

A photograph of several cattails in the foreground, with a large, out-of-focus pine tree in the background. The cattails are brown and cylindrical, with some showing their fuzzy, white seed heads. The pine tree has dense, green needles. The overall scene is outdoors, likely in a wetland or marsh area.

The Future of Online Learning and Personal Learning Environments

Stephen Downes April 18, 2007

Online Learning

- Has been around since 1995 or so
- Really grew with the World Wide Web
- Has advanced tremendously

Many positive developments in the last few years worth sharing...

Open Source Applications

- **Learning Management Systems**
such as Moodle, Sakai, Bodington, ATutor
- **Development and Community Tools**
such as LAMS, Connexions, ELGG, Drupal, WordPress
- **Supporting Software**
such as Firefox, Thunderbird, OpenOffice, Audacity



Open Educational Resources

- MIT's **OpenCourseWare** project
and the OpenCourseWare Consortium
- Open University's **Open Courses**
- **OER** initiatives
Hewlett, Wellcome, OECD, UNESCO
- **Creative Commons** and CC materials
in Flickr, Yahoo, Google, **Wikipedia**, Wikiversity, etc.



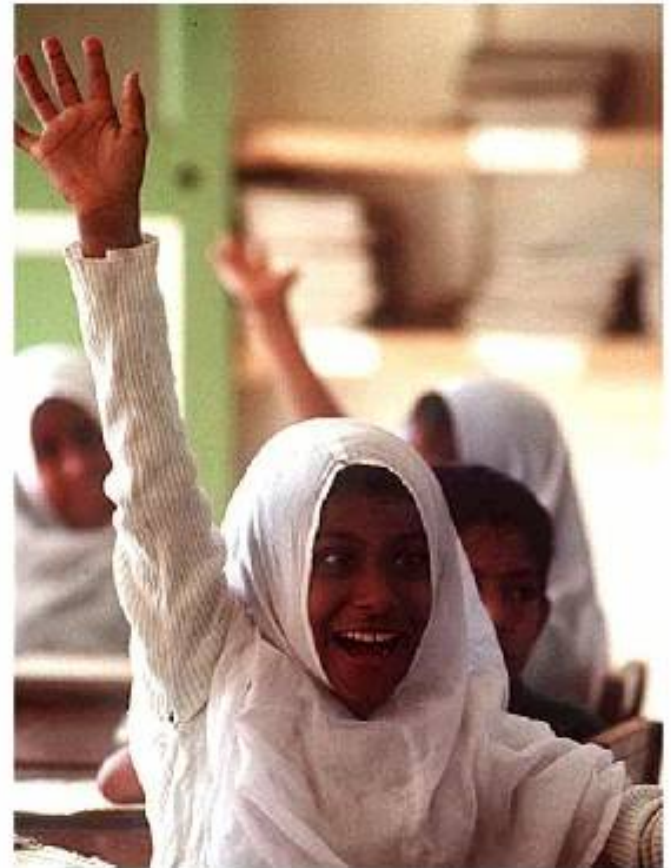
New Environments

- **Multimedia explosion**
podcasts, vodcasts, YouTube, Slideshare, more
- **Mobile computing**
mobile phones, PDAs, etc.
- **The 3D web**
Second Life is a start, we will see more of this



Access...

- *One-to-one computing*
such as the Maine laptop project,
now spreading rapidly
- *One Laptop per Child*
has launched –
computers in Nigeria
- *Wireless access*
3G networks, WLAN...



The Internet of 2007



It looks like **nothing before...**

- Like open source
- Like **Social Networks**
- Like **blogs** and **blogging**
- Like **wikis** and collaborative writing
- Like tagging and Digg and...

It looks like **Web 2.0**



Stallman

The Concept...

- Learning is centered around the interests of the learner
- This learning is immersive – learning by doing
- The computer connects the student to the rest of the world

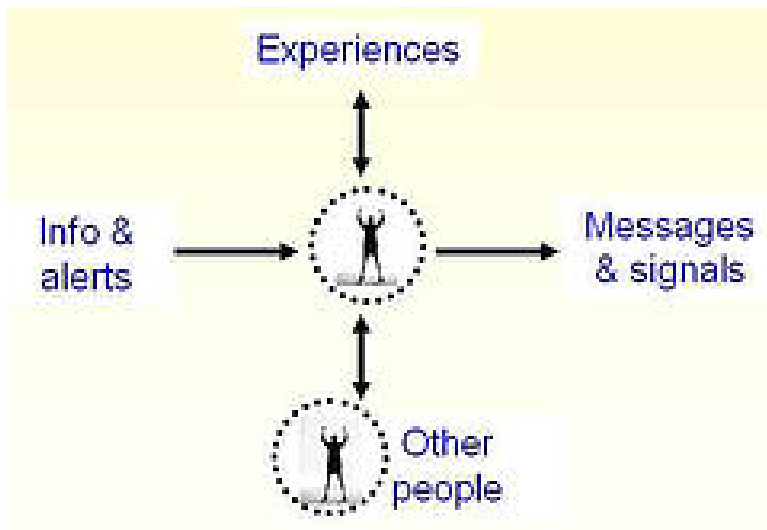
Game Based Learning



Types: Branching, Spreadsheet, Game, Lab...

<http://www.downes.ca/cgi-bin/website/view.cgi?dbs=Article&key=1116274375>

Workflow (Informal) Learning



Types: Community of Practice, Environment, Visualization...

<http://metatime.blogspot.com/>

Online Learning at the Crossroads

- On the one hand – we have developed tools and systems intended to support traditional classroom based learning
- On the other hand – we *could* (should?) be developing tools and systems to support immersive learning
- We should be developing for dynamic, immersive, *living* systems...

