A dramatic photograph of a volcanic eruption. A thick, dark plume of ash and smoke billows upwards from a snow-covered mountain peak. The foreground is a smooth, white snowfield. The sky is a clear, pale blue.

# Connectivism in Practice: Critical Thinking as a Distributed Course

Stephen Downes

April 22, 2010

# Connectivism

“At its heart, connectivism is the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks.”

*What Connectivism Is*

<http://halfanhour.blogspot.com/2007/02/what-connectivism-is.html>

# Course Components

- Open Enrollment

|   |
|---|
| <a href="#">24 Final Project</a>  |
| <b>Please <a href="#">enter your email address here</a> if you'd like to be involved (either for free participation or to enroll for credit).</b> |
| <b><a href="#">Course blog is available here</a></b>  |
| <a href="#">Connectivism Research</a>   |
| <b>Course Details</b>   |
| Delivered in partnership with: Extended Education and Learning Technologies Centre, University of Manitoba  |
| <b>Course Code:</b> 98813- 08-01  |

- The course was advertised in both of our blogs...

# Course Components

- Readings and outline in the Wiki....



<http://ple.elg.ca/course/moodle/mod/wiki/view.php?id=2>

# Course Components

- The Blog



<http://ple.elg.ca/course/blog/>

# Course Components

- Course Moodle Forum

The screenshot shows the Moodle interface for the 'Critical Literacies Online Course'. The page layout includes a left sidebar with a 'Main Menu' containing links to 'CL10 - Blog' and 'CL10 - Wiki', and a 'Courses' section listing 'Critical Literacies Online Course 2010' with a link to 'All courses ...'. The main content area features a central text block with an introductory paragraph about critical literacies, accompanied by icons for 'Blog' (a cluster of colored pencils) and 'Wiki' (a person reading a book). Below the text is a link to the 'Critical Literacies Online Course 2010 support Wiki'. The right sidebar contains an 'Upcoming Events' section stating 'There are no upcoming events' with a 'Go to calendar...' link, and a 'Calendar' section for April 2010. The calendar table shows dates from Sunday to Saturday, with the 21st highlighted. The page footer includes a login prompt 'You are not logged in. (Login)' and the Moodle logo.

**Critical Literacies Online Course** You are not logged in. ([Login](#))  
English (en) ▼

**Main Menu**

- [CL10 - Blog](#)
- [CL10 - Wiki](#)

**Courses**

- [Critical Literacies Online Course 2010](#)
- [All courses ...](#)

**Upcoming Events**

There are no upcoming events

[Go to calendar...](#)

**Calendar**

April 2010

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|-----|-----|-----|-----|-----|-----|-----|
|     |     |     |     | 1   | 2   | 3   |
| 4   | 5   | 6   | 7   | 8   | 9   | 10  |
| 11  | 12  | 13  | 14  | 15  | 16  | 17  |
| 18  | 19  | 20  | 21  | 22  | 23  | 24  |
| 25  | 26  | 27  | 28  | 29  | 30  |     |

Technology has brought changes to the way people learn and some "critical literacies" are becoming increasingly important. This course is about these critical literacies. Critical, as the course is not just about finding out how to use the latest technologies for learning, but to look critically at the Web and its underlying structures. Literacies, as it is more about capabilities to be developed than about the acquisition of a set of skills. It is all about learning what is needed to develop confidence and competence, and to feel capable of negotiating an ever changing information and media landscape. You can register to receive course information here.

We will open up the course so participants can take the course in any mode, space or direction that they find useful. Our goal is to provide a starting point for participants to build a distributed infrastructure for innovative conversations.

