



Putting Semantics on the Web with RDFa

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Background

Microformats

RDFa in Metadata

RDFa in Content

Tools

Challenges

Conclusions



Background

Web contains information

Humans can use it

What about computers?

search engines

mash-ups

How can computers make better use of
the existing web of documents?

Parsing of irregular pages

breaks when pages change

"Intelligent" guesses at meaning

based on third-party interpretation

Hard to do

HTML pages not designed for this

Inaccurate

Data labelled as data

known/consistent semantics

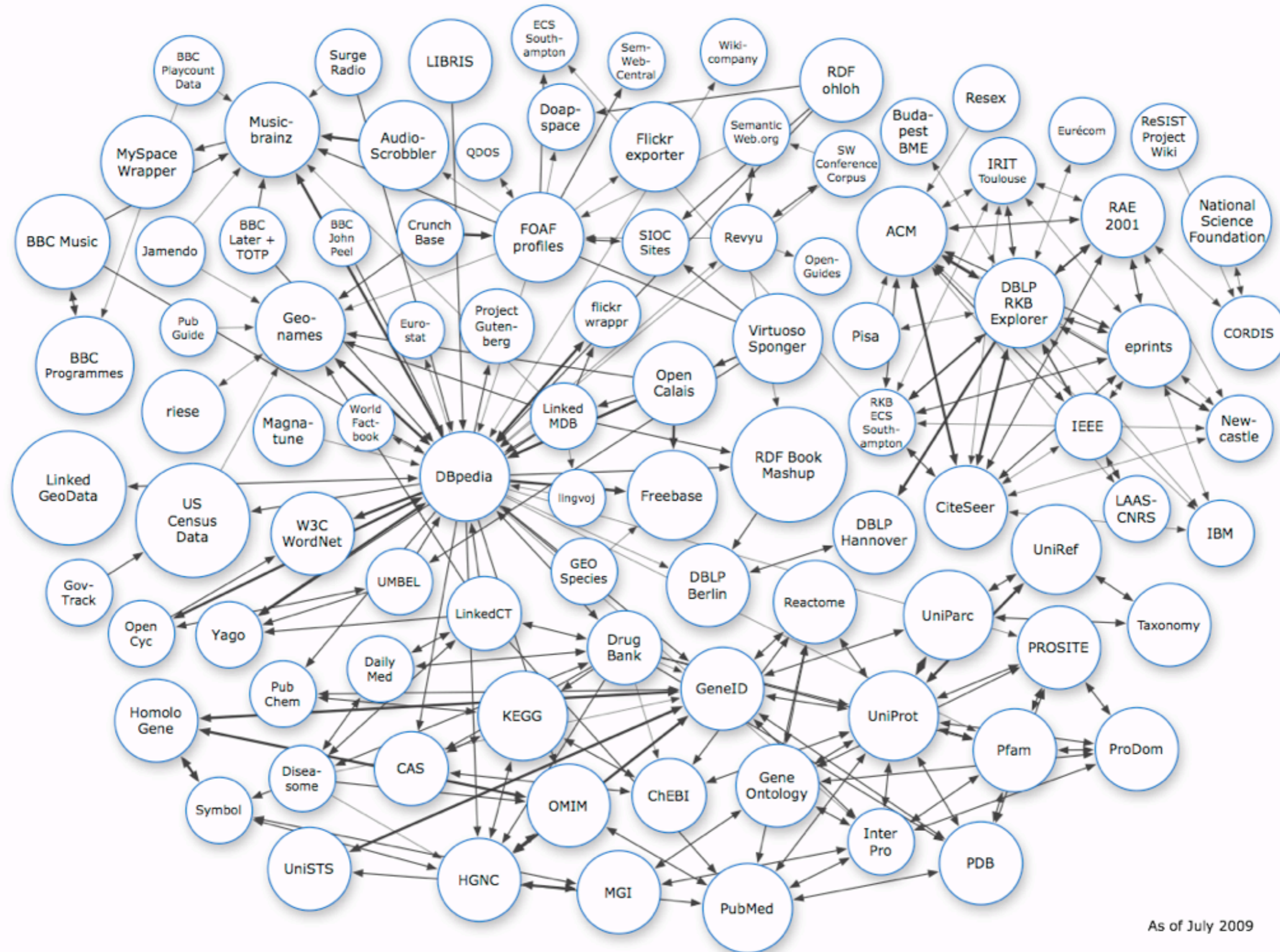
Data referencing data


known/consistent identifiers


Easier to process

even automatically

Linked Data



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WIL WHEATON




JUST A GEEK

Unflinchingly honest tales of the search for life, love, and fulfillment beyond the Starship Enterprise