First Iteration: User-Produced Media

- Blogs and Blogging
- Podcasting and Vodcasting
- Game mods and other multimedia



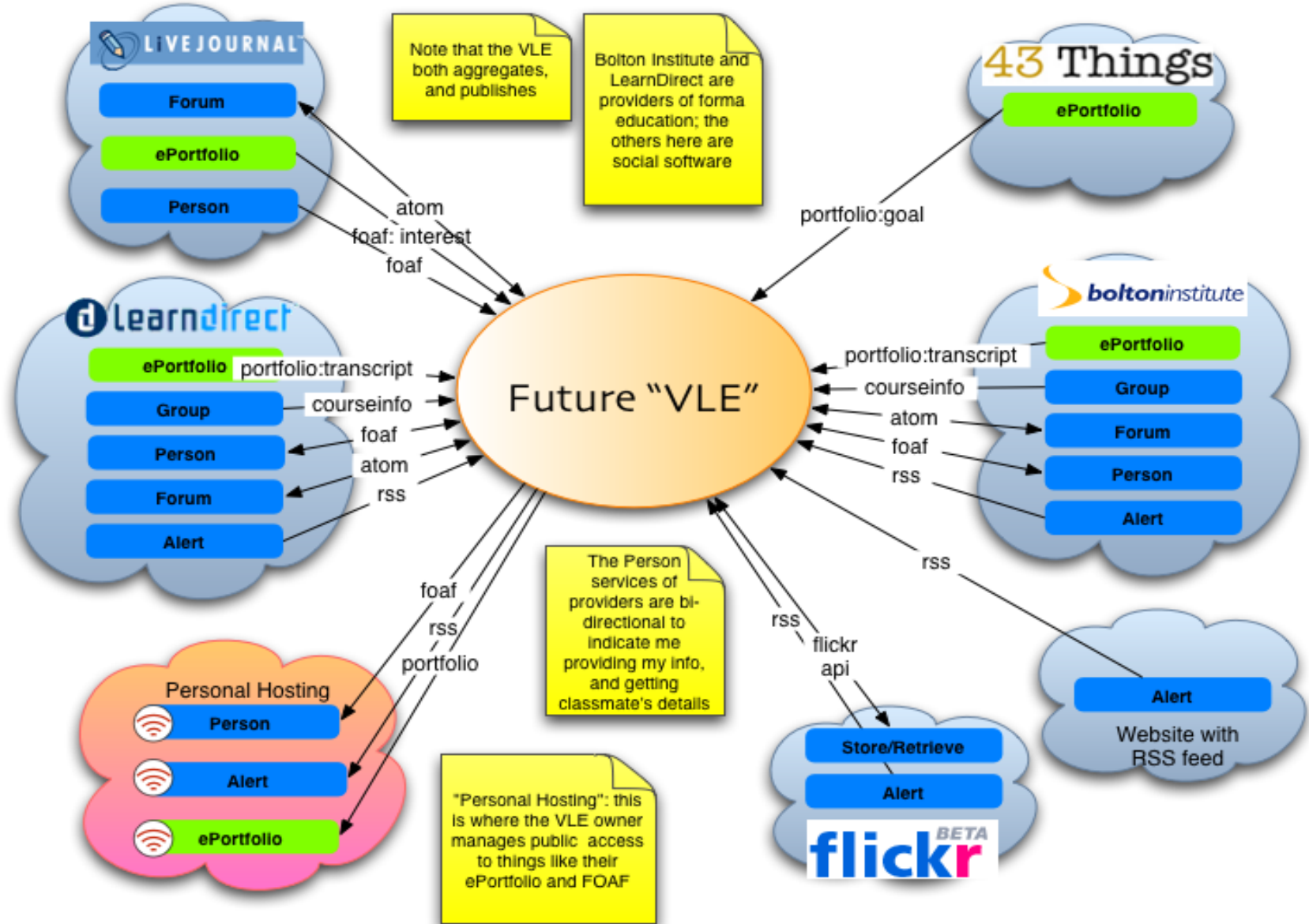
Web 2.0: The Learning Network

- The e-Portfolio lives in the intersection between the worlds for education, work, and home
- A model for e-Portfolio as a learner-managed construct
- Key requirement is easy-to-use tools and hosting services*
- *E.g. the “e-Portfolio-as-blog” approach

Scott Wilson:

<http://www.cetis.ac.uk/members/scott/entries/20050523083528>

The Idea of the PLE...



Plex Personal Learning Environment Example

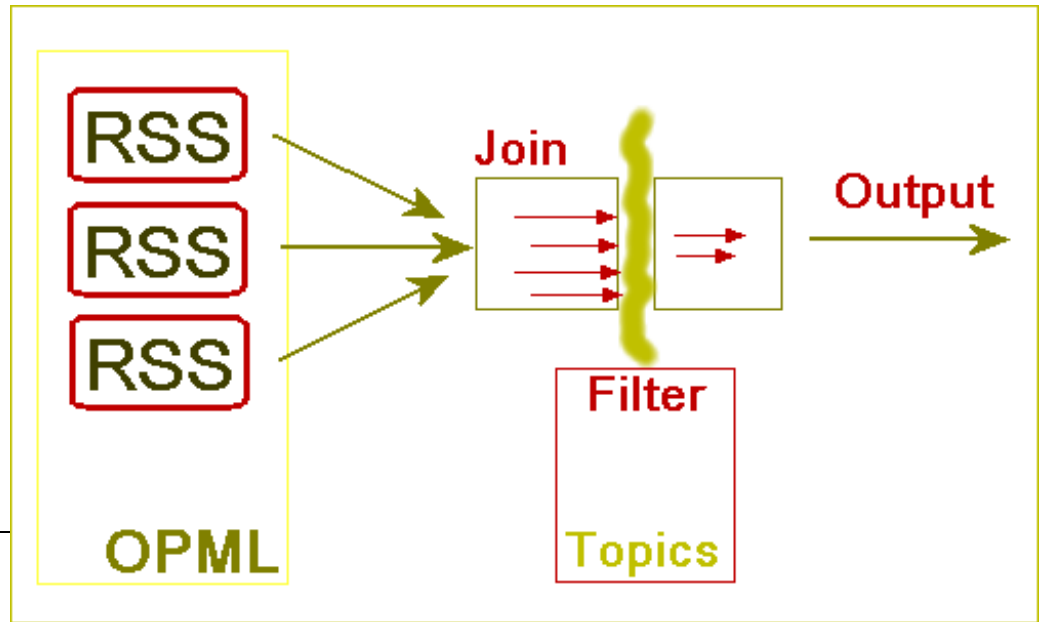
The screenshot displays the Plex Personal Learning Environment interface. The main window is titled "Plex" and contains several panes:

- Opportunities Explorer:** A tree view showing a hierarchy of opportunities. The selected item is "learn three chord rock guitar".
- Opportunity Viewer:** A detailed view of the selected opportunity. It shows the title "learn three chord rock guitar", the number of registered people (1), the provider (43 Things), and the location (http://www.43things.com/thing:). There is a "Browse" button next to the location field.
- Search Results:** A pane showing search results for the query "learn three chord rock guitar". It includes a "Find It!" button and a "Filter results by:" field. The results are displayed in a table with columns for Title, Provider, and Location.
- Web Browser:** A pane showing the details of the selected opportunity on the 43 Things website. The address bar shows "http://www.43things.com/things/view/161919". The page content includes a search bar and a notification that "1 person wants to do this...".

