledgements:

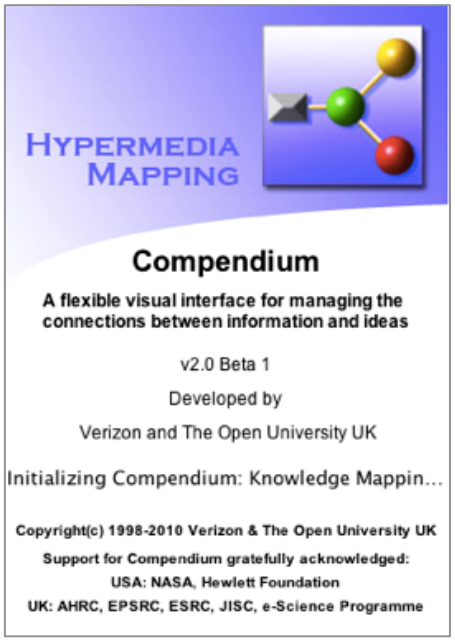
Jeff Conklin (CogNexus Institute)

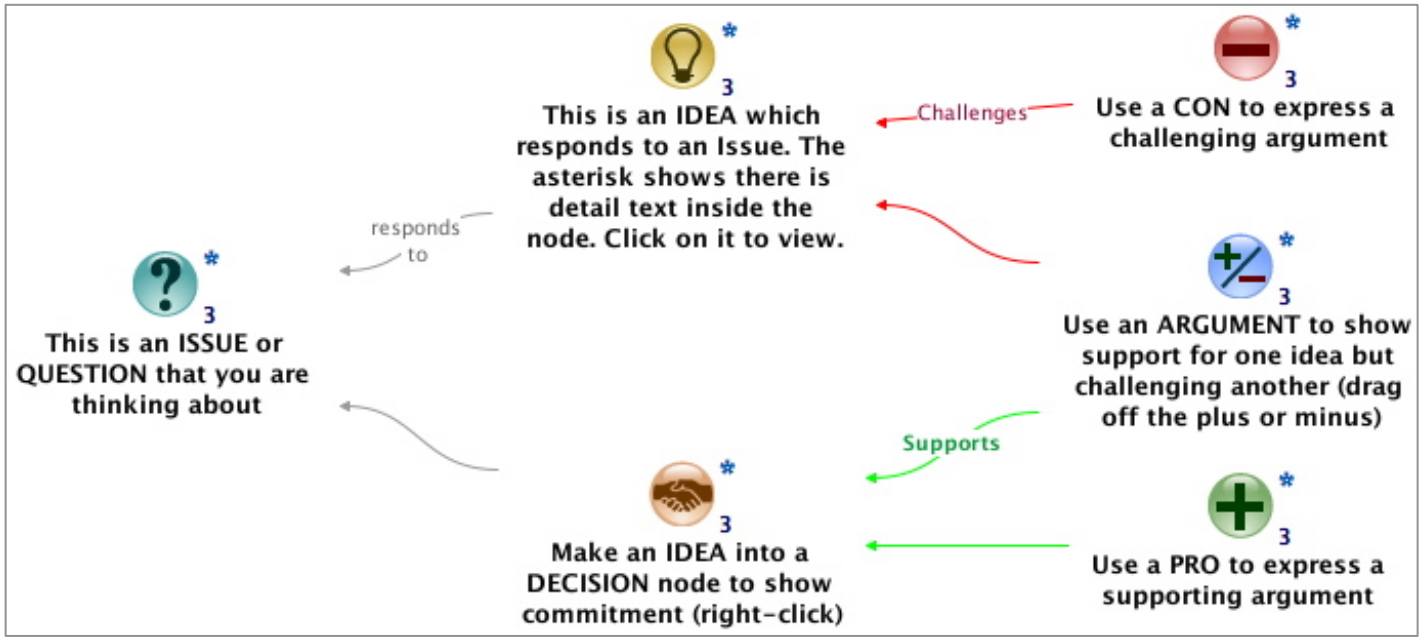
Al Selvin & Maarten Sierhuis
(NYNEX Science & Technology)

http://compendiuminstitute.net (archive) + compendiumng.org (next gen)

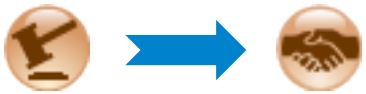
Compendium software (open source)

visual hypermedia for managing the connections between ideas flexibly





http://compendiuminstitute.net (archive) + compendiumng.org (next gen)

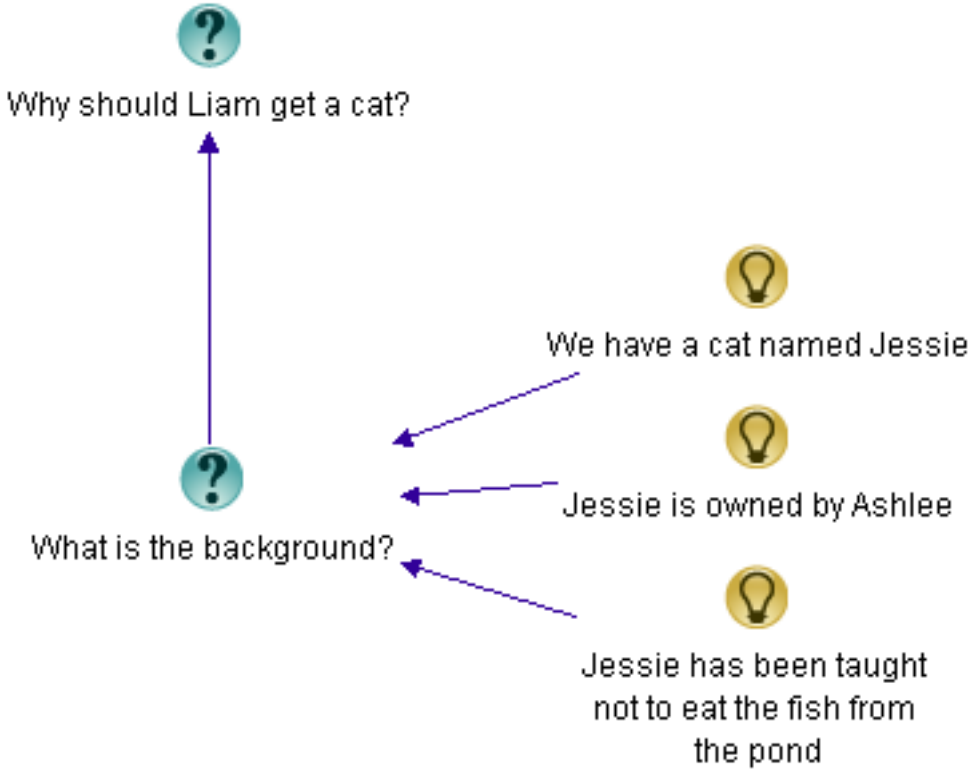


Dialogue Mapping in a nutshell

Why should Liam get a cat?

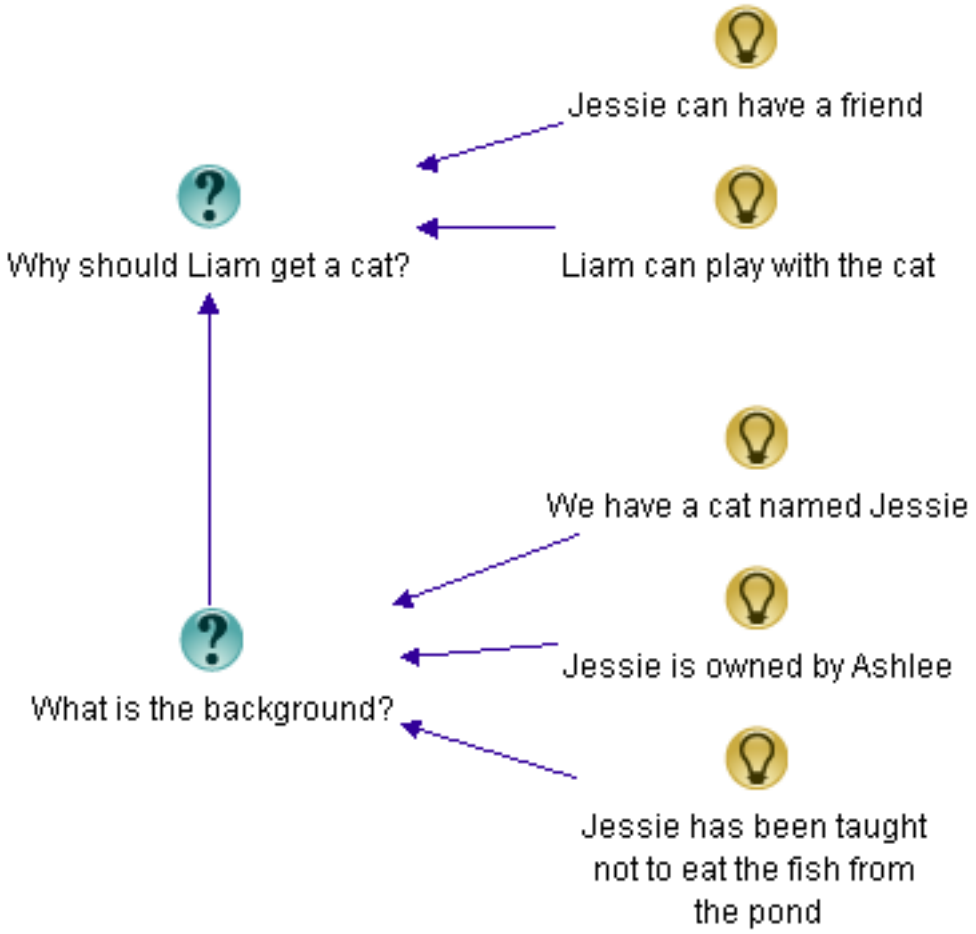
With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old

Dialogue Mapping in a nutshell



With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old

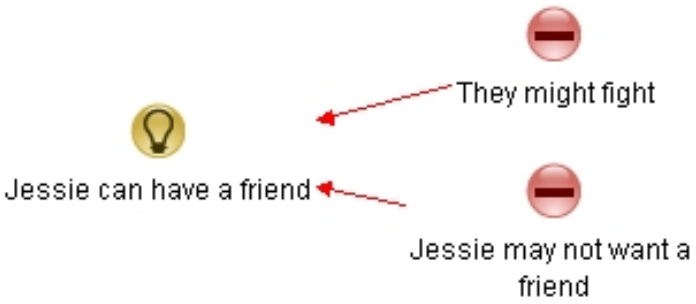
Dialogue Mapping in a nutshell



With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old

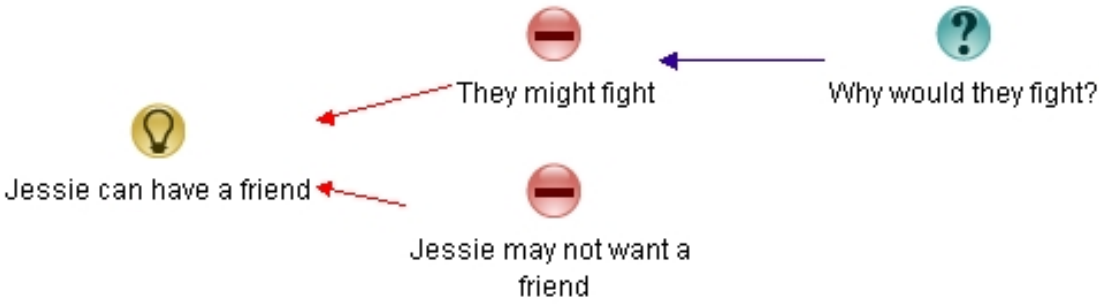
Dialogue Mapping in a nutshell

With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old



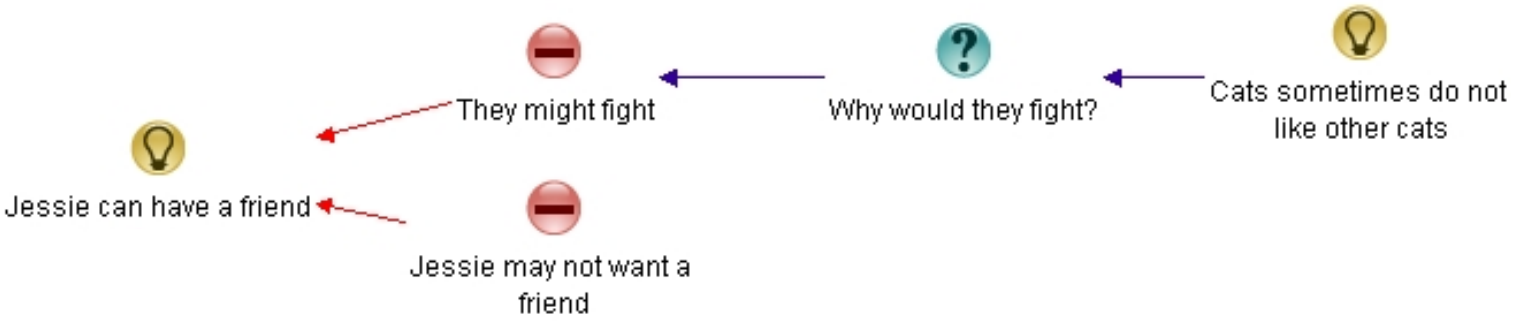
Dialogue Mapping in a nutshell

With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old



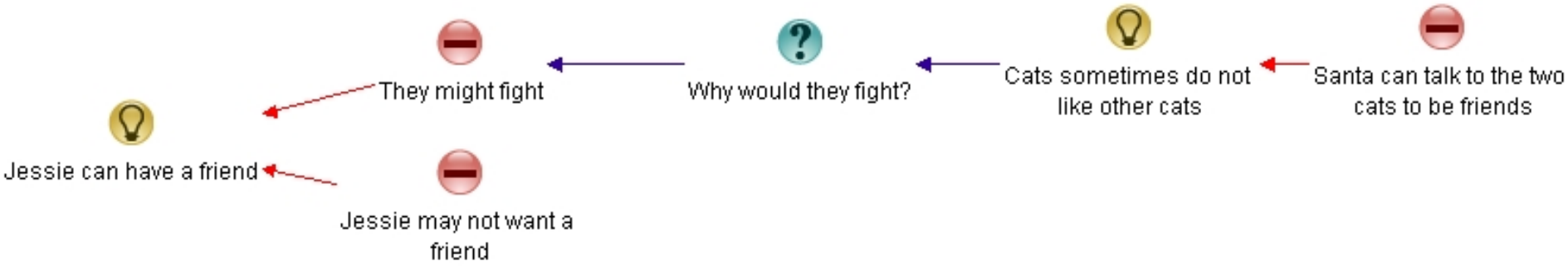
Dialogue Mapping in a nutshell

With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old



Dialogue Mapping in a nutshell

With thanks to Paul Culmsee! http://www.cleverworkarounds.com/2009/12/16/the-rationale-of-a-5-year-old



this simple set of moves — combined with hypertext — goes a long way…

Compendium Institute: international community

CompendiumInstitute.net

CompendiumInstitute

Home | News | Library | Training | Community | Download | Developers | Support |

Compendium Institute

About Compendium

Associated Institutions

Acknowledgements

Download Compendium

Screencast: introductory movie to Compendium, set in the context of the

Compendium Institute

The Compendium Institute is an open forum for the ongoing development a dissemination of the Compendium methodology and software tools. Compendium is abo sharing ideas, creating artifacts, making things together, and breaking down the boundar between dialogue, artifact, knowledge, and data. Please visit the resources on this site learn more. See what our users are saying...

Let us know what you think of Compendium!
Please take our short survey ==>

The Community Showcase

The Compendium Exchange

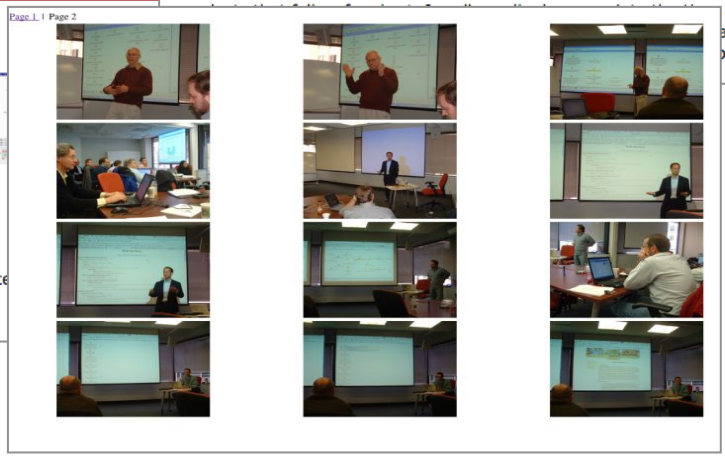
Compendium has a place where the community can share maps, ste more. Here we are also developing Compendium training materials.
The Compendium Exchange

TESTIMONIALS

Compendium is used globally across diverse sectors.
Of **188** endorsements received so far:

Business: 19% (58)	Education: 26% (82)
Government: 2% (5)	Not for Profit: 14% (43)
Personal: 31% (98)	Other: 8% (26)

"I found use for compendium a few years ago in my final years completing my BEng with the OU and found it to be the most amazing piece of software I had ever encountered. The fact that it could be so multi layered became invaluable, not only in my studies, but also for endeavours to muster ideas for business, novels, etc etc. My OU work had been using windows, and then via a VM on a Mac. I thought I would never find the versatility of a Compendium like program again on a mac. I cannot tell you how relieved I am to have found the DMG now available for mac after trying so many and effort that your always recommend or-14



scaling it up

NASA field trials

EPSRC CoAKTinG Project: http://projects.kmi.open.ac.uk/coakting/nasa

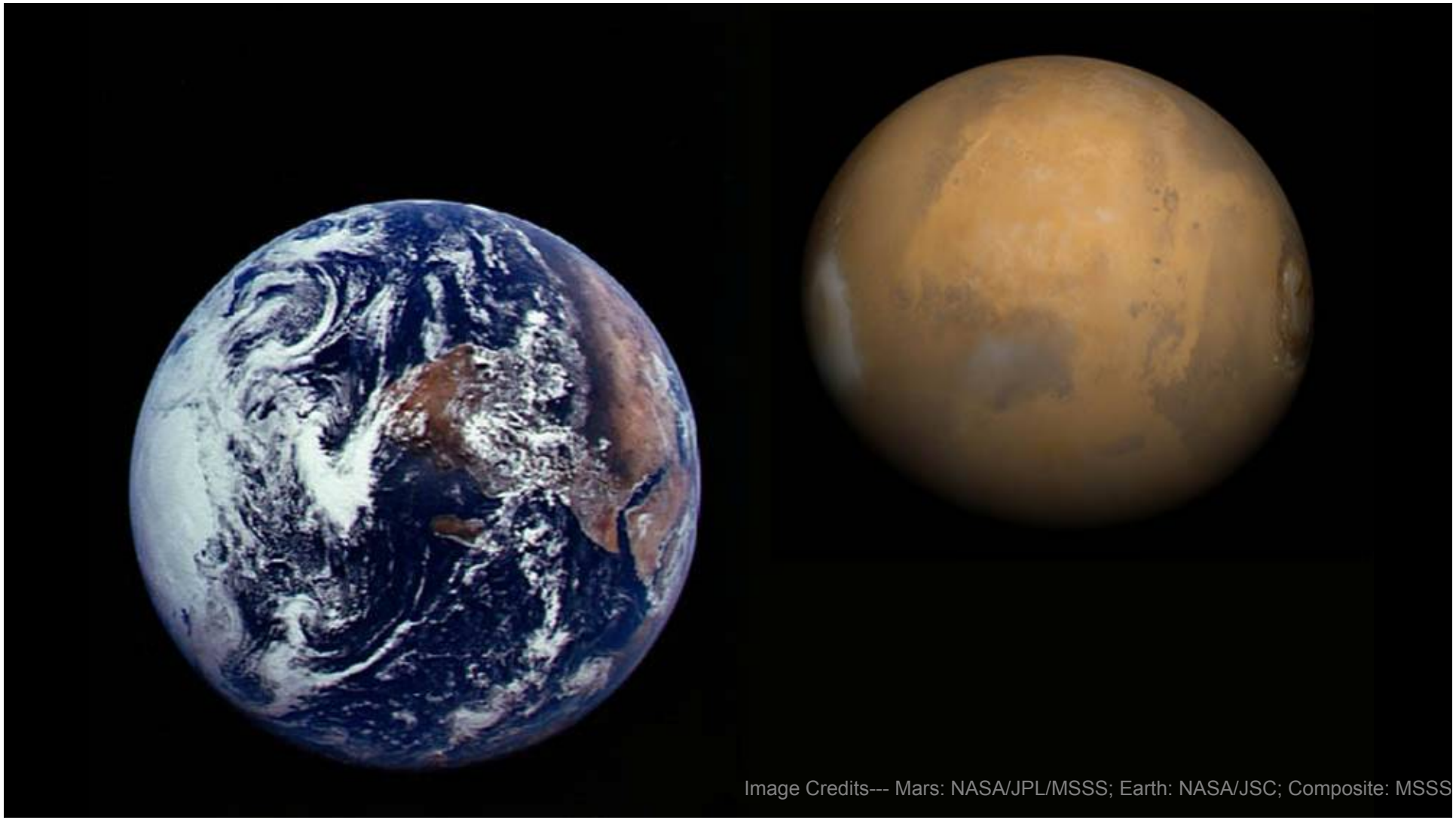
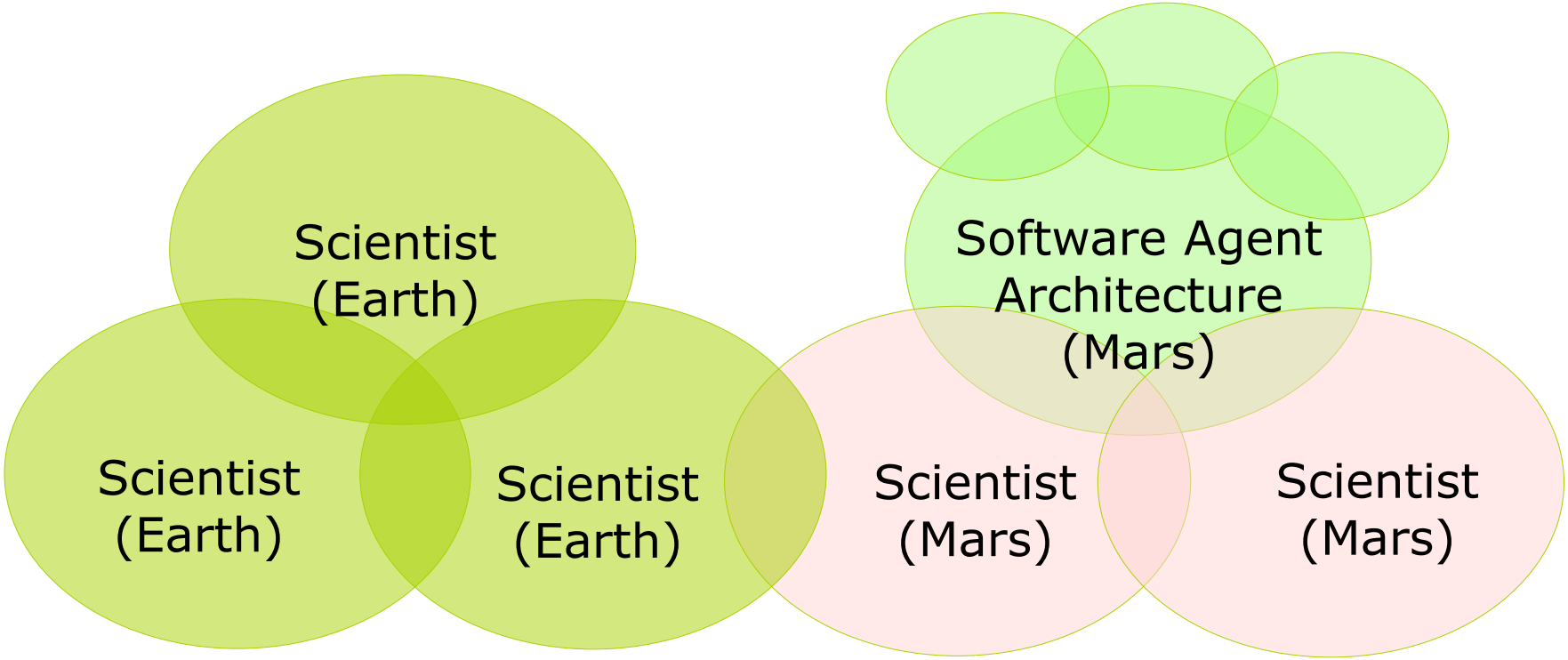


