Paradigm Shifts
A Revolution in Web Content & Communication

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Paradigm Shifts
Changes in perspective that fundamentally reorient our understanding and employment of new media technology.
Web 1.0
\[ \Delta T = \infty \]
\[ \Delta C = 0 \]

Web 2.0
\[ \Delta T = 0 \]
\[ \Delta C = \infty \]

Web 3.0+
\[ \Delta T = \infty \]
\[ \Delta C = \infty \]
Web 1.0

\[ \Delta T = \infty \]
\[ \Delta C = 0 \]
World Wide Web
Proposed by Tim Berners-Lee in 1989 as a system for organizing documents for physicists
Operational in 1991; released to Internet
Development overseen by the World Wide Web Consortium (W3C) - 1994
Content Development

**HTML** – Hypertext Markup Language
A set of mark-up tags used to specify the appearance of text, images, hypertext links, and multimedia elements.

**CSS** – Cascading Style Sheets
A style sheet language used to specify the format or appearance of HTML elements.
Web 1.0

Browsers – Web Client

Interprets HTML and CSS code to display content

Mosaic, Netscape, Firefox, Internet Explorer, Safari, Chrome
Web 1.0

Media Innovations
Hypertext Linking
Multimedia Integration
With the **web** it is **easy** to create **hypertext links**. The **question** is not necessarily one of **technology** but of **design** and **composition**. How does a **link** support the **story**? How does linking **advance** the **narrative**? **Interaction** through **hypertext** means that we need to **rethink** all aspects of **writing**.

**Hypertext**

**User Interaction**

**Read Only Experience**
Although multimedia on the web is still evolving, including audio or video is relatively easy to accomplish. The question therefore is not only technical, but a matter of design and composition. The inclusion of multimedia elements should be motivated by the need to advance and enrich the story. It should not be simply an added distraction or an end in itself. Otherwise it's just eye or ear candy and not integral to the content of the web page.
Web 1.0

Web of Documents
Web of Documents

**Publishing Model**
Web provided a means for creating and distributing documents: *web pages.*
“Content is king”

**Producer/Consumer**
Documents created by professional content providers, made available over the Internet, and accessed by consumers of information.

**Hypertext**
Interaction is created by linking documents to each other and permitting users to follow these links. Read-only experience.
Web 2.0

$\Delta T = 0$

$\Delta C = \infty$
Web 2.0 refers to a perceived second generation of web-based communities and hosted services – such as social-networking sites, wikis and folksonomies – which aim to facilitate collaboration and sharing between users. The term became popular following the first O'Reilly Media Web 2.0 conference in 2004. Although the term suggests a new version of the World Wide Web, it does not refer to an update to any technical specifications, but to changes in the ways software developers and end-users use the web.
Participation Platform
  Provide a platform for users to collaborate, share, and contribute. “Community is king.” Web of People.

Prosumer
  User generated content. Content is not produced by professionals but created by users for users. Amateur-to-amateur model.

Read/Write Interaction
  Rewriting/editing information, commenting, and tagging. Collaborative intelligence.
Facebook Stats

More than 1 billion monthly active users as of December 2012; Population of Facebook is equivalent to India and the continent of Africa.

250 billion photographs uploaded daily;
2.7 billion “Likes” every day

Average user spends more than 50 minutes a day on Facebook
**Web 2.0**

Content Management System (CMS)

Dynamic database driven content

*PHP* – Server-side Scripting Language

*MySQL* – Relational Database
Web Browsers

Hypertext Markup Language (HTML) is interpreted by the web browser, which applies the format information described by the HTML tags to the content that is marked-up in the HTML document. The first graphical browser, Mosaic, was developed by Marc Andreessen at the University of Illinois in 1992.
Web 2.0

Dynamic database driven content

Add News

Name: David Gunkel

Subject: Content Management Systems

This is an entirely different way of thinking about web content. Instead of writing the entire page in HTML code, a CMS uses PHP to generate HTML forms that can be filled in by the user. The information collected by the form is written to and stored in a relational database like MySQL. This data can then be read by another PHP document, which automatically generates the HTML sent to and displayed by the browser.
Web 2.0

News

Content Management Systems

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Dynamic database driven content
Web 3.0+

\[ \Delta T = \infty \]

\[ \Delta C = \infty \]
Web 3.0+
Semantic Web
A universal medium for the exchange of data and information. “Web of Data.”

Machines
Information that can be developed, read, and understood by machines. Machine Intelligence and Autonomous Agents.

Cybernetic World
A community not just of human agents but also intelligent and social machines. People talking not just to people but also interacting with machines.
Web 3.0+

**Semantic Web Standards**
- XML - Extensible Markup Language
- RDF - Resource Description Framework
- OWL – Web Ontology Language
- SPARQL - SPARQL Protocol and RDF Query Language
In HTML, the tags describe elements. This text is made up of tags such as `<b>` for bold, `<i>` for italics, and `<u>` for underline, and these tags specify the appearance of the text. However, in Extensible Markup Language (XML), tags do not describe the appearance of elements on the page. Instead, they characterize the meaning of the content contained by the tag. This way information can be extracted, understood, and even manipulated by machines.
Web 3.0+

Figure 14. Machine-to-Machine Traffic to Increase 22-Fold Between 2011 and 2016

Terabytes per Month

<table>
<thead>
<tr>
<th>Year</th>
<th>Terabytes per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>23 PB per Month</td>
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<tr>
<td>2012</td>
<td>300,000</td>
</tr>
<tr>
<td>2013</td>
<td>600,000</td>
</tr>
<tr>
<td>2014</td>
<td>85% CAGR 2011-2016</td>
</tr>
<tr>
<td>2015</td>
<td>508 PB per Month</td>
</tr>
</tbody>
</table>

Source: Cisco VNI Mobile, 2012
Web 3.0+
Web 3.0+

autonomous user agent
We have adapted our personalization algorithms to this new scenario in such a way that now 75% of what people watch is from some sort of recommendation.

http://techblog.netflix.com (6 April 2012)
Data Mashups
A web application that combines data from more than one source into a single integrated tool.
Web 3.0+

Future of Journalistic Semantics

Sophisticated inferential analysis
More effective user agents and avatars
Automated production of intelligent abstracts
Semantic rules can launch nuanced applications based upon meaning matching
Semantic rules engines + inferential analysis = sophisticated composition engines
Pulitzer Prize by an A.I. by 2030?
Conclusions
1. Web Epochs

Web 1.0

Web 2.0

Web 3.0+
## 2. Basic Characteristics

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>ΔT = ∞</td>
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<td>ΔT = ∞</td>
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“Content is King”
Web of Documents
Read Only
Producer/Consumer

“Community is King”
Web of People
Read / Write
Prosumer

“Context is King”
Web of Data
Read / Write / Understand
Machine Intelligence
3. Opportunities / Challenges