[learn three chord rock guitar]

Collecting and Filtering RSS

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



MyGlu

By Stephen Downes

[About](#)

Force: 1

Harvesting <http://del.icio.us/rss/Downes>

Feedfile is: myglu/feedcache/del.icio.us_rss_Downes

No content. Harvesting from source.

URL: <http://del.icio.us/rss/Downes>

Parsing Feed=HASH(0x9f0f10c)

Harvesting <http://www.downes.ca/news/OLDaily.xml>

Feedfile is: myglu/feedcache/www.downes.ca_news_OLDaily.xml

No content. Harvesting from source.

URL: <http://www.downes.ca/news/OLDaily.xml>

Parsing Feed=HASH(0x9f0ef8c)

RSS Writr

The screenshot shows the RSS Writr web editor interface. At the top left, there is a search bar and a "Start Search" button. Below this are navigation links: [Change Theme], Stephen's Web, [OLDaily], [Archives], [Threads], [Best Of], [Search], and [Options]. The main content area is divided into two columns. The left column contains a large heading "Welcome to RSS Writr" and three paragraphs of instructional text. The right column contains a "Title:" input field, a rich text editor toolbar with icons for bold, underline, italic, bulleted list, numbered list, decrease indent, increase indent, link, and unlink, and a text area containing the word "Hello". Below the text area is a "Content Sources" section with a dropdown menu currently showing "Stephen's MyGlu Test".

Start Search

[Change Theme]
Stephen's Web
[OLDaily] [Archives] [Threads] [Best Of] [Search] [Options]

Welcome to RSS Writr

Select a content source from the list (see the panel at the lower right hand side of the page).

When you see an item that interests you, drag it into the editing area (at right). You can drag multiple items into the editor.

When you have finished editing, save your new post to your blog.

Title:

B U *I* Shift+Enter for single line space

Hello

Content Sources

Stephen's MyGlu Test

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

Edu_RSS Viewer

Stephen's Web

[START SEARCH](#) [\[NEWS\]](#) [\[DISCUSS\]](#) [\[SEARCH\]](#) [\[ABOUT\]](#) [\[ARCHIVES\]](#) [\[OPTIONS\]](#)

← **EDU-RSS RECENT** →

You are logged in as Stephen Downes

[\[Logout\]](#)

Formation and professional certification open and remote on the free software ***

Tally of the general project, history, objectives, concepts
[From: [Thot](#), April 10, 2007] [Tags: [Project Based Learning](#)]
<http://thot.cursus.edu/rubrique.asp?no=25673>

[Blog This!](#)

1 of 1594

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CONTACT: STEPHEN@DOWNES.CA

<http://www.downes.ca/cgi-bin/page.cgi?action=viewer>

Edu_RSS 0.2

Stephen's Web

[START SEARCH](#)

[\[NEWS\]](#) [\[DISCUSS\]](#) [\[SEARCH\]](#) [\[ABOUT\]](#) [\[ARCHIVES\]](#) [\[OPTIONS\]](#)

Site Administration

[\[ADMIN\]](#)

[\[New\]](#) [\[List\]](#) [Author](#)
[\[New\]](#) [\[List\]](#) [Box](#)
[\[New\]](#) [\[List\]](#) [Event](#)
[\[New\]](#) [\[List\]](#) [Feed](#)
[\[New\]](#) [\[List\]](#) [File](#)
[\[New\]](#) [\[List\]](#) [Journal](#)
[\[New\]](#) [\[List\]](#) [Link](#)
[\[New\]](#) [\[List\]](#) [Page](#)
[\[New\]](#) [\[List\]](#) [Person](#)
[\[New\]](#) [\[List\]](#) [Post](#)
[\[New\]](#) [\[List\]](#) [Publication](#)
[\[New\]](#) [\[List\]](#) [Template](#)
[\[New\]](#) [\[List\]](#) [Theme](#)
[\[New\]](#) [\[List\]](#) [Topic](#)
[\[New\]](#) [\[List\]](#) [View](#)

Mailing List

- [Test Newsletter](#) (Sends to Admin Only)... [Send Newsletter](#)

Harvester

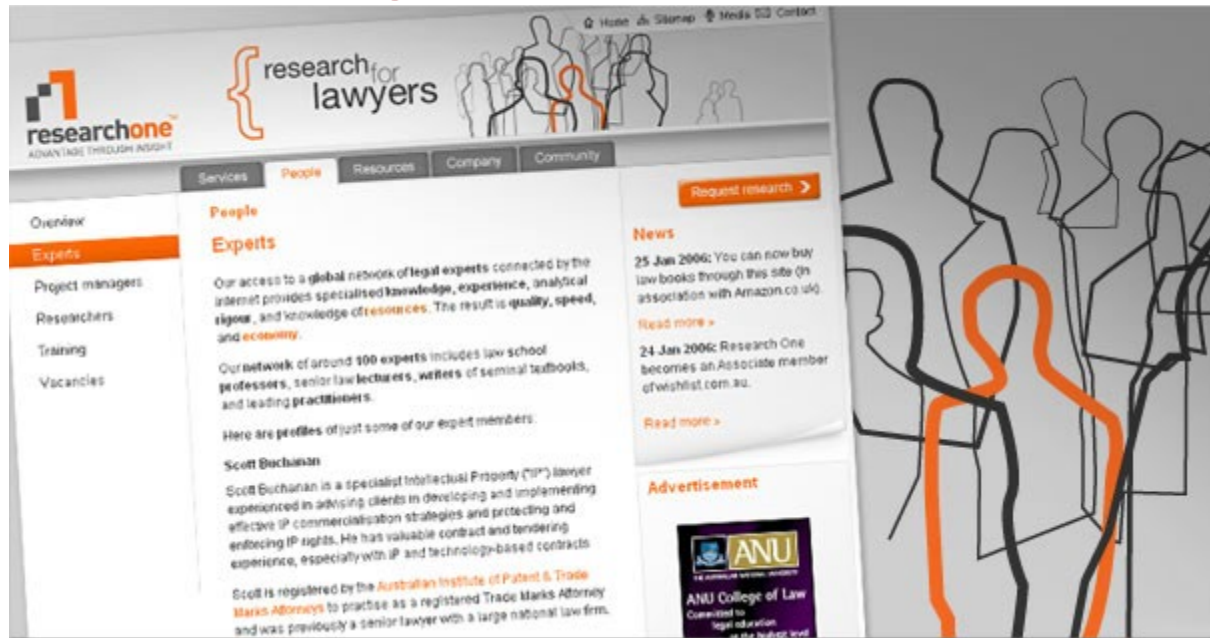
- [Harvest Next In Queue](#)
- [Harvest All Feeds](#)
- [Calculate Most Cited](#)

