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Learning Networks and the Personal Learning Environment

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National Research Council Canada
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1. Ways of Seeing

What we see when we look at a computer:

- words and textual content
- images and graphics
- perhaps some video

In other words – traditional paper-based media…

But what does someone immersed in net culture see?

http://www.flickr.com/photos/w00kie/7350188/in/set-180637/

Virtual Reality

Is the online somehow unreal?

We might think so… but consider how we approach what we perceive through:

- mirrors
- telescopes
- telephones

MMORPGS

http://en.wikipedia.org/wiki/MMORPG

Video games…

Videoconferencing…

It's all people…

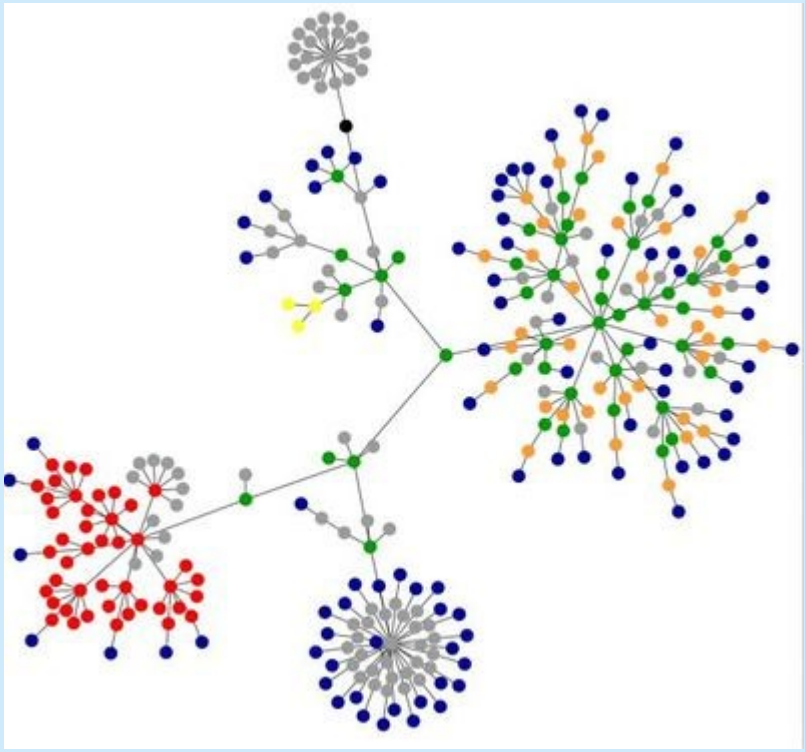
Websites are people too…

http://secondlife.com/

But… when we look at a website… at media…

What do we *see*?

Something like this.



Websites as Graphs

http://www.aharef.info/static/htmlgraph/

Each blue dot is a hyperlink to another website

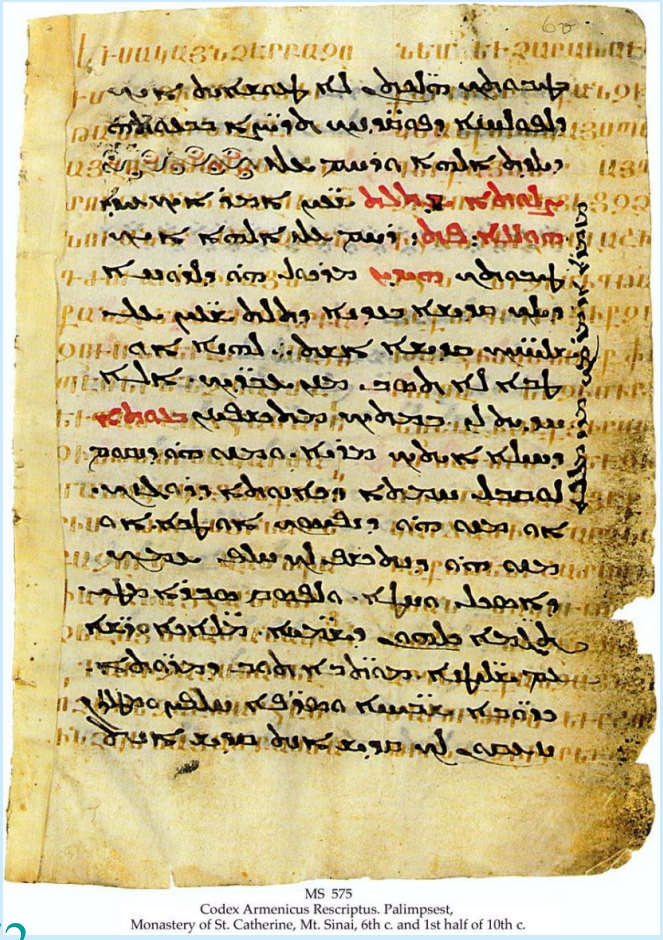
New Media

Traditional media is linear – hypermedia is *multidimensional*

Traditional media is *composed* – hypermedia is *connected*

Traditional media *describes* – hypermedia *represents*

Traditional media is *static* – hypermedia is *dynamic*



MS 575
Codex Armenicus Rescriptus. Palimpsest,
Monastery of St. Catherine, Mt. Sinai, 6th c. and 1st half of 10th c.

http://www.downes.ca/cgi-bin/page.cgi?post=72

Misa Matsuda: networked technologies create “full-time intimate communities.”

Danah Boyd: MySpace provides a fertile ground for identity development and cultural integration. As youth transition from childhood, they seek out public environments to make sense of culture, social status and how they fit into the world.