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Just a Geek

Unflinchingly honest tales of the search for life, love, and fulfillment beyond the Starship Enterprise

By [Wil Wheaton](#)


Publisher: O'Reilly Media

Released: June 2004

Pages: 304


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Description

Wil Wheaton has never been one to take the conventional path to success. Despite early stardom through his childhood role in the motion picture "Stand By Me", and growing up on television as Wesley Crusher on "Star Trek: The Next Generation", Wil left Hollywood in pursuit of happiness, purpose, and a viable means of paying the bills. In the oddest of places, Topeka, Kansas, Wil discovered that despite his claims to fame, he was at heart *Just a Geek*.

[Full Description](#)

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RDFa Websites: BBC

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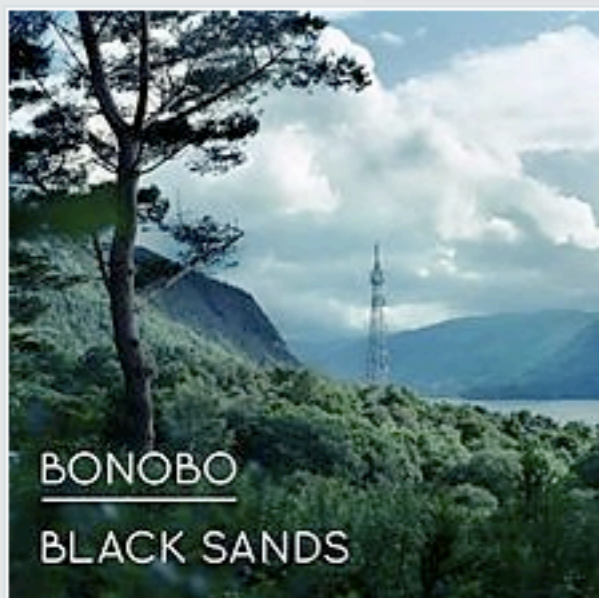
QUICK FIND

Enter an artist name ...

BBC Music > Reviews > Black Sands

Bonobo Black Sands Review

Album. Released 29 March 2010.



BONOBO
BLACK SANDS

Tracks

1 Prelude



2 Kiara



BBC Review

Bonobo has blossomed into something beautiful at his own pace.

Paul Clarke 2010-03-24

There was little in Bonobo's first two albums – 2000's *Animal Magic* and 2003's *Dial 'M' For Monkey* – to suggest that Simon Green could ever craft anything as grand, expansive and accomplished as *Black Sands*.

Back then his moniker could almost have referred to his tendency to merely ape other trip hop producers without adding anything substantially individual himself. 2006's *Days to Come* might have scooped Gilles Peterson's Radio 1 listener's prize for Album of the Year, but even then few would have predicted that four years later Green would have become a one-man **Cinematic Orchestra**, responsible for an album that can stand alongside *Every Day* or *Ma Fleur* as a classic of its genre.

For it's not just a record label that Bonobo shares with *Cinematic Orchestra* these

Featured On...



Gilles Peterson

24 March 2010

LATEST RECOMMENDATIONS



Outside the Box
Skream



Dog With a Rope
Quantic Presenta Flowering Inferno



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Date: 16 August 2010 **Issue Number:** 59517 **Page number:** 15758

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Notice Code: *2410*

Appointment of Administrators

In the High Courts of Justice (Chancery Division) No 6308 of 2010

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Operator

microformats, some RDFa

Tails Export

microformats

Semantic Radar

RDF / RDFa

Extraction

W3C pyRdfa: <http://www.w3.org/2007/08/pyRdfa/extract?uri=>

Viewing

OpenLink Data Explorer: <http://demo.openlinksw.com/DAV/JS/rdfbrowser/index.html?uri=>



Microformats

Microformat basics

rel-license

hCard

hCalendar

Good and bad aspects

Simple way of embedding metadata in
HTML

Use existing attributes

class, rel attributes

`<abbr title="">` pattern

microformats.org

Link to license

Use rel attribute

Implies license for whole page

```
<a href="http://creativecommons.org/licenses/by/2.0/" rel="license">cc by 2.0</a>
```