Harvest Results

- [Most Recent in EduRSS](#) (RSS Version)
- [Look at the files: HTML, XML, RSS](#)

<http://www.downes.ca/edurss02.htm>

The Challenge...



How to find the *right* resource...

- at the right time
- for the right person

The old way – use descriptions

General Identifier Title Language Description Domain Idea Structure	MetaMetaData Create MetadataScheme Technical Format Size LocSpec Requirements Type Name MinimumVersion MaximumVersion	Educational PedagogicalType CoursewareGenre Format Approach InteractivityLevel SemanticDensity EducationalUse Role Difficulty Level Duration	RightsManagmnt Role Description Conditions Reciprocity Attribution Prize MonetaryUnit Amount UnitOfPricing
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<http://www.capuano.biz/Papers/ITS%202000/ITS%202000.htm>

- Dublin Core
- Learning Object Metadata

The New Way: Recommender Systems

The idea is that associations are mapped between:

- User profile – properties of given users
- Resource profile – properties of the resource
- Previous evaluations of other resources

The Match.com Profile

Basics Photos Personality Physical

Next Step →

How creative are you? Are you shy or outgoing, whimsical or pragmatic? find out in **only 5 minutes!**

Explore your personality traits and quirks and find out what type of personality is right for you using Match.com's Ph.D.-designed Personality Test.

When you're finished, we'll send your FREE Personality Report and allow you to include highlights from it in your

Your Match.com Profile

✓ Basics	25% completed
Photos	
Personality	
Physical	

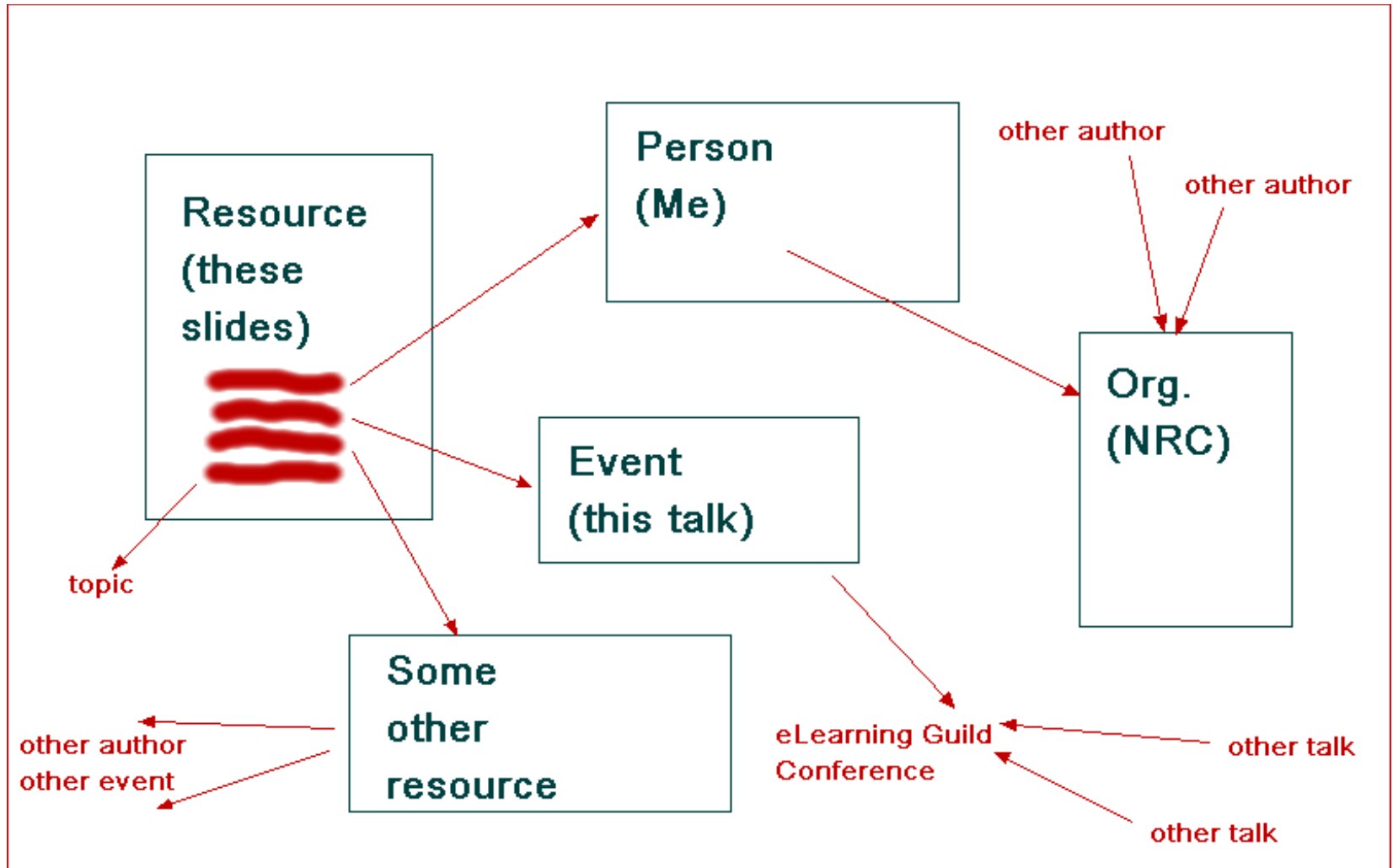
How social is she?