Image Credits--- Mars: NASA/JPL/MSSS; Earth: NASA/JSC; Composite: MSSS

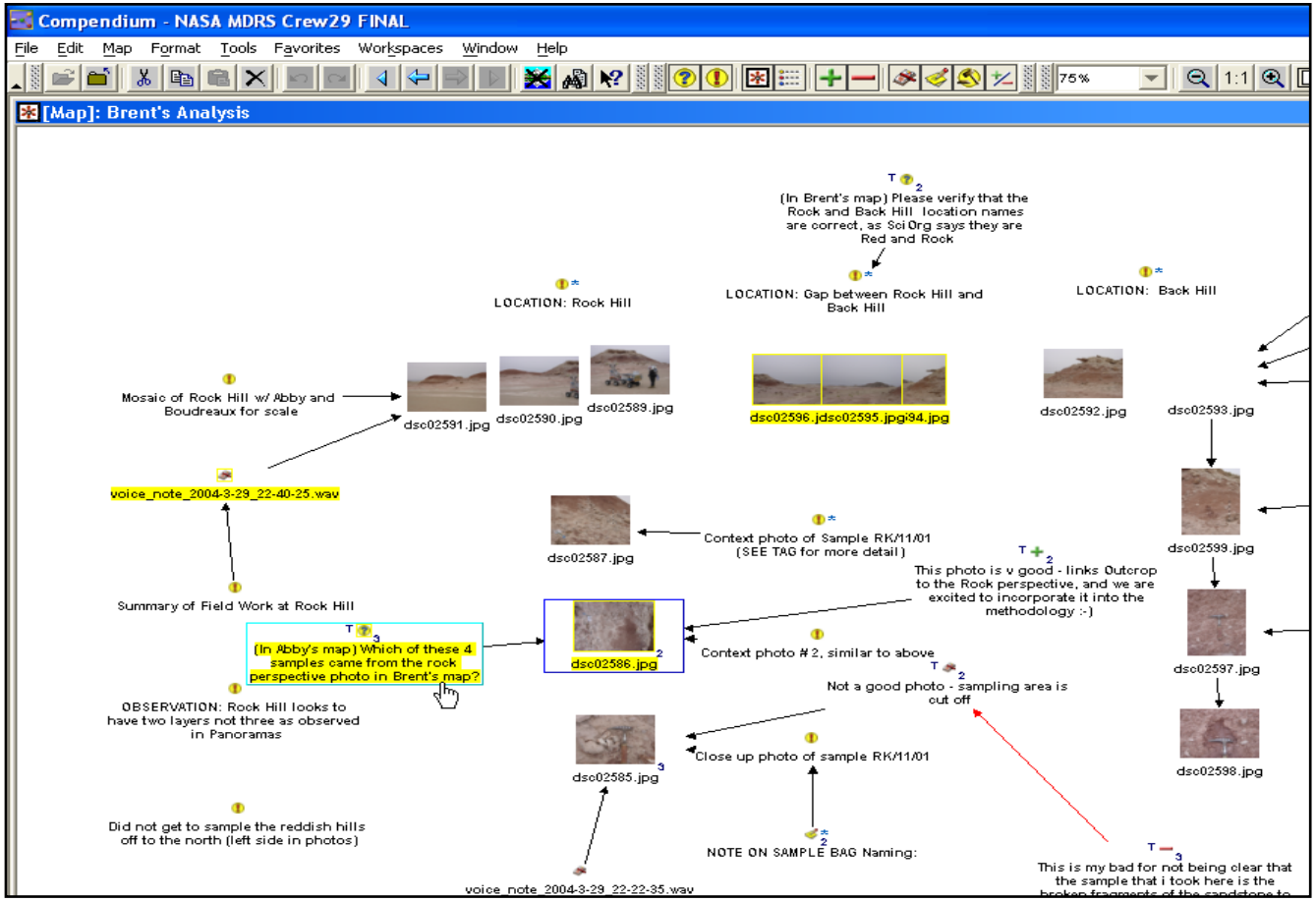
NASA: Mars Habitat field trials in Utah desert

NASA remote science team tools

Compendium used as a collaboration medium at all intersections: humans +agents reading+writing knowledge maps

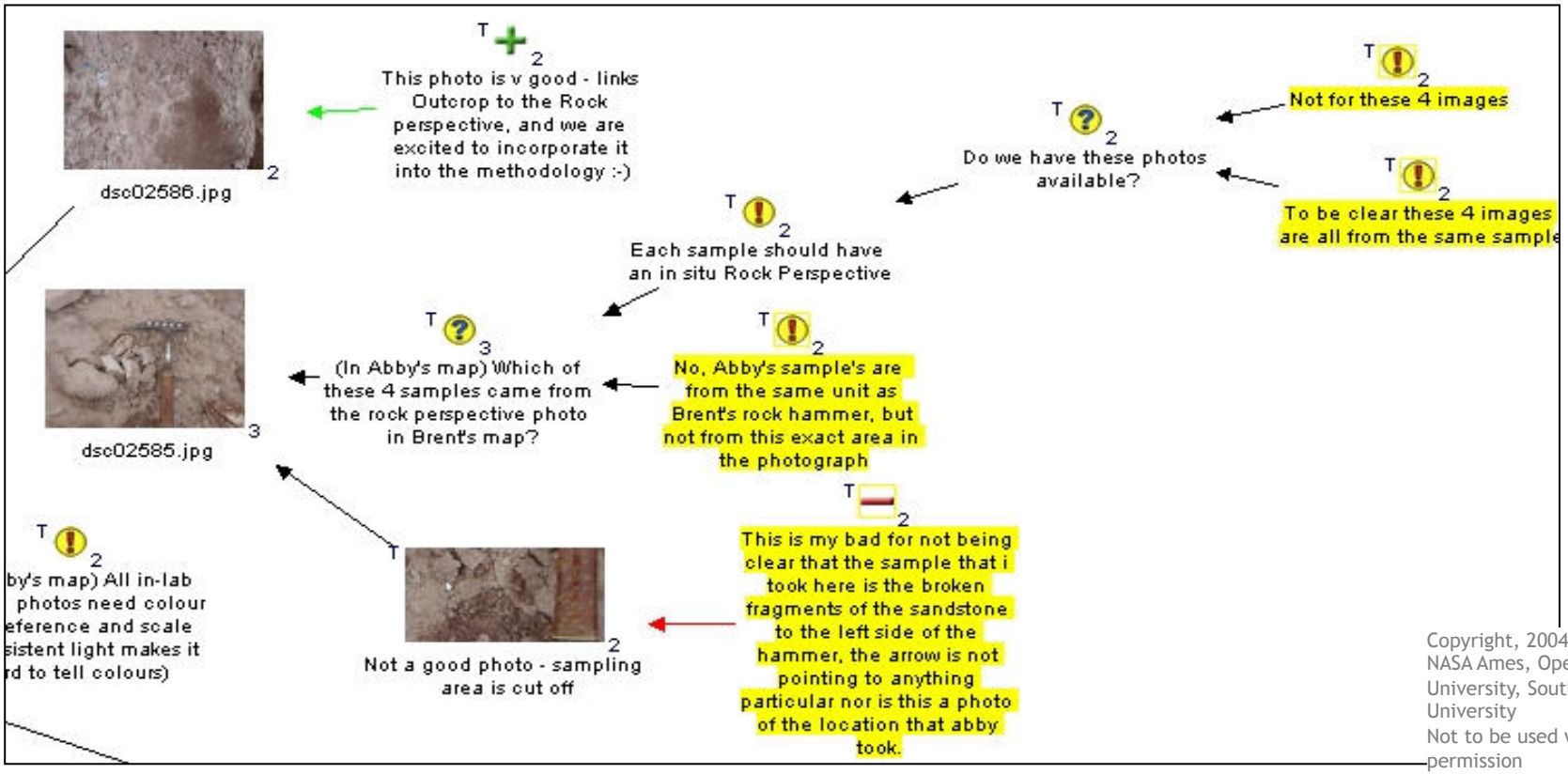


Compendium-based photo analysis by *geologists* on *'Mars'*



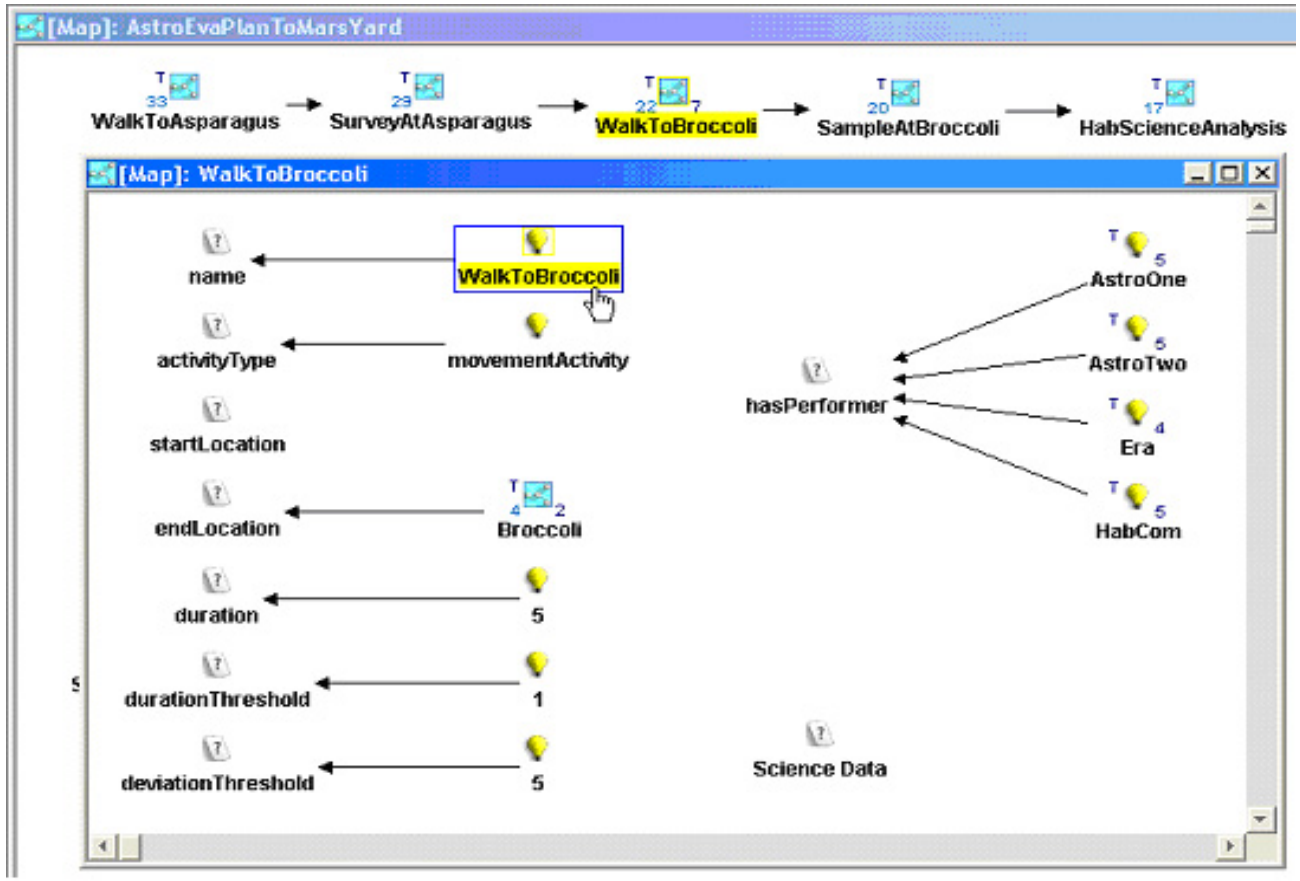
Copyright, 2004, RIACS/ NASA Ames, Open University, Southampton University
Not to be used without permission

Geology dialogue map between *Earth-based scientists and 'Mars'*

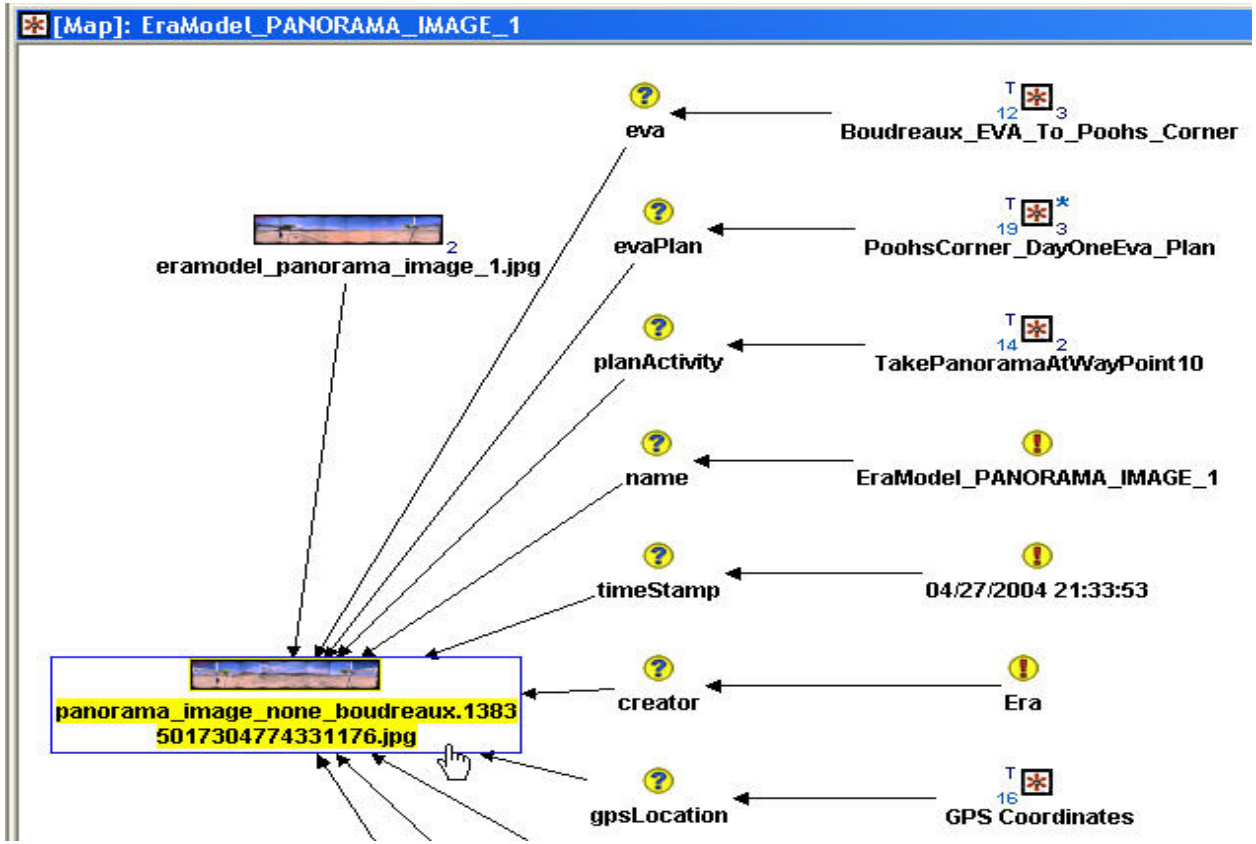


Copyright, 2004, RIACS/ NASA Ames, Open University, Southampton University
Not to be used without permission

Compendium activity plans for surface exploration, constructed by *scientists*, interpreted by *software agents*

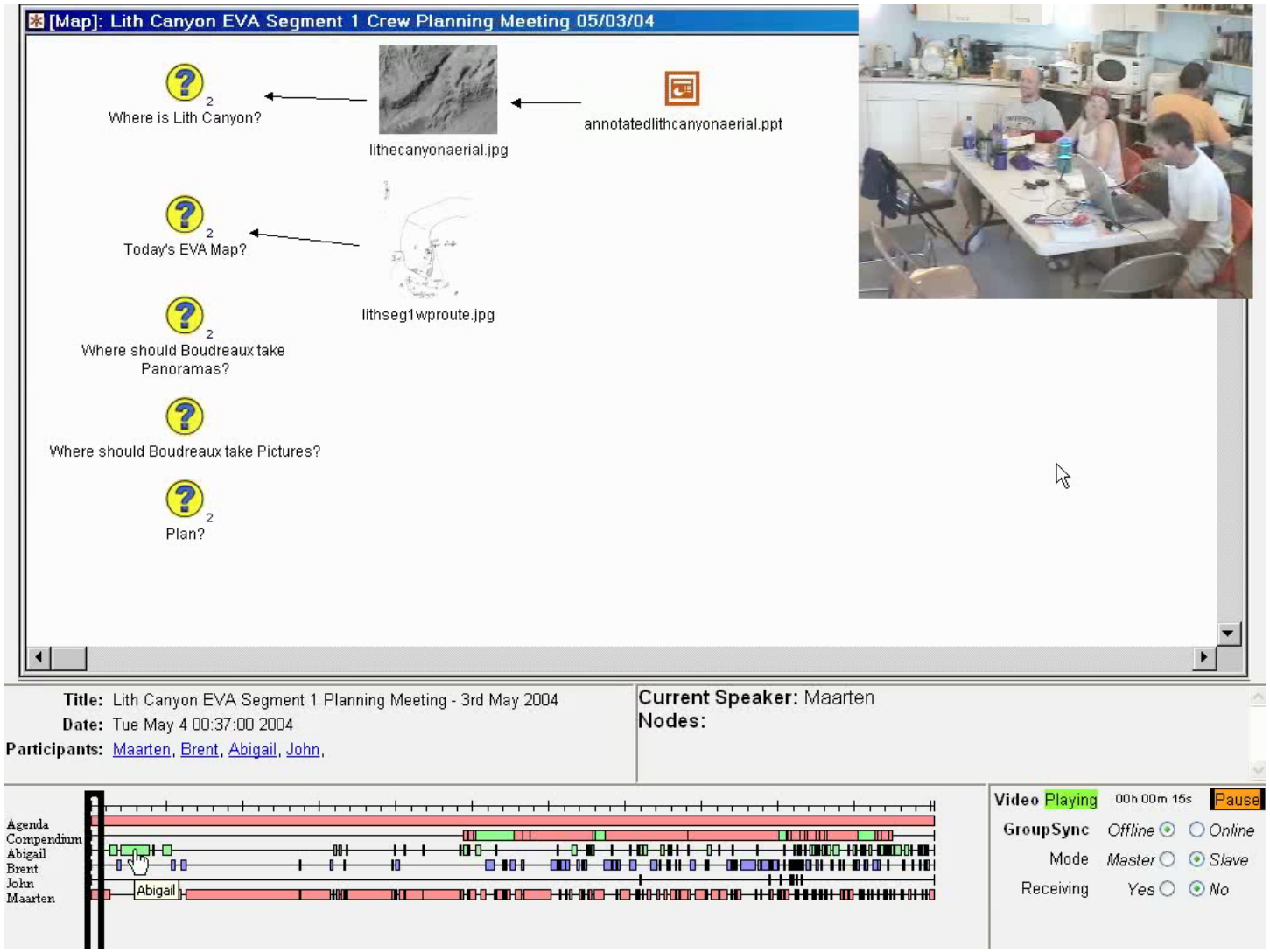


Compendium science data map, generated by *software agents*, for interpretation by *Mars+Earth scientists*



replaying meetings:
rich video
+ conceptual structure

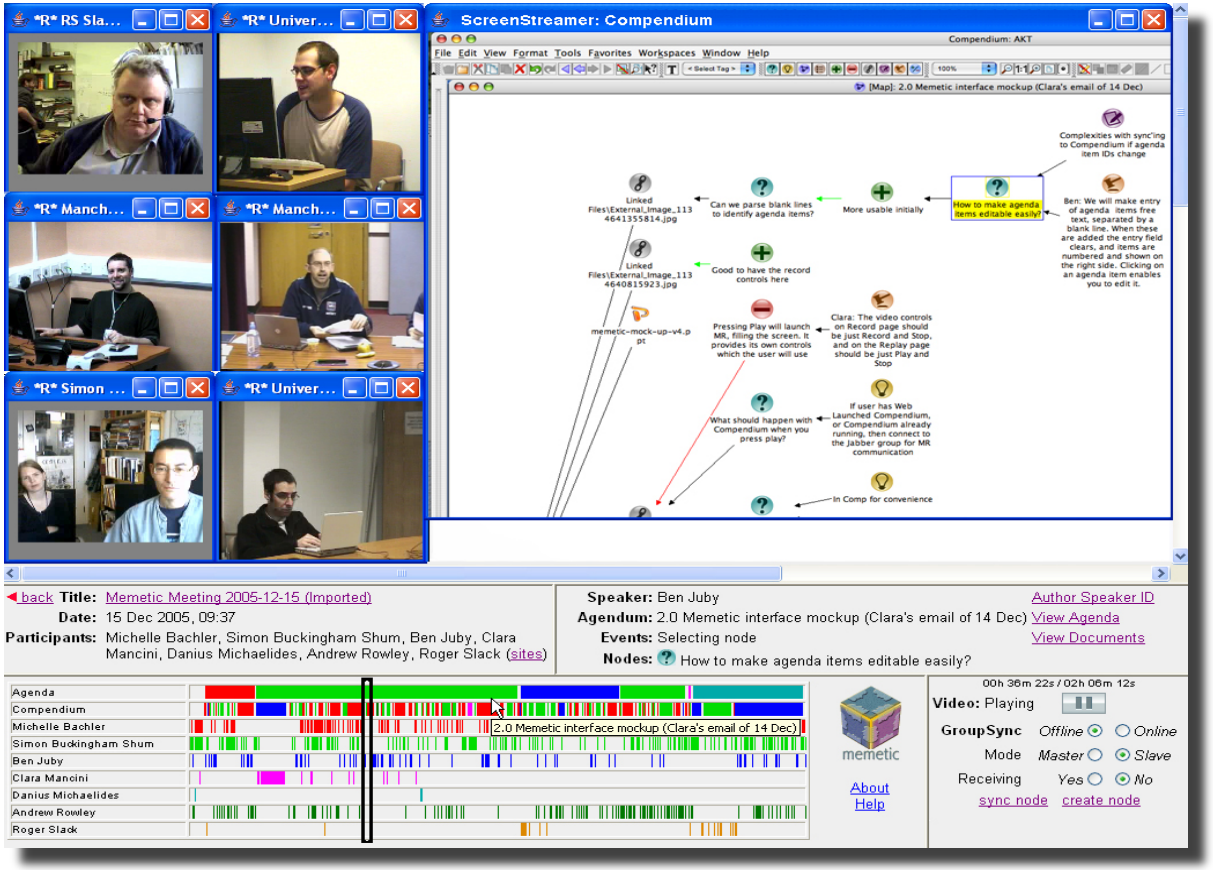
Meeting Replay tool: *Earth scientists* can browse a (simulated) *Mars crew's* planning meeting using Compendium



Copyright, 2004, RIACS/NASA Ames, Open University, Southampton University
Not to be used without permission

What if you map during a videoconference?

