Negotiating the Web Science Curriculum through Shared Educational Artefacts

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Web Science 2011, Koblenz, Germany
Negotiating the Web Science Curriculum through Shared Educational Artefacts

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ABSTRACT
The far-reaching impact of the Web on society is widely recognised. The interdisciplinary study of this impact has crystallised in the field of study known as Web Science. However, defining an agreed, shared understanding of what constitutes web science requires complex negotiation and translations of

Categories and Subject Descriptors
K.3.2 [Computing Milieux] Computer and Information Science Education  
The consortium

Southampton

Beirut

Thessaloniki

Koblenz

Milan

Montpellier

The consortium includes institutions from various European cities and countries.

Source: University of Southampton, Universita degli Studi di Milano, Aristotle University of Thessaloniki.

The History

• Lots of people have been talking and thinking about this sort of thing for a while...
Web Science emerges

...And will continue to emerge, evolve and develop
Curriculum

This page is for discussions on the curriculum of Web Science degrees at various levels. If you would like to add a resource, please email Les Carr, lac@ecs.soton.ac.uk.

Contents [show]

Proposed Curriculum Topics

A first draft of a list of topics that should be covered in a Web Science course was discussed at the Network For Web Science Workshop on Web Science Curriculum in September 2008. It is listed in detail on the curriculum topics page.

- History of the Web
- Building the Web
- The Web in Society
- Operationalising Web Science for a World of International Commerce
- Analysing the Web

Existing Web Science M.Sc. Programs

1. Aristotle University of Thessaloniki, Department of Mathematics, Master Program in Web Science funded by Municipality of Veria and Cyta Telecommunications [1]

The Master degree in Web science is based on the study of Web assessment, mathematical modeling and operation organized as follows:

Winter semester
- WS.01 Web science [2]
- WS.13 Web Languages and Technologies [3]

- WS.04 Networks and Discrete Mathematics [4]
- WS.07 Information Processing and Networks [5]

Spring semester
- WS.09 Economics and Business in the Web [6]

Existing Web Science Courses

3. Technical University of Graz. Markus Strohmaier, Klaus Tockteienn. [9]
We each structure our own web science curriculum - in our own way

| What is the web? How is it made? | • Web, Social Web, Semantic Web |
| Understanding the impact of the web from different perspectives | • Technological, Social Sciences and Humanities, Inter-disciplinarity |
| What are the key research questions | • Foundations of Web Science |
| How do we undertake research | • Research planning, research methods |
| Individual Extended Research Activity | • Project and Dissertation |

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http://eprints.ecs.soton.ac.uk/22141/
Table 1. An abridged representation of the Web Science Curriculum.
NB: The full version at http://webscience.org/2010/wssc.html also specifies level 3 headings