mostly shy & introverted your ideal mostly outgoing

<http://www.slideshare.net/Downes/projecting-quality>

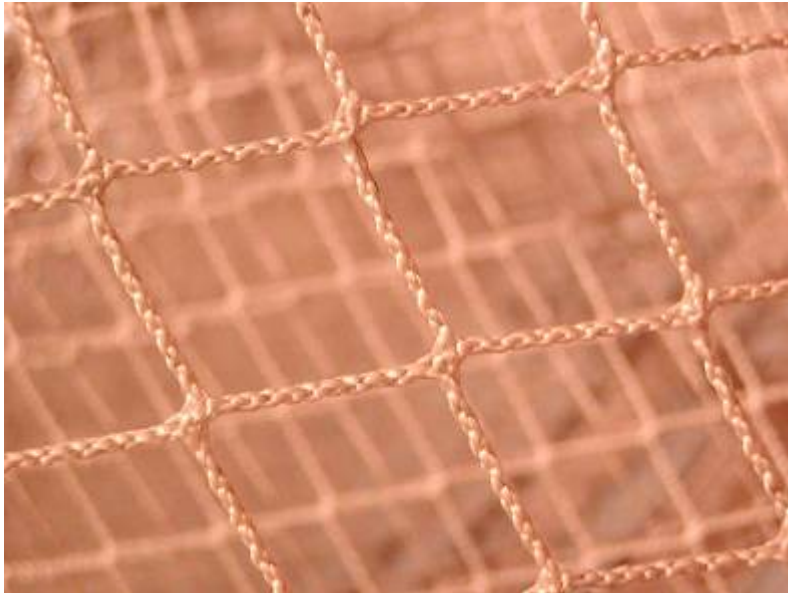
<http://www.slideshare.net/Downes/quality-standards-its-all-about-teaching-and-learning/>

Relations between Entities...



Finding Resources is like Finding Patterns in the Mesh

the knowledge is in the network



Old: universals

- rules
- categories

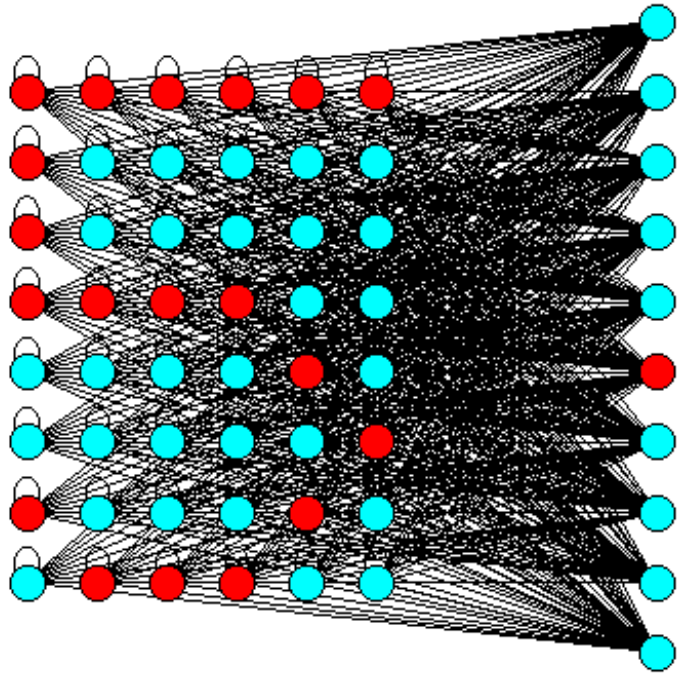
New: patterns

- patterns
- similarities

the knowledge *is* the network



Tenenbaum

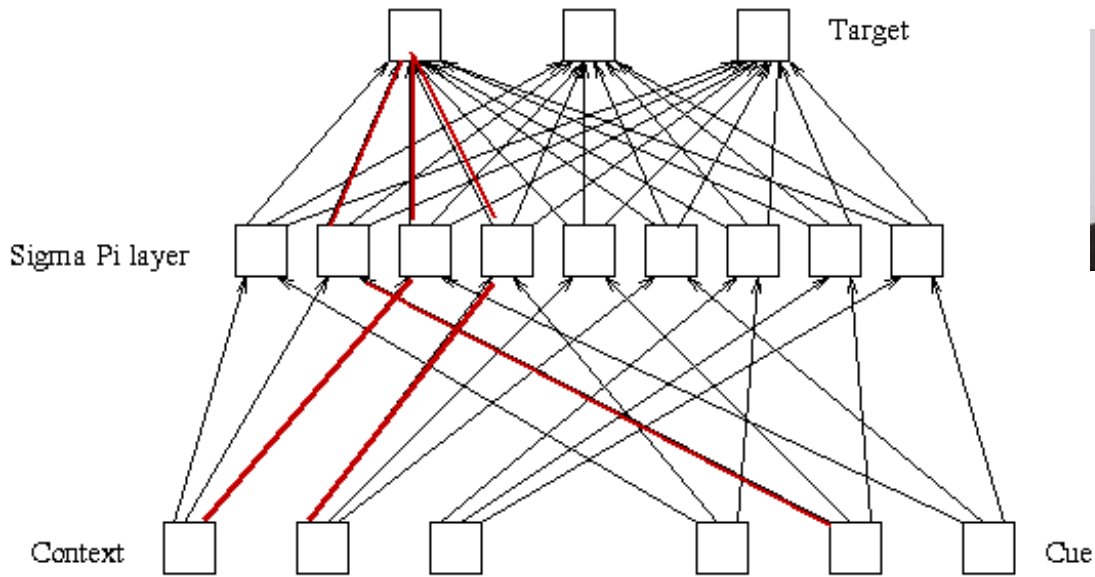
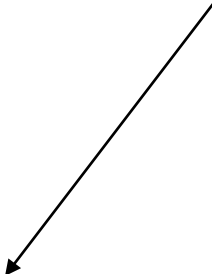


Pattern Recognition...

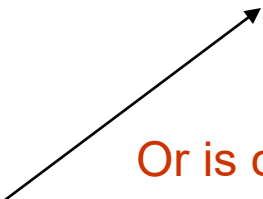


Gibson

stands for?