Replay and navigate Access Grid videoconferences by the ideas in the meeting

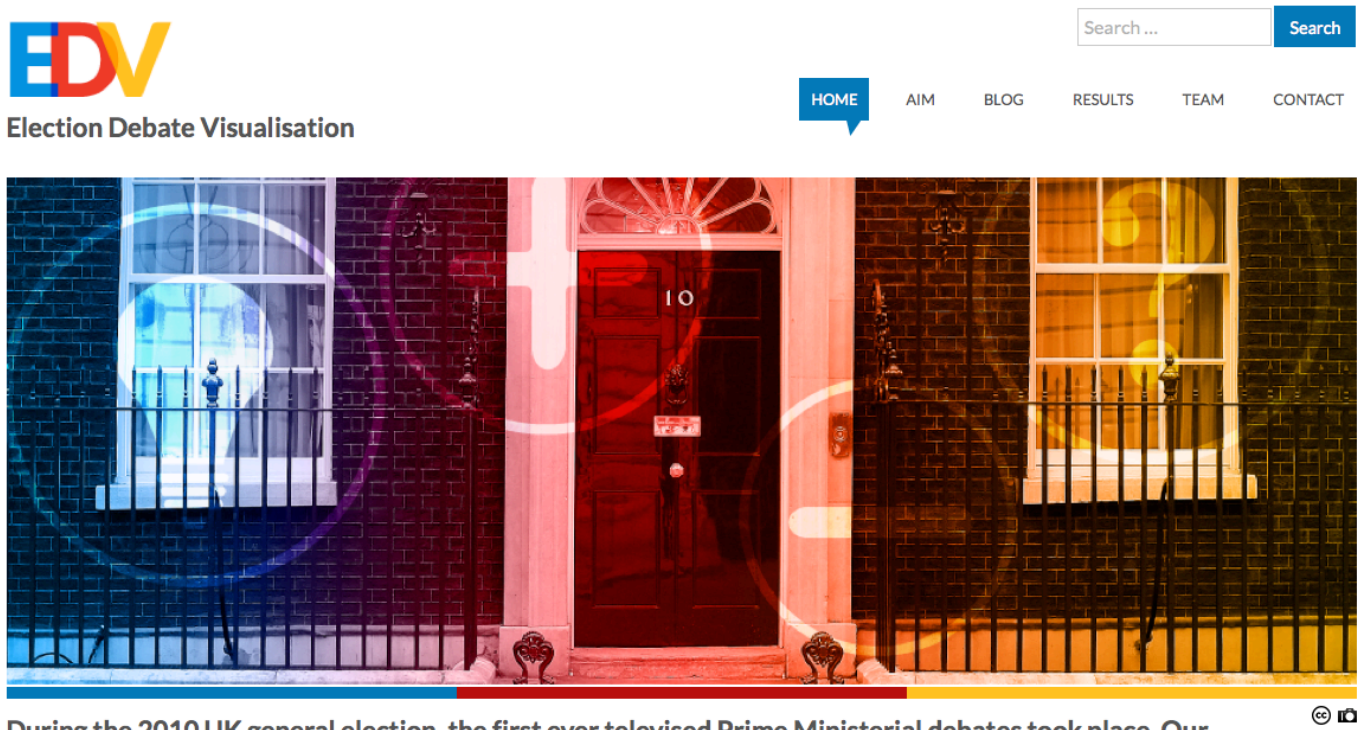


http://memetic-vre.net

General Election debates, 2010

http://people.kmi.open.ac.uk/sbs/2010/04/debate-replay-with-map

Next General Election…



http://edv-project.net

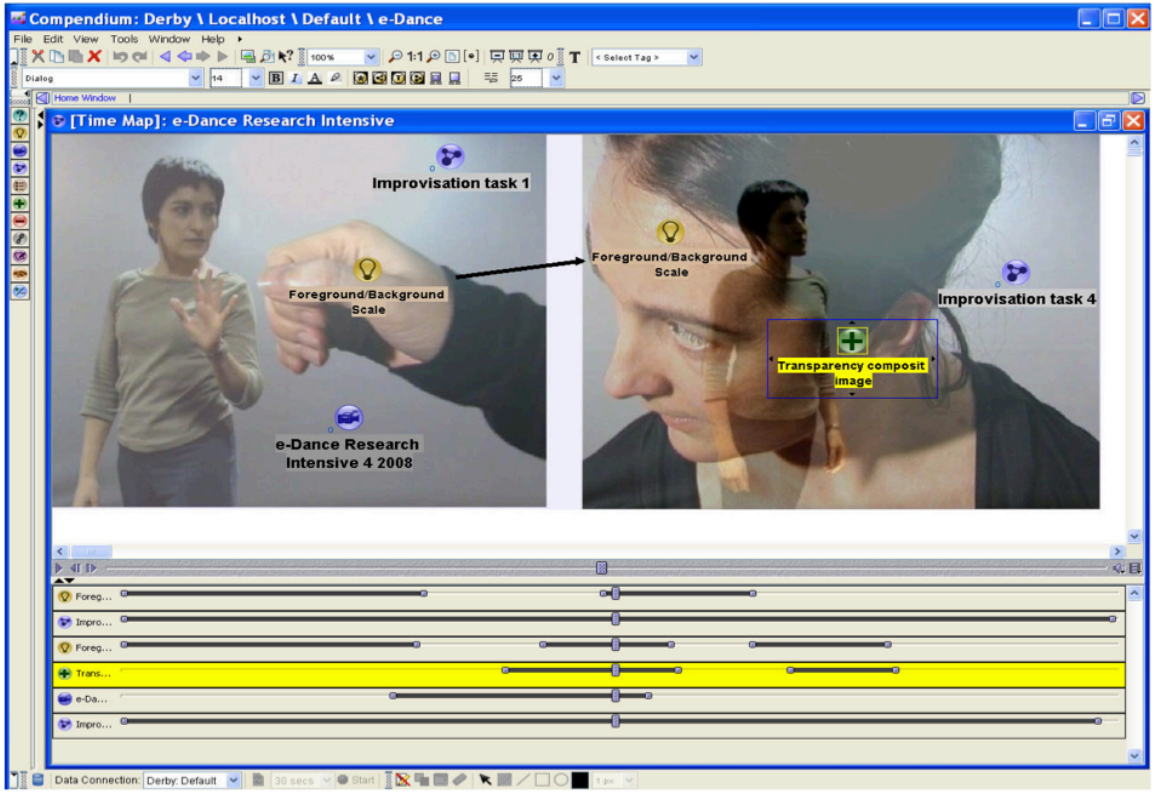
providing a video annotation medium for digital choreographers

— document rehearsals and research

e-Dance Project: Choreography practice as research, & the transformative role of digital media

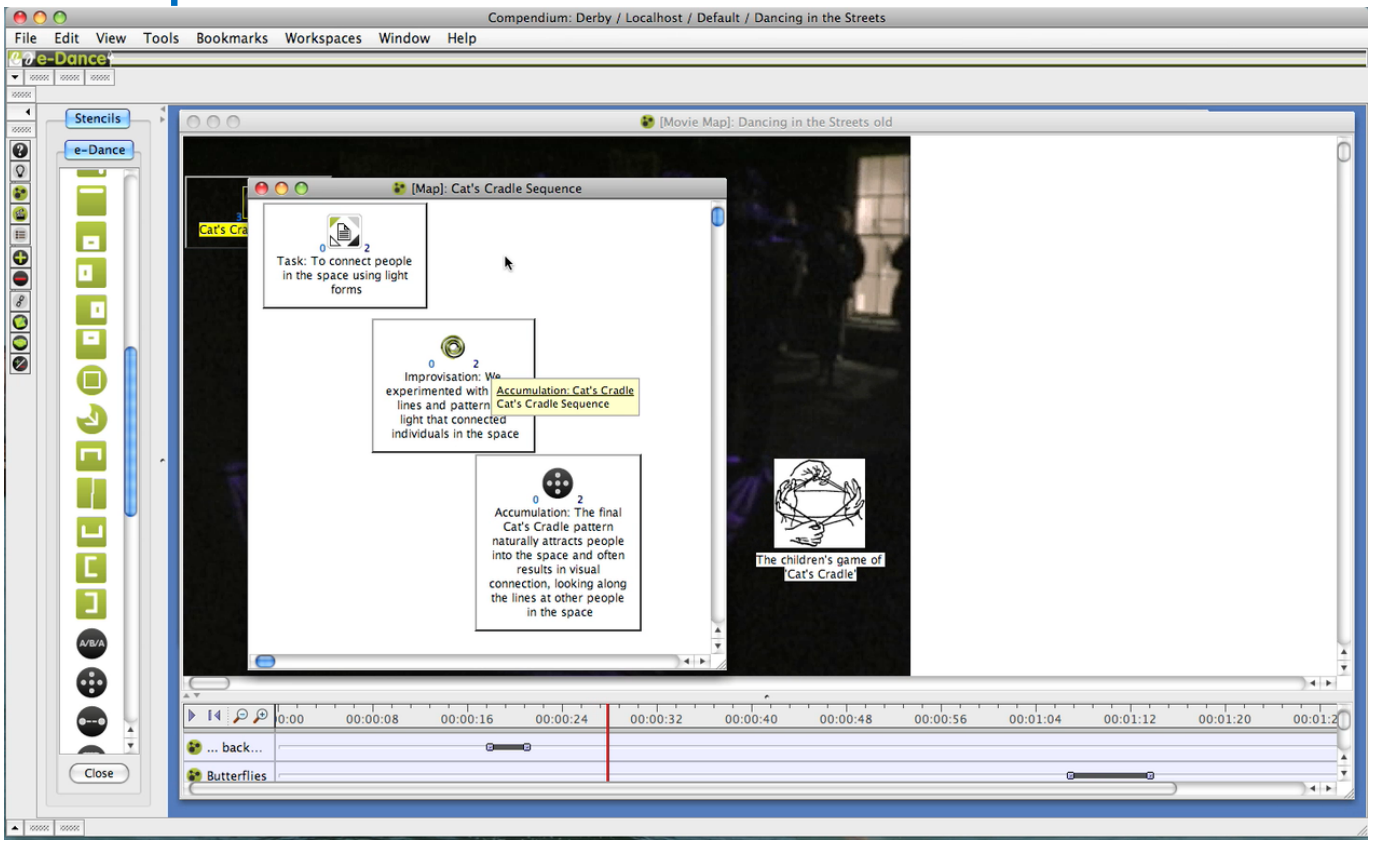
AHRC/EPSRC/JISC e-Dance Project: http://projects.kmi.open.ac.uk/e-dance
— in collab. with: Helen Bailey (Univ. Bedfordshire), Sita Popat (Univ. Leeds), Martin Turner (Univ. Manchester)

e-Dance Project: Choreography practice as research, & the transformative role of digital media



Bailey H., Bachler M., Buckingham Shum S., Le Blanc A., Popat S., Rowley A. and Turner M. (2009). Dancing on the Grid: Using e-Science Tools to Extend Choreographic Research. *Philosophical Transactions of the Royal Society A.* 367: 2793-2806. http://oro.open.ac.uk/12901

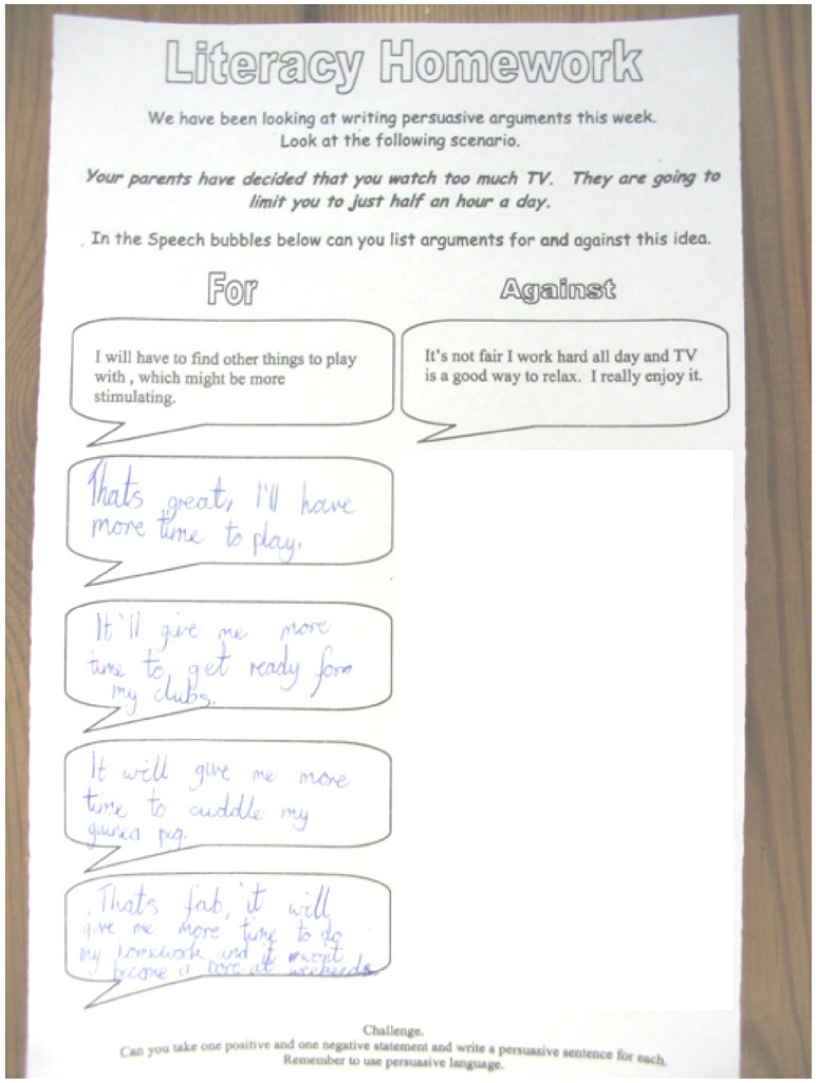
Multimedia presentations for a multimedia, practice-based discipline



http://projects.kmi.open.ac.uk/e-dance/2009/09/14/choreographic-video-annotation

putting arguments under the microscope

Argument Mapping in a nutshell



Literacy Homework

We have been looking at writing persuasive arguments this week.
Look at the following scenario.

Your parents have decided that you watch too much TV. They are going to limit you to just half an hour a day.

In the Speech bubbles below can you list arguments for and against this idea.

For

I will have to find other things to play with , which might be more stimulating.

Thats great, I'll have more time to play.

It'll give me more time to get ready for my clubs.

It will give me more time to cuddle my guinea pig.

Thats fab, it will give me more time to do my homework and it might become a bore at weekends.

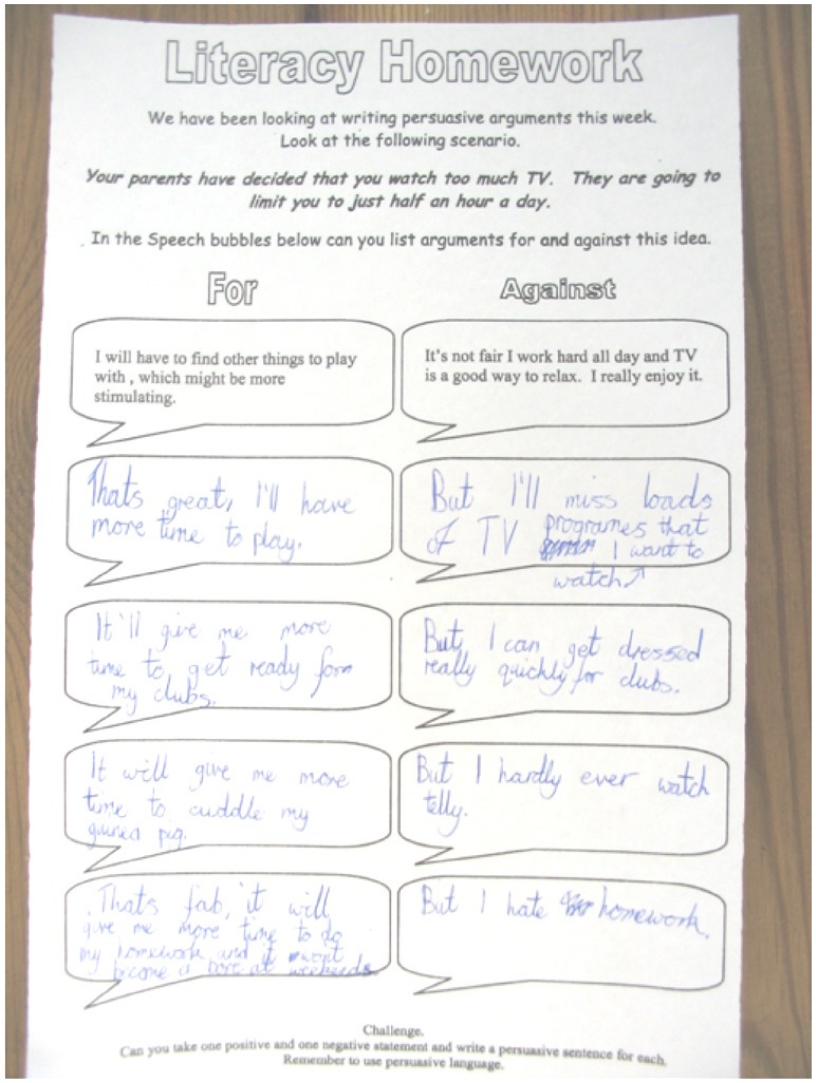
Against

It's not fair I work hard all day and TV is a good way to relax. I really enjoy it.

Challenge.
Can you take one positive and one negative statement and write a persuasive sentence for each.
Remember to use persuasive language.

http://people.kmi.open.ac.uk/sbs/2009/12/when-children-learn-to-map-dialogue-and-argument

Argument Mapping in a nutshell



Literacy Homework

We have been looking at writing persuasive arguments this week.
Look at the following scenario.

Your parents have decided that you watch too much TV. They are going to limit you to just half an hour a day.

In the Speech bubbles below can you list arguments for and against this idea.

For	Against
I will have to find other things to play with , which might be more stimulating.	It's not fair I work hard all day and TV is a good way to relax. I really enjoy it.
Thats great, I'll have more time to play.	But I'll miss loads of TV programmes that I want to watch.
It'll give me more time to get ready for my clubs.	But I can get dressed really quickly for clubs.
It will give me more time to cuddle my guinea pig.	But I hardly ever watch telly.
Thats fab, it will give me more time to do my homework and it might become a bore at weekends.	But I hate homework.

Challenge.
Can you take one positive and one negative statement and write a persuasive sentence for each.
Remember to use persuasive language.

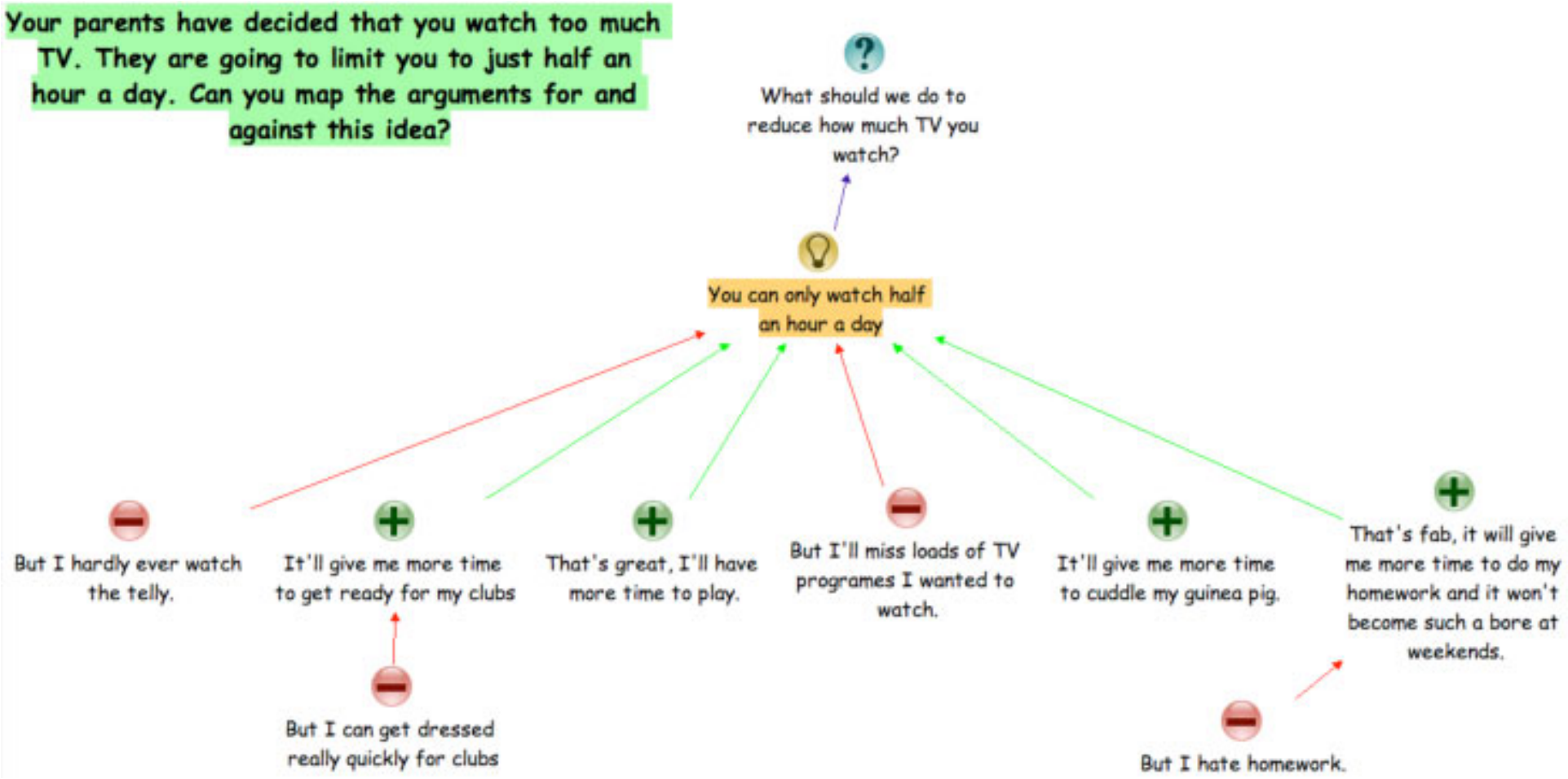
http://people.kmi.open.ac.uk/sbs/2009/12/when-children-learn-to-map-dialogue-and-argument

Argument Mapping in a nutshell

Your parents have decided that you watch too much TV. They are going to limit you to just half an hour a day. Can you map the arguments for and against this idea?

http://people.kmi.open.ac.uk/sbs/2009/12/when-children-learn-to-map-dialogue-and-argument

Argument Mapping in a nutshell



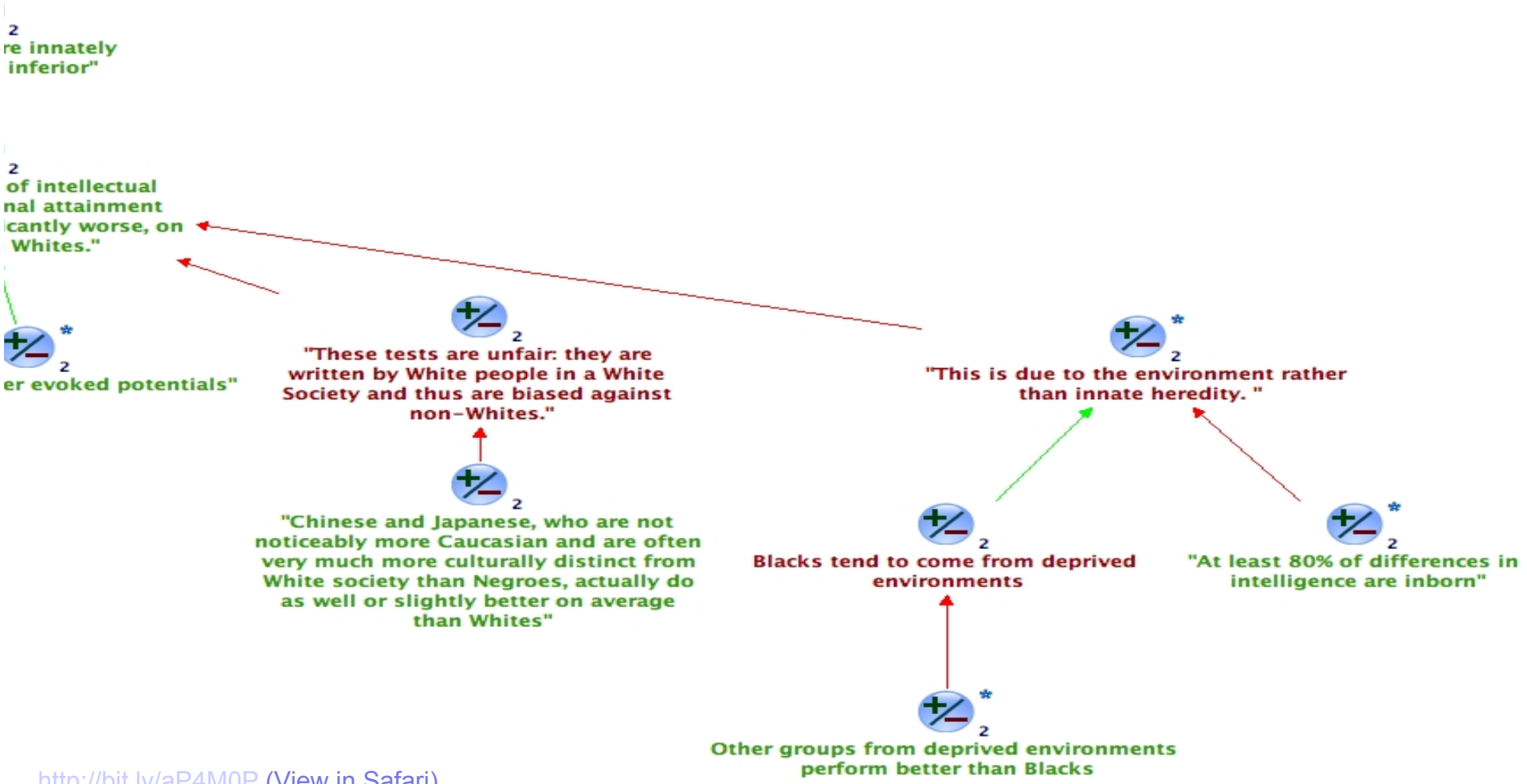
Using argument mapping to visualize, analyse and challenge racist literature

Buckingham Shum, S. (2007). Undermining Mimetic Contagion on the Net: Argumentation Tools as Critical Voices. COV&R 2007: Colloquium on Violence & Religion, Amsterdam Vrije Universiteit July, 4-8 2007
http://www.bezinningscentrum.nl/teksten/girard/c/c2007_Buckingham-Shum_Simon_abstract.htm
http://www.slideshare.net/sbs/undermining-mimetic-contagion-on-the-net-argumentation-tools-as-critical-voices
Interactive Web Maps: http://bit.ly/aP4M0P (View in Safari)

Example: a “scientific argument” on National Front website

“What are the facts? … on every measure of intellectual ability and educational attainment Blacks perform significantly worse, on average, than Whites. In the case of average IQ, for example, the average Negro figure is only 85% of the White average.”