<table>
<thead>
<tr>
<th>A</th>
<th>General – not concerned with course content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Web History and Methodology</td>
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<tr>
<td></td>
<td>B.1 General Web History and Methodology</td>
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<td></td>
<td>B.2 Web History</td>
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<tr>
<td></td>
<td>Web Forerunners; Biographies and related stories</td>
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<td></td>
<td>B.3 Web Science Theory and Epistemology</td>
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<td>Two Magics of Web Science; Actor Network Theory</td>
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<td></td>
<td>Web Technologies</td>
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<td></td>
<td>C.1 General Web Technologies</td>
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<td>C.2 Web Milieux</td>
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<tr>
<td></td>
<td>Document technologies; Hypertext technologies; Internet technologies; Mobile Web technologies; Grid and Cloud computing technologies</td>
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<td></td>
<td>C.3 Basic Web Architecture</td>
</tr>
<tr>
<td></td>
<td>HTTP and related technologies; URIs; HTML; XML; CSS and related technologies; Interfaces and Browsers; Servers Web Services</td>
</tr>
<tr>
<td></td>
<td>C.4 Web 2.0 technologies</td>
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<td></td>
<td>C.5 Semantic Web/Linked Data</td>
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<td></td>
<td>Metadata; Knowledge Representation; Ontology Languages; Linked Data; Natural Language Processing; Provenance systems in the Web</td>
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<td></td>
<td>C.6 Internet/Web of Things</td>
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<td>D. Web Analysis</td>
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<tr>
<td></td>
<td>D.1 General Web Analysis</td>
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<tr>
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<td>D.2 Mathematical Methods of Web analysis</td>
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<tr>
<td></td>
<td>Web data sampling and analytics; Logic and Inference in the Web; Statistical Inference in the Web; Statistical Analysis of the Web; Web as a Complex System; Graphs; Networks; Mathematical methods for describing Web services; Crawling; Indexing and Searching; Data Mining; Information Retrieval and Machine Learning; Other Algorithms for the Web</td>
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<td>E. Web Society</td>
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<tr>
<td></td>
<td>E.1a Economics</td>
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<td></td>
<td>Goods in the Web; The Web economy; Antitrust Issues and Policies in the Web; Intellectual property and digital rights management; Web-based economic development</td>
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<td>E.1b Business</td>
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<td></td>
<td>E-commerce Business models in the Web; Advertising in the Web; sponsored search</td>
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<td></td>
<td>E.2 Social Engagement and Social Science</td>
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<tr>
<td></td>
<td>Social networks; Mass phenomena; Collective intelligence; Peer production; Globalization; Systems; Social structures and processes; Virtual communities, groups and identity; Social capital and power inequality in the Web; On-line lives, intergenerational differences; Mass media</td>
</tr>
<tr>
<td></td>
<td>E.3 Personal Engagement and Psychology</td>
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<td>System Psychology and Behaviour; Child and adolescent psychiatry; Tele-working</td>
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<td>E.4 Philosophy</td>
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<td>Philosophy of information; Objects; Reference and Cognition in the Web; Ethics in the Web</td>
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<td></td>
<td>E.5 Law</td>
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<tr>
<td></td>
<td>Intellectual Property in the Web; Digital Rights Management; Digital crime; Laws for Web access; Antitrust Law</td>
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<tr>
<td></td>
<td>E.6 Politics and Governance</td>
</tr>
<tr>
<td></td>
<td>Political science; E-Government; E-Politics; E-Democracy; Policy and Regulation; Web Governance; Privacy; Trust; Security; Network neutrality; E-Inclusion</td>
</tr>
<tr>
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<td>F Teaching the web – not concerned with course content</td>
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</table>

Can we “verify” (?) the Web Science Curriculum?

Starting point

• Compare the formal curriculum with
  – existing ‘de facto’ curricula
  • Programmes
  • modules, summer schools, seminar series
Negotiating A Web Science Curriculum through Shared Educational Artefacts, White et al 2011
http://eprints.ecs.soton.ac.uk/22141/
Web Sci 10

Negotiating A Web Science Curriculum through Shared Educational Artefacts, White et al 2011
http://eprints.ecs.soton.ac.uk/22141/
Comparing with it with existing curricula

- web science curriculum (modules/programmes)
  - against the web science curriculum

http://wiki.websciencetrust.org/w/Curriculum

Please do the survey
https://www.isurvey.soton.ac.uk/2290
Working with the two magics

values

creativity

Engineering

Idea

Design

Social

Tech.

macro

micro

analyze

complexity

collaboration

We want to create some repository magic

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http://eprints.ecs.soton.ac.uk/22141/
So next... let's gather some evidence

- Share exemplar teaching materials and resources

- We have an EU proposal for a project to get people to share (multilingual) content

- We will ask them to share (and annotate) via
- The Web Science Community repository (WSCR) (pronounced Whisker – think cats!)
  based on EdShare - http://www.edshare.soton.ac.uk

Our idea....

- By identifying, sharing, exposing resources by course and by curriculum topic

- The curriculum will emerge!
The Potential

- Asking people to share exemplar teaching materials and resources
  - annotate them against the curriculum taxonomy
  - and to invent keywords
    - Gap spotting
    - Gap filling
    - De facto definitions

- Enrich and elaborate our understanding of the curriculum
- Broaden the discourse
- Provide a set of shared artefacts around which the discourse can take place
- Negotiate our understanding of the web science curriculum ...and web science?