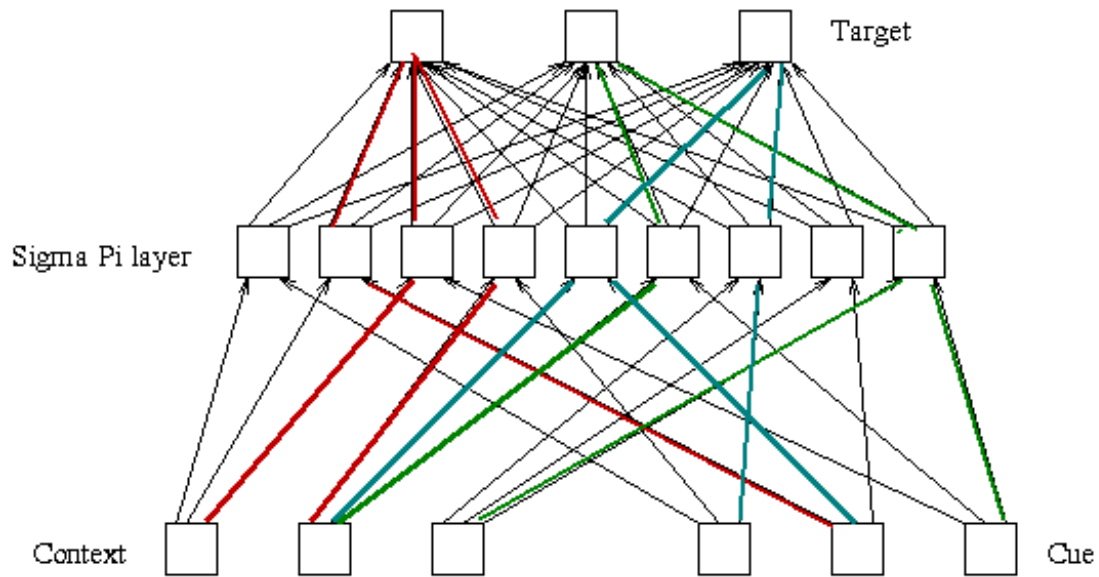
Hopfield



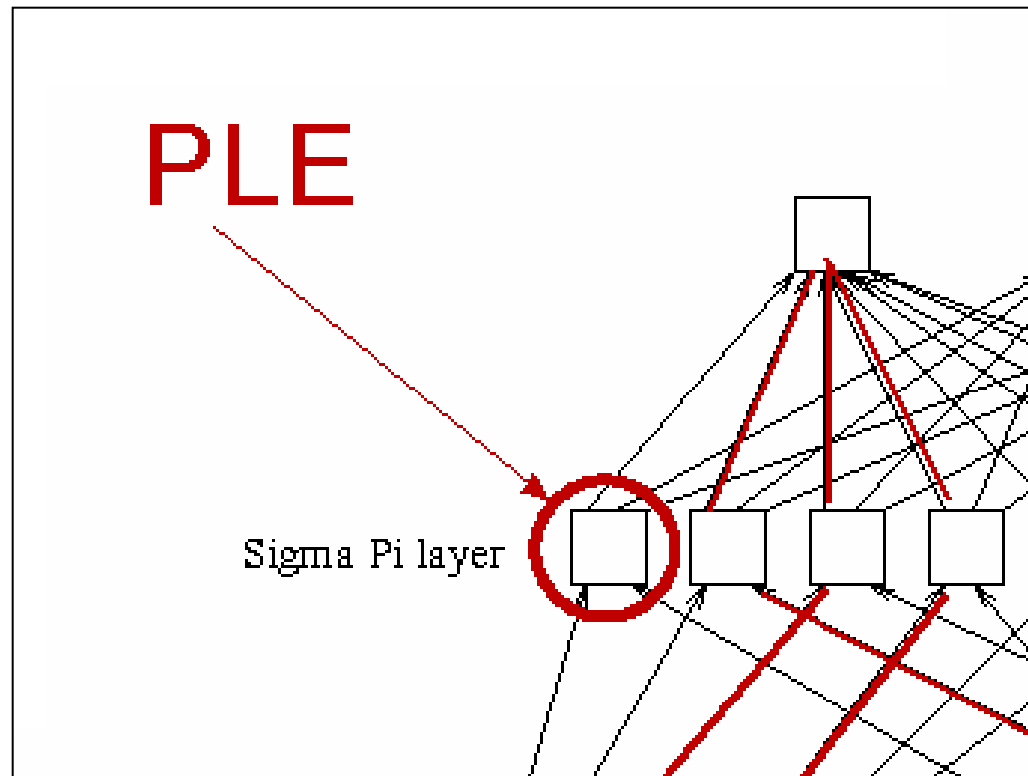
Or is caused by?

Distributed Representation

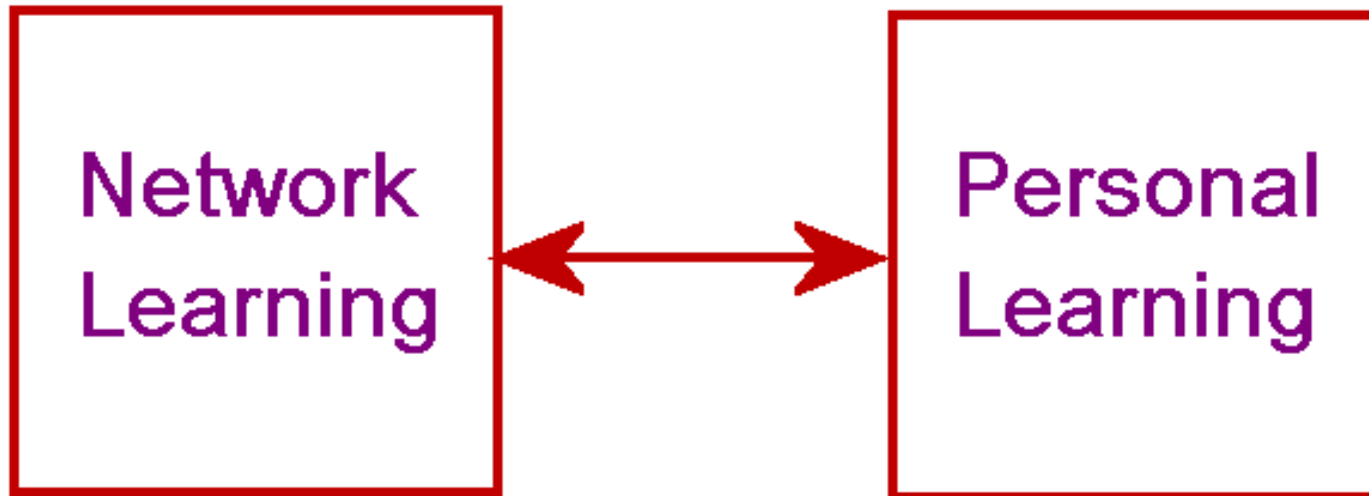
= a pattern of connectivity



Where is the PLE?