People and organisations Based on vCard

```
<p class="vcard">  
  <span class="fn">Jeni Tennison</span><br />  
  <a href="mailto:jeni@jenitennison.com"  
    class="email">jeni@jenitennison.com</a><br />  
  <abbr class="tel" title="+44 20 82240520">  
    +44 (0)20 8224 0520  
  </abbr>  
</p>
```

Events

Based on iCalendar

```
<div class="vevent">
  <h3 class="summary">RDFa Course</h3>
  <p><abbr class="dtstart"
    title="2009-02-06T09:30:00">9:30</abbr> -
  <abbr class="dtend"
    title="2009-02-06T16:30:00">16:30 2nd Feb
  </abbr></p>
</div>
```

Common semantics

everyone needs to talk about people,
places, events

Easy to use

Easy to do things with

Operator, Tails Export plugins

The Bad

Accessibility issues

title attribute isn't meant for machine-readable data

Mixing can be hard

Limited in extent

Not extensible



RDFa in Metadata

RDFa background

Identifying subjects

Expressing relationships

Expressing properties

RDF in (X)HTML

encodes data in attributes
like extensible microformats
RDF "API" within web pages

Recommendation 2007

Quick Example

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN"
"http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:dctype="http://purl.org/dc/dcmitype/"
xmlns:dc="http://purl.org/dc/terms/">
<head>
<title>RDFa</title>
<base href="http://www.jenitennison.com/id/rdfa-course" />
<link rel="rdf:type" href="[dctype:Text]" />
<meta property="dc:title" content="RDFa" />
<link rel="dc:creator" href="/id/jeni" />
</head>
...
</html>
```

Shorthand for URIs

declare namespaces as normal
colon separator from rest of URI

Safe CURIEs in []s

in attributes that hold URIs

```
<link rel="rdf:type" href="[dctype:Text]" />  
<meta property="dc:title" content="RDFa" />  
<link rel="dc:creator" href="/id/jeni" />
```


Usually the base URI
location of the web page
use `<base>` element

Use about attribute

```
<link rel="dc:creator" href="/id/jeni" />  
<meta about="/id/jeni" property="foaf:name"  
  content="Jeni Tennison" />
```

In `<head>`, use `<link>`

Use `rel/rev` for relation

can have multiple relations

Use `href` for object

```
<link rel="rdf:type" href="[dctype:Text]" />  
<link rel="dc:creator" href="/id/jeni" />
```

In `<head>`, use `<meta>`

Use `property` for property

can have multiple properties

Use `content` for value

```
<meta property="dc:title" content="RDFa" />  
<meta property="dc:identifier"  
  content="http://www.jenitennison.com/id/rdfa-course" />
```

Values that aren't natural language strings

dates, booleans, URIs

Use datatype attribute

```
<meta property="dc:modified"  
  content="2009-02-06"  
  datatype="xsd:date" />
```



RDFa in Content

Use natural content of page

RDFa attributes

allowed on any element

Content (can) provide property value

Nesting

provides context for statements

supports providing multiple values

Values from Content

```
<div about="/id/rdfa-course">
  <h3 property="dc:title">RDFa Course</h3>
  <p property="dc:description" lang="en">
    This course covers the basics of RDFa...
  </p>
  <p>
    Last modified:
    <span property="dc:modified" datatype="xsd:date"
      content="2009-02-06">
      6th Feb 2009
    </span>
  </p>
</div>
```

Pointing to Resources

Use href if you want a link

Use resource if you don't

```
<div about="/id/rdfa-course">
  <h3 property="dc:title">RDFa Course</h3>
  <p>
    by <span rel="dc:creator" resource="/id/jeni">
      Jeni Tennison</span>
    (<a rel="cc:license"
      href="http://creativecommons.org/...">
      license</a>)
  </p>
</div>
```

Usually inherit about

also src attribute

New resource provided by

resource attribute

typeof attribute

"hanging" rel/revs

Example Context

```
<div about="/id/rdfa-course">  
  <h3 property="dc:title">RDFa Course</h3>  
  <p rel="dc:creator" resource="/id/jeni">  
    by  
    <span property="foaf:name">Jeni Tennison</span>  
  </p>  
</div>
```

```
</id/rdfa-course>  
  dc:title "RDFa Course" ;  
  dc:creator </id/jeni> .  
  