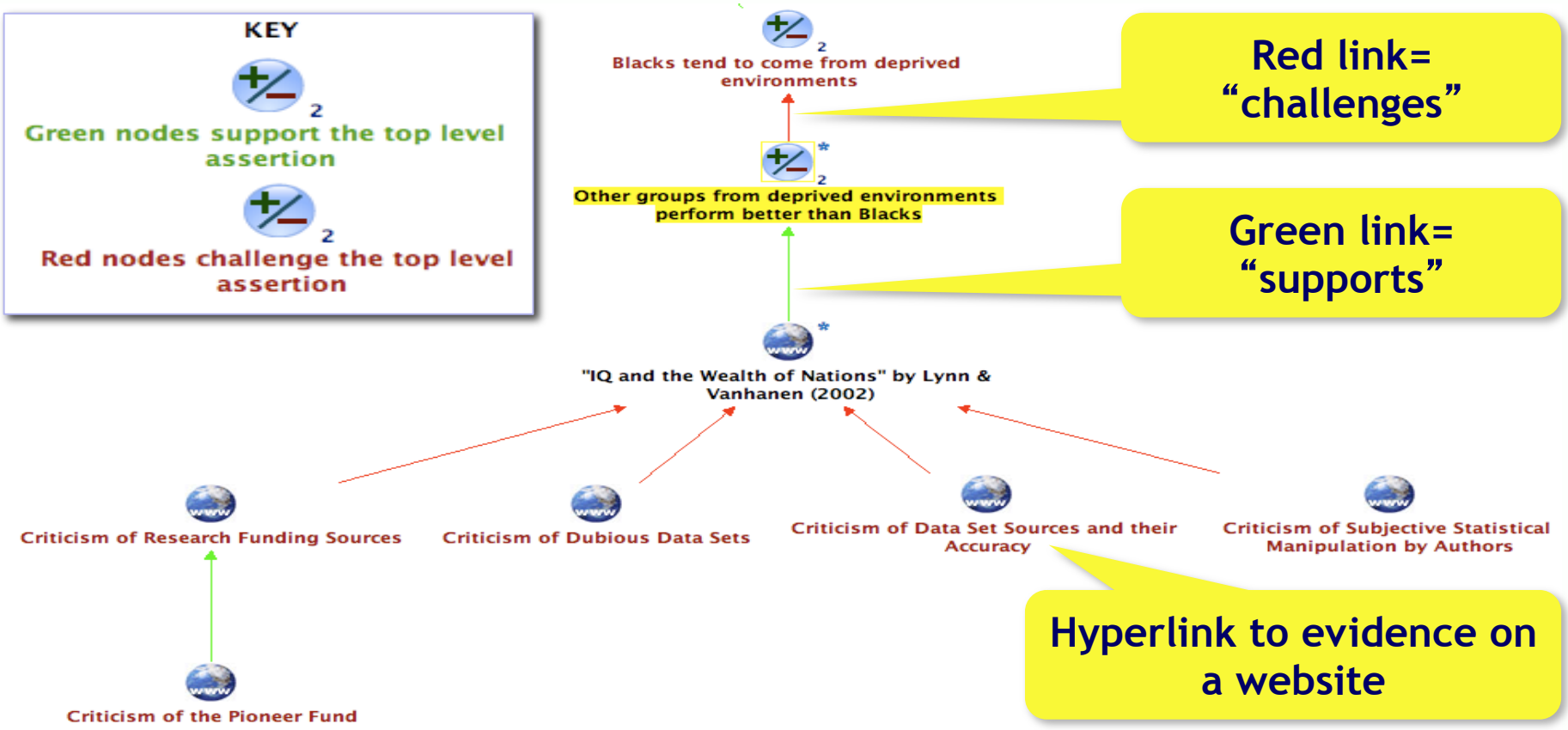
Readers can consult *Race* by Dr. John R. Baker, former Reader in Cytology at Oxford University, published by the Oxford University Press, or *The Testing of Negro Intelligence*, an exhaustive review of hundreds of studies demonstrating racial differences in intellectual ability by Dr. Audrey M. Shuey, and of course there is *The Bell Curve* by Herrnstein and Murray.



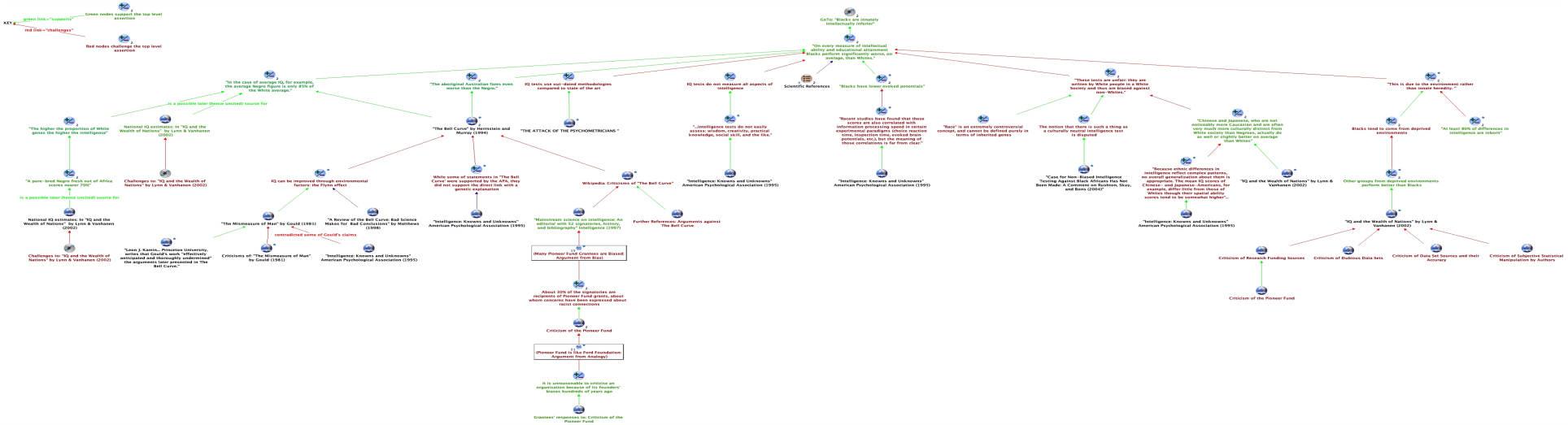
http://bit.ly/aP4M0P (View in Safari)

Analysing the NF “negro intelligence” case using argument mapping

http://bit.ly/aP4M0P (View in Safari)



Refuting the NF “negro intelligence” argument using argument mapping



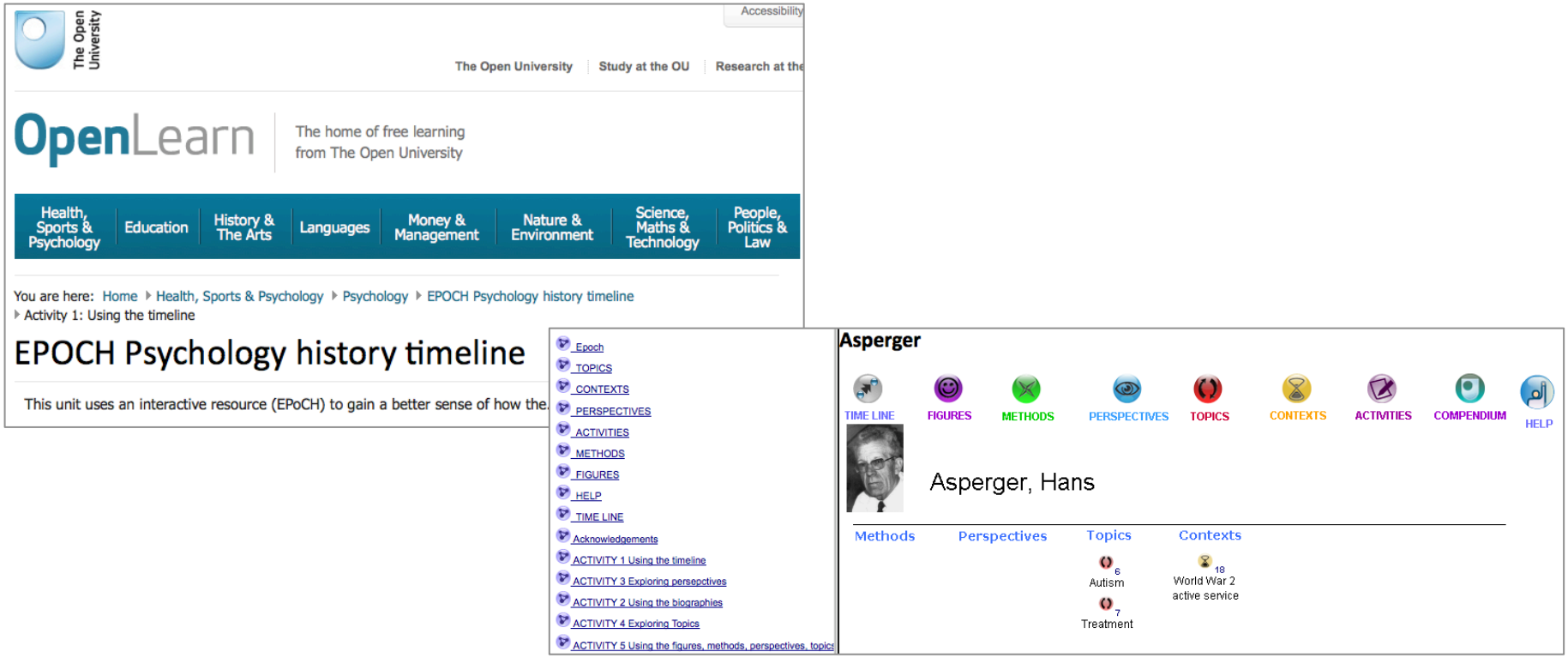
http://bit.ly/aP4M0P (View in Safari)

Compendium in OU teaching and learning

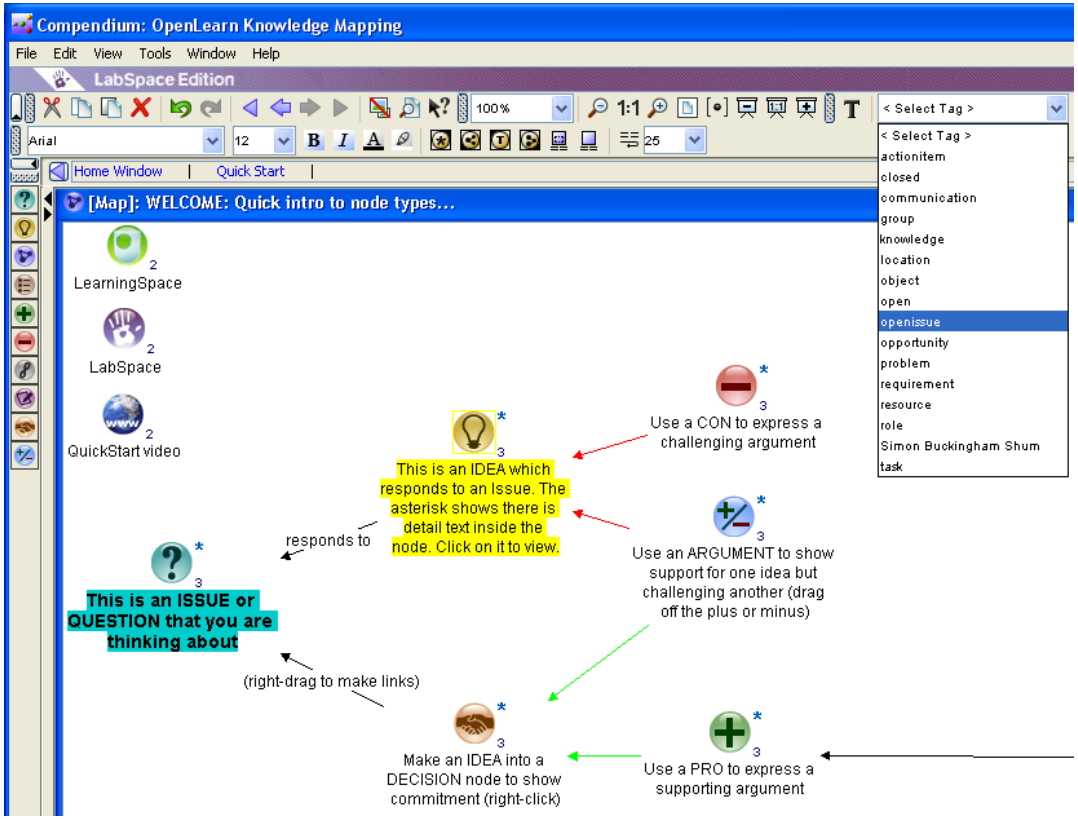
Compendium used widely across OU

http://compendium.open.ac.uk

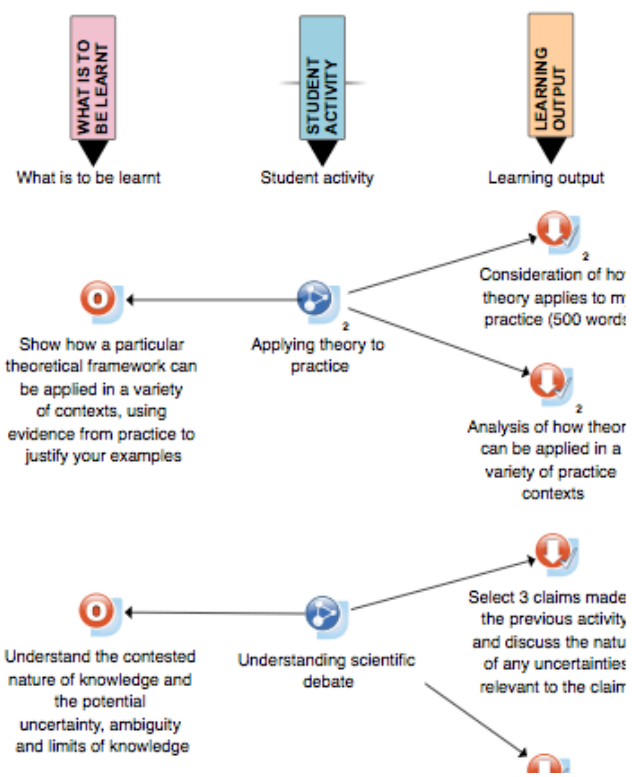
Compendium in OpenLearn

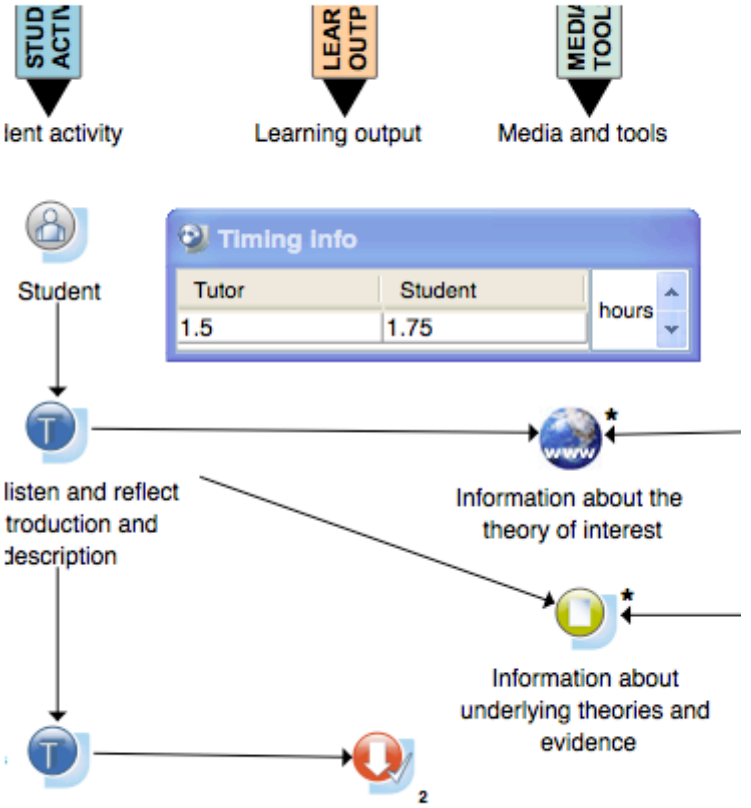


Compendium in OpenLearn LabSpace



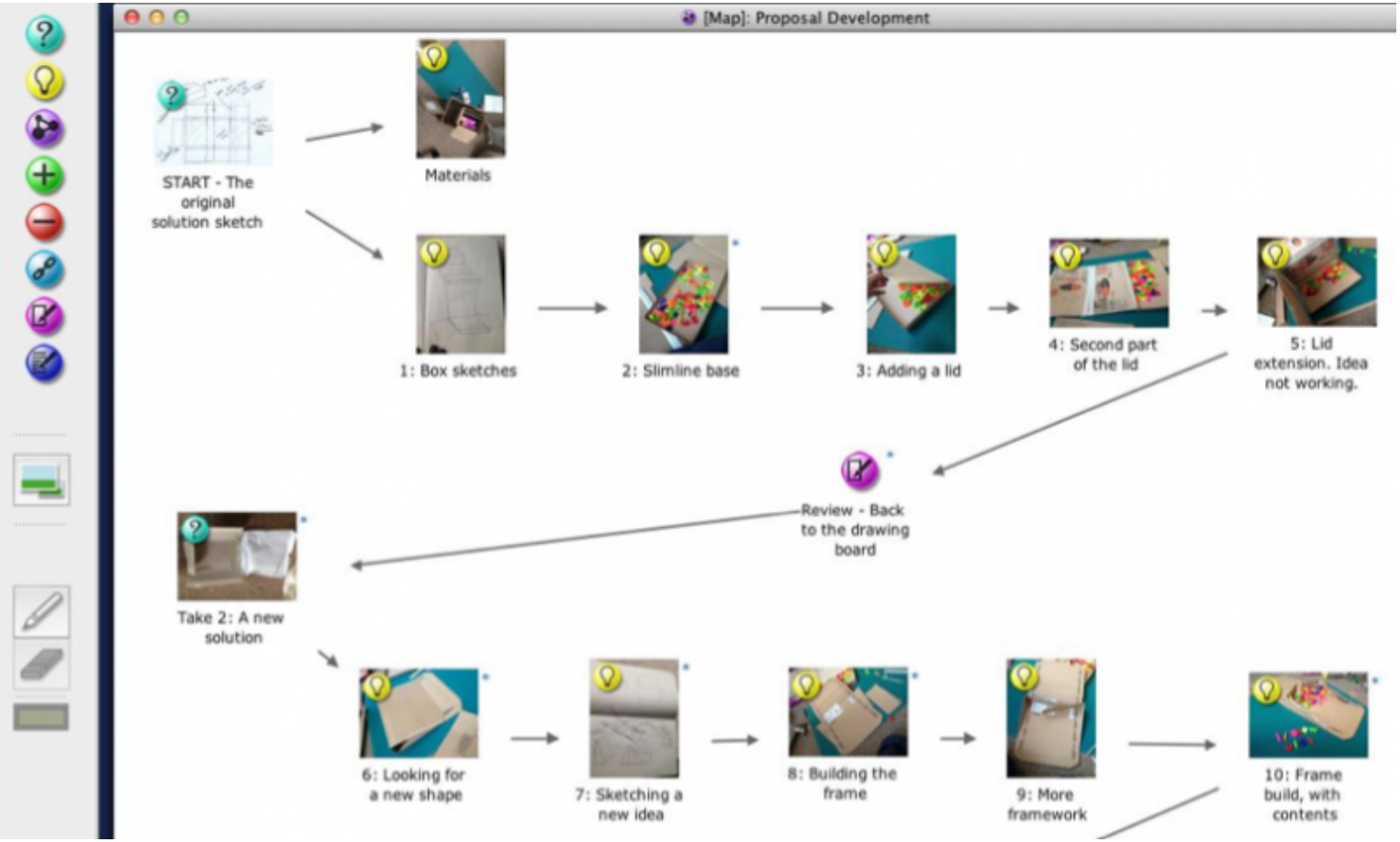
CompendiumLD: for OU Learning Design





OU LDI Project led by Grainne Conole: http://compendiumld.open.ac.uk

CompendiumDS: the award-winning *U101 Design Studies* course



CompendiumDS wins e-Assessment Scotland award for Best Product

e-Assessment Scotland

eAssessment Scotland
@eassessscotland

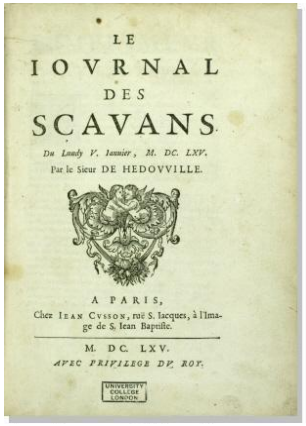
Follow

Winner in the best Product category was Derek Jones @plug103 from the OU for CompendiumDS #easc13
pic.twitter.com/9IidgxRiNu

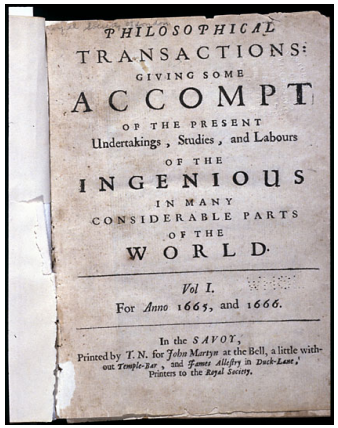
Reply Retweet Favorite More

what if we start to publish scholarly/research knowledge as webs of arguments?

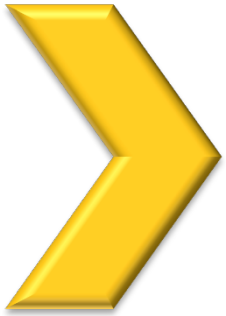
Scholarly discourse as webs of ideas…

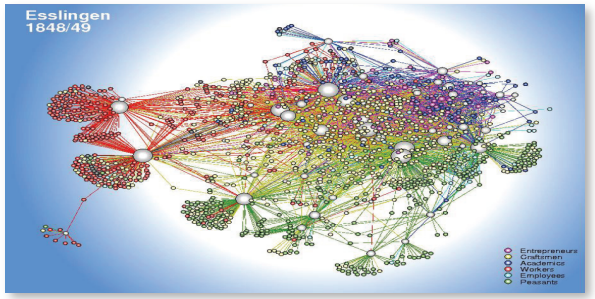

LE
IOVRNAL
DES
SCAVANS
Du Lundy V. Janvier, M. DC. LXV.
Par le Sieur DE HEDOVVILLE.
A PARIS,
Chez IEAN CVSSON, rue S. Iacques, à l'Image de S. Iean Baptiste.
M. DC. LXV.
AVEC PRIVILEGE DV ROY.

Le Journal des Sçavans
January 1665

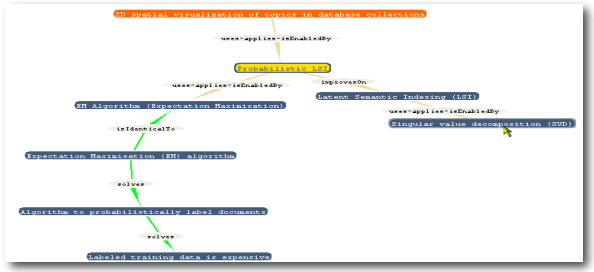

PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD.
Vol I.
For Anno 1665, and 1666.
In the SAVOY,
Printed by T. N. for John Martyn at the Bell, a little without Temple-Bar, and James Allestry in Duck-Lane, Printers to the Royal Society.