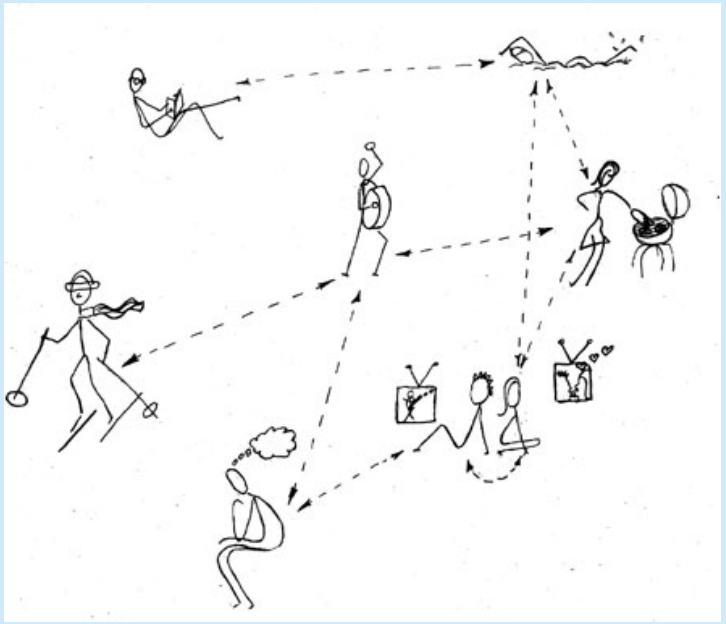
http://www.educause.edu/apps/er/erm04/erm045.asp

http://www.danah.org/papers/MySpaceDOPA.html

Social Networking

A website is not a person's *description* of themselves…

It is a *presentation* of themselves through their network



http://en.wikipedia.org/wiki/Social_networking

http://www.socialcustomer.com/

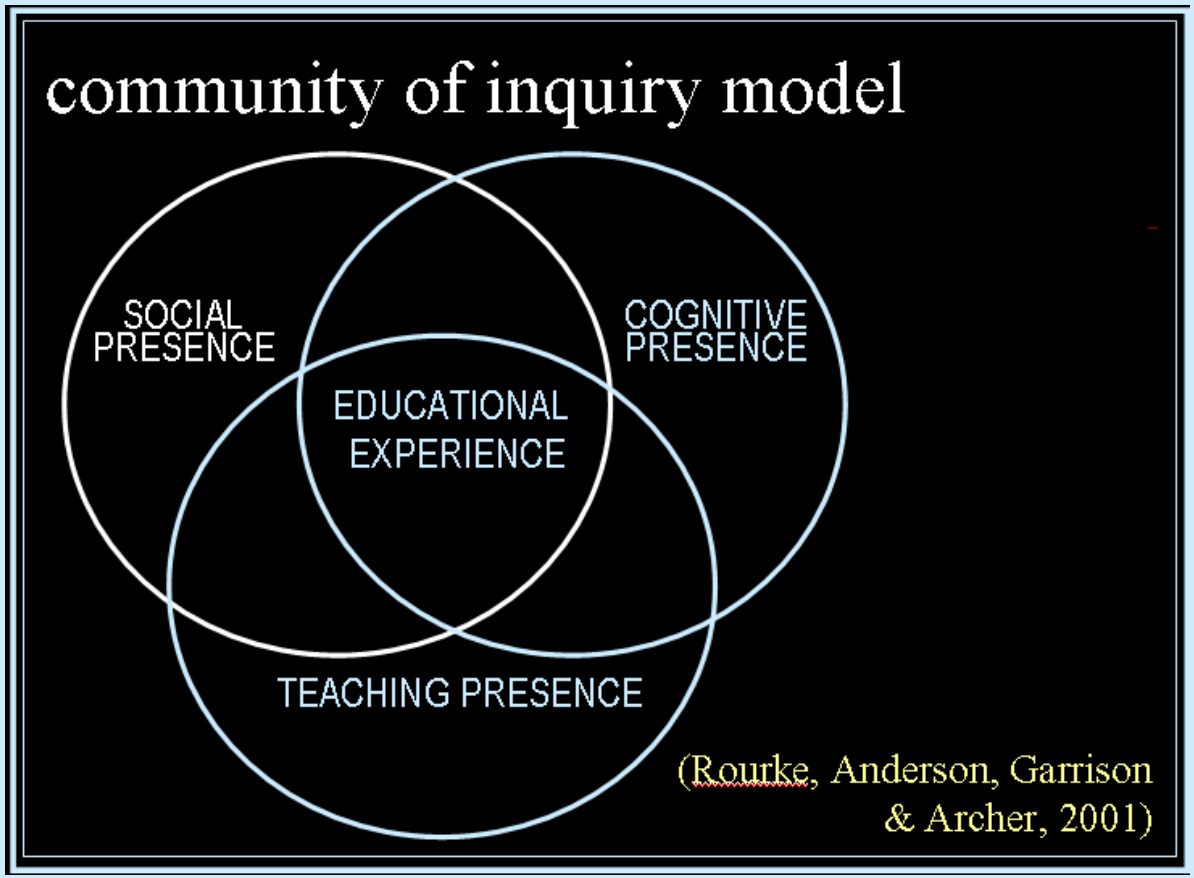
When *we* look through the internet, we are creating networks… perception - as an extension of ourselves... McLuhan - our networks are extensions of ourselves - facets of our identity… when we look at the computer **we see ourselves** through our contacts, our liaisons, our interactions…

Why is this important?

