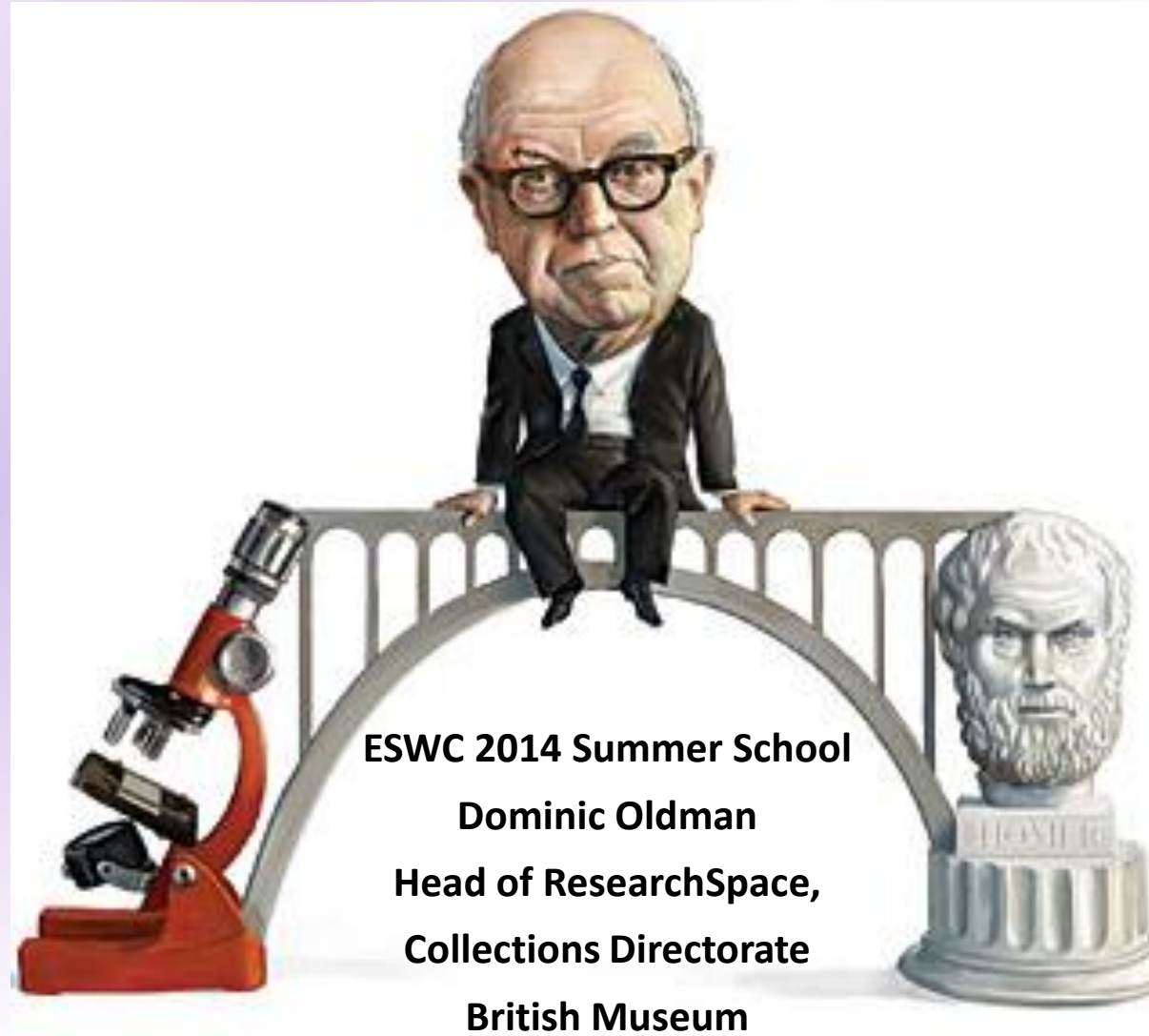


# Conflicting Cultures of Knowledge?

## Revisiting the Two Cultures



**ESWC 2014 Summer School**

**Dominic Oldman**

**Head of ResearchSpace,**

**Collections Directorate**

**British Museum**

[www.researchspace.org](http://www.researchspace.org) (funded by the Andrew W. Mellon Foundation)

# In a Nutshell

Your poster systems could be greatly improved and even become real life sustainable production systems with cross disciplinary support from humanists....

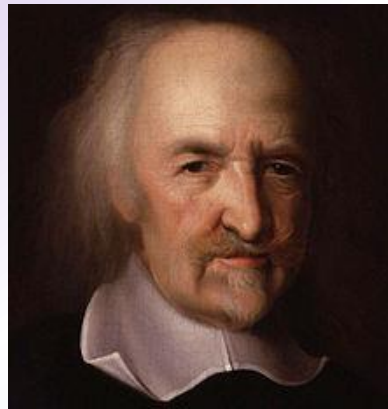


....if you can explain your proposal clearly.

# History: Humanities & Science

- Science means, “reliable Knowledge”.
- What we mean by the Arts is Science. (Philosophy and Theology)
- Therefore the Royal Society of Arts (from 1700’s) promotes of industry and technology.
  
- 1870s - clear distinction between science and humanities.
- Experiments, science of energy, astronomy, geology and evolutionary biology.
- The right to control resources, education, economics, politics).

Thomas  
Hobbs  
1588 - 1679



Robert Boyle  
1627 - 1691

# The Two Cultures Debate



- **C.P Snow versus F.R. Leavis**
- 1959 Rede Lecture, Senate House, Cambridge –published as, *The Two Cultures and the Scientific Revolution*.
- Science needed to be absorbed into Public Culture – political and economic progress, but.....

*“Once or twice I have been provoked and have asked the company how many of them could describe the Second Law of Thermodynamics. The response was cold: it was also negative. Yet I was asking something which is about the scientific equivalent of: 'Have you read a work of Shakespeare's?’”*

# What's the difference between a scientist and a humanist?



Stephen Hawking



Eric Hobsbawm

# ...in fact they have a lot in common

- Exercises performed as part of Ariadne with different disciplines.
- Process of reasoning and deduction is very similar between disciplines!
- Knowledge, language and experience?

<http://www.ariadne-infrastructure.eu/>



# ...a question of listening & collaboration



© Trustees of the British Museum

## ..but constraints!

- Time
- Resources
- Short term economics
- Corporatism – affecting both science and humanities.
- Long terms benefits?





