



# Linked Data: Implications and Applications

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# Linked Data in One Slide



# Linked Data in One Slide

Tom

lives in

Bristol

Tom

works for

Talis

Talis

based in

Birmingham



# Linked Data in One Slide

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<http://tomheath.com/id/me>

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eg:livesIn

~~Bristol~~

<http://dbpedia.org/resource/Bristol>

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~~based in~~

foaf:based\_near

~~Birmingham~~

<http://sws.geonames.org/3333125/>



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~~Talis~~

<http://tomheath.com/id/me>

~~based in~~

foaf:based\_near

~~Birmingham~~

<http://sws.geonames.org/3333125/>

foaf:name

"Tom Heath"



# Implications for Applications



<http://www.flickr.com/photos/khour/>





# The Document Metaphor is Everywhere!

- *“I'd better clear all those messy **files** off my **desktop** before I connect to the projector”*
- *“Damn, I sent the **email** without attaching the **file**”*
- *“<sigh> I really must update my home **page**”*



What do you want the Web to be?



<http://www.flickr.com/photos/25831000@N08/>



<http://www.flickr.com/photos/kathycsus/>



# The Web is the Exploratorium



## Linked Data is not about...

- Searching for a specific document
- Visiting a particular Web site
- Browsing from one (RDF) document to the next



**Linked Data is about Things!**



# Linked Data is about Things

- Describe any aspect you like...  
...of any *thing* you like!
- Give identifiers (URIs) to those things
- Interact with those things directly!



# What happens to the old metaphors?





# 10 Tasks for Potential Linked Data Applications



# 10 Tasks for Potential Linked Data Applications

Locating

Exploring

Monitoring

Notifying

Sharing

Transacting

Asserting

Discussing

Evaluating

Arranging



# 10 Tasks for Potential Linked Data Applications

*Actions on single things?*

- Locating
- Exploring
- Monitoring
- Notifying
- Sharing
- Transacting
- Asserting
- Discussing
- Evaluating
- Arranging



# 10 Tasks for Potential Linked Data Applications

*Actions on single things?*

- Locating
- Exploring
- Monitoring
- Notifying
- Sharing
- Transacting

*Adding Linked Data to the Web?*

- Asserting
- Discussing
  
- Evaluating
- Arranging



# 10 Tasks for Potential Linked Data Applications

*Actions on single things?*

- Locating
- Exploring
- Monitoring
- Notifying
- Sharing
- Transacting

*Adding Linked Data to the Web?*

- Asserting
- Discussing

*Aggregation and analysis of Linked Data from the Web?*

- Evaluating
- Arranging



## Locating

- Looking for an object or chunk of information which is known or expected to exist
  - Has a broadly identifiable target
  - e.g. the population of Aberdeen
  - e.g. a photo of a library that I can use in my presentation