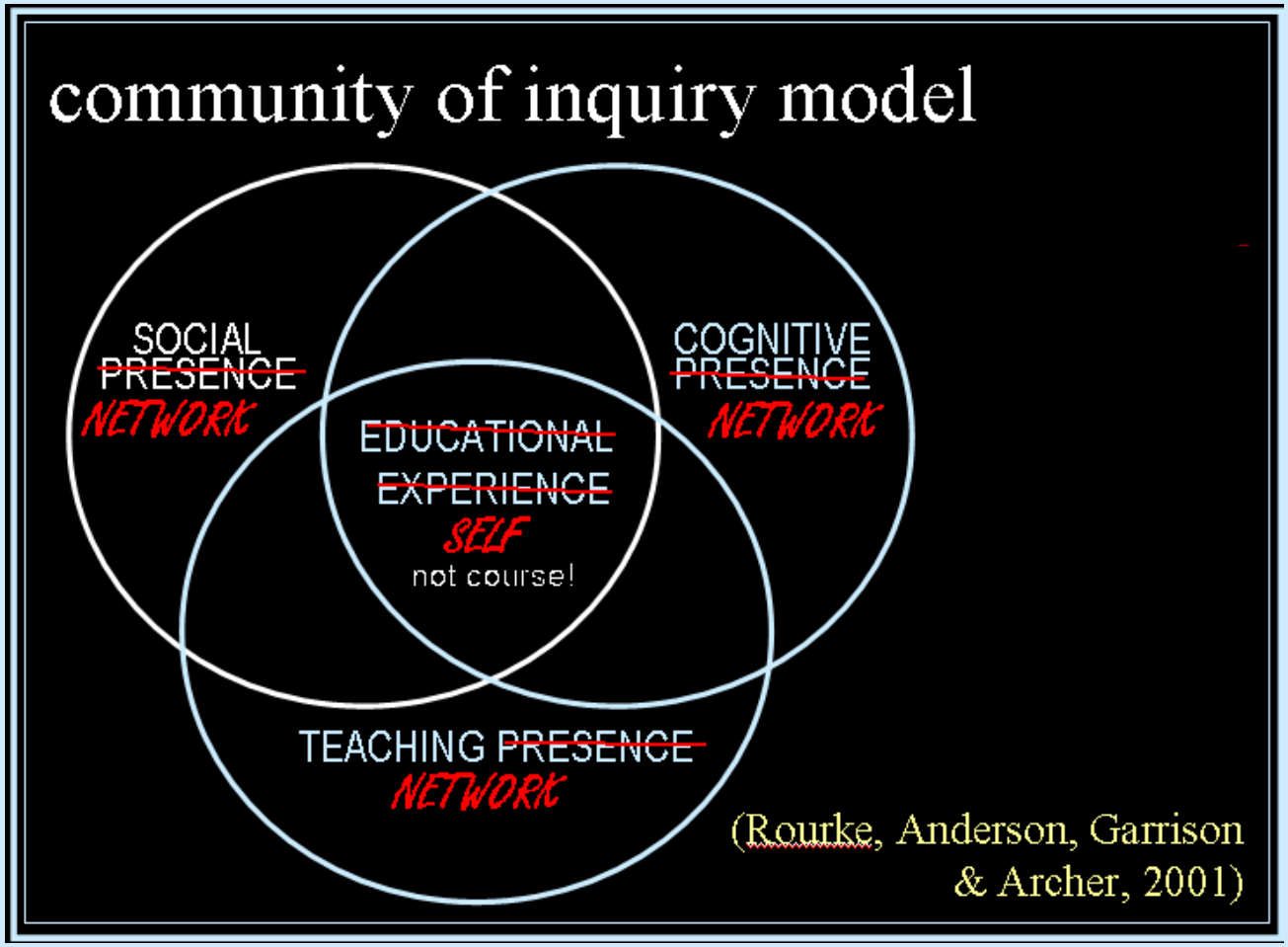
In a nutshell – because it means that theories of online distance learning must:

- capture the expression of self as a network of connections
- place this self at the centre of the learning experience

For example…



http://cider.athabascau.ca/


community of inquiry model
SOCIAL PRESENCE
NETWORK
COGNITIVE PRESENCE
NETWORK
EDUCATIONAL EXPERIENCE
SELF
not course!
TEACHING PRESENCE
NETWORK
(Rourke, Anderson, Garrison & Archer, 2001)

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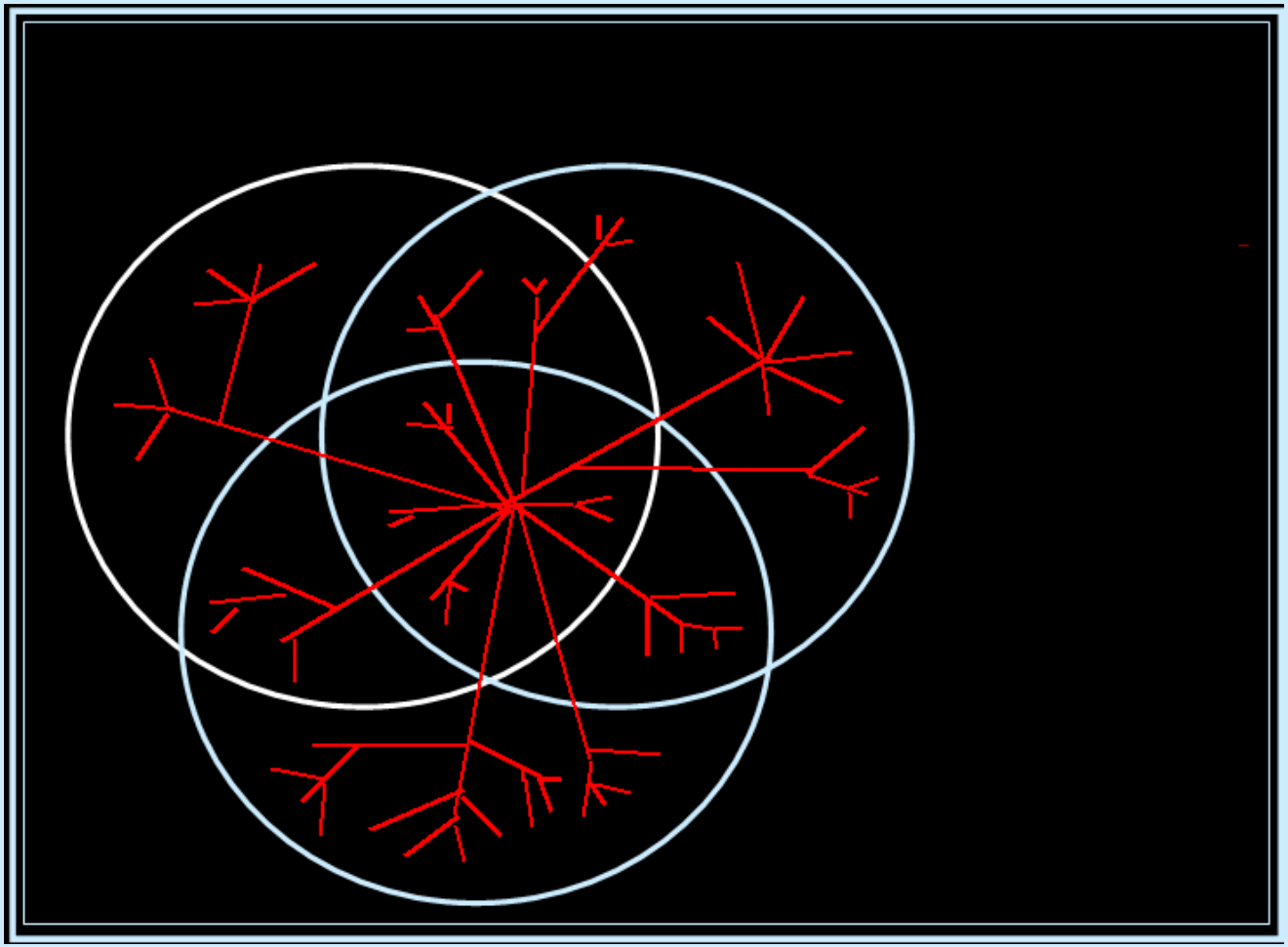