# Digital Humanities – Joining the Two Cultures

*“In some form, the semantic web is our future, and it will require formal representations of the human record. Those representations – ontologies, schemas, knowledge representations, call them what you will – should be produced by people trained in the humanities. Producing them is a discipline that requires training in the humanities, but also in elements of mathematics, logic, engineering, and computer science. Up to now, most of the people who have this mix of skills have been self-made, but as we become serious about making the known world computable, we will need to train such people deliberately.”*

*(Unsworth, 2002)*

- Advocates - Cross disciplinary training



By Nidoart (Own work) [CC-BY-SA-3.0  
(<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons

# Digital Humanities - Reality

“Digital Humanities is the discipline born from the intersection between humanities scholarship and computational technologies.”

Elena Pierazzo

(<http://epierazzo.blogspot.gr/2011/01/digital-humanities-definition.html>)

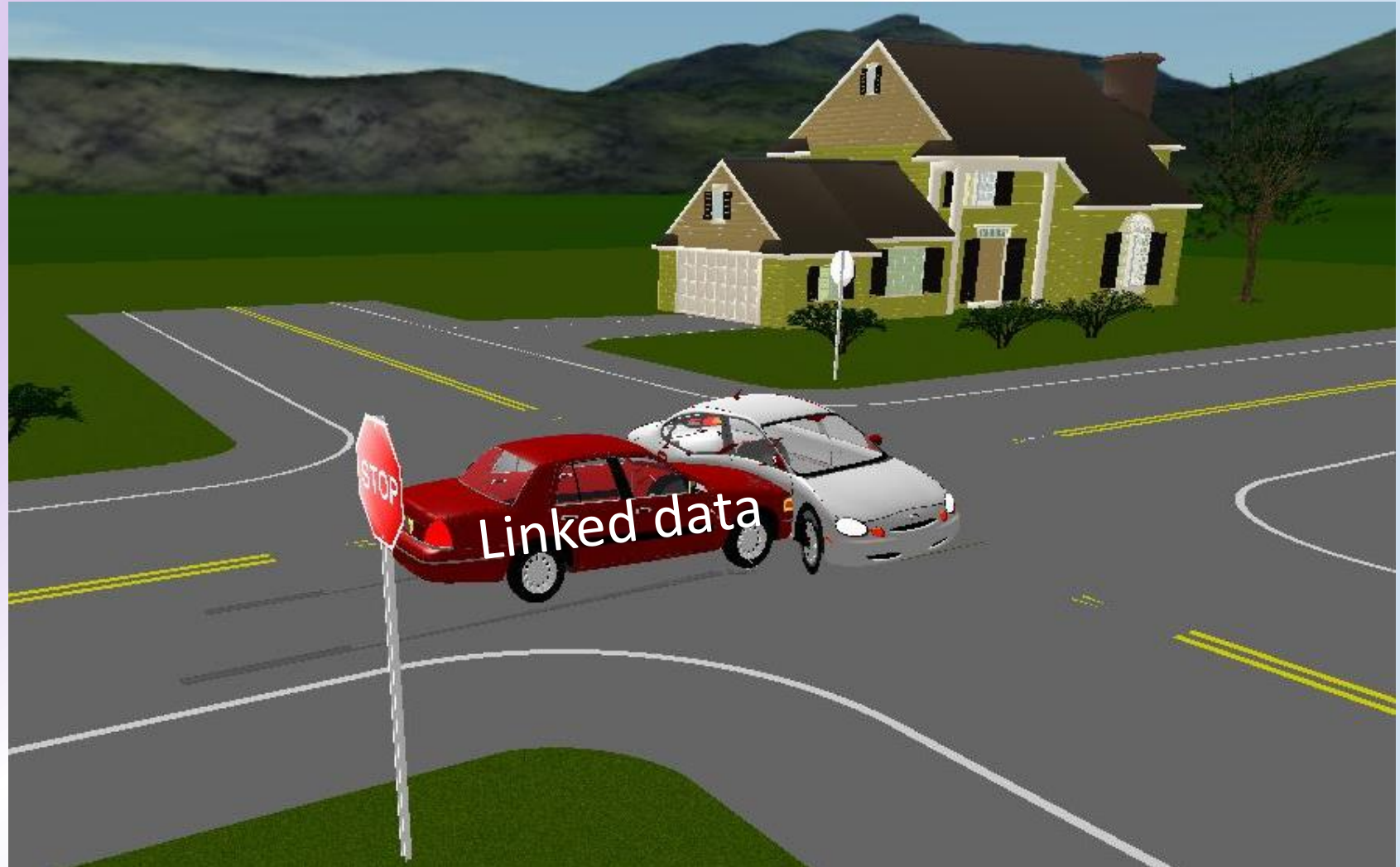
- Perceived bias towards literature (two cultures of DH!)
  - Origins in text and literature (concordances)
  - The main Journal Literary and Linguistic Computing.
  - TEI – text encoding
  - Many Digital Humanist from the English Department.
  - Avoid the words “Information Technology”.