[Critical Literacies Online Course 2010 support Wiki](#)

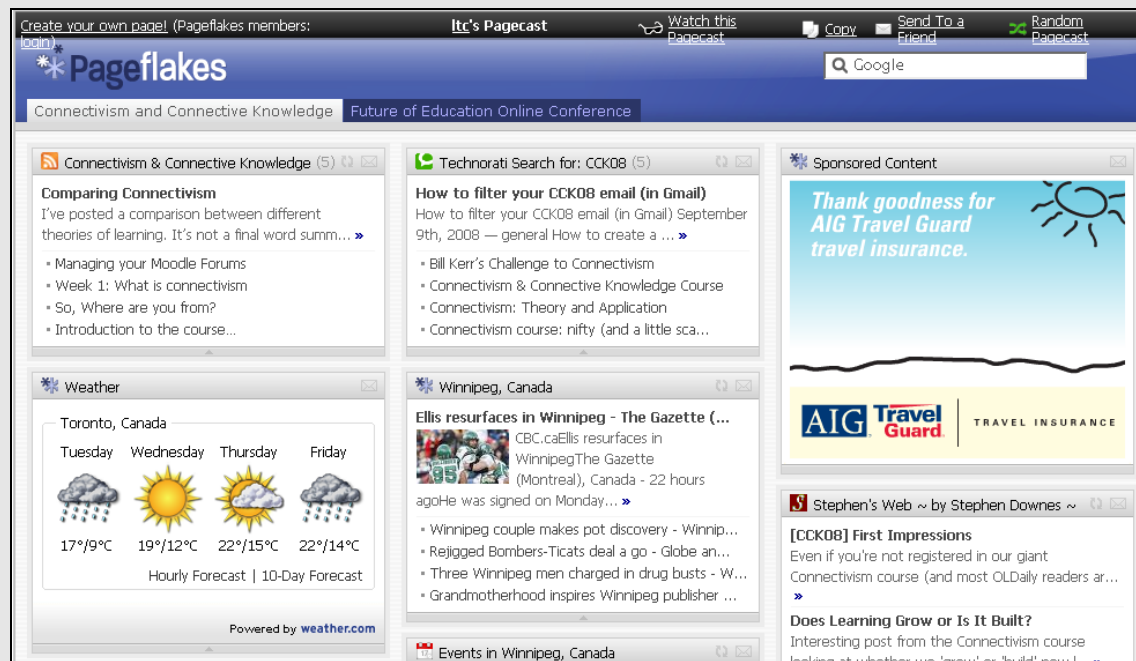
You are not logged in. ([Login](#))