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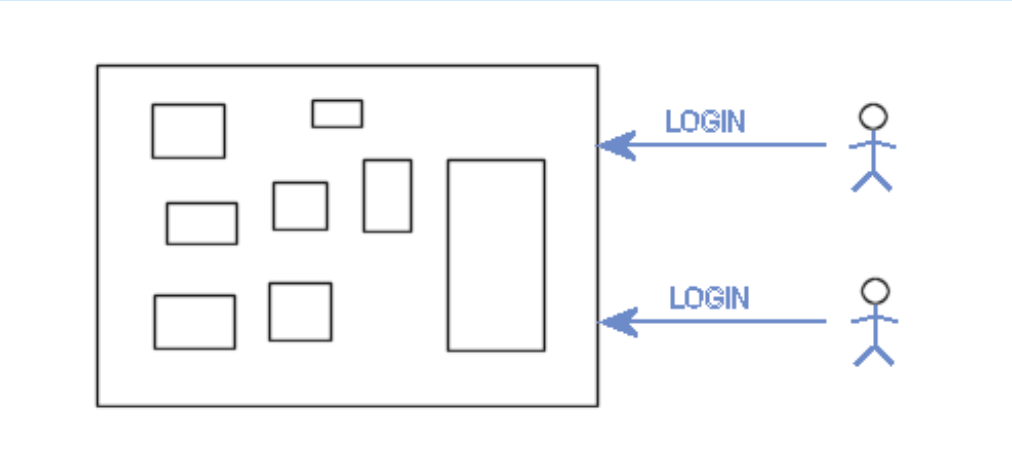
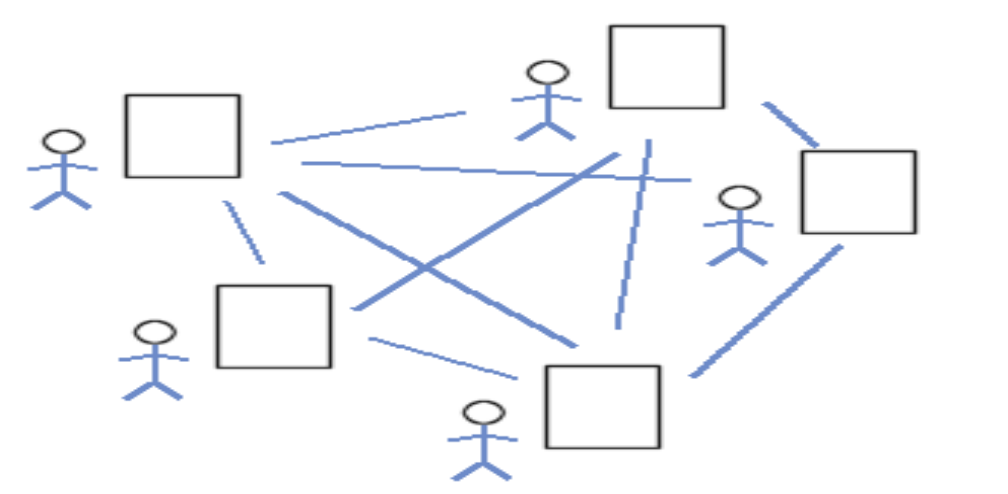
2. The Network

Two Models of Online Environments

- **Centralized**



- **Distributed**



Centralized Environments

- Before the web, the centralized model was all we had (examples include CompuServe, Prodigy)
- On the web, centralized models include site-based services such as Yahoo!
- Most (all?) college and university services are offered using the centralized model
- But centralized environments are static, inflexible, expensive

Traditional Online Learning

- Institution Based
  - Online courses, learning management system
  - Content ‘federations’ – closed network
- Product Based
  - Content packaging and CD-ROM delivery
  - Digital rights and authentication
- Content Based
  - The idea of courseware, course packs
  - Learning design and sequencing

Distributed Environments

- **The World Wide Web is an example of a distributed environment**
- **Resources, access are *not* centralized, but scattered around the world:**
  - Resources, in the form of a network of connected (via DNS) web servers
  - Access, in the form of a network of connected (via DNS) internet service providers
  - Users, in the form of individualized and connected (via HTTP) web browsers
- **The big issue – integration – that is, making different systems work together**