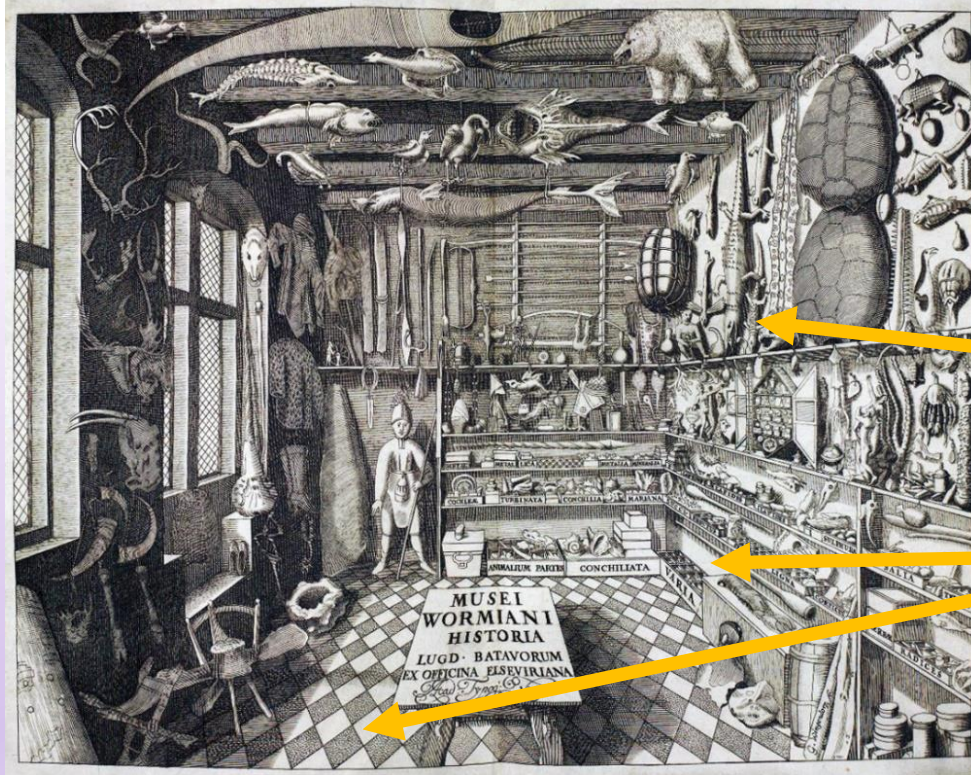
# Testing the Intersection

Conflict  
or Collaboration

Meaningful  
or superficial?



# (16<sup>th</sup> / 17<sup>th</sup>) – Life and the Universe: The Wunderkammer



Agsburg, Getty Institute

- A network of relationships and meaning based on unity within the chaos of nature. (Patterns / Concepts)
- Not comprehensive but representative across the world.

# 18<sup>th</sup> - Collecting & the Enlightenment!



Combinations of object

- More sophisticated questions.
  - More comprehensive collections.
  - **Artificial and natural still combined.**
  - **Themes explored – Intersubjective!**
- 
- **18<sup>th</sup> and 19<sup>th</sup>**
  - Specialisms and division.
  - New Knowledge at the expense of unity.

# 19<sup>th</sup> - Specialist Museums & Disunity\*



**We forget the history of things**

**Edmund Oldfield**

□ Assistant Keeper of Antiquities at the British Museum in 1857.

Q: Is it an accident that the library, natural history specimens, sculptures and antiquities were part of the same institution?

**A: “I think it is”**

**Antonio Panizzi**

□ British Museum’s Principal Librarian

Asserted a fundamental distinction between Christian art and **“heathen antiquities”**

\*Siegel, Jonah. *The Emergence of the Modern Museum: An Anthology of Nineteenth-Century Sources*. OUP USA, 2009.

# The “Will to Order” to create harmony?

- The “essence”. The type and nature of a Thing – Western Philosophy
- According to Huxley this instinct has “produced many premature syntheses based on insufficient evidence”

(Huxley, 1958, Brave New World Revisited - sec.III. Over Organisation).

- Asian Philosophy – Ars Contextualis – meaning changes depending upon the context that it is placed.
- ‘Family Resemblance’ demonstrates that things described as the same may have different, or no, common characteristics.



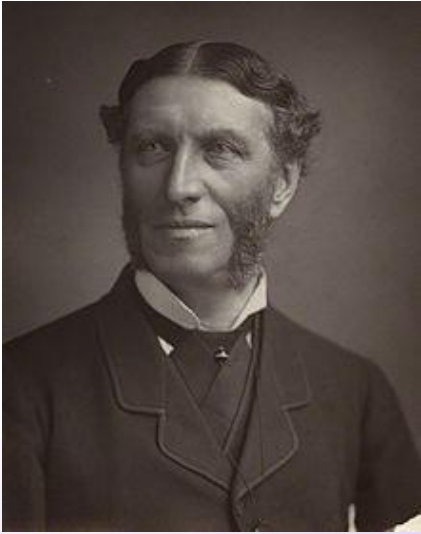
# Open data, closed data & Linked Data

- BM - History of human development and cultures from pre-historic to the present day.
- Just because you have data doesn't mean it useful.
- 30 year project to digitise – purpose?
- “Open” and “Closed” systems.



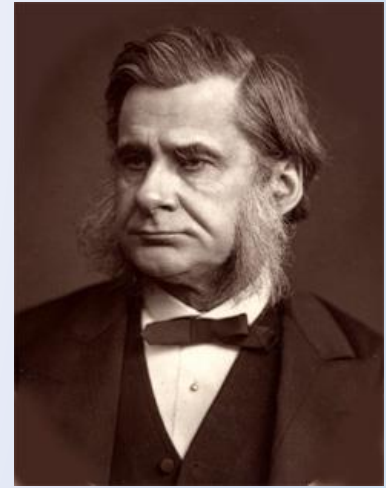


# Matthew Arnold versus Thomas Huxley



1822 - 1888

- An educationalist and Inspector of Schools
- Science is associated with Industry and wealth creation.
- A “blind faith” in machinery obscures real culture.
- The importance of classical sources and literature.



1825 - 1895

*“The people who believe most that our greatness and welfare are proved by our being very rich, and who most give their lives and thoughts to becoming rich, are just the very people whom we call the Philistines.”*

Arnold, Matthew (2011-03-24). Culture and Anarchy (Kindle Locations 618-620). . Kindle Edition.

# Why Linked Data is Not Enough for Scientists

Sean Bechhofer<sup>1</sup>, John Ainsworth<sup>2</sup>, Jiten Bhagat<sup>1</sup>, Iain Buchan<sup>2</sup>, Philip Couch<sup>2</sup>,  
Don Cruickshank<sup>3</sup>, David De Roure<sup>3,4</sup>, Mark Delderfield<sup>2</sup>, Ian Dunlop<sup>1</sup>,  
Matthew Gamble<sup>1</sup>, Carole Goble<sup>1</sup>, Danilus Michaelides<sup>3</sup>,  
Paolo Missier<sup>1</sup>, Stuart Owen<sup>1</sup>, David Newman<sup>3</sup>, Shoaib Sufi<sup>1</sup>

*“However, simply publishing data out of **context** would fail to respect research methodology nor would it respect the flow of rights and reputation of the researcher. Scientific practice is based on publication of results being associated with provenance to aid interpretation and trust, and description of methods to support reproducibility.”*