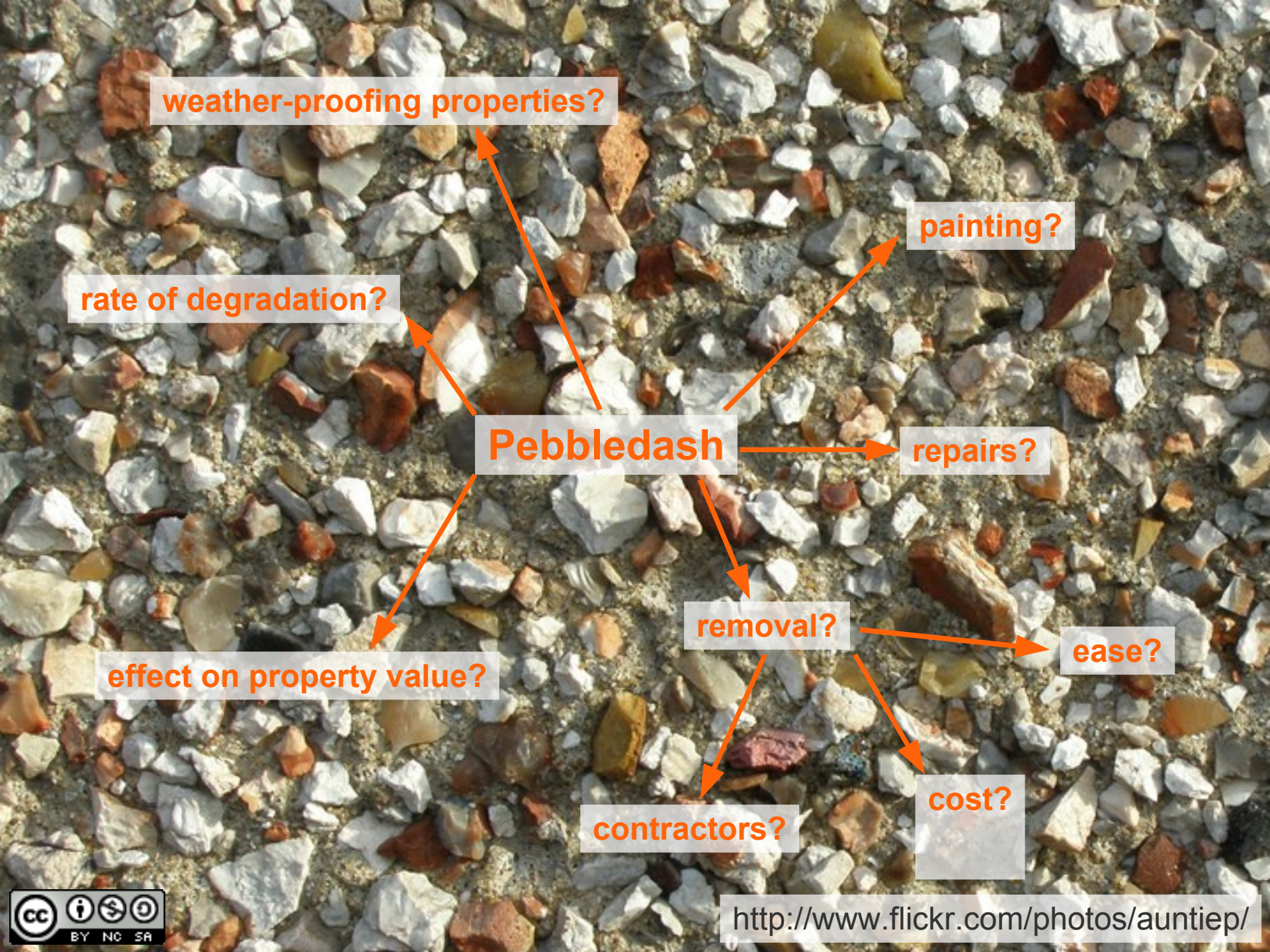


## Exploring

- Gathering information about a specific concept or entity to gain understanding or background knowledge
  - Has an identifiable subject
  - e.g. the concept 'pebbledash'







weather-proofing properties?

painting?

rate of degradation?

**Pebbledash**

repairs?

removal?

ease?

effect on property value?

contractors?

cost?

<http://www.flickr.com/photos/auntiep/>





# Monitoring

- Checking something that is expected to change, in order to be aware of these changes
  - e.g. checking your email
  - e.g. RSS Feed-reading
  - Can I do an HTTP GET on the URI of an organisation to get (redirected to) a list of their press releases?
  - Can I do an HTTP GET on a URI of a country to get (redirected to) the news about that country?
  - Can you do an HTTP GET on my URI to get (redirected to) a description of my current status?



## Notifying

- Informing others of an event in time or a change of state
  - e.g. emailing / tweeting / txting / IMing friends to tell them you'll be going to the pub on Friday
  - Can this just be POSTed to my friends' URIs?
  - Is this over-stretching the HTTP methods?
  - Do we need some new methods? An alternative?



# Sharing

- Making an object or chunk of information available to others
  - e.g. sharing holiday photos via Flickr or MMS
  - Can an object I want to share be POSTed to my friends' URIs?
  - Or PUT to the URI of their 'in-tray'? (a bit old-school?)
  - Shouldn't we be passing by reference?



# Transacting

- Transferring money or credit between two parties
  - e.g. paying a bill
  - If you owe me ten pounds, do you get to choose which pocket I put it in when you settle your debt?
  - Is the cheque in the POST?

# Asserting

- Making statements of fact or opinion
  - e.g. writing a review of a restaurant
  - e.g. stating that you own (a copy of) a particular book
  - Referring to but not acting on the specified resource
  - No specific response
  - Into which data space should these statements go?
  - Not the resource owner's data space!



## Discussing

- Exchanging knowledge or opinions with others on a specific topic
  - e.g. posting a comment on a discussion forum or blog
  - Equivalent to multiple instances of the *Asserting* task?





# Evaluating

- Assessing a number of alternative options
  - e.g. choosing a pebbledash removal contractor
  - e.g. selecting a hotel near Paddington station for less than a hundred pounds (without bed bugs)?
  - Multiple points of reference and dimensions of assessment
    - Location and Capability and Certification
    - Location and Object Type and Cost and Cleanliness



## Arranging

- Coordinating with third parties to ensure that something will take place or will be possible at a certain time
  - e.g. arranging travel and accommodation for a Linked Data meetup
  - If the arrangement has an identifiable target, can't we provide an actionable, machine-readable specification?



# Conclusions



## Conclusions

- A document-centric perspective hides things inside documents, and constrains our imagination
- If you don't feel constrained, then you're not thinking hard enough :)
- Linked Data promotes all things to first class Web citizens
- We need apps for actions on all types of things
- What thing-centric metaphors can we adopt? From where?



## Discussion

- Slides
  - <http://tomheath.com/slides/2010-02-london-linked-data-implications-and-applications.pdf>
- Further Reading
  - “How will we interact with the Web of Data”
    - Tom Heath
    - <http://tomheath.com/publications>
  - “The problem with breadcrumb trails”
    - Michael Smethurst
    - <http://derivadow.com/2010/02/18/the-problem-with-breadcrumb-trails/>