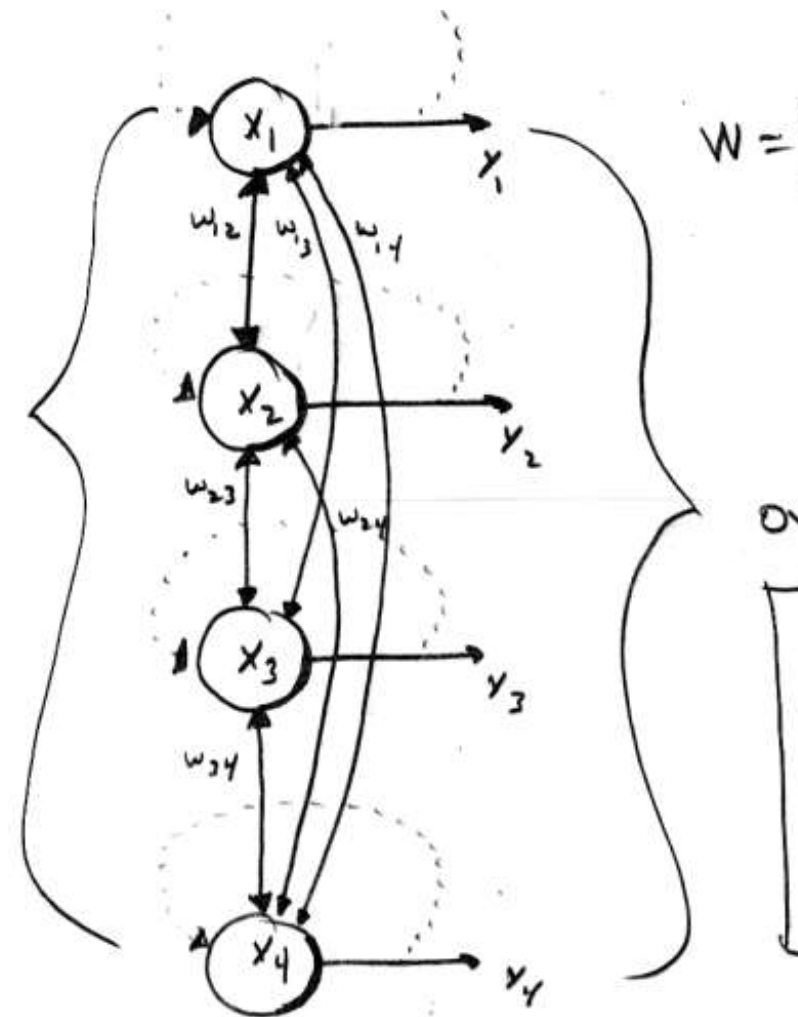
The way networks learn is the way people learn...



This...

Network Learning

- Hebbian associationism
 - based on concurrency
- Back propagation
 - based on desired outcome
- Boltzman
 - based on 'settling', annealing



- Single Layer
- Inputs X_i act as outputs Y_i

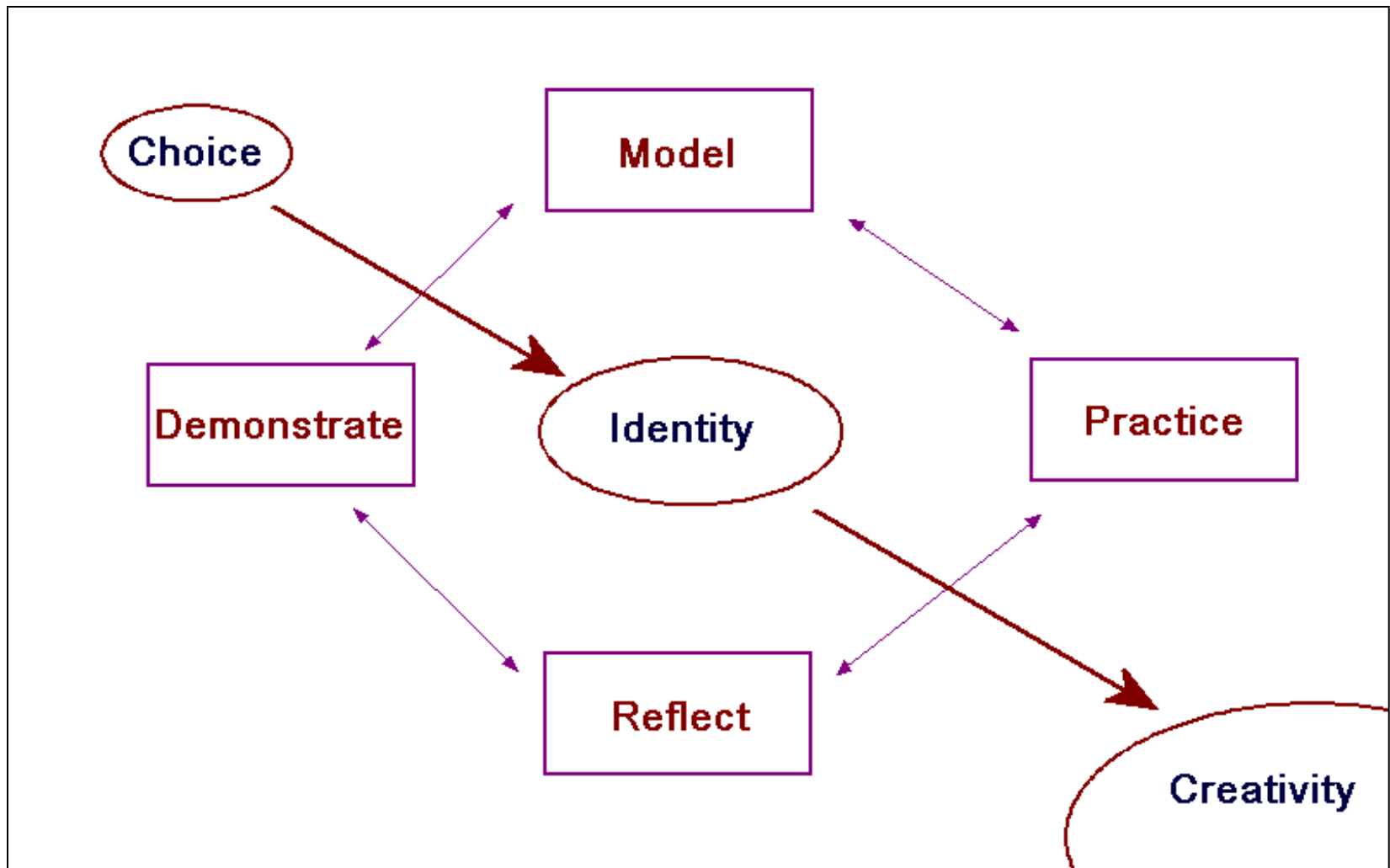
Leads to This...