**(2013)**

<http://eprints.soton.ac.uk/271587/5/research-objects-final.pdf>



# Linked Data Problems

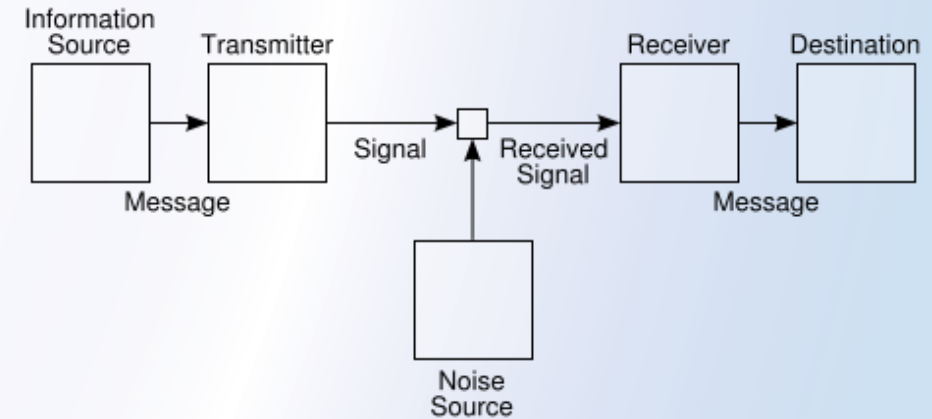
## The Information Paradox

*Classical information theory has no room for meaning—but humans persist in assigning meaning. How can we reconcile this difference?*

## Knowledge Representation

- How can new Knowledge be generated from information?
1. It must be clear what encoded information is referring to – Recipients gain knowledge through the association between the sign and the referent. (Denning, P, Bell, T., Am. Sci (2012))
  2. The justification for this new knowledge must be linked to the original evidence. (Doerr, 2014)

## Shannon's Mathematical Theory of Communication (1948)



# Linked Data Problems - Consider this!



The Anatomy Lesson of Dr Nicolaes Tulp (@Mauritshuis www.mauritshuis.nl)

- **What does this mean for reproducibility?**
- **How do we convey transparency?**
- **What is the provenance of knowledge?**
- **Is it Ethical?**

The body of Aris Kindt (thief)

“grotesquely out of proportion” and the wrong way round (Sebald, 2002, p.18).

The gaze of Dr Tulp’s colleagues are fixated, not on the subject of the examination, but on a large “open anatomical atlas in which the appalling physical facts are reduced to a diagram, a schematic plan of the human being” (Sebald, 2002, p.13).

The content of the image he suggests, has been artificially arranged to “memorialize the achievements of science while exposing the overlooked or forgotten individual destruction that is its price” (Johnson, 2011, p.110)

# Technology led commoditisation of Information



**“Can one hope for the 'virtual museum'? Yes, if one holds a universalist view of the world where different contents could be moulded into identical forms. No, if one thinks that each system of representation should keep its own characteristics regarding form as well as contents.”**

**((Dominique Delouis, 1993 - RAMA))**

**The value is in the difference!**

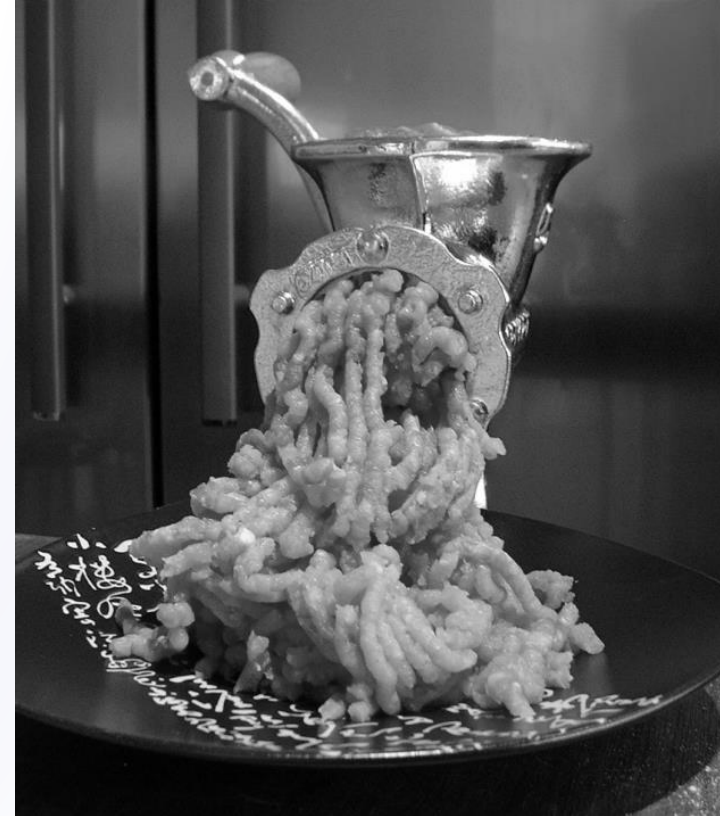
# Cultural Heritage Aggregation

**SQUEEZING MULTIPLE PERSPECTIVES into  
a SINGLE UNINFORMED  
PERSPECTIVE**

“In the past we have focussed on  
conformity in naming”

**HARMONISING PERSPECTIVES**

“Increasingly it seems that we should  
have concerned ourselves with the  
relationships...between the objects”



# Lessons Learnt

- **Position 1** - The Nature of Cultural Heritage Data
  - Variable and complex – multiple contexts.
  - Incomplete without additional expertise.
- **Position 2** – Engagement Needs Real World Context
  - The same contextual data is needed by the a general interested audience and an academic researcher.
- **Position 3: Sustainability**
  - Never dealt with sustainable ongoing provision.
  - Definable Benefits to all.

Realising lessons of the Last 20 years

<http://www.dlib.org/dlib/july14/oldman/07oldman.html>

# Linked Data ≠ Understanding

## **Publishing does not create understanding**

- Unnecessary invention of new ontologies.
- Difficult to utilise outside a narrow context.
- Not designed as cross disciplinary.
- Makes more sophisticated uses difficult and unsustainable.
- Rich quality contextual data now!






# Example

The screenshot shows a web browser window with the address bar displaying "everythingisconnected.be". The main content area features a large graphic of interlocking puzzle pieces. The central piece is blue and contains the text "CHOOSE YOUR STARTING POINT" above a white input field. To the right of the input field is a Facebook logo and the text "OR CONNECT WITH". Below this is a "Next" button. To the left of the input field, the text "Watch the movie" is written in a handwritten style, with "co" and "an" on the lines below. A large pink number "1" is positioned above the input field. Other puzzle pieces in the background are blue and green, with some containing text like "CONNECTED" and "EVERYTHING IS".