Philosophical Transactions of the Royal Society of London
March 1665



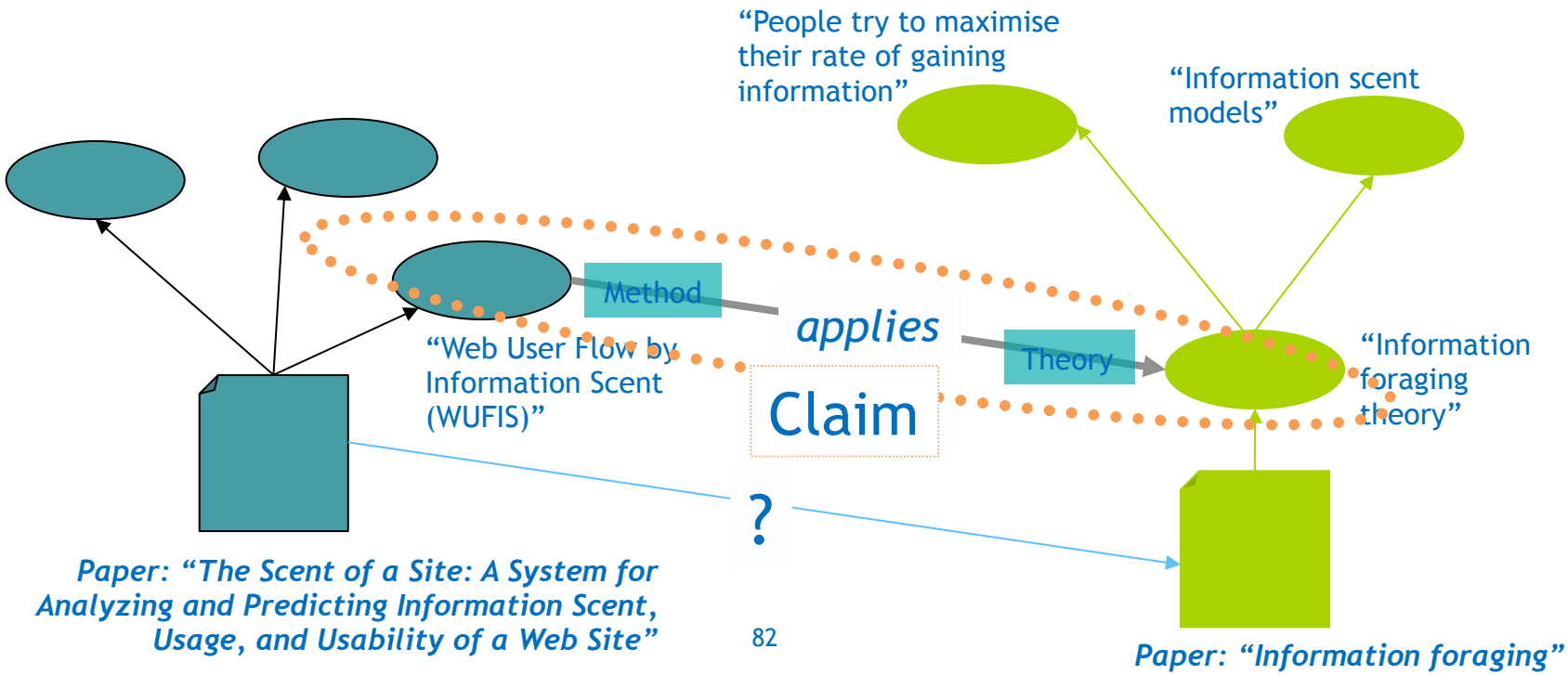


Chaomei Chen, 2006: Citation analysis

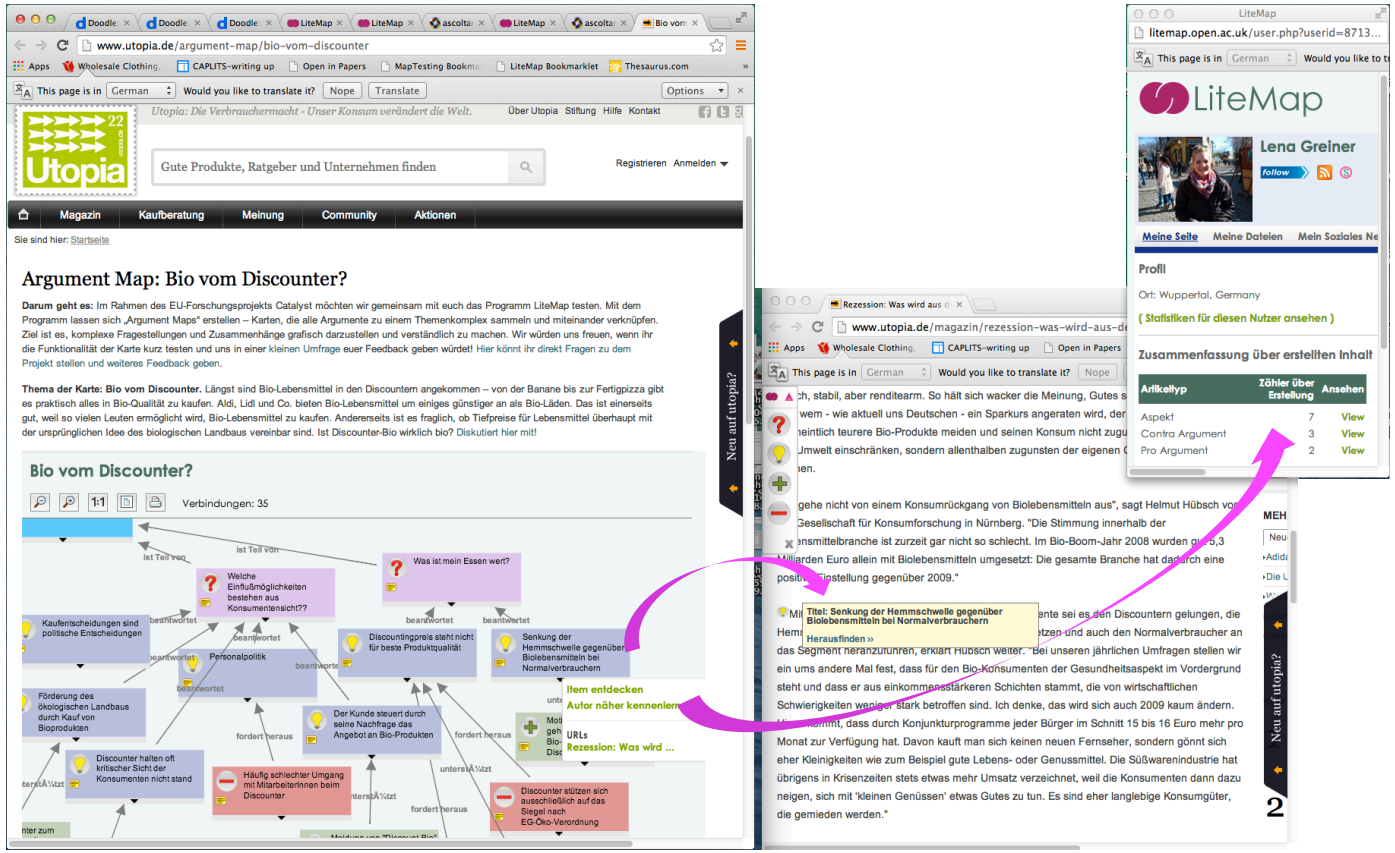


Buckingham Shum et al, 2003: lineage analysis

Scholarly discourse as CKS…
Beyond document citations…

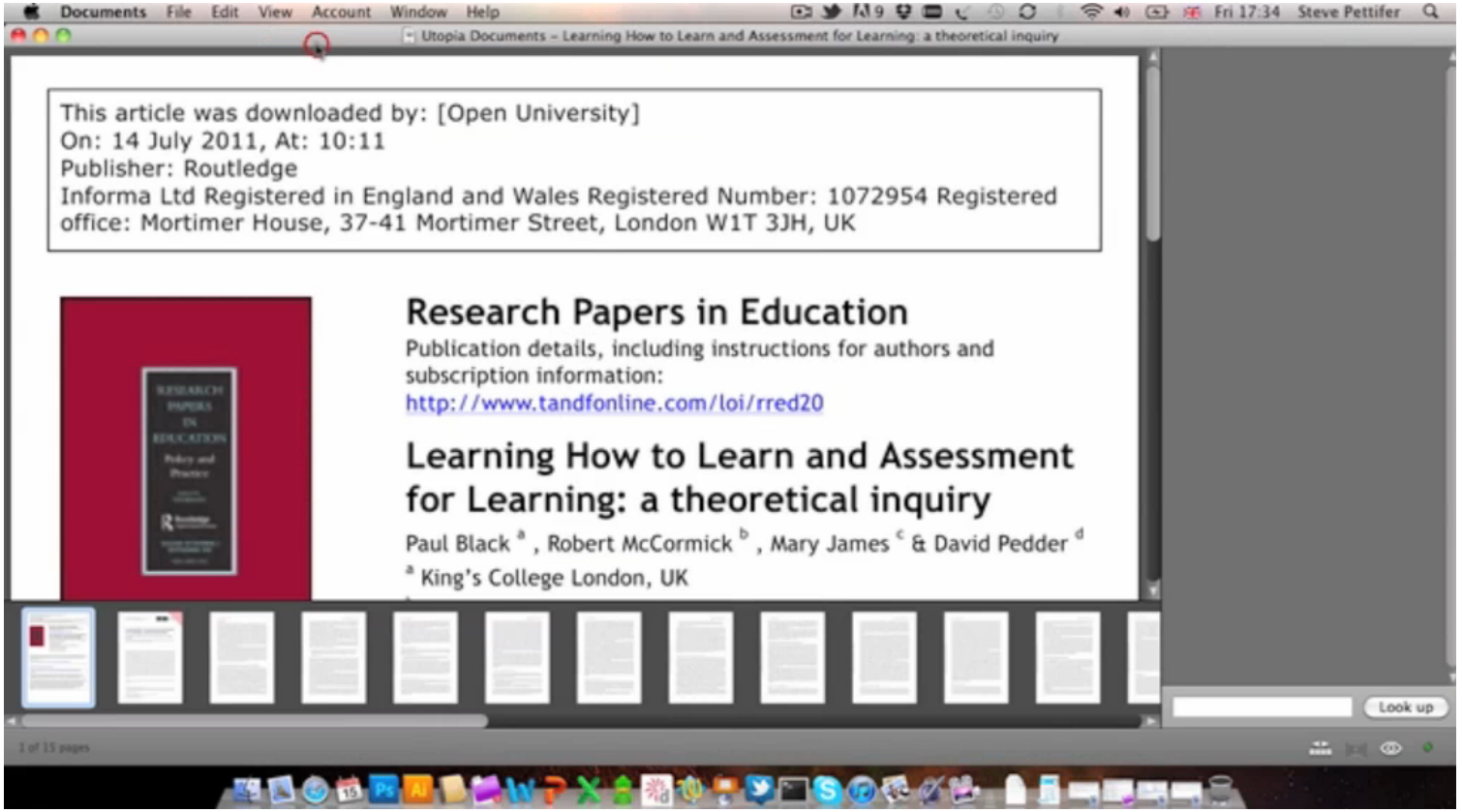


Annotating the web with an Argument Web



EU Catalyst Project: http://catalyst-fp7.eu • Example: http://www.utopia.de/argument-map/bio-vom-discounter

Embedded argument annotations in journal articles



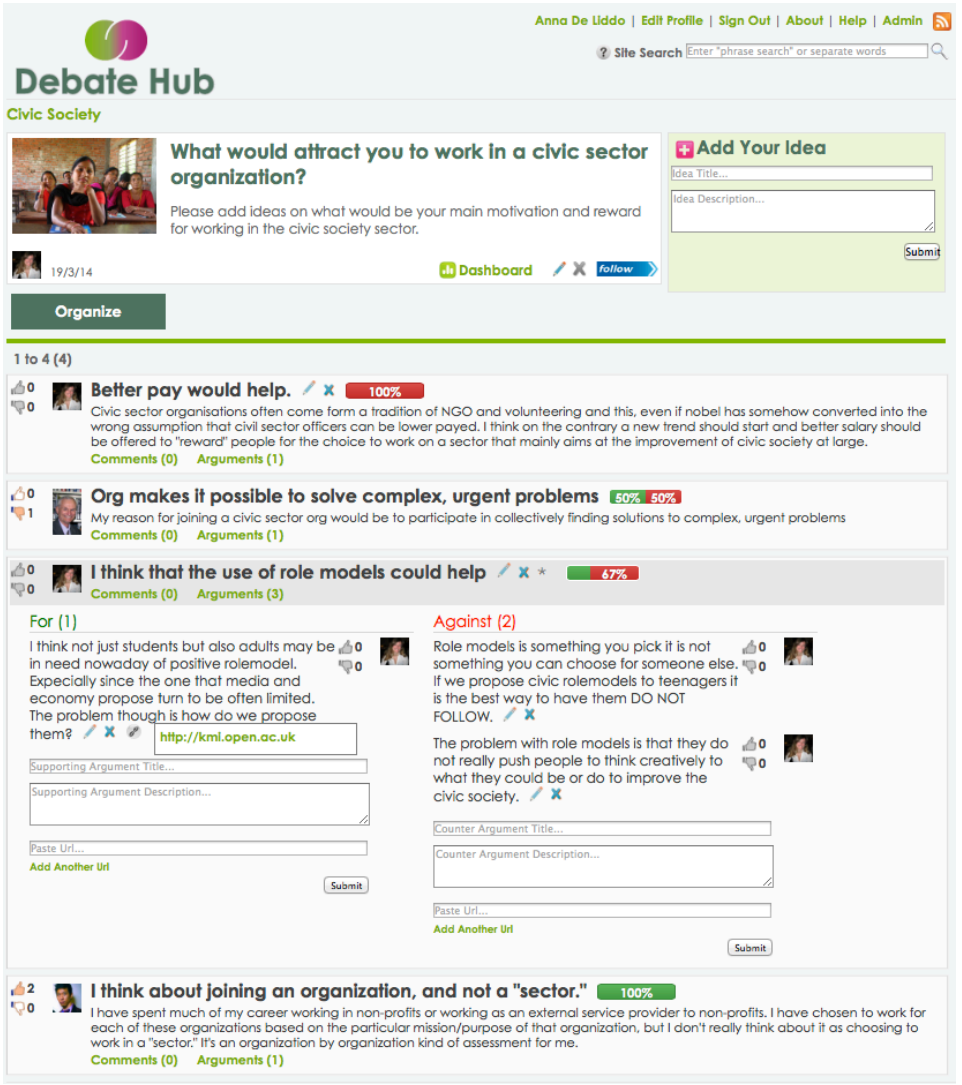
Acknowledgements: Steve Pettifer, http://utopiadocs.com

moving towards

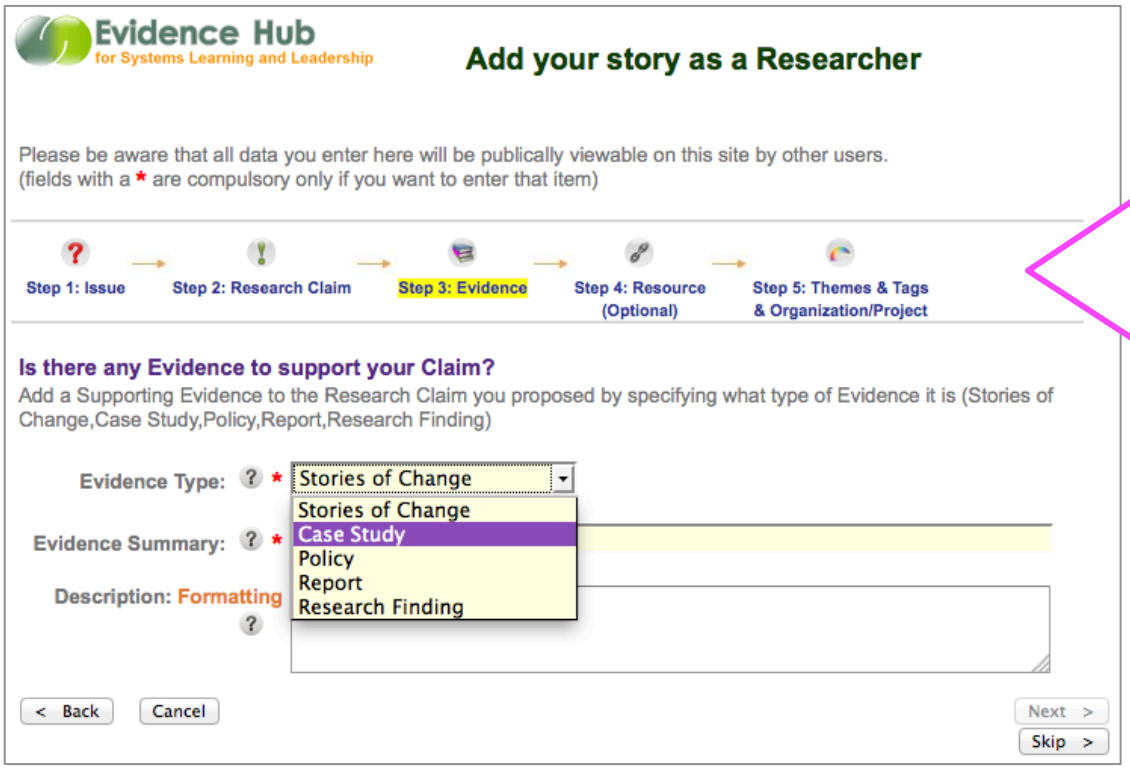
Contested Collective Intelligence

DebateHub

minimalist user interface for social ideation



Evidence Hub: semantic storytelling for students, practitioners and researchers



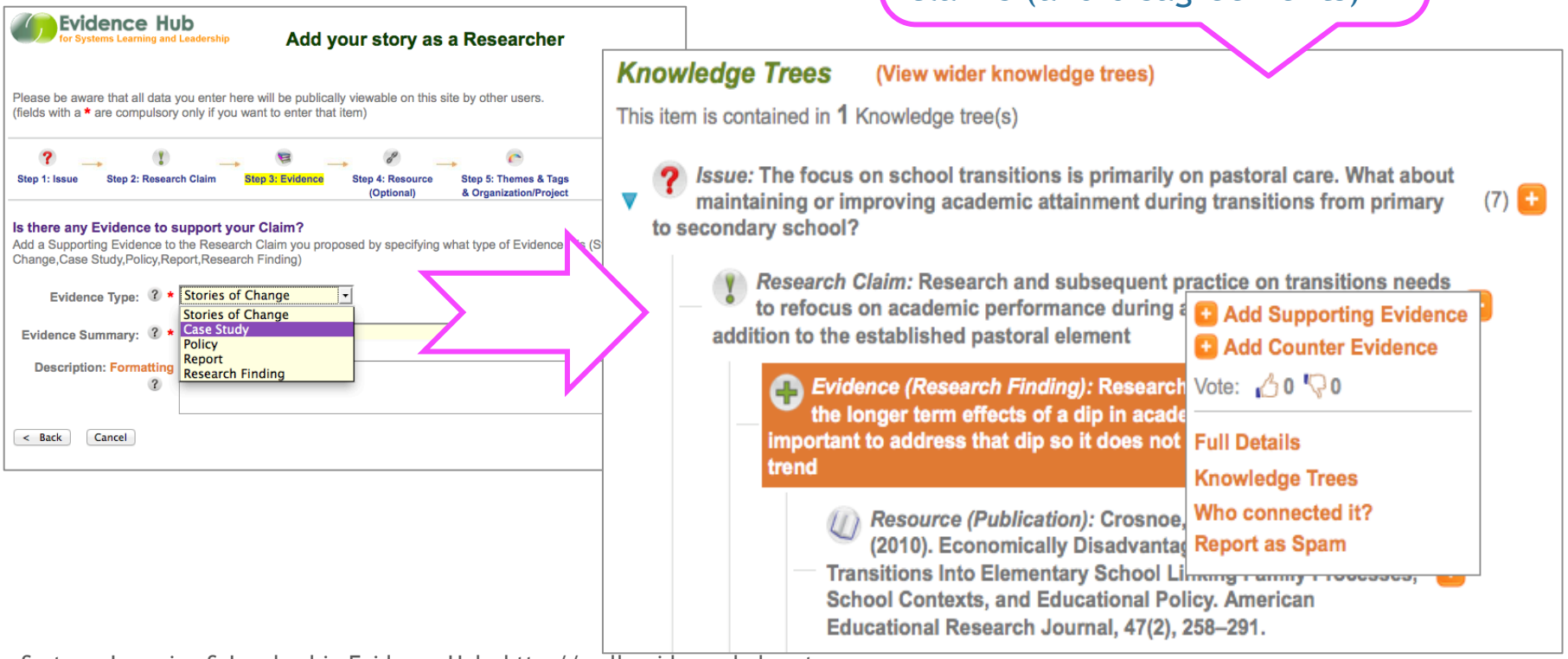
A wizard guides the user through the submission of a structured story:

- What's the Issue?
- What claim are you making/ addressing?
- What kind of evidence supports/challenges this?
- Link it to papers/data
- Index it against the NIC's core themes

Systems Learning & Leadership Evidence Hub: http://sysll.evidence-hub.net

Evidence Hub: Argument Maps

The wizard then generates a structured Knowledge Tree showing evidence-based claims (and disagreements)



Systems Learning & Leadership Evidence Hub: http://sysll.evidence-hub.net

Evidence Hub: professional development

http://learningemergence.net/2013/07/17/deed-elli-ai-ci-systemic-school-learning

Issue

Potential Solution

Supporting Evidence (practitioner story)

***Issue:* How does a change in Mathematics teaching approach impact the strategic aw**

***Potential Solution:* Adopting a method that could initialise sustainable change i**
that they were less robotic in learning and more strategically aware of their lear

Added on: 15/7/13
Added by: Phil Cocks

Description:
The method would encompass a three phase approach. The first phase would be to adop
(http://investigations.terc.edu) and then collect data in both a qualitative and quantitative r
questionnaire designed both to measure a person's learning power at any moment in time

***Evidence (Stories of Change):* The profiles show the two most develop st**
well behaved, however with the change of teaching approach have begun
dimensions. The results were surprising to the researcher, because the major
ability to be more strategically aware of their learning and interestingly in othe

Added on: 15/7/13
Added by: Phil Cocks

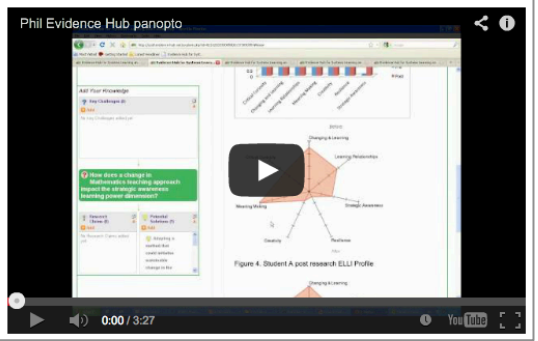
Description:

The results of the interviews were surprisingly positive about how students' feel
interviewed gave us a wealth of information regarding their views on their teach
students talk about how they like Maths, that they like the teacher and that they
directly to them and real life. The students were able to compare themselves to
some students at certain points in the lesson. The information from the intervie
Rogers would regard is an ideological learning situation. The students recalled
lesson when they were given time to "give it a go".

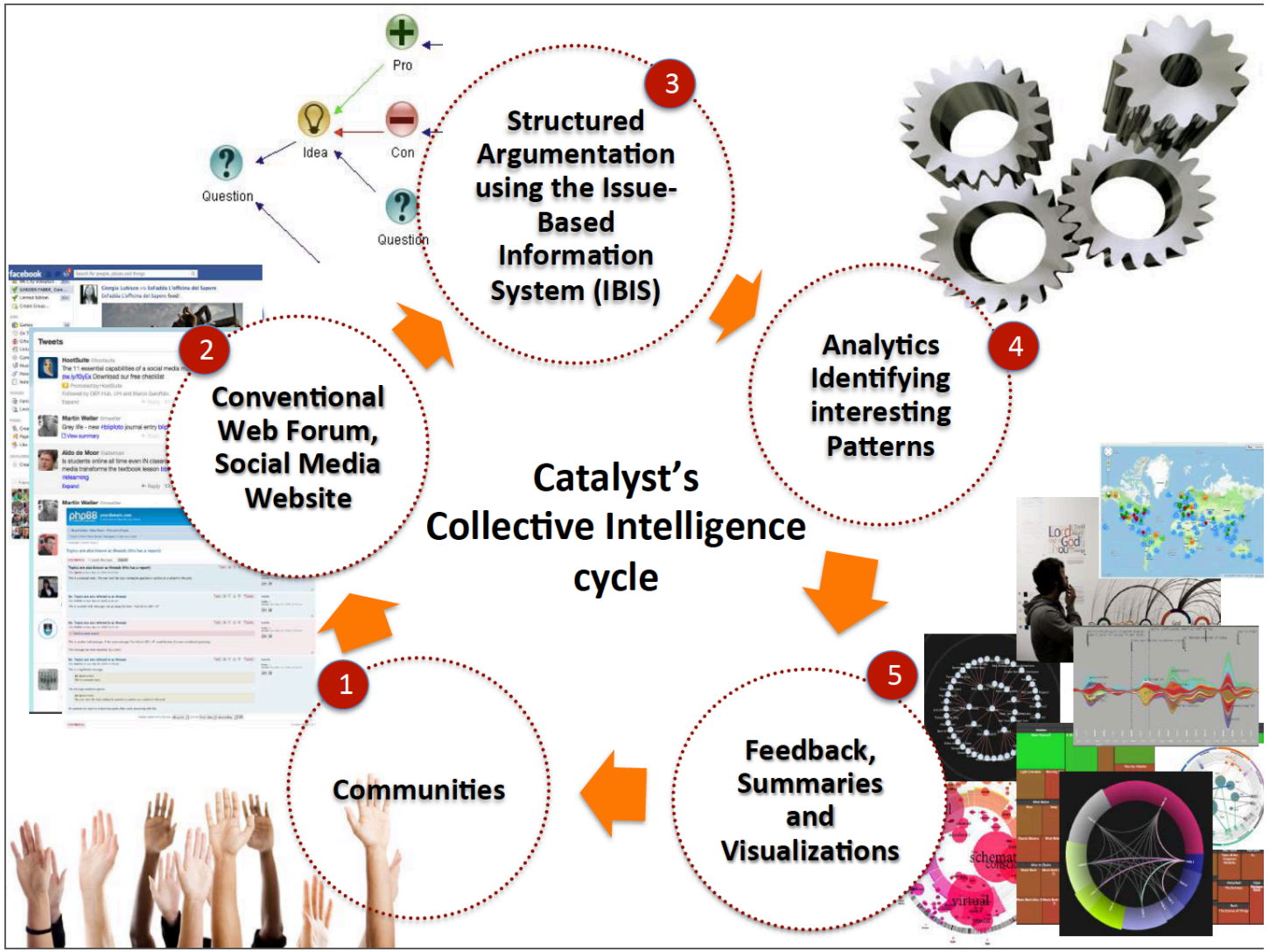
Phil's Story

Phil's talk about his enquiry about how to engage students in a top Year 8 Maths set by 'handing over responsibility to students' and helping them to develop their strategic awareness.