moodle

<http://ltc.umanitoba.ca/moodle/course/view.php?id=20>

# Course Components

- Pageflakes Site

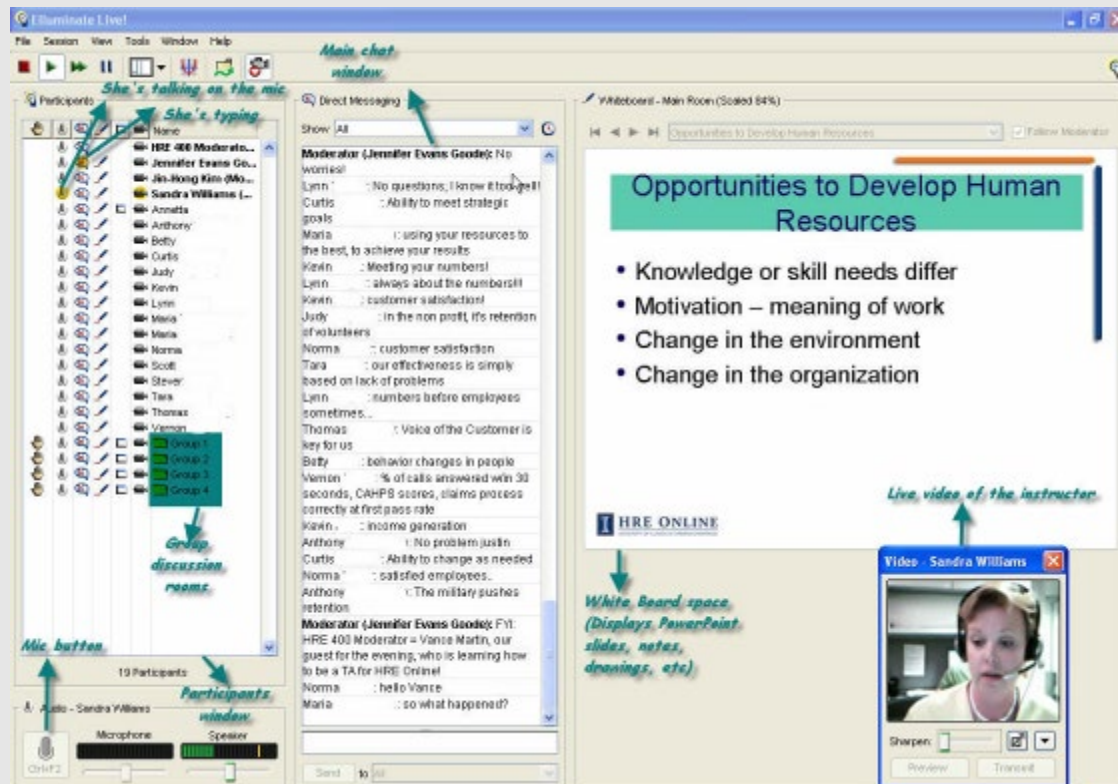


<http://www.pageflakes.com/lrc>



# Course Components

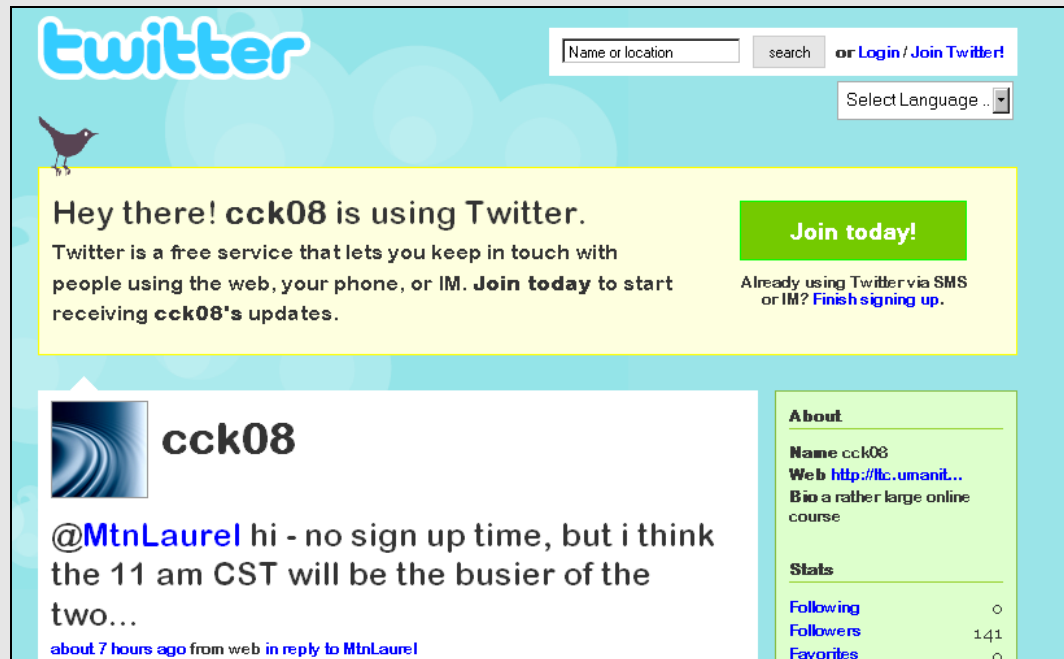
- Elluminate Discussions (Wednesdays)





# Course Components

- Twitter...