Watch the movie  
co  
an

CHOOSE YOUR STARTING POINT

OR CONNECT WITH  f

Next


1


CONNECTED


EVERYTHING IS

© 2012 Multimedia Lab - iMinds / Ghent University

Why? How? About

 iMinds  
CONNECT.INNOVATE.CREATE

 GENT

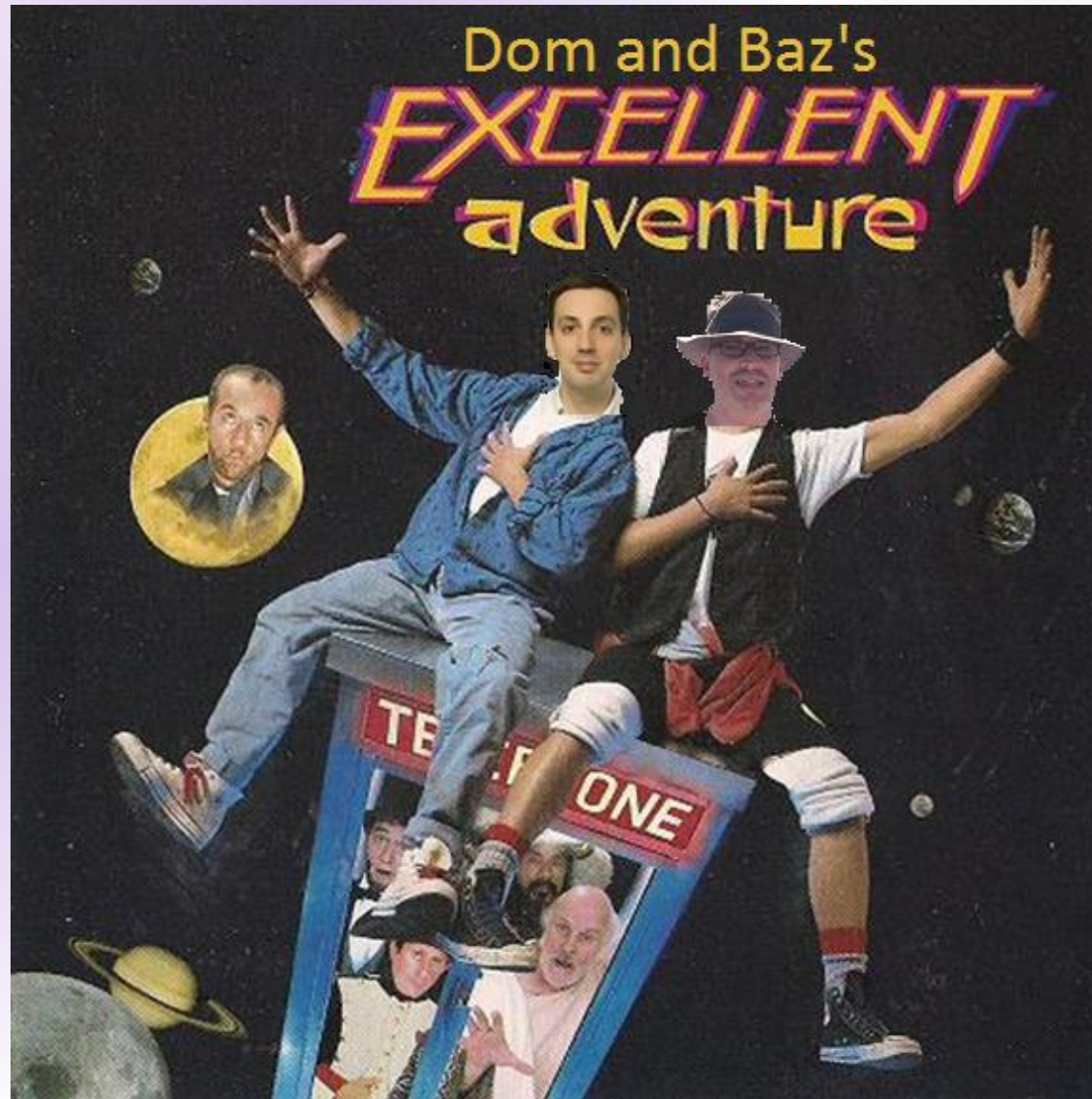
 MULTIMEDIA

# Modern Lowestoft!



# ResearchSpace

An excellent  
(but difficult)  
adventure



# ResearchSpace

Projects Tools Dominic Bookmark web link in RS Databasket

ResearchSpace search

Dashboard Forum Rembrandt

Find all objects  with images created/modified by Rembrandt

Search Add To Data Basket Export Print

500 Results 1 2 3 4

Object Type

- 1 album
- 4 book-illustration
- 3 counterproof
- 187 drawing
- 1 forgery

Creator

- 9 Abraham Furnerius
- 3 Abraham van Dijck
- 2 Anonymous
- 2 Anthonie van Borssom
- 3 Anthony de Haen

Places

- 77 Europe
  - 1 British Isles
    - 1 England
      - 1 London England
  - 75 Gaul
  - 75 France

Created

- 1 1600-1625 :: c.
- 1 1610-1638 :: c.
- 3 1620-1632 :: c.
- 1 1624-1656 ::
- 1 1625 ::

created/modified by

influenced by

owner/keeper

all owners/keepers

about

met

date interval

identified by

keyword

sorted by: Title; then by...

Andromeda  
by Rembrandt

Aristotle with a Bust of Homer  
by Rembrandt

Borststuk van een man met een gevederde baret  
by Rembrandt

Man in Oriental Costume  
by Rembrandt

PDO10606 A young woman sleeping (Hendrickje Stoffels);...  
by Dutch and Rembrandt

PDO12495 The Last Supper, after an Italian drawing;...

PDO13552 Landscape with a road by an inn and a distant...

PDO13555 Landscape with a windmill on the banks of...

PDO13612 A horse lying down; with head to right. ...

PDO13615 Seated old man; an academic nude, old man...

by David Teniers the Younger, ...

by Lambert Doomer, Philips ...