Learning Networks

- Not Institution Based
  - Resource based, learning integration
  - Open access, content networks
- Not Product Based
  - Web based, content not packaged but agregated
  - Identity used to enable access, not restrict it
- Not Content Based
  - E-learning as engagement, conversation
  - Focus on services and interaction

Connective Knowledge

- Connectivism
- Connective Knowledge
- E-Learning 2.0

Principles of Connective Knowledge:

- Autonomy – choice and control for the learner
- Diversity – different cultures, different technologies
- Openness – to read, to write
- Interaction – to create community, to enquire, to assert

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Sensible Design Principles

- The analysis of customer needs has to concentrate on practical uses that are likely to become everyday routines
- The development of a new technology must be based on well–defined, carefully selected core principles
- Real experiences in real networks must be continuously taken into account.

  http://www.firstmonday.org/issues/issue10_1/kilkki/
- Or, as the author concludes: "As to the list of core principles, simplicity and realism are essential."

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3. Design Principles

Network Design Principles

- Specifies how networks differ from traditional learning
- The idea is that each principle confers an *advantage* over non-network systems
- Can be used as a means of evaluating new technology

1. Decentralize

- Centralized networks have a characteristic ‘star’ shape
  - Some entities have many connections
  - The vast majority have few
  - Eg., broadcast network, teacher in a classroom
- Decentralized networks form a mesh
  - The weight of connections, flow is distributed
  - Balanced load = more stable
  - Foster connections between entities, ‘fill out’ the star

2. Distribute

- Network entities reside in different physical locations
  - Reduces risk of network failure
  - Reduces need for major infrastructure, such as powerful servers, large bandwidth, massive storage
- Examples:
  - Peer-to-peer networks, such as Kazaa, Gnutella
  - Content syndication networks, such as RSS
- Emphasis is on *sharing,* not copying
  - 'Local' copies are temporary

3. Disintermediate

- Mediation – barrier between source and receiver
- Examples:
  - Editors, peer review prior to publication
  - Traditional media, broadcasters
  - Teachers between knowledge and student
- Where possible, provide direct access
  - The purpose of mediation is to manage flow, not information
  - It is to reduce the volume of information, not the type of information

4. Disaggregate

- Units of content should be as small as possible
  - Content should not be ‘bundled’
  - Organization, structure created by receiver
  - Allows integration of new information with old
- This is the idea behind learning objects
  - smallest possible unit of instruction
  - Assembling into pre-packaged ‘courses’ defeats this

5. Dis-integrate

- Entities in a network are not ‘components’ of one another
  - Thus., eg. Plug-ins or required software to be avoided
- The structure of the message is logically distinct from the type of entity sending or receiving it
  - The message is coded in a common ‘language’
  - This code is open, not proprietary
  - No particular software or device is needed to receive the code
- This is the idea of standards, but:
  - Standards are not created, they evolve
  - Standards adopted by agreement, not requirement

6. Democratize

- Entities in a network are autonomous
  - Have the freedom to negotiate connections
  - Have the freedom to send, receive information
- Diversity is an asset
  - Diversity confers flexibility, adaptation
  - Diversity enables the network as a whole to represent more than just the part
- Control is Impossible
  - Even where control seems desirable, it is not practical
  - Creating control effectively destroys the network

7. Dynamize

- A network is a fluid, changing entity
  - Without change, growth, adaptation are not possible
  - It is through the process of change that new knowledge is discovered
- The creation of connections is a core function

8. Desegregate

- Example: Learning is not a Separate Domain
  - Do not need learning-specific tools, processes
  - Learning is a *part* of living, of work, of play
  - The *same* tools we use to perform day-to-day activities are the tools we use to learn
- The Network as Infrastructure
  - Computing, communicating, not something we ‘go some place to do’
  - The idea of network resources as a utility, like electricity, like water, like telephones – the network is everwhere

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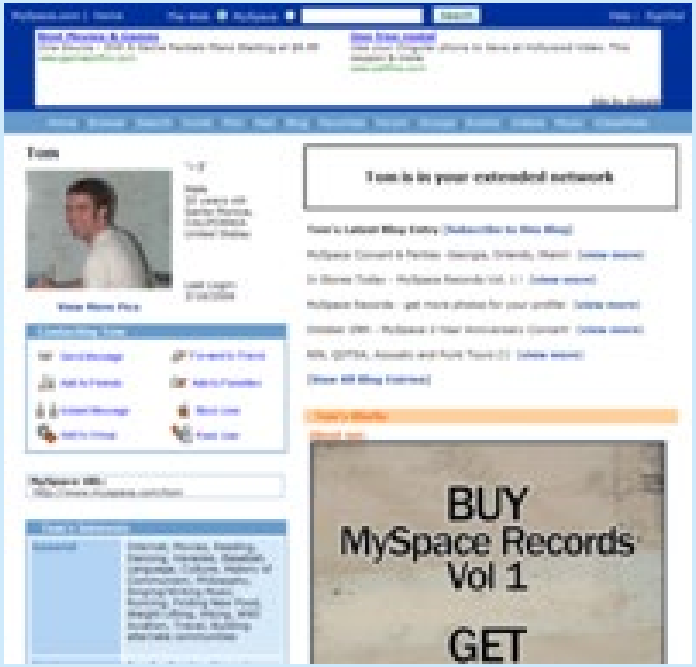
4. The Tools



The Net Generation creates its own media…

Identity Production in a Networked Culture: Why Youth Heart MySpace … Danah Boyd
http://www.danah.org/papers/AAAS2006.html

"The dynamics of identity production play out visibly on MySpace. Profiles are digital bodies, public displays of identity where people can explore impression management."

Blogs and Wikis

"Never have so many people written so much to be read by so few..."
-- Katie Hafner NY Times.