Personal Learning...

To *teach* is to *model* and to *demonstrate*
To *learn* is to *practice* and *reflect*



What is the PLE?



We can get an idea of what the PLE looks like by drilling down into the pieces...

Model

- conceptual frameworks
 - wiki (wiki API, RSS)
 - concept maps (SVG, mapping format)
 - gliffy (SVG?)
- reference frameworks
 - Wikipedia
 - video / 2L 3D representation – embedded spaces

The question is – how to transport and represent models that are actually used?

Demonstrate

- reference examples

- code library
- image samples

- thought processes

- show experts at work (Chaos Manor)

- application

- case studies
- stories

The question is, how can we connect the learner with the community at work?

Practice

- scaffolded practice
 - game interfaces
 - sandboxes
- job aids
 - flash cards
 - cheat sheets
- games and simulations
 - mod kits
 - mmorpgs

The question is, how can we enable access to multiple environments that support various activities?

The question is, how can we assist people to see themselves, their practice, in a mirror?

Reflection

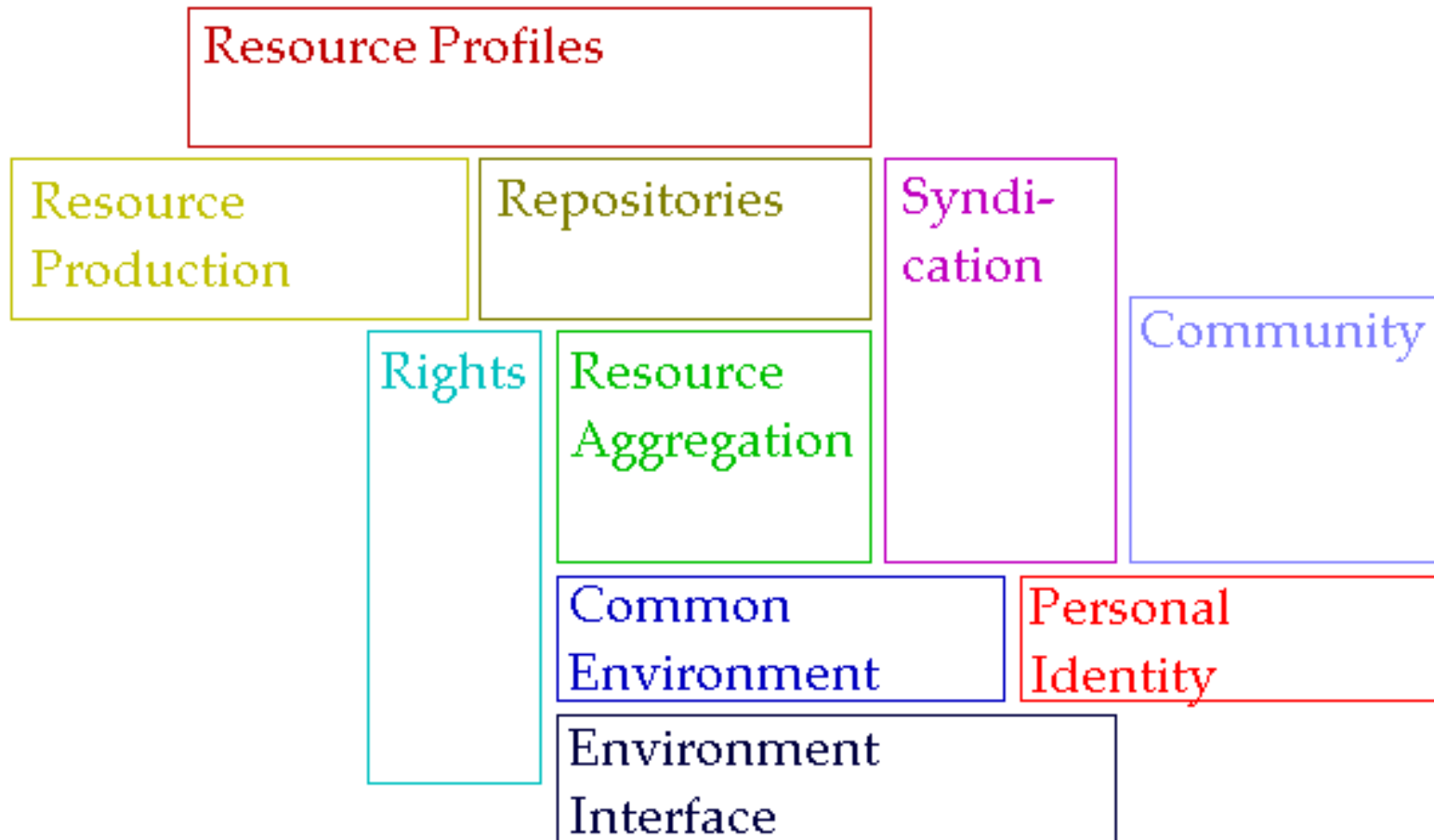
- guided reflection
 - forms-based input
 - presentations and seminars
- journaling
 - blogs, wikis
- communities
 - discussion, sharing

People talk about 'motivation'
– but the real issue here is
ownership

Choice – Identity - Creativity

- simulated or actual environments that present tasks or problems
- OpenID, authentication, feature or profile development
- Portfolios & creative libraries

Learning Networks Architecture





Downes

<http://www.downes.ca>