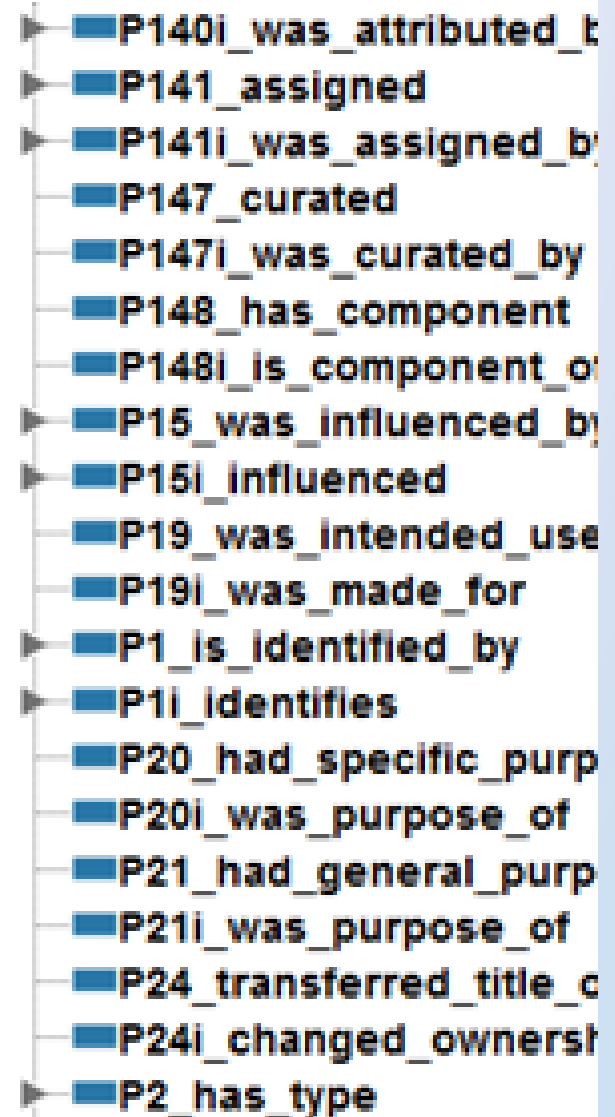
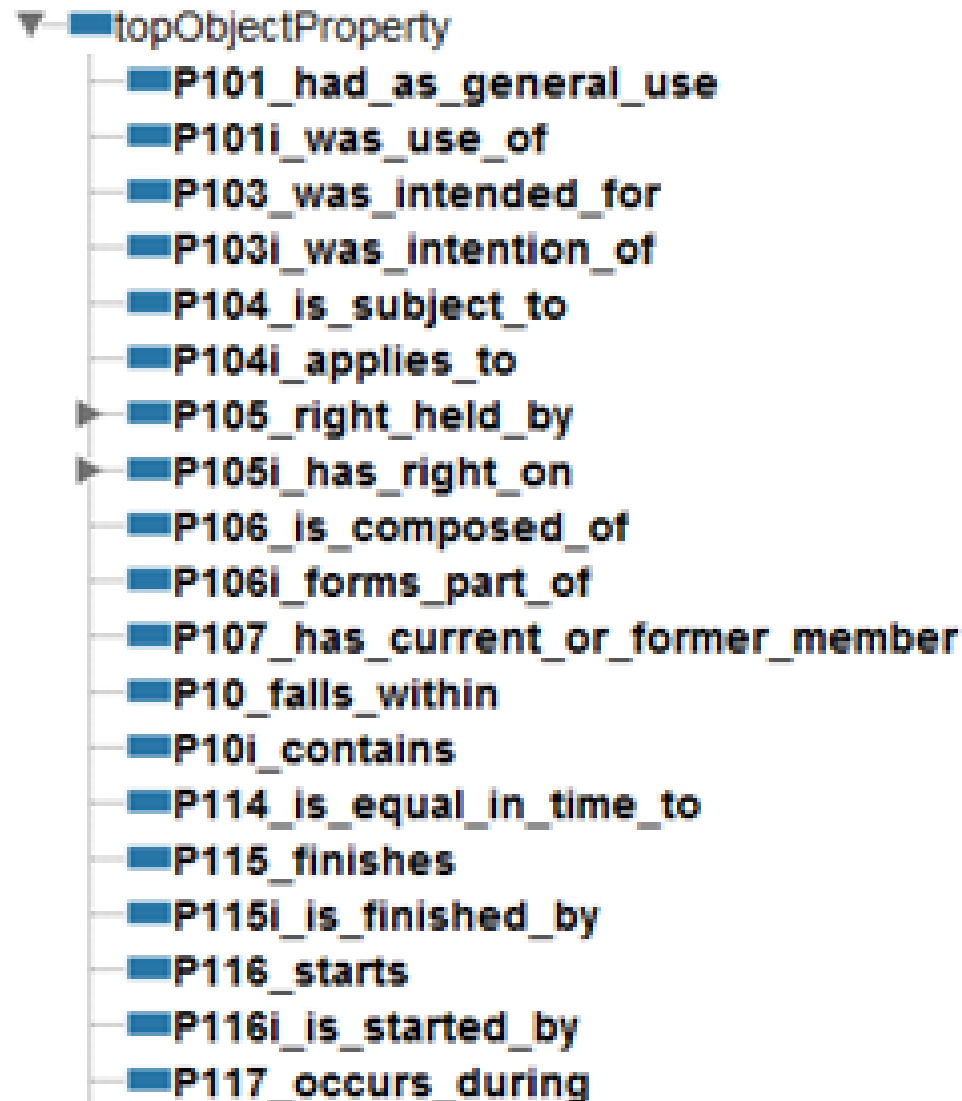
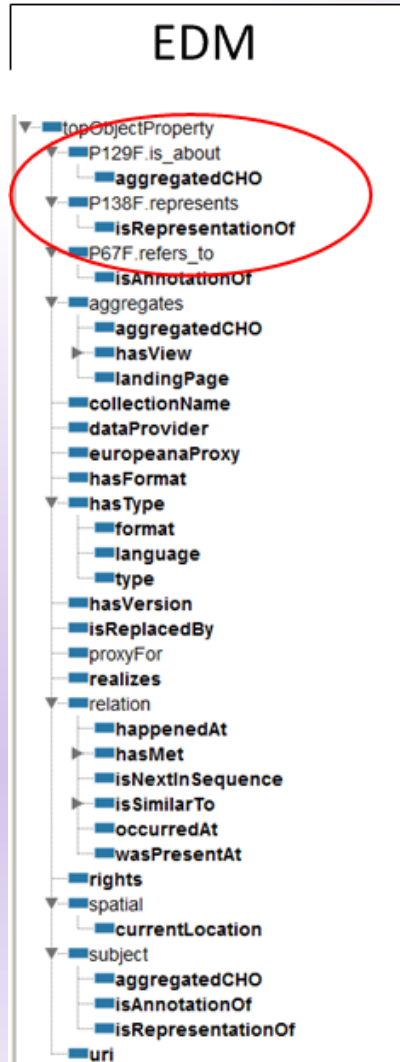
by Philips Koninck, Dutch, and ...

by Jan Lievens, Anonymous, ...

by Abraham van Dijck, Jan ...