Blogger - Live Journal - Movable Type - Wordpress
Educational Blogging – article
Educational Weblogs - Edublogs.org

Wikipedia – as compared to Britannica by Nature

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Photos, Podcasting and Vodcasting

Flickr
Podcasting - wikipedia
iPodder - Odeo – Liberated Syndication

Youtube - video

Podcasting in Learning
Ed Tech Talk - Ed Tech Posse - FLOSSE Posse
Bob Sprankle - Education Podcast Network

From LMS to PLE

"Personal Learning Environments are systems that help learners take control of and manage their own learning. This includes providing support for learners to:

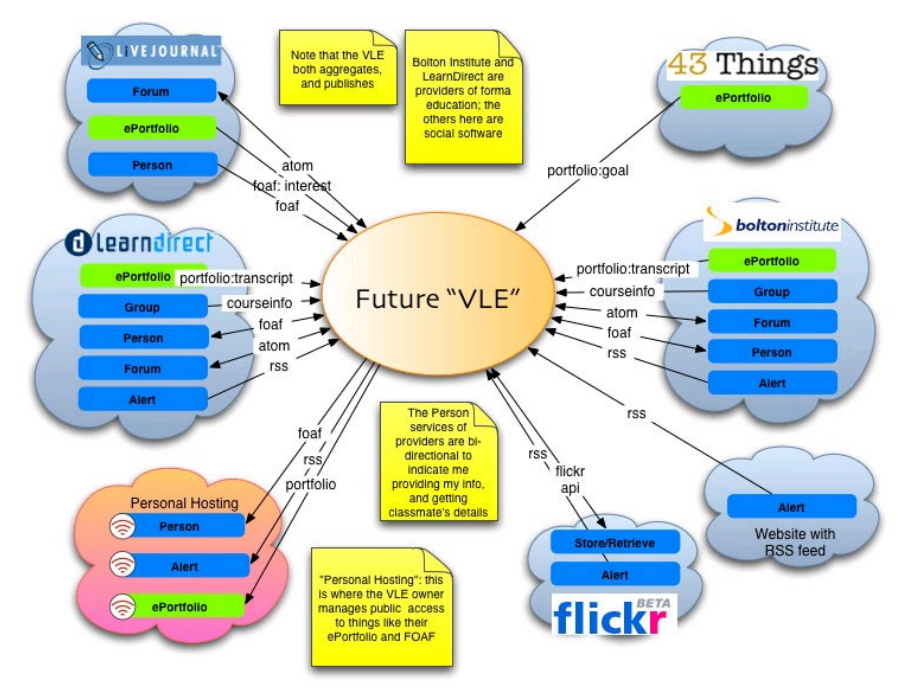
* set their own learning goals

* manage their learning; managing both content and process

* communicate with others in the process of learning and thereby achieve learning goals."

From JITT.
http://octette.cs.man.ac.uk/jitt/index.php/Personal_Learning_Environments

The Classic Diagram…



Scott Wilson.
http://octette.cs.man.ac.uk/jitt/images/b/ba/Wilson_future_PLE.jpg

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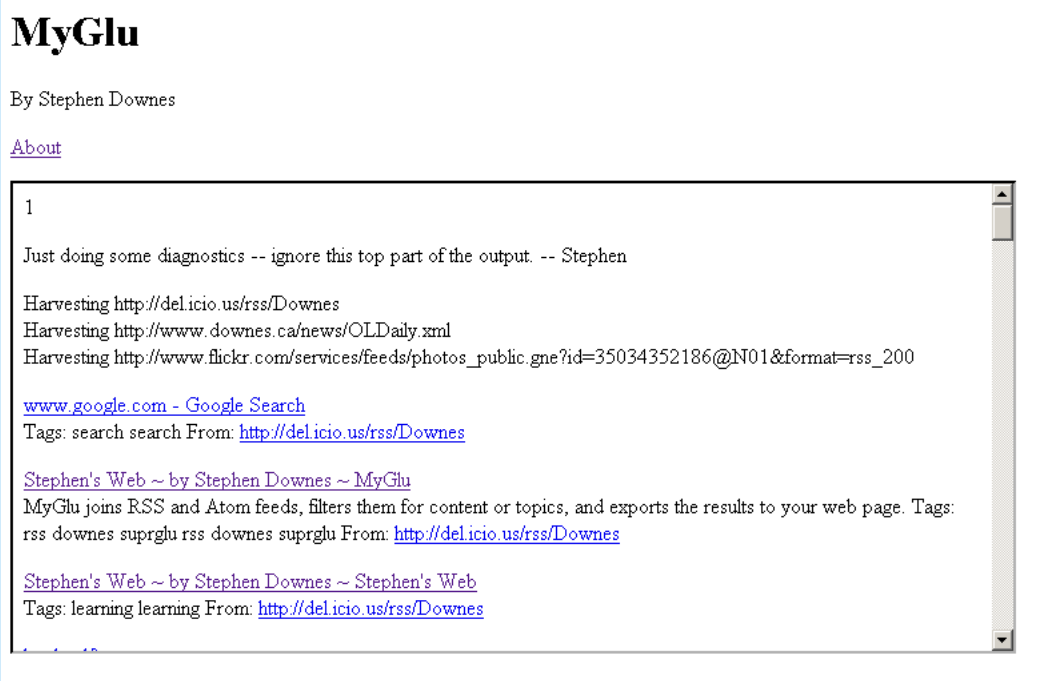
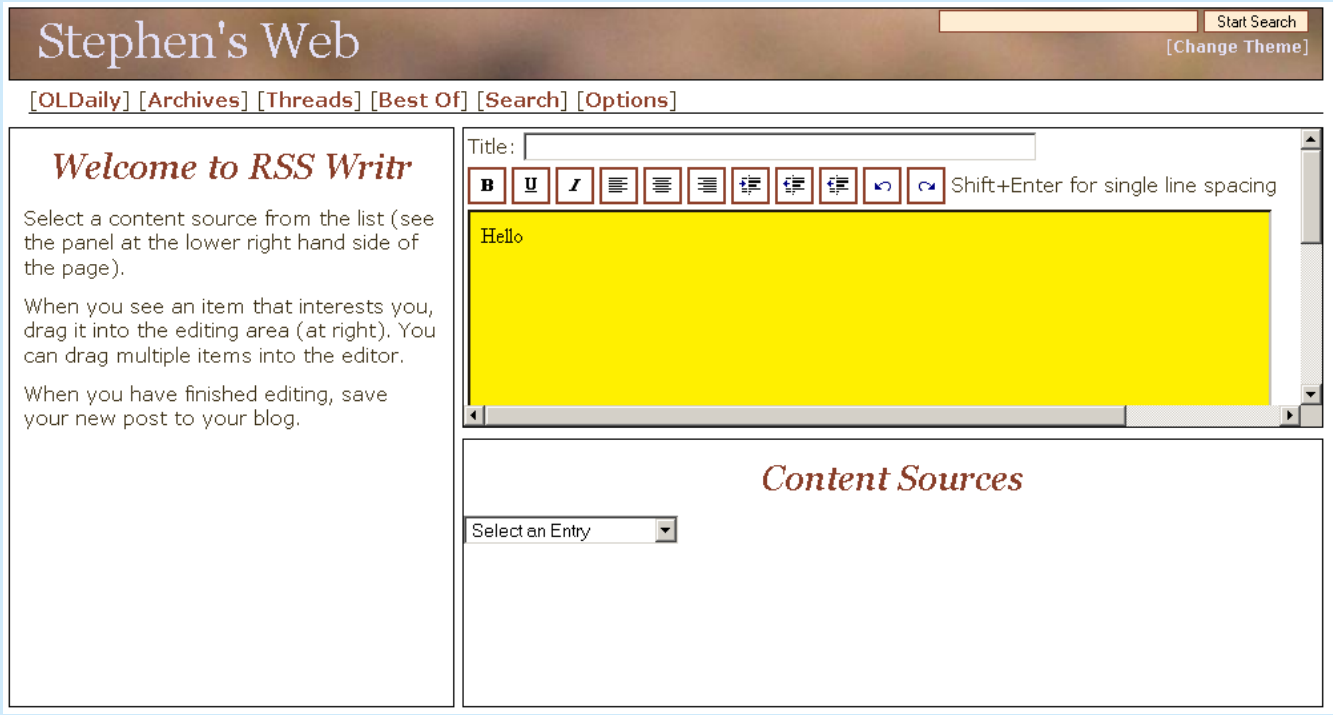
My Own Approach (1): MyGlu