Simon then explored Phil's story distilled on the Evidence Hub [view on Hub]:



Reflective, structured deliberation, which computers can understand, is beginning to be possible at scale



learning analytics

can we tell from your digital traces if you're learning?

Every learning tool now has an “analytics dashboard”

(a Google image search)

https://twitter.com/Wiswijzer2/status/414055472451575808

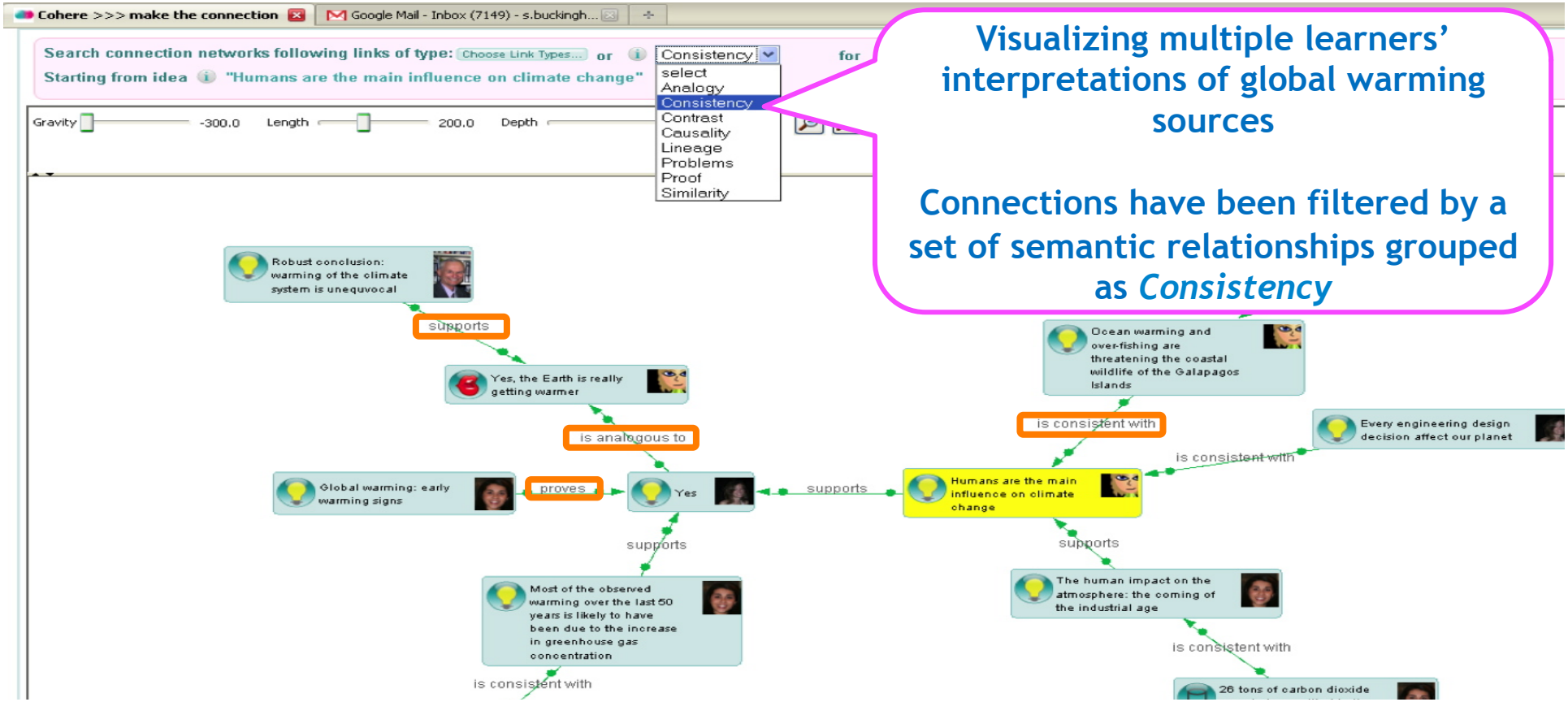
https://twitter.com/Wiswijzer2/status/414055472451575808

"Note: check the huge difference between knowing and measuring..."

- [x] Scaleable
- [x] Precise
- [x] Quantifiable
- [x] Reprocessable

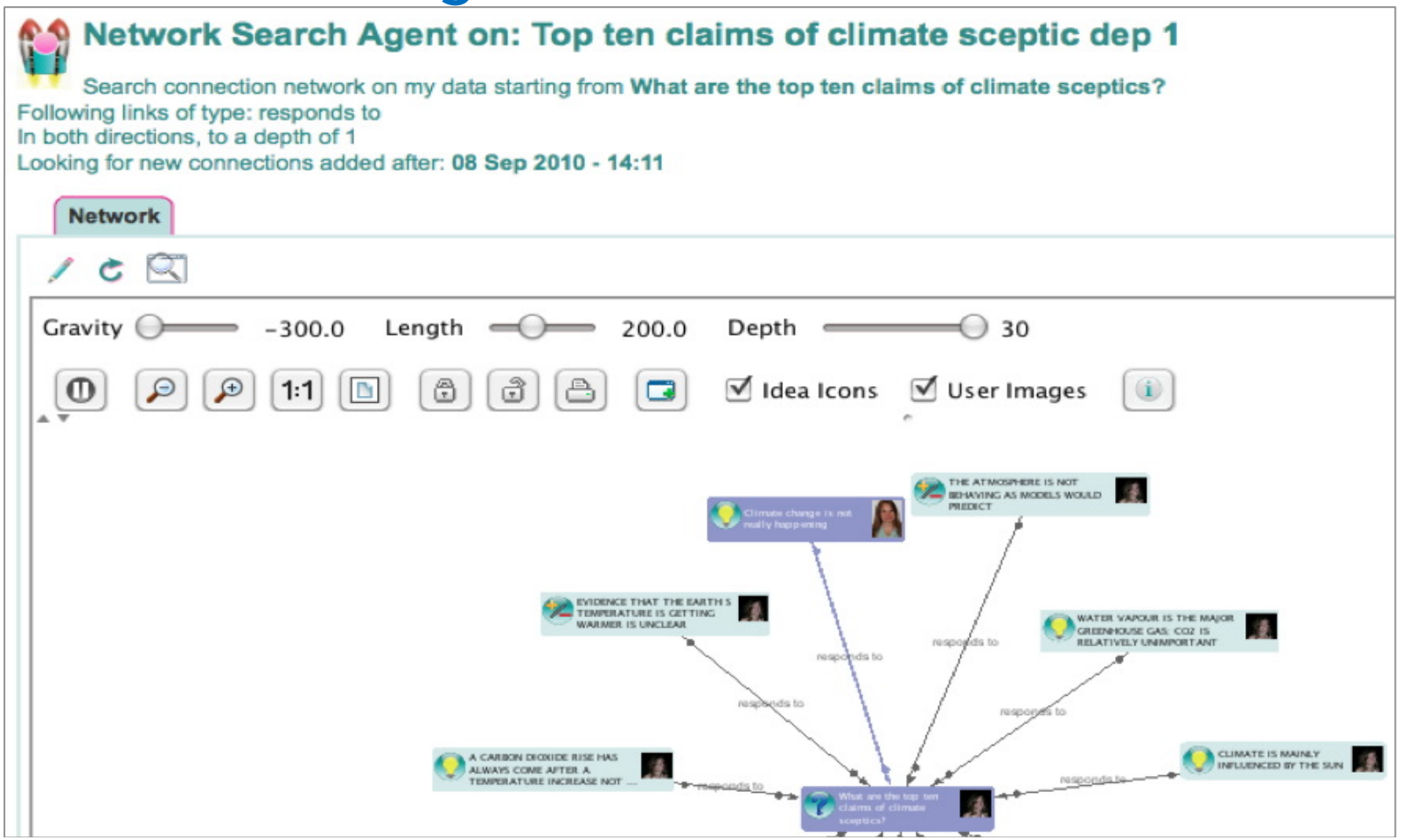
what kind of analytics might point to higher order learner qualities?

cohere — semantic filtering of connections

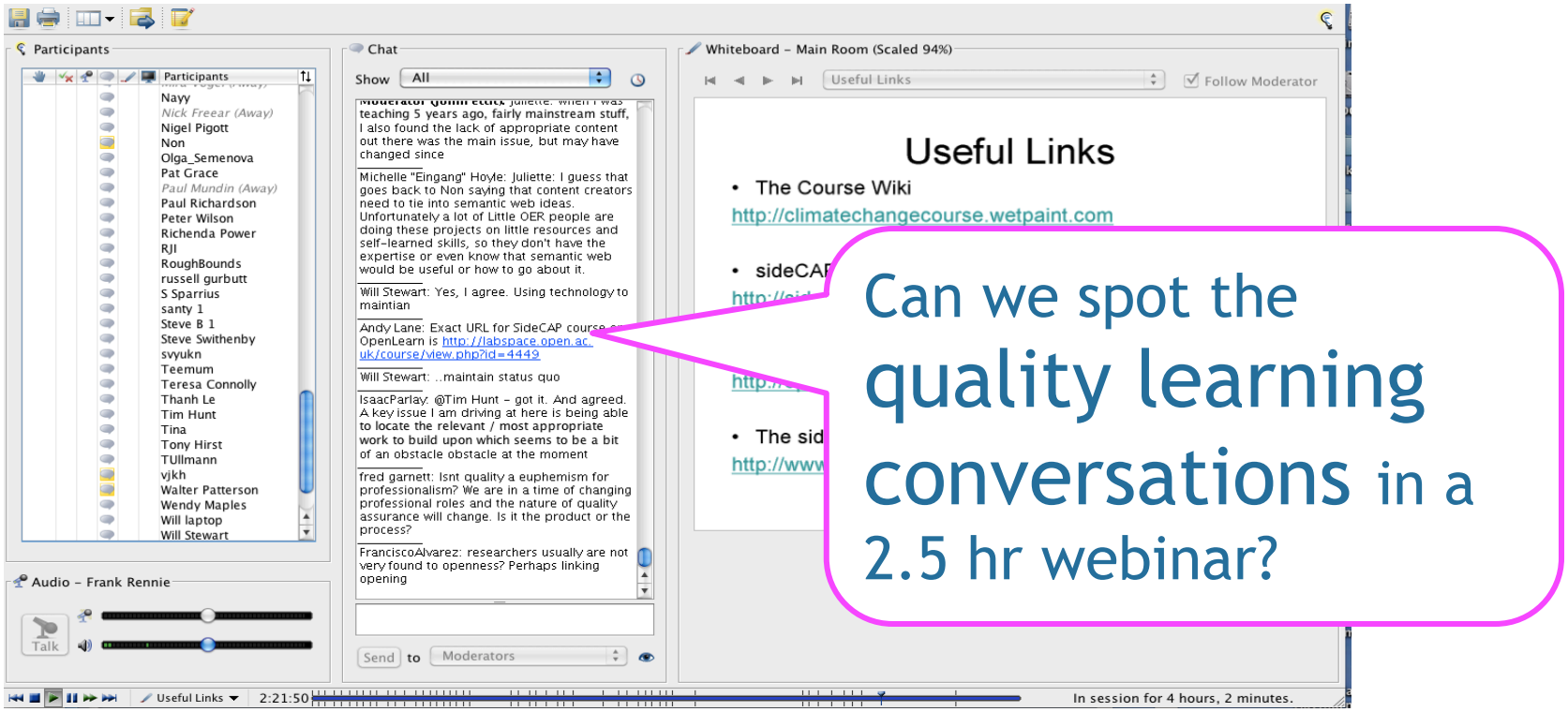


De Liddo, A. and Buckingham Shum, S. (2010). Cohere: A prototype for contested collective intelligence. In: *ACM Computer Supported Cooperative Work (CSCW 2010) - Workshop: Collective Intelligence In Organizations*, February 6-10, 2010, Savannah, Georgia, USA. http://oro.open.ac.uk/19554

cohere — an agent alerts me to new connections



Discourse analytics on webinar textchat



Ferguson, R. and Buckingham Shum, S., Learning analytics to identify exploratory dialogue within synchronous text chat. In: *1st International Conference on Learning Analytics and Knowledge* (Banff, Canada, 2011). ACM, pp. 99-103. Open Access Eprint http://oro.open.ac.uk/28955

Discourse analytics on webinar textchat

Given a 2.5 hour webinar, where in the live textchat were the most effective learning conversations?

Not at the start and end of a webinar…

Sheffield, UK not as sunny as yesterday - still warm

Greetings from Hong Kong

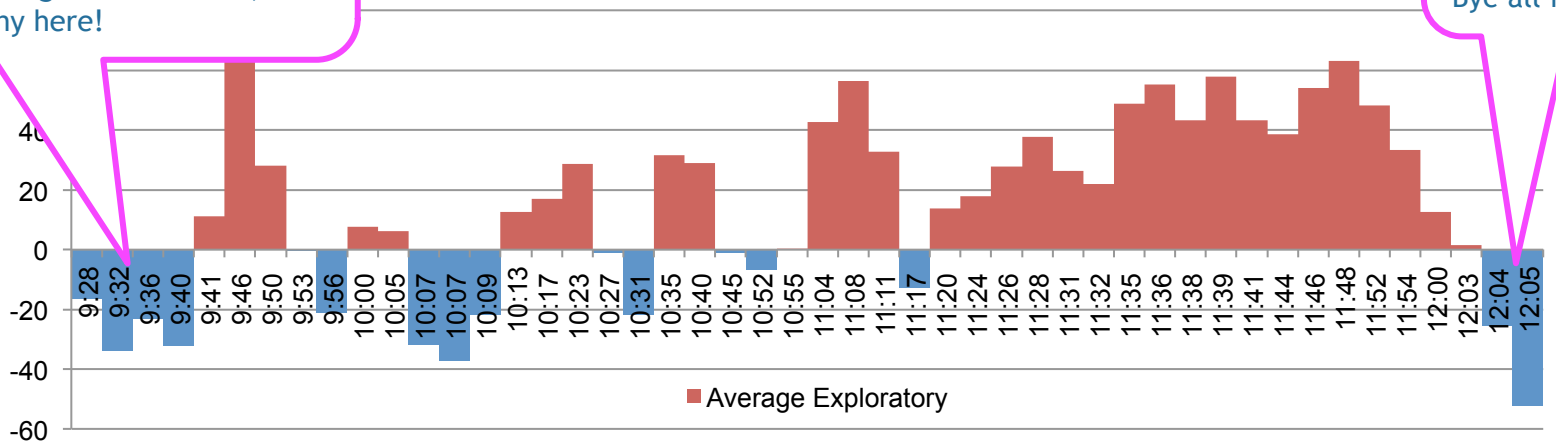
Morning from Wiltshire, sunny here!

See you!

bye for now!

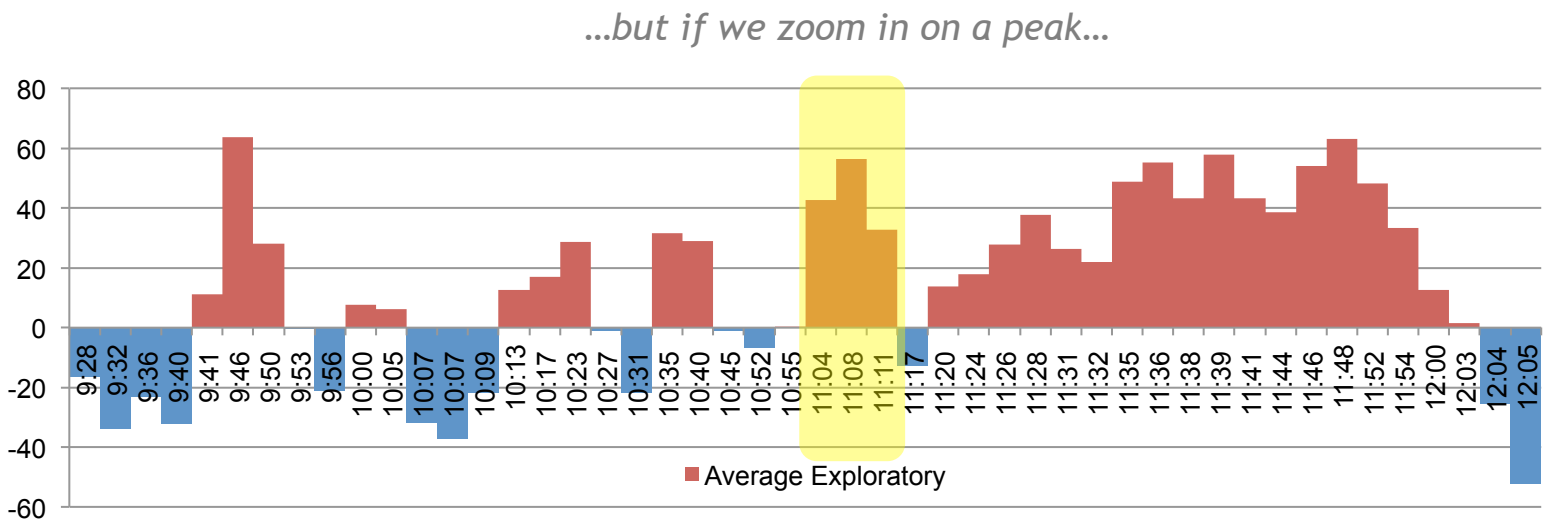
bye, and thank you

Bye all for now



Ferguson, R., Wei, Z., He, Y. and Buckingham Shum, S., An Evaluation of Learning Analytics to Identify Exploratory Dialogue in Online Discussions. In: *Proc. 3rd International Conference on Learning Analytics & Knowledge* (Leuven, BE, 8-12 April, 2013). ACM. http://oro.open.ac.uk/36664

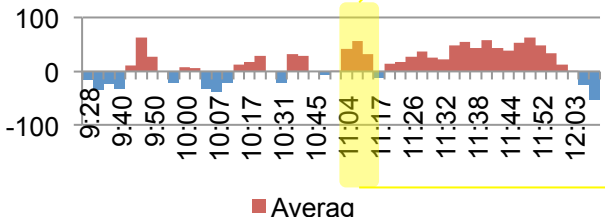
Discourse analytics on webinar textchat



Ferguson, R., Wei, Z., He, Y. and Buckingham Shum, S., An Evaluation of Learning Analytics to Identify Exploratory Dialogue in Online Discussions. In: *Proc. 3rd International Conference on Learning Analytics & Knowledge* (Leuven, BE, 8-12 April, 2013). ACM. http://oro.open.ac.uk/36664

Discourse analytics on webinar textchat

…language is used in a manner more akin to "Exploratory Talk" (Neil Mercer)



right	
I wonder if it also changes from introspective feel of some (of our) materials to more of an open dialogue?	
Course teams (not necessarily OU) can become incredibly blinkered during the period of writing a course and an additional external view is valuable	
Is the authoring out loud model best suited for new, emerging fields? Introduction to Algebra might go be so ripe for this model -- unless there was a novel dimension to it, eg. a new way of teaching it, or for s niche audience	
hello Helen!	
OK i take your point - I think there are points when it could really help. Eg. inviting ALs and students in to comment on course outlines or particularly tricky chunks of material. Yes - take your point.	Classified as "exploratory talk" (more substantive for learning)
would you like me to speak?	
I'm just wondering how 'team work' works when live authoring is used?	
That's what I was looking for Tony - lovely, "Conversational" is the term	
<RT>@Tony Does the meaning of 'a course' change through the process? I.e. there is effectively a different learning process (course) in the preparation of the actual course.</RT>	
I'd also like to point out that this particular model is more agile, not just in initial development but in ongoing development. "Traditional" OU courses are written and pretty much well fixed in stone for extended periods of time.	
The link to the artist who painted the image I used on one of my slides is Steve Russell http://www.russellstudio.co.uk/russell_studio/steve_russell.html	"non-exploratory"

Ferguson, R., Wei, Z., He, Y. and Buckingham Shum, S., An Evaluation of Learning Analytics to Identify Exploratory Dialogue in Online Discussions. In: *Proc. 3rd International Conference on Learning Analytics & Knowledge* (Leuven, BE, 8-12 April, 2013). ACM. http://oro.open.ac.uk/36664

Rhetorical discourse analytics

Xerox Research Centre Europe

OPEN QUESTION:

"… little is known …"

"… role … has been elusive"

"Current data is insufficient …"

CONTRASTING IDEAS:

"… unorthodox view resolves …"

"In contrast with previous hypotheses ..."

"... inconsistent with past findings ..."

SURPRISE:

"We have recently observed ... surprisingly"

"We have identified ... unusual"

"The recent discovery ... suggests intriguing roles"

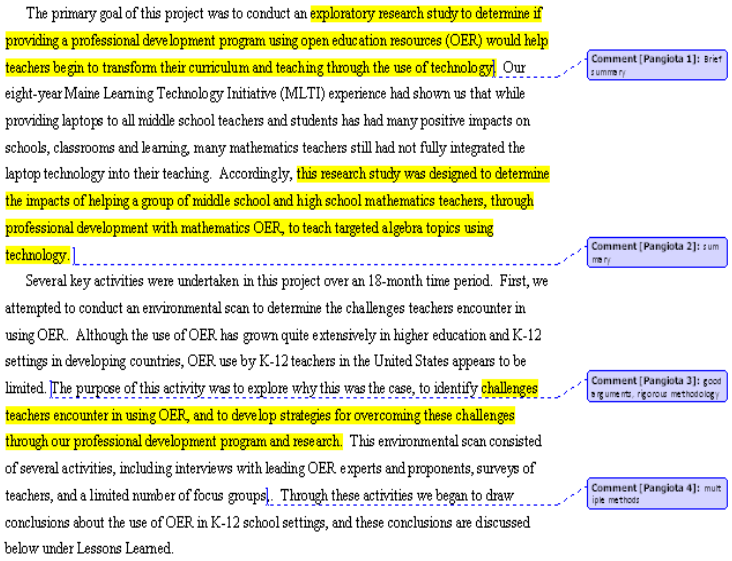
http://technologies.kmi.open.ac.uk/cohere/2012/01/09/cohere-plus-automated-rhetorical-annotation

De Liddo, A., Sándor, Á. and Buckingham Shum, S., Contested Collective Intelligence: Rationale, Technologies, and a Human-Machine Annotation Study. *Computer Supported Cooperative Work*, 21, 4-5, (2012), 417-448. http://oro.open.ac.uk/31052

Rhetorical discourse analytics

Xerox Research Centre Europe

Human analyst



The primary goal of this project was to conduct an exploratory research study to determine if providing a professional development program using open education resources (OER) would help teachers begin to transform their curriculum and teaching through the use of technology. Our eight-year Maine Learning Technology Initiative (MLTI) experience had shown us that while providing laptops to all middle school teachers and students has had many positive impacts on schools, classrooms and learning, many mathematics teachers still had not fully integrated the laptop technology into their teaching. Accordingly, this research study was designed to determine the impacts of helping a group of middle school and high school mathematics teachers, through professional development with mathematics OER, to teach targeted algebra topics using technology.

Several key activities were undertaken in this project over an 18-month time period. First, we attempted to conduct an environmental scan to determine the challenges teachers encounter in using OER. Although the use of OER has grown quite extensively in higher education and K-12 settings in developing countries, OER use by K-12 teachers in the United States appears to be limited. The purpose of this activity was to explore why this was the case, to identify challenges teachers encounter in using OER, and to develop strategies for overcoming these challenges through our professional development program and research. This environmental scan consisted of several activities, including interviews with leading OER experts and proponents, surveys of teachers, and a limited number of focus groups. Through these activities we began to draw conclusions about the use of OER in K-12 school settings, and these conclusions are discussed below under Lessons Learned.