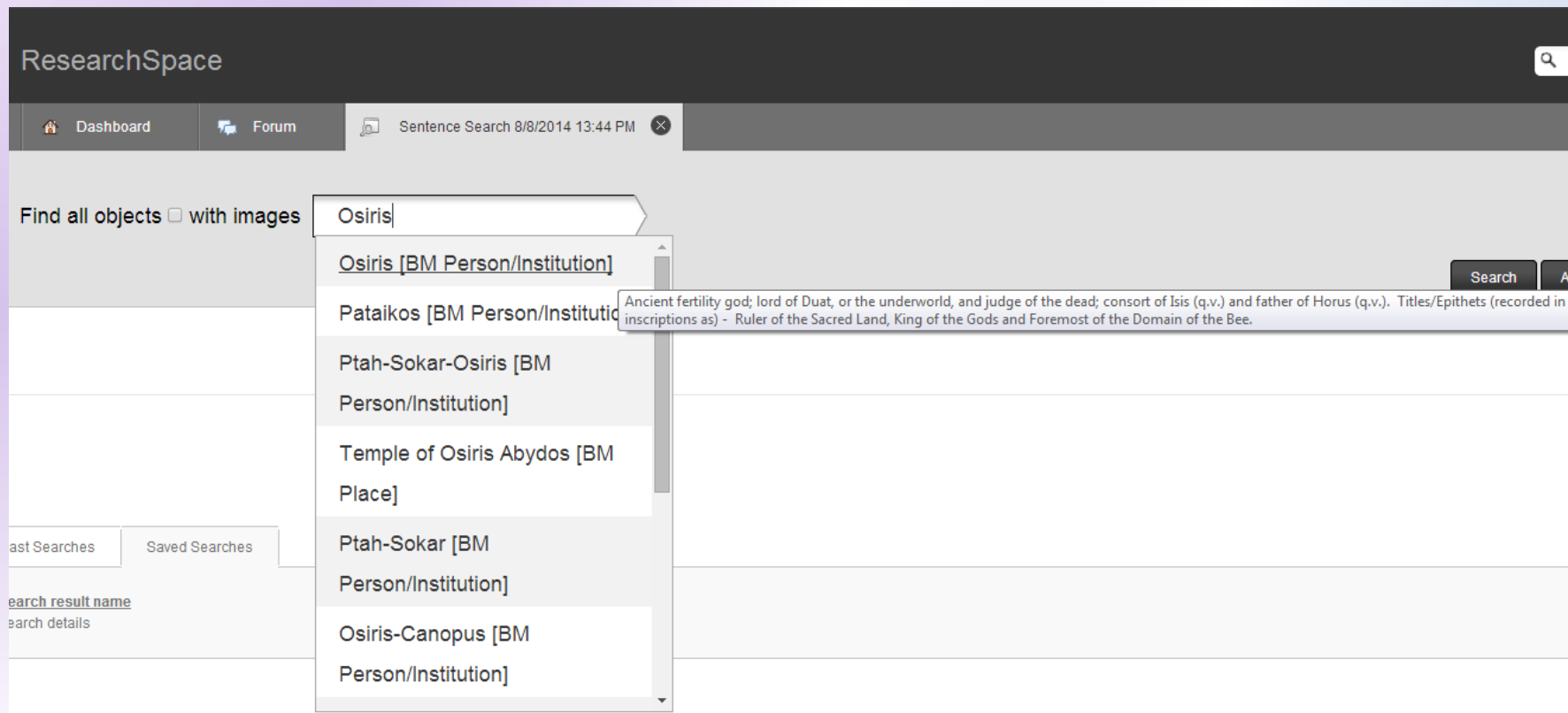
# CIDOC – Conceptual Reference Model

## A Science / Humanities Collaboration



# ResearchSpace Search

- Semantic search based on terminology, not just free text:



The screenshot displays the ResearchSpace search interface. At the top, the 'ResearchSpace' logo is visible on the left, and a search bar is on the right. Below the logo, there are navigation tabs for 'Dashboard', 'Forum', and 'Sentence Search 8/8/2014 13:44 PM'. The main search area contains the text 'Find all objects  with images' followed by a search input field containing 'Osiris'. A dropdown menu is open below the input field, listing several search results:

- Osiris [BM Person/Institution]
- Pataikos [BM Person/Institution]
- Ptah-Sokar-Osiris [BM Person/Institution]
- Temple of Osiris Abydos [BM Place]
- Ptah-Sokar [BM Person/Institution]
- Osiris-Canopus [BM Person/Institution]

A tooltip is visible over the 'Pataikos' entry, providing a detailed description: 'Ancient fertility god; lord of Duat, or the underworld, and judge of the dead; consort of Isis (q.v.) and father of Horus (q.v.). Titles/Epithets (recorded in inscriptions as) - Ruler of the Sacred Land, King of the Gods and Foremost of the Domain of the Bee.' Below the search input, there are tabs for 'Last Searches' and 'Saved Searches', and a link for 'Search result name' and 'Search details'.

# ResearchSpace Search

- Semantic search using explicit (but possibly abstracted) relationships:

The screenshot displays the ResearchSpace search interface. At the top, the 'ResearchSpace' logo is visible. Below it, a navigation bar contains 'Dashboard', 'Forum', and 'Osiris' (with a close icon). The main search area features a search bar with the text 'Find all objects  with images' and a dropdown menu currently showing 'about' and 'Osiris'. A dropdown menu is open below the search bar, listing various semantic relationships: 'created/modified by', 'influenced by', 'owner/keeper', 'all owners/keepers', 'about', 'met', 'date interval', 'identified by', and 'keyword'. The 'results' section is currently empty. At the bottom, there are tabs for 'Last Searches' and 'Saved Searches', and a link for 'search result name' with 'search details' below it.