http://www.downes.ca/mygluframe.htm

My Own Approach (2): RSS Writr



http://www.downes.ca/editor/writr.htm

E-Learning 2.0

"The model of e-learning as being a type of content, produced by publishers, organized and structured into courses, and consumed by students, is turned on its head. Insofar as there is content, it is used rather than read— and is, in any case, more likely to be produced by students than courseware authors. And insofar as there is structure, it is more likely to resemble a language or a conversation rather than a book or a manual."

Stephen Downes

http://elearnmag.org/subpage.cfm?section=articles&article=29-1

Some Advantages of PLEs

Persistence

> "The reflective posting of a blog are a digital record of the learning process. They can be an integral part of the lifelong learning accomplishment and e-portfolio of the learner. They should not disappear at the end of a course."

Terry Anderson http://terrya.edublogs.org/2006/01/09/ples-versus-lms-are-ples-ready-for-prime-time/

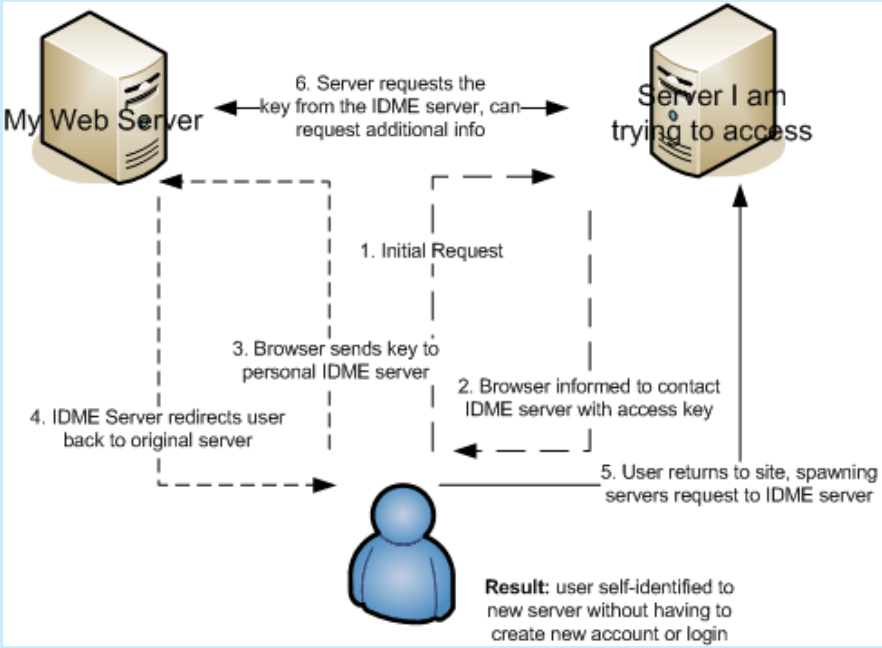
Some Advantages of PLEs (cont)…

Identity

> "Learners have existences beyond formal school, that can be used to both help learners contextualize their own understanding and for others to understand their epistemological legacy. The PLE tools integrate this outside life with formal study."