Comment [Pangiota 1]: Brief summary

Comment [Pangiota 2]: summary

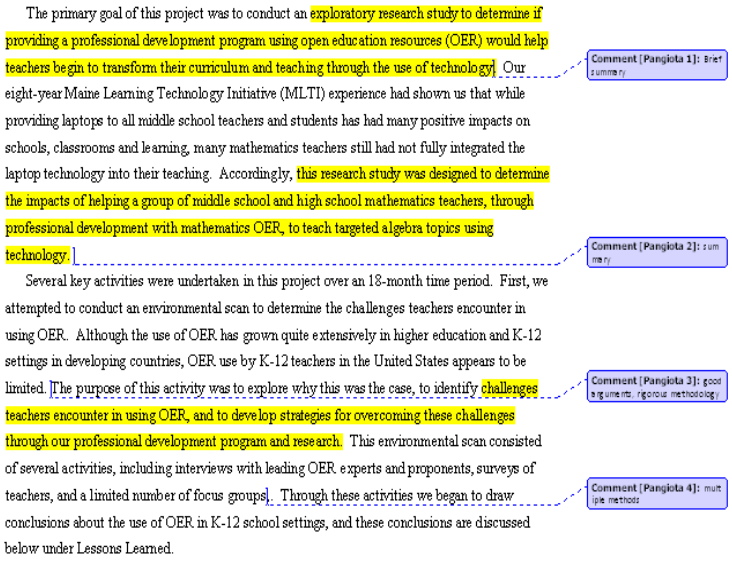
Comment [Pangiota 3]: good arguments, rigorous methodology

Comment [Pangiota 4]: multiple methods

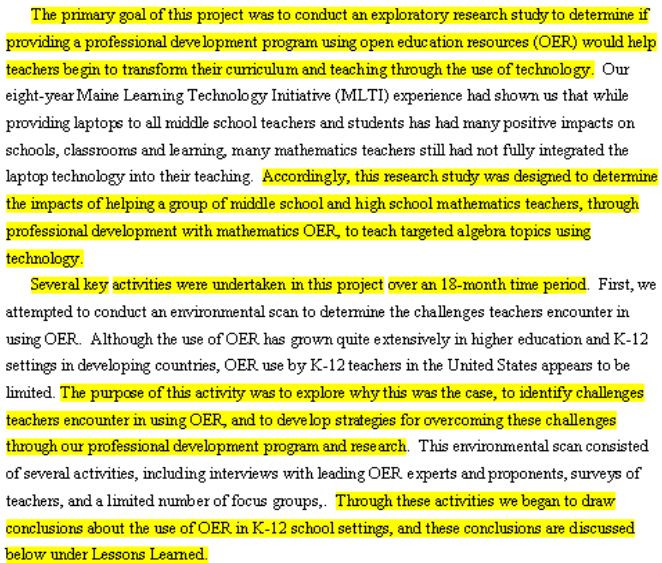
Rhetorical discourse analytics

Xerox Research Centre Europe

Human analyst



Computational analyst



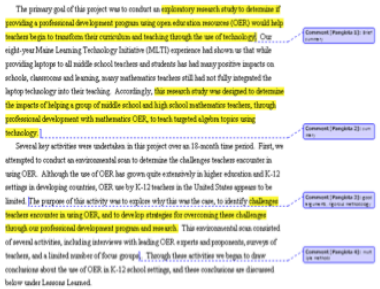
http://technologies.kmi.open.ac.uk/cohere/2012/01/09/cohere-plus-automated-rhetorical-annotation

De Liddo, A., Sándor, Á. and Buckingham Shum, S., Contested Collective Intelligence: Rationale, Technologies, and a Human-Machine Annotation Study. *Computer Supported Cooperative Work*, 21, 4-5, (2012), 417-448. http://oro.open.ac.uk/31052

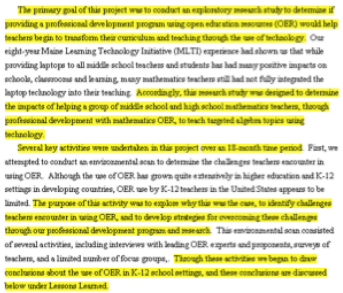
Rhetorical discourse analytics

Xerox Research Centre Europe

Human analyst



Computational analyst



Glimpses of analytics capable of detecting higher order thinking.

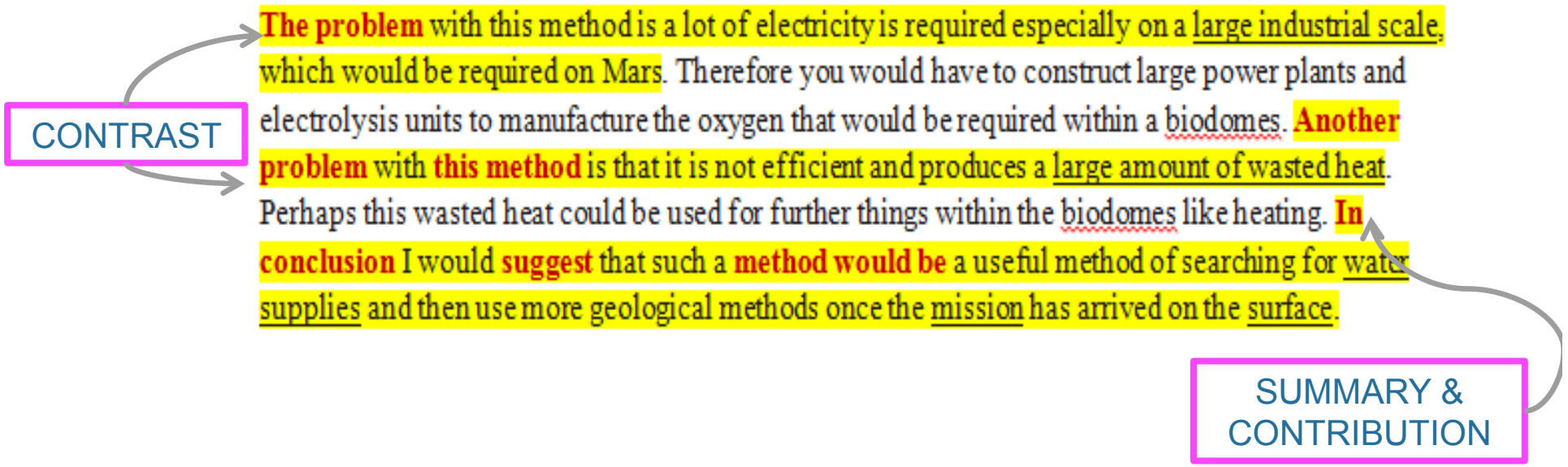
But humans will always read differently to machines

Can we correlate this with “academic writing”, and can such analytics be used as formative feedback on drafts?

Duygu Simsek’s PhD: http://people.kmi.open.ac.uk/simsek/research/

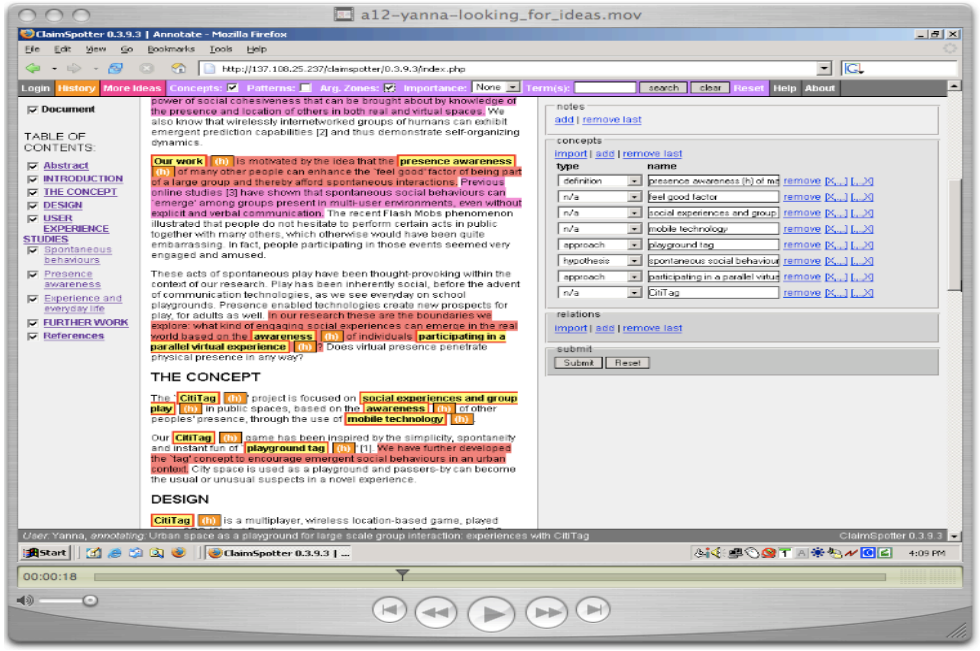
Rhetorical discourse analytics

Xerox Research Centre Europe



Simsek D, Buckingham Shum S, Sándor Á, De Liddo A and Ferguson R. (2013) XIP Dashboard: http://oro.open.ac.uk/37391

Detailed video analysis of how users engage with semantically annotated texts



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: 17-47.

Sereno B., Buckingham Shum S. and Motta E. (2005). ClaimSpotter: an environment to support sensemaking with knowledge triples. *Proceedings of the 10th international conference on Intelligent user interfaces*. San Diego, California, USA: ACM, 199-206.

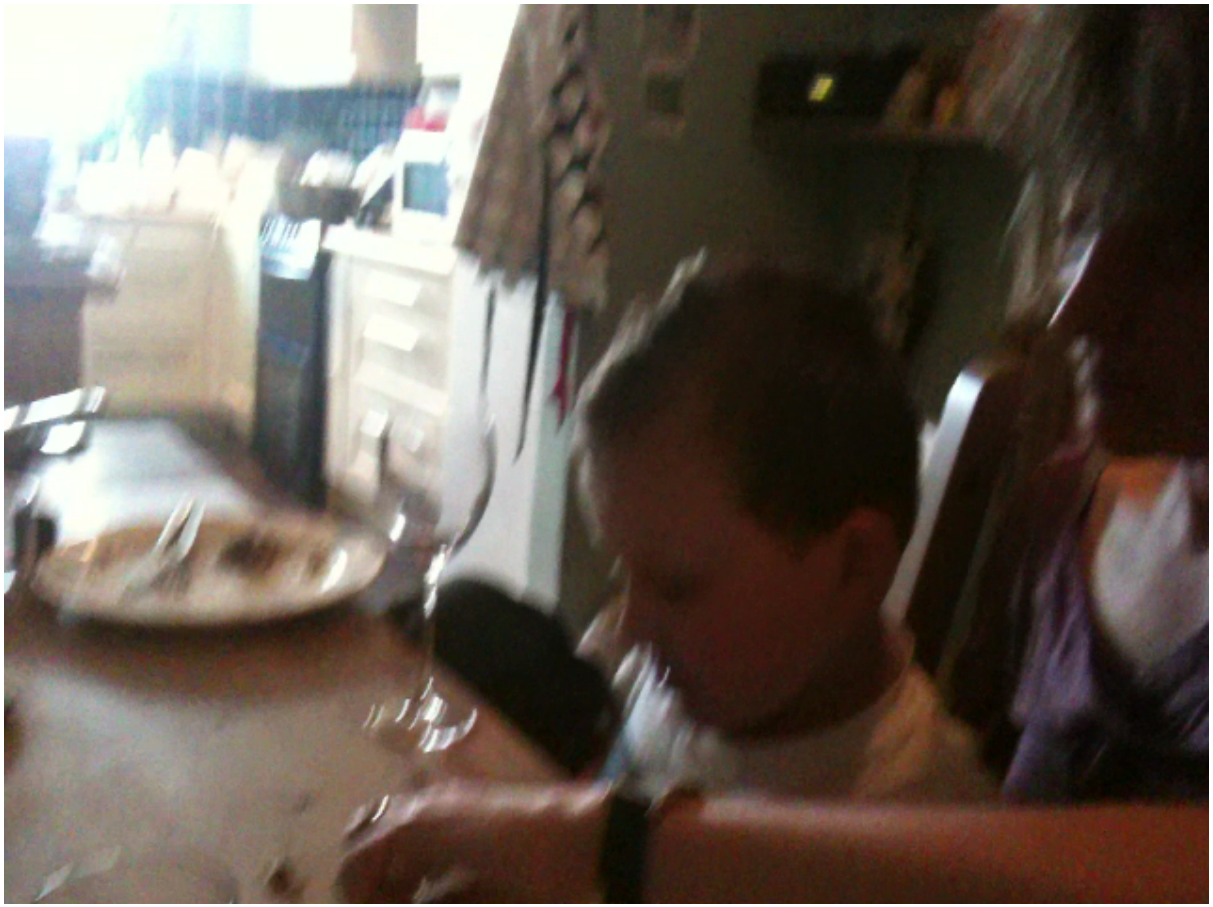
what kind of person survives - even *thrives* - in liminal space?

a key 21st century literacy:

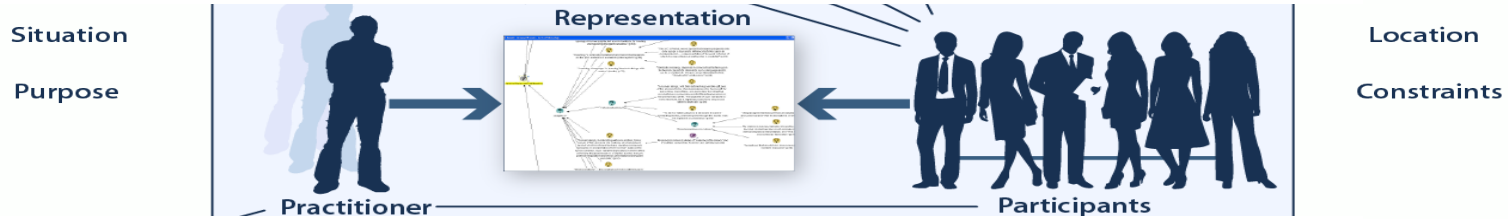
what skills and dispositions help you create the right visual diagram at the right moment in a meeting?

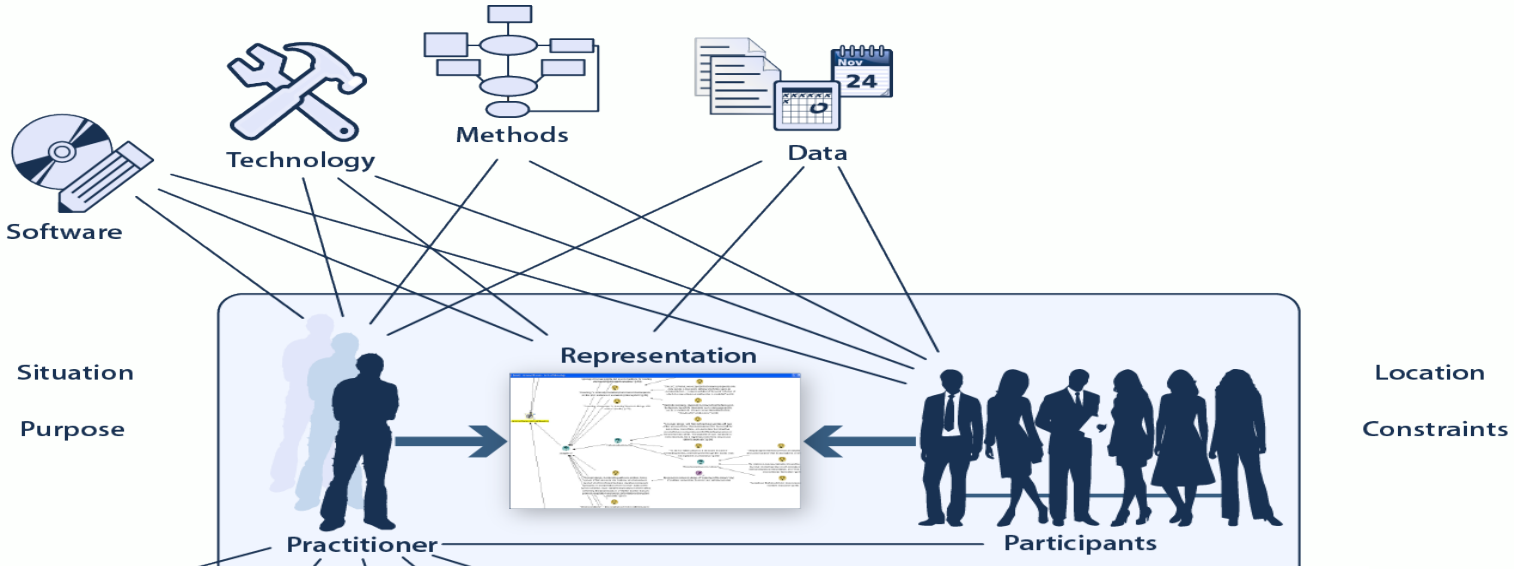
Al Selvin's PhD: http://people.kmi.open.ac.uk/sbs/2011/12/making-representations-matter-al-selvin-phd

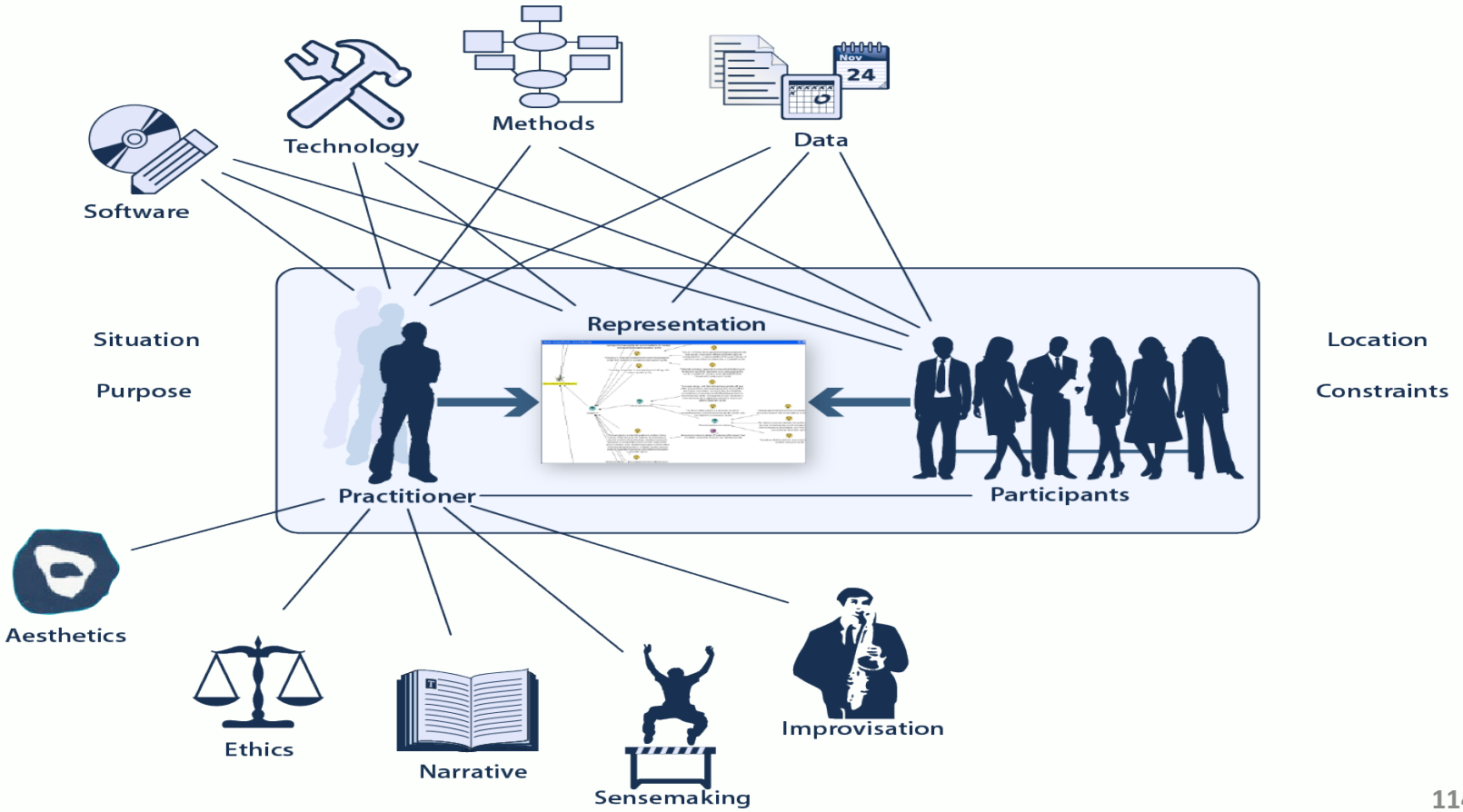
Real time kitchen improvisation



A language for talking about the skills and dispositions needed to use the right representation at the right moment to help a team make sense of a problem




Software
Technology
Methods
Data
Nov
24
Situation
Purpose
Representation
Location
Constraints
Practitioner
Participants


Technology
Methods
Data
Software
Situation
Purpose
Representation
Location
Constraints
Practitioner
Participants
Aesthetics
Ethics
Narrative
Sensemaking
Improvisation

let’s go deeper on these dispositions

We worry about disengaged low achievers...
but we need to worry about the “high” achievers too...

- I know I’m bright, and that I’m going to get good grades. But I worry I’ve become a tape-recorder. I worry that once I’m out of school, and people stop handing me information with questions, I’ll be lost.

  Emily, 16

Spoon-feeding works – but it works at the expense of something that British schools have always been rather good at, namely, turning out young people who are creative, thoughtful, critical… even intelligently awkward sometimes.

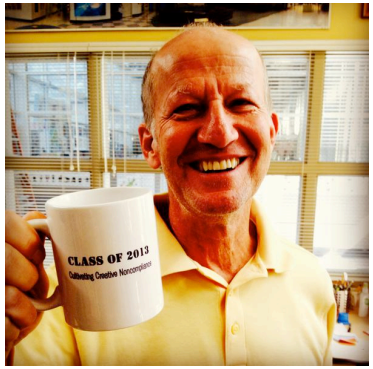
Independent Schools Inspectorate

Guy Claxton: Constant change is here to stay: why schooling will always be about the future.
UK ESRC Futures Meeting, May 2011. http://www.slideshare.net/edfutures/guy-claxton-esrc-futures-may11

Why are dispositions important?

"It's more than knowledge and skills. For the innovation economy,

dispositions come into play: readiness to collaborate; attention to multiple perspectives; initiative; persistence; curiosity."



0:00 0:46

Larry Rosenstock

LearningREimagined project: http://learning-reimagined.com
Larry Rosenstock: http://audioboo.fm/boos/1669375-50-seconds-of-larry-rosenstock-ceo-of-hightechhigh-on-how-he-would-re-imagine-learning

Why are dispositions important?

"a **growth mindset** — **a commitment to … taking informed risks … surrounding yourself with people who will challenge you to grow**"

Carol Dweck

Interview with Carol Dweck:
http://interviewscoertvisser.blogspot.co.uk/2007/11/interview-with-carol-dweck_4897.html
Another interview: http://www.youtube.com/watch?v=ICILzbB1Obg

Why are dispositions important?

"We're looking at the profiles of what it means to be effective in the 21st century. […]

Resilience will be the defining concept. When challenged and bent, you learn and bounce back stronger."

"Dispositions are now *at least* as important as Knowledge and Skills. …
They cannot be taught.
They can only be cultivated."