# ResearchSpace Search

ResearchSpace

Dashboard Forum Osiris and papyrus

Find all objects  with images about Osiris and made of papyrus

## 7 Results


List Thumbnails Timeline


Object Type  
7 papyrus


Creator  
7 (missing this field)


Places  
7 (others)

sorted by: [Title](#); then by...

- 

[YCA39611 Fragment of funerary papyrus, with vignettes...](#)  
papyrus: YCA39611 Fragment of funerary papyrus, with vignettes...; Material: papyrus; Technique: painted
- 

[YCA62412 Book of the Dead of Panedjem II; sheet 1...](#)  
papyrus: YCA62412 Book of the Dead of Panedjem II; sheet 1...; Material: papyrus; Technique: painted
- 

[YCA63209 Book of the Dead of Penmaat; sheet 1; deceased...](#)  
papyrus: YCA63209 Book of the Dead of Penmaat; sheet 1; deceased...; Material: papyrus; Technique: painted
- 

[YCA67306 'Book of the Dead', Papyrus of Ani \(sheet...](#)  
papyrus: YCA67306 'Book of the Dead', Papyrus of Ani (sheet...; Material: papyrus; Technique: painted



# ResearchSpace Data Annotation

- Data annotation allows us to question and add new relationships, *e.g.*:

The screenshot displays the ResearchSpace web application interface. At the top, the 'ResearchSpace' logo is visible. Below it, a navigation bar includes 'Dashboard', 'Forum', 'Osiris and papyrus', and the current page title 'YCA62412 Book of the Dead of Panedjem II; sheet 1;...'. The main content area is titled 'YCA62412 Book of the Dead of Panedjem II; sheet 1;...' and features three tabs: 'Object Details', 'Annotations', and 'Relations'. A dropdown menu is set to 'Basic'. The 'Museum Object' section provides a description: 'Book of the Dead of Panedjem II; sheet 1; Hieratic text, full colour offering-vignette with Hieroglyphic text above.' Below this, the 'Preferred identifier' is 'YCA62412 (BM Public Reference Number)'. The 'Identifiers' section lists: 'EA10793,1 (BM Big Number)', '118176 (BM Codex Id)', 'Sheet.1 (BM Other number)', and '1960,1210.1.1 (BM Registration Number)'. To the right, an 'Annotations' panel contains 'Filter' and 'Sort' dropdowns, and 'Go to data field' and 'Add annotation' buttons. The 'Related Content' section, under the 'Images' sub-heading, shows three thumbnail images: a fragment of hieroglyphic text, a rolled-up papyrus scroll, and a framed section of the book of the dead.

# ResearchSpace Data Annotation

- Data annotation allows us to question and add new relationships, *e.g.*:

The screenshot displays the ResearchSpace web application interface. At the top, the 'ResearchSpace' logo is visible. Below it, a navigation bar includes 'Dashboard', 'Forum', 'Osiris and papyrus', and a browser tab for 'YCA62412 Book of the Dead of Panedjem II; sheet 1;...'. The main content area shows the object details for 'YCA62412 Book of the Dead of Panedjem II; sheet 1;...', with tabs for 'Object Details', 'Annotations', and 'Relations'. The 'Object Details' tab is active, showing a 'Basic' dropdown menu and a 'Museum Object' section with the description: 'Book of the Dead of Panedjem II; sheet 1; Hieratic text, full colour offering-vignette with Hieroglyphic text above.' Below this, there are sections for 'Preferred identifier' (YCA62412), 'Identifiers' (EA10793.1, 118176, Sheet.1, 1960,1210.1.1), and 'Depicts' (Osiris). A 'New Annotation' dialog box is open, allowing the user to create a new annotation. The 'Title' field contains 'papyrus YCA62412 Book of the Dead of Panedjem II; sheet 1;... depicts: Osiris'. The 'Referred value' dropdown is set to 'Osiris', and the 'Suggested value' field contains 'Ra'. The dialog box includes a rich text editor toolbar and 'Add', 'Save', and 'Cancel' buttons. On the right side of the page, there are two images: a photograph of a rolled-up papyrus scroll and a digital scan of a page from the book of the dead.

# ResearchSpace Image Annotation

- Given an image (associated with an object), user can
  - create a geometric outline within image
  - relate this new component resource to terminology

The screenshot displays the ResearchSpace web application interface. At the top, the browser tabs show 'Forum', 'Osiris and papyrus', and 'YCA62412 Book of the Dead of Panedjem II; sheet 1'. The main header area contains the identifier 'AN00235' and three tabs: 'Image details', 'Annotations', and 'Relations'. Below the tabs is a toolbar with various icons for drawing (line, rectangle, circle, polygon), selection (arrow), and navigation (back, forward). A color palette and additional icons for zooming and full-screen are also present. The central image shows a fragment of an ancient Egyptian papyrus scroll with a blue rectangular annotation box drawn around a figure. To the right, a 'New Annotation' form is visible, with the title field containing 'AN00235'. Below the form is a rich text editor with bold, italic, underline, and text color options. At the bottom, a dropdown menu is open, listing several terms related to 'Osiris', such as 'Osiris [BM Person/Institution]', 'Pataikos [BM Person/Institution]', and 'Temple of Osiris Abydos [BM Place]'. A 'Save' button is located to the left of the dropdown, and an 'Add' button is to the right.

# Final Message

Consider this opinion from the JISC Discovery Summit 2013 from the expert panel.

*"...developers are impatient and just want to get access to the data and do interesting things, and on the other side of the equation we have curators reasonably enough concerned about how that data is going to be used or misinterpreted or used incorrectly. I think that this is actually a difficult area because the conceptual reference models are generally more popular with the curators than with the developers[...It is not] clear to me... how we solve the problem of engaging the people who want to do the development...through that mechanism, but nonetheless as this great experiment that we are living through at the moment with opening up data and seeing what can be done [...]unfolds, if we find that the risks are starting to become too great and the value is so poor because the data is being misused or used incorrectly or inappropriately, if that risk is a risk to society in general and not just to the curators ...then we are going to have to find those kind of solutions."*

(JISC, 2013)