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Edshare – a model for WSCR

Open Access: How the Case Has Been Made
How the argument for Open Access has been made to government and the research industry over the last ten years.

Dr Leslie Carr  Shared with: World

Policy Skills for Web Scientists
Practical group based work on reading and interrogating evidence and writing policy briefings critiques.

Dr Leslie Carr  Shared with: World

A Brief History of the Web
The Web is now so ingrained in our lives that it is easy to forget that it is less than twenty years old. But the History of Web goes back much further, to the pioneering technologists who built the first hypertext systems and the men and women before them who imagined great libraries of interconnected information that would augment human intellect and drive civilization forward. In this lecture we will explore the pre-digital origins of the Web, look at how it developed into the mass communication system we have today, and speculate on the next stages of its evolution in the context of Web Science and Social Media.

Dr David Millard  Shared with: World

Transparency & Privacy
The Transparency Agenda of the 2010/1 UK Coalition government promises to revolutionise government, public services and public engagement, by “holding politicians and public bodies to account, reducing the deficit and delivering better value for money in public spending, and realising significant economic benefits by enabling businesses and non-profit organisations to build innovative applications and websites using public data”, to quote the then Prime Minister. This is an ambitious programme with laudable aims, yet it naturally has limits.

Dr Leslie Carr  Shared with: World
Building on what we already do

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Basic concept

We create a core

Semantic wiki

Core repository

...federated repositories?

...associated wikis?

Available to augment and use

Custom views

Custom views

Custom views

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What it might look like...

A programme

University of Southampton. Les Carr and Catherine Pope. Masters in Web Science

http://www.ecs.soton.ac.uk/admissions/pg/msc/1011/web_science.php

**Semester 1**

**Semester 2**

- **Semantic Web/Linked Data (SKOS:C.5) (Compulsory)**
  
  **Material**
  
  **Source:** WSCCR
  
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<thead>
<tr>
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</table>
  
  **Multi-agent Reasoning**

- **Social Engagement and Social Science (SKOS:E.2) (Compulsory)**

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A Curriculum view

Web 2.0 technologies (See also: E.2.2 Mass phenomena)
- C.5 Semantic Web/Linked Data (See also: D.2.2 Logic and Inference in the Web, D.2.5 Web as a Complex System, Graphs, Networks, Games, E.1.1.6 Web-based economic development)
  Source: WSCCR

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<th>Professor Stefano Cerri</th>
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- C.5.1 Metadata
- C.5.2 Knowledge Representation
Methods and Affordances

Opportunities

• Associates

• Community of practice
  – Made real
  – Made physical

• Artefacts for the discourse

Methods

• Peer review
• Open to contributions
• Community review workshop series
• Fill fests -
Benefits and the future?

• See what is actually being taught
  – Share assignments
  – Project ideas
  – Reading lists
  – Data sets
  – Web science ‘in the wild’
• Spot what is missing
• Share the task of filling gaps
• Identify multiple web sciences

• The web is worldwide
  – Lets make this an international picture
    • Multilingual
    • Commentaries

• Functions
  – Mapping the territory
  – Contributor for an observatory
  – Sandbox
  – Generator
  – Students as participants
    • Faceted user generated content

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Thank You 😊

And special thanks to the many different participants and leaders of the web science curriculum workshop 2008-2011 and counting ;-)
The todo list from the curriculum workshop this week

- Action List
- list of course/programmes/curriculum (wiki) Jim H
- mailing list (announcements) - exists- use it (join)
- co-ordinating calls, monthly meetings Craig
- lecturer/expert list (talks, ideas etc) <this is one naturally for either Craig, or for WSCR profiles)
- project ideas hcd
- literature hcd
- exemplary examples hcd
- textbooks (online/discussion)
- resources site hcd, stéphane
- match making service <after the event - enhancement >
- datasets steffen S
- commentary/discussion resources Su W
- index (and connections of ideas to above)
- review process (max)
- list of people/areas <WSCR profiles>
references


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Vafopoulos, M. (2010a). "Web Science Subject Categorization (WSSC ).".

Vafopoulos, M. (2010b). "Web Science Subject Categorization (WSSC) a Proposal for Discussion (Wiki)."


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