John Seely Brown

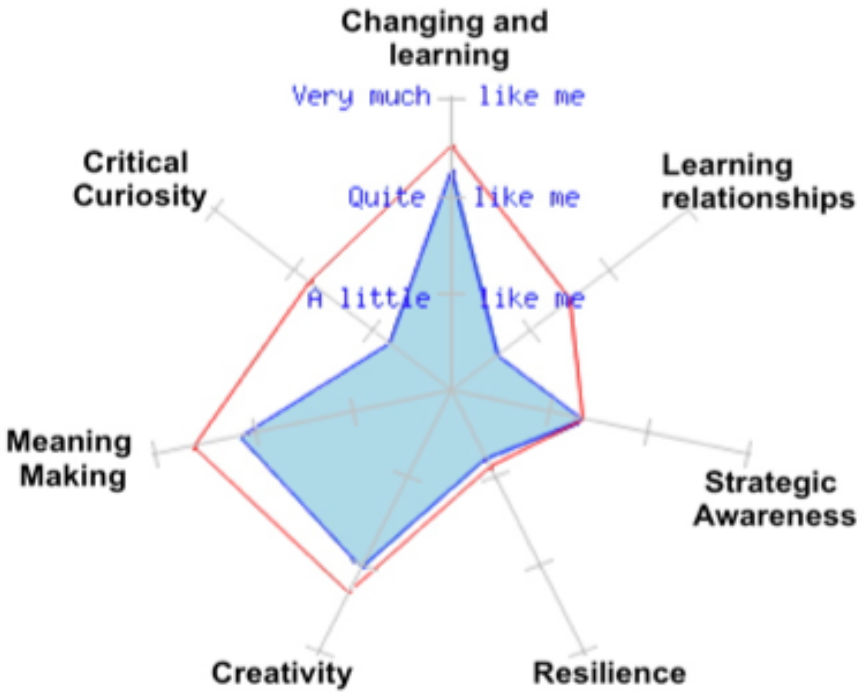
US Dept. of Educ. http://reimaginingeducation.org conference (May 28, 2013)
Dispositions clip: http://www.c-spanvideo.org/clip/4457327
Whole talk: http://www.c-spanvideo.org/program/SecD
See also: https://screen.yahoo.com/genconnect/john-seely-brown-education-060000474.html

Designing holistic analytics for 21st century learners?

http://reinventors.net/roundtables/new-metrics

Assessing learning dispositions

agency; identity; motivation; responsibility (Ruth Deakin Crick, Univ. Bristol)



Already piloted at the OU with ALs, in a UK universities student retention project: Chris Edwards (IET)

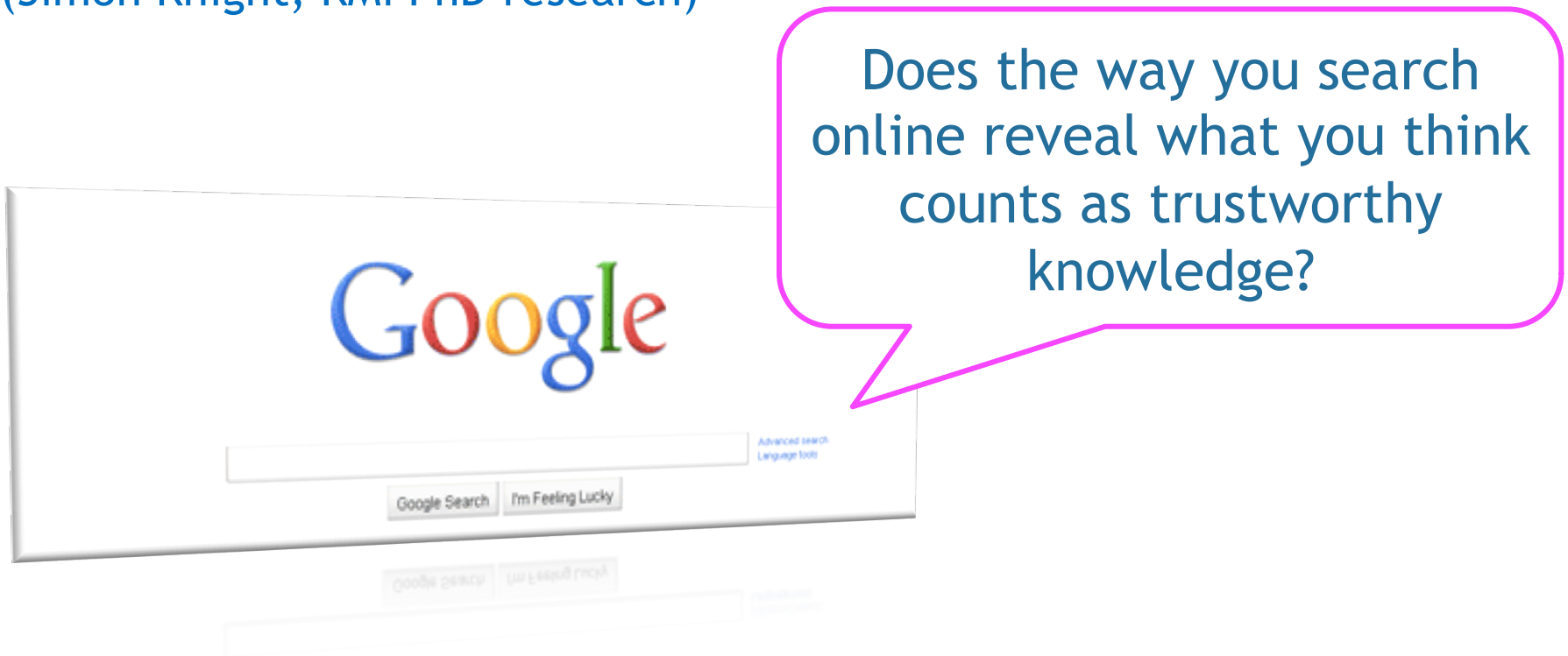
http://oro.open.ac.uk/32823 and http://learningemergence.net/2012/04/30/learning-powered-learning-analytics

Edwards C. (2011). Embedding reflective thinking on approaches to learning - moving from pilot study to developing institutional good practice. *The 16th Annual Conf. of Education, Learning, Styles, Individual differences Network*. 29 June - 1 July, 2011, University of Antwerp. http://oro.open.ac.uk/29505

could a *computer* help us reflect on different learning dispositions?

Shifts in epistemic commitments?

(Simon Knight, KMi PhD research)



What is it to 'know' when we search? http://sjgknight.com/finding-knowledge/2014/02/knowledge-in-search
Danish exams permit Net: http://sjgknight.com/finding-knowledge/2013/07/danish-use-of-internet-in-exams-epistemology-pedagogy-assessment
Epistemic networks for epistemic commitments: http://oro.open.ac.uk/39254

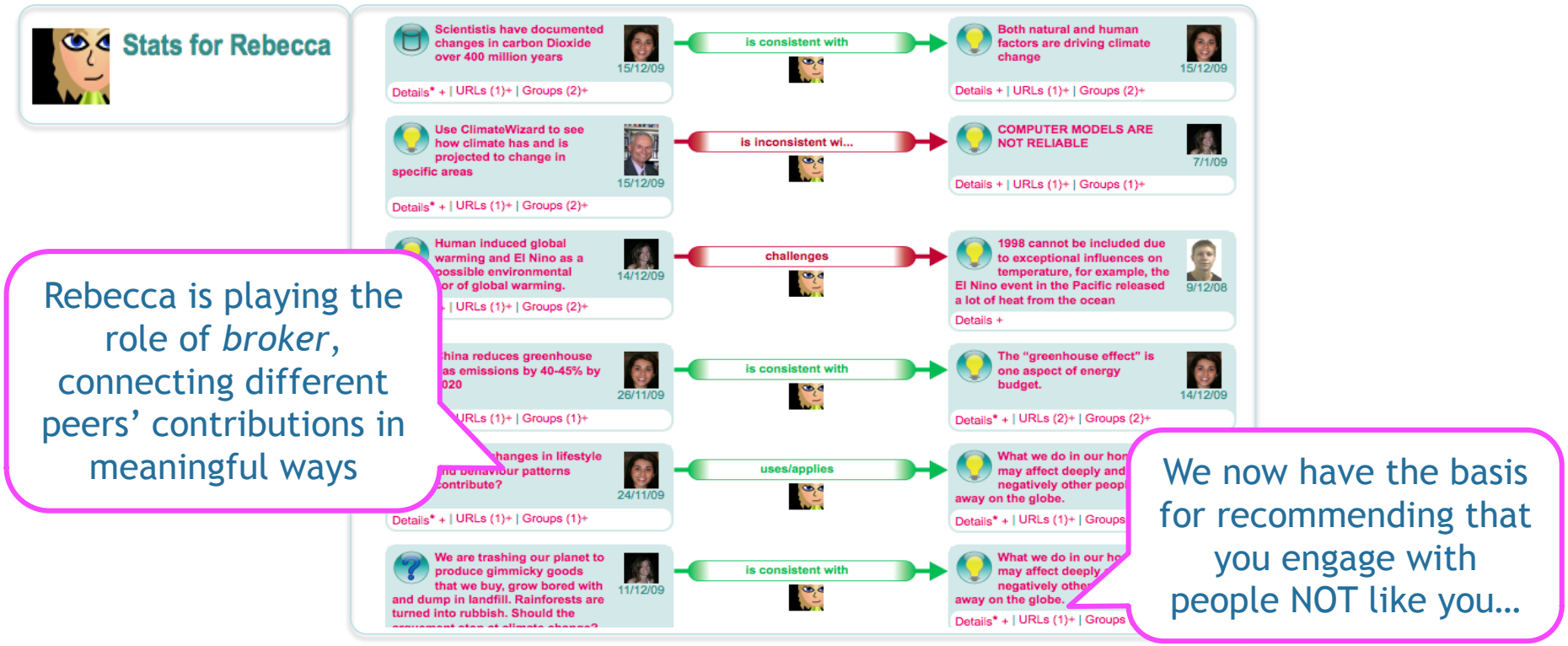
Shifts in epistemic commitments?

(Simon Knight, KMi PhD research)

Dimensions of Epistemic Belief	
Certainty	The degree to which knowledge is conceived as stable or changing, ranging from absolute, to tentative and evolving
Simplicity	The degree to which knowledge is conceived as compartmentalised or interrelated, ranging from knowledge as made up of discrete and simple facts to knowledge as complex and comprising interrelated concepts
Source	The relationship between knower and known, ranging from the belief that knowledge resides outside the self and is transmitted, to the belief that it is constructed by the self
Justification	What makes a sufficient knowledge claim, ranging from the belief in observation or authority as sources, to the belief in the use of rules of inquiry and evaluation of expertise

Knight, Simon; Buckingham Shum, Simon and Littleton, Karen (2014). Epistemology, assessment, pedagogy: where learning meets analytics in the middle space. *Journal of Learning Analytics* (In press). http://oro.open.ac.uk/39226

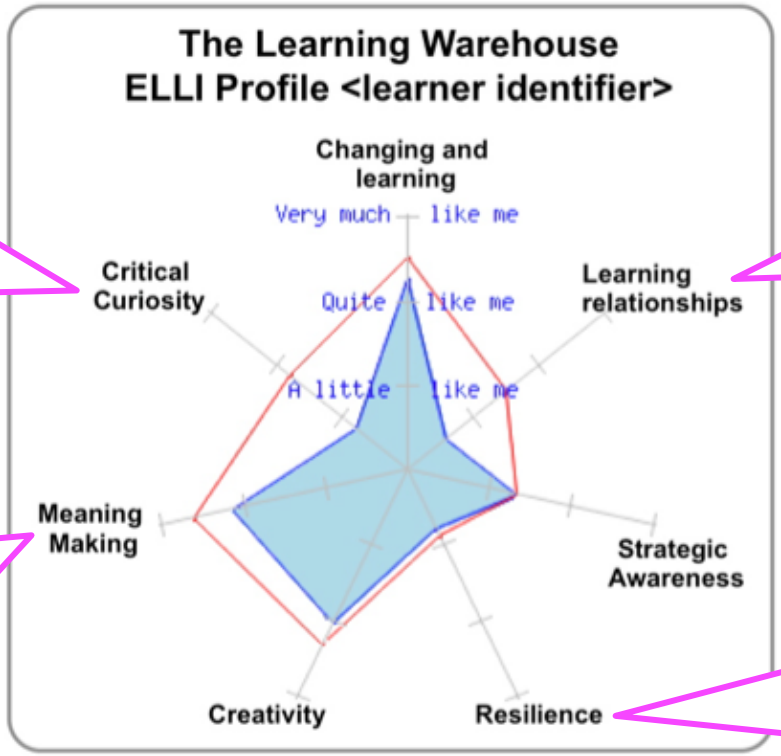
What epistemic contributions are learners making in the community?



De Liddo, A., Buckingham Shum, S., Quinto, I., Bachler, M. and Cannavacciuolo, L. (2011). **Discourse-centric learning analytics.** *1st Int. Conf. Learning Analytics & Knowledge* (Banff, 27 Mar-1 Apr). ACM: New York. Eprint: http://oro.open.ac.uk/25829

Dispositional profile from behavioural traces, to complement self-report?

Questioning, arguing and search behaviours reveal intrinsic curiosity and epistemic commitments



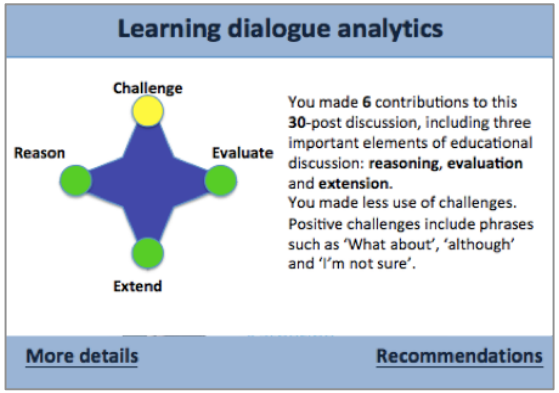
Social network patterns, teamwork effectiveness and initiation of relationships

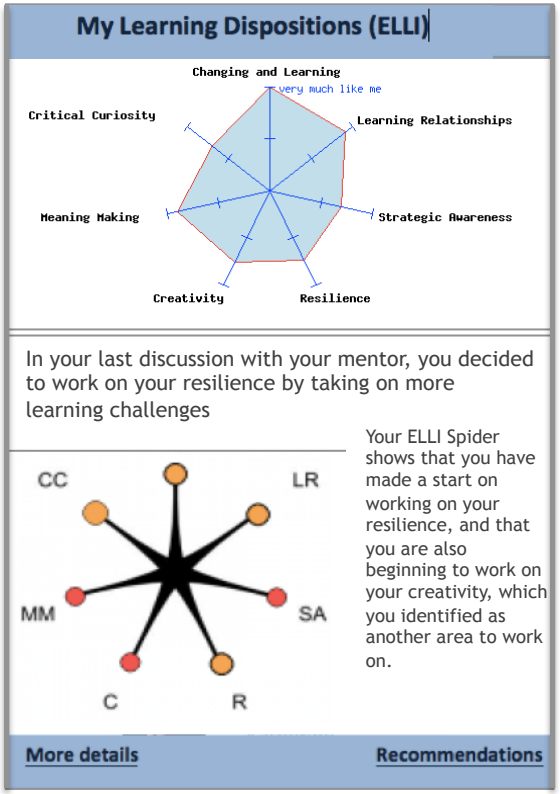
Tagging/sharing/ blogging/social patterns reveal how you see connections between ideas

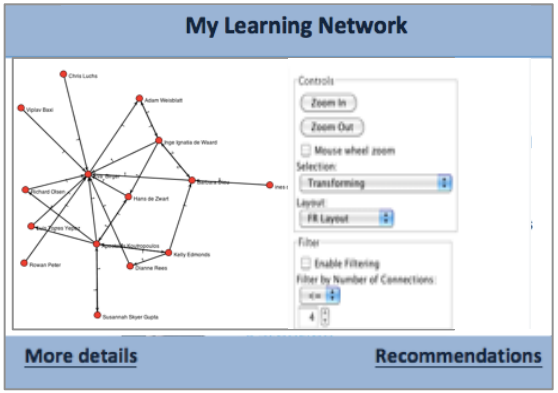
Behavioural and somatic traces associated with perseverance, grit, tenacity; overcoming panic/stress when stretched

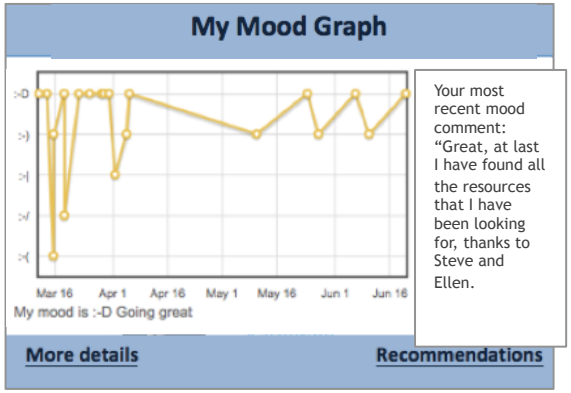
http://learningemergence.net/2014/03/01/assessing-learning-dispositions-academic-mindsets

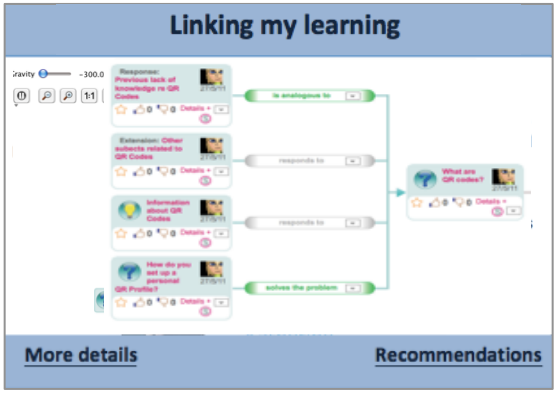
Social learning analytics: mirrors for the learner to reflect





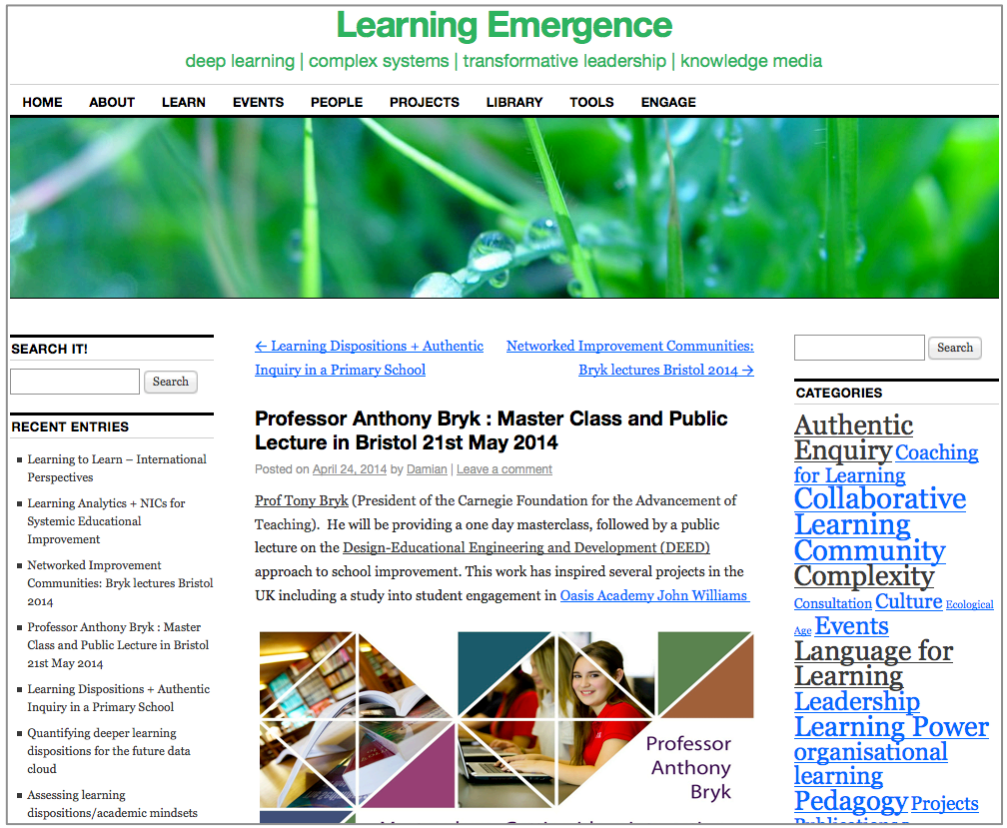


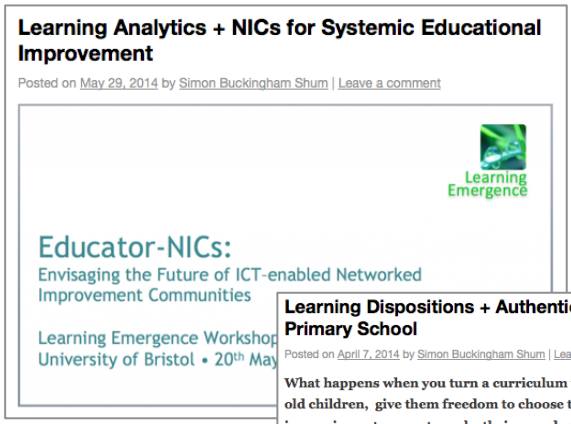


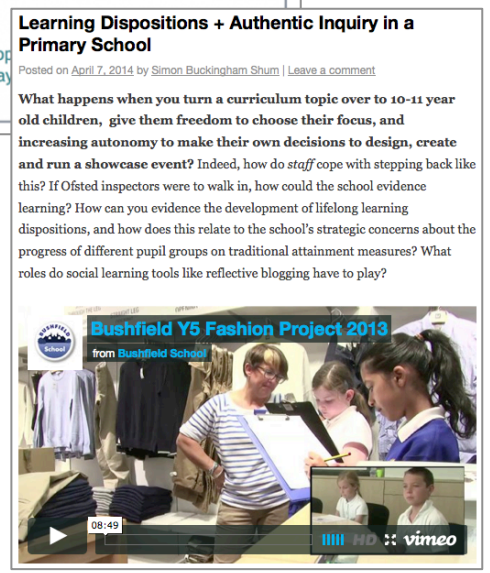


Ferguson R and Buckingham Shum S. (2012) Social Learning Analytics: Five Approaches. *Proc. 2nd International Conference on Learning Analytics & Knowledge*. Vancouver, 29 Apr-2 May: ACM: New York, 23-33. DOI: http://dx.doi.org/10.1145/2330601.2330616 Eprint: http://oro.open.ac.uk/32910

LearningEmergence.net

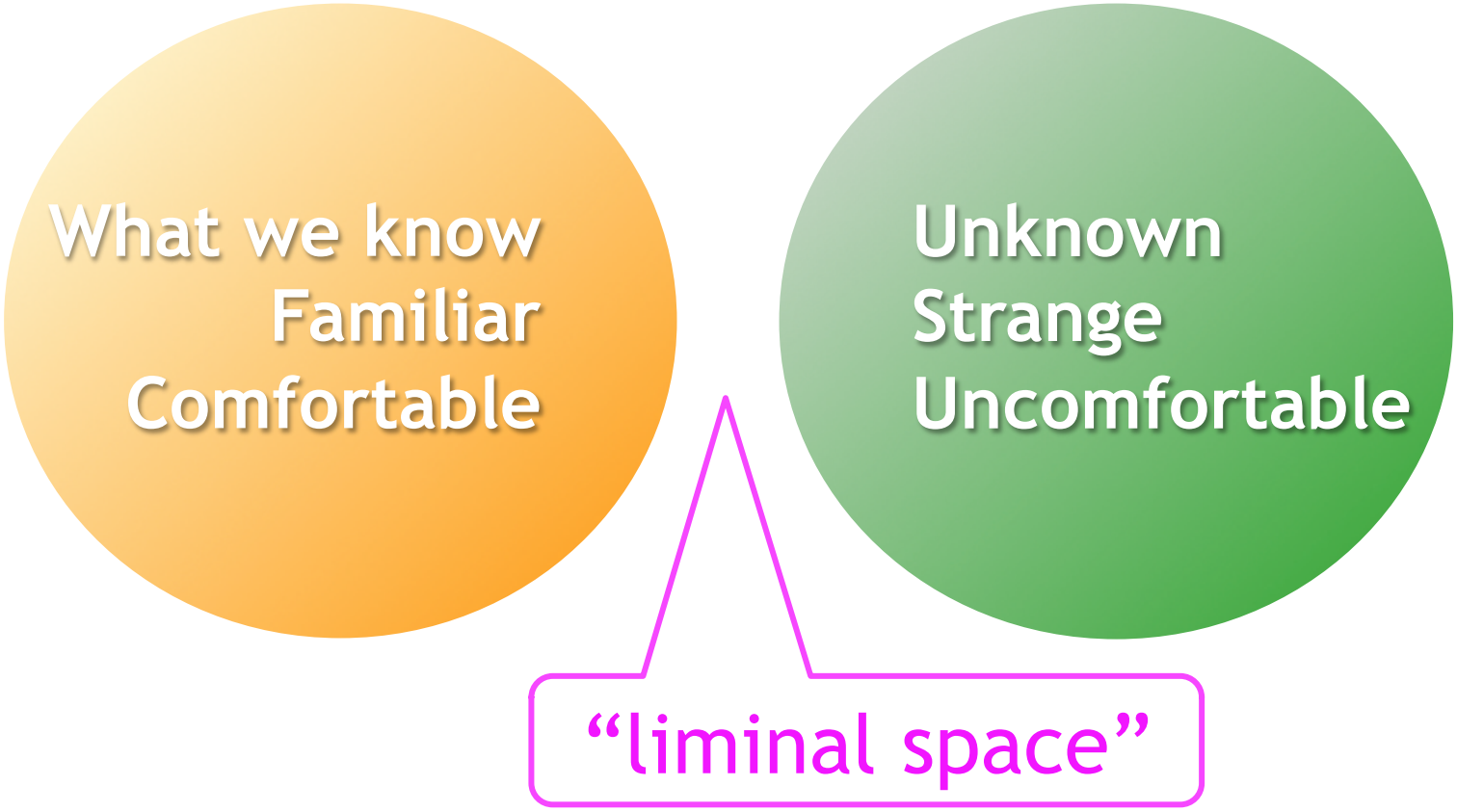






http://learningemergence.net

From the known to the unknown



“liminal space tools” should help us grapple with uncertainty + complexity…

manage webs of connections

think critically + engage in debate

hold conflicting perspectives in tension

wield tools for collective sensemaking

integrate identity + aspiration with learning

Thank you to all my colleagues, past and present

I daren’t try and name you all — you know who you are!

None of this was remotely possible without you ☺