Terry Anderson http://terrya.edublogs.org/2006/01/09/ples-versus-lms-are-ples-ready-for-prime-time/

My Own Approach (3): mIDm



License plates

Telephone

ATM

http://www.downes.ca/midm.htm

Some Advantages of PLEs (cont)…

> "Copyright and re-use: Contributions to a PLE are very definitely owned by the learner and thus can be used and re-used as that owner sees fit." - Terry Anderson.

More and more, we will see students – and not instructors or publishers – authoring learning resources.

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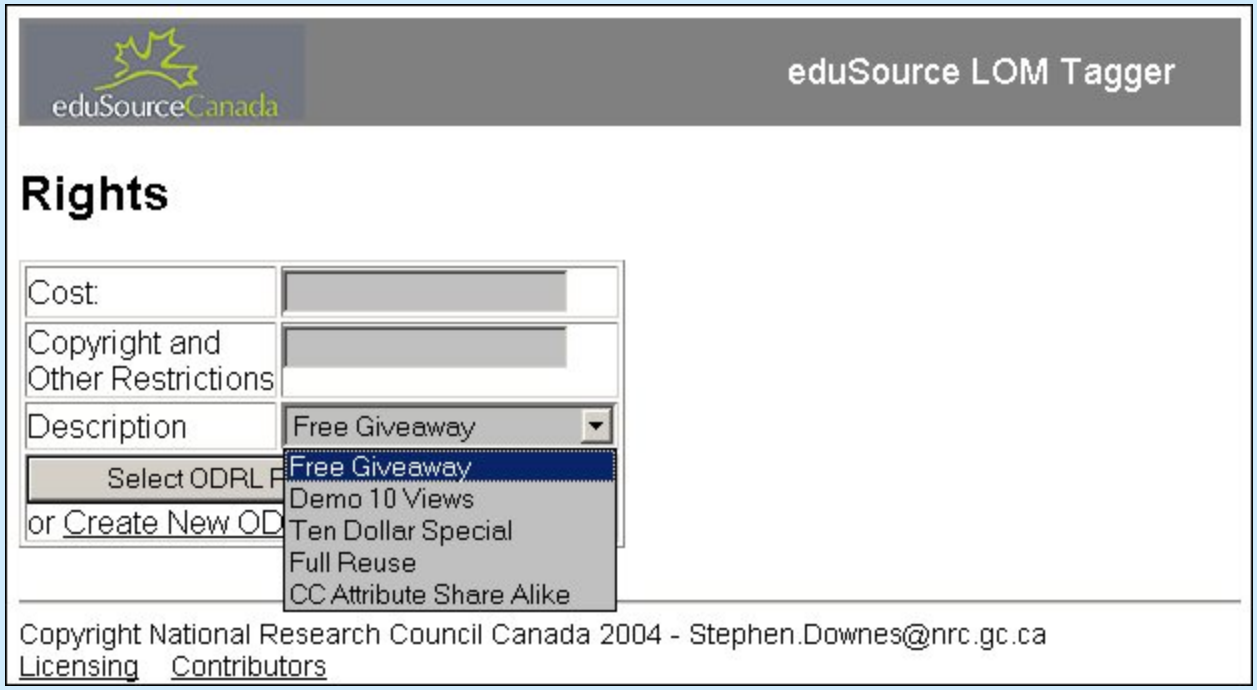
My Own Approach (3): DDRM



http://www.downes.ca/dwiki/?id=DDRM

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Whence the PLE?

"Why do we need a PLE when we already have the Internet? The Internet is my PLE, ePortfolio, VLE what ever. Thanks to blogger, bloglines, flickr, delicious, wikispaces, ourmedia, creative commons, and what ever comes next in this new Internet age, I have a strong online ID and very extensive and personalised learning environment."

Leigh Blackall

http://teachandlearnonline.blogspot.com/2005/11/die-lms-die-you-too-ple.html

The PLE: An approach, not an application

Watch for the evolution of read/write applications

- Similar to Web 2.0 ™ applications
- Similar also to Windows Vista

The students' application need not be a learning application

- Eg. More like an email client than a learning client

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Attending to the ‘Read’ Part…

Resource Profiles

http://www.downes.ca/files/resource_profiles.htm

- 1st Party Metadataa: Bibliographical
- 2nd Party Metadata: Usage
- 3rd Party Metadata: Commentary

Also: microformats

http://microformats.org/

The Semantic Social Network

Learning = Participation in a Community

The Learning Environment is the work environment (or the community environment)

Resource production, selection and referral via more experienced members of the community

'Schoolwork' = Work in real life

Stephen Downes: http://www.downes.ca/cgi-bin/page.cgi?post=46

5. Semantics

Network Semantics

- How Meaning is Created in Networks
- Tells us how people learn using networks
- Tells us how networks create new knowledge

Elements of Network Semantics

- Context
  - Localization of entities in a network
  - Each context is unique – entities see the network differently, experience the world differently
  - Context is required in order to *interpret* signals
- Salience
  - The relevance or importance of a message = the similarity between one pattern of connectivity and another
  - Meaning is created from context and messages via salience
  - In other words: knowledge is *shared understanding* (and not *copied* understanding)

Elements of Network Semantics (2)

- Emergence
  - The development of patterns in the network
  - A process of resonance, synchronicity, not creation
  - Example: commonalities in patterns of perception
  - Requires an *interpretation* to be *recognized*
- Memory
  - Persistence of patterns of connectivity
- Other elements: stability, weighting…

Connectivism: Network Pedagogy

- Think of as ‘Network Pragmatics’
- Deals with how to use networks to support learning
- Embraces the idea of ‘distributed knowledge’
  - Example: knowing how to build a 747
  - ‘I store my knowledge in my friends’
  - Recognizes explicity that what we ‘know’ is *embedded* in our network of connections to each other, to resources, to the world
- George Siemens
  http://www.elearnspace.org/Articles/connectivism.htm

Principles of Connectivism

- Learning is a process of connecting entities
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Capacity to know more is more critical than what is currently known
- Decision-making is itself a learning process

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