</id/jeni> foaf:name "Jeni Tennison" .
```


Example Hanging Rel

```
<div about="/id/rdfa-course">  
  <h3 property="dc:title">RDFa Course</h3>  
  <p rel="dc:creator">  
    by  
    <span property="foaf:name">Jeni Tennison</span>  
  </p>  
</div>
```

```
</id/rdfa-course>  
dc:title "RDFa Course" ;  
dc:creator [ foaf:name "Jeni Tennison" ] .
```

Example Hanging Rel

```
<div about="/id/rdfa-course">  
  <h3 property="dc:title">RDFa Course</h3>  
  <p rel="dc:creator">  
    <span about="/id/jeni">  
      by  
      <span property="foaf:name">Jeni Tennison</span>  
    </span>  
  </p>  
</div>
```

```
</id/rdfa-course> dc:creator </id/jeni> .  
</id/jeni> foaf:name "Jeni Tennison" .
```

Example Typeof

```
<div about="/id/rdfa-course">  
  <h3 property="dc:title">RDFa Course</h3>  
  <p rel="dc:creator">  
    <span typeof="foaf:Person">  
      by  
      <span property="foaf:name">Jeni Tennison</span>  
    </span>  
  </p>  
</div>
```

```
</id/rdfa-course> dc:creator [  
  a foaf:Person ;  
  foaf:name "Jeni Tennison" ] .
```

Interactions between attributes are complicated

test everything with a good parser

easiest if you avoid blank nodes

try to pair typeof with about



Tools

CSS & Javascript

GRDDL

Parsers & browsers

Search engines

Scrapers

Style differently

Provide alternative views

Ubiquity

<http://code.google.com/p/ubiquity>

rdfQuery

<http://code.google.com/p/rdfquery>

Gleaning RDF from HTML Provide an XSLT stylesheet

```
<head
  profile="http://www.w3.org/1999/xhtml/vocab
          http://www.w3.org/2003/g/data-view">
  ...
  <link rel="transformation"
        href="/styles/RDFa2RDFXML.xsl" />
  ...
</head>
```

Human-readable HTML GRDDL metadata

```
<head profile="/profile.html">...</head>
```

```
<head profile="http://www.w3.org/2003/g/data-view">  
...  
  <link rel="profileTransformation"  
        href="/styles/toRDF.xsl" />  
...  
</head>
```

Online service

Understands GRDDL

Converts to

RDF/XML

Turtle

JSON etc etc

pyRdfa

[http://www.w3.org/2007/08/pyRdfa/
extract?uri=](http://www.w3.org/2007/08/pyRdfa/extract?uri=)

librdfa

[http://rdfa.digitalbazaar.com/librdfa/
rdfa2rdf.py?uri=](http://rdfa.digitalbazaar.com/librdfa/rdfa2rdf.py?uri=)

OpenLink RDF Browser

<http://demo.openlinksw.com/DAV/JS/rdfbrowser/index.html?uri=>

SIOC Browser

<http://sparql.captsolo.net/browser/browser.py?url=>

Yahoo! Search

specialist SearchMonkey apps

Semantic search engines

Swoogle

SWSE: <http://swse.derri.org/>

Your website is your API

Parsable

Regular semantics

Expose resources

import into RDF database

run SPARQL



Challenges

Current status

requires namespace declarations

if you want to be valid, use XHTML

requires your own DTD

Upcoming changes make it easier

embedding in other formats (inc HTML)

profiles and terms

RDFa API

Semantic Content

Some web pages built on data(bases)

- easy to expose semantics

- may want to embed more data

Some content isn't yet marked up

- adding semantics is hard

- natural language processing

Linked data identifiers

- providing good URIs for web pages
- giving required status codes

Ontologies

- choosing which to use
- creating your own

Microdata / RDFa & the future



Conclusions

Get your websites in order

good URIs for things

Try to use microformats

if you have relevant data

Start using RDFa

snippets such as licences

metadata in the head

embedded in content

RDFa Primer

<http://www.w3.org/TR/xhtml-rdfa-primer/>

Linked Data on the Web

<http://www4.wiwiss.fu-berlin.de/bizer/pub/LinkedDataTutorial/>



Any Questions?