<http://twitter.com/cck08>

# Course Components

- The Daily

## Connectivism & Connective Knowledge

[\[Home\]](#) [\[The Daily\]](#) [\[Wiki\]](#) [\[About\]](#) [\[Aggregations\]](#) [\[Readings\]](#)

### *The Daily*

September 9, 2008

#### Highlighted Resources

[Time Change for Wednesday Session](#)  
Important: We've made a change to our Wednesday (in our part of the world) schedule. The illuminate session will be held at 11:00 am CST (see [conversion here](#)). The event will be held in illuminate ([link here](#)). Sorry about this last minute change. If the time doesn't work for those in Australia and Asia, please let me know ([gsiemens@elearnspace.org](mailto:g Siemens@elearnspace.org)) and we can try and arrange a smaller discussion group at a different time). CCK08, , September 9, 2008 [\[Link\]](#) [Tags: none] [\[Comment\]](#)

[Connections, Learning, and Ptolomeus \(CCK08-W1\)](#)  
Nice post on the question of whether we 'grow' or 'build' new learning. Diego Leal cites John Medina's book *Brain Rules* (I'll have to get that one) on learning: "No defined structure, no progressive storage. Just the creation and recreation of connections between neurons. So, the process seems to be closer to something growing out (or expanding?) than to something being built." Here's the [Brain Rules](#) website, if you want to have a look. [Diego Leal](#), [.Edu.Co.Blog](#), September 9, 2008 [\[Link\]](#) [Tags: none] [\[Comment\]](#)

<http://connect.downes.ca/>

# Course Components

- Managing Content

The screenshot shows the homepage of a website titled "CONNECTIVISM & CONNECTIVE KNOWLEDGE" with the subtitle "a rather large open online course...". The navigation bar includes links for HOME, THE DAILY (which is highlighted), WIKI, ABOUT, AGGREGATIONS, READINGS, and SIGNING UP. The main content area is divided into two columns. The left column, under a "[ADMIN]" header, lists various content types with "New" and "List" links: Author, Box, Cite, Event, Feed, File, Journal, Link, Optlist, Mapping, Page, Person, Post, Presentation, Publication, Project, Task, Template, Theme, Topic, and View. The right column, under a "Site Administration" header, contains several sections: "Reader" with a "Viewer" link; "Mailing List" with a "Test Newsletter" link (noting it sends to admin only) and a "Send Newsletter" link; "Harvester" with links for "Harvest Next In Queue", "Harvest All Feeds", and "Calculate Most Cited"; "Harvest Results" with links for "Most Recent in EduRSS (RSS Version)" and "Look at the files: HTML, XML, RSS"; and "Feeds" with links for "Export OPML File" and "Import Feed List From OPML".

**CONNECTIVISM & CONNECTIVE KNOWLEDGE**  
a rather large open online course...

HOME THE DAILY WIKI ABOUT AGGREGATIONS READINGS SIGNING UP

**Site Administration**

[ADMIN]

[New] [List] Author  
[New] [List] Box  
[New] [List] Cite  
[New] [List] Event  
[New] [List] Feed  
[New] [List] File  
[New] [List] Journal  
[New] [List] Link  
[New] [List] Optlist  
[New] [List] Mapping  
[New] [List] Page  
[New] [List] Person  
[New] [List] Post  
[New] [List] Presentation  
[New] [List] Publication  
[New] [List] Project  
[New] [List] Task  
[New] [List] Template  
[New] [List] Theme  
[New] [List] Topic  
[New] [List] View

**Reader**

- Viewer

**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

**Feeds**

- Export OPML File
- Import Feed List From OPML

# Course Components

- Feed Harvesting

## CONNECTIVISM & CONNECTIVE KNOWLEDGE

a rather large open online course...

[HOME](#)[THE DAILY](#)[WIKI](#)[ABOUT](#)[AGGREGATIONS](#)[READINGS](#)[SIGNING UP](#)

### List feeds

[\[ADMIN\]](#)

[\[New\]](#)[\[List\]](#)

Author

[\[New\]](#)[\[List\]](#)

Box

[\[New\]](#)[\[List\]](#)

Cite

[\[New\]](#)[\[List\]](#)

Event

[\[New\]](#)[\[List\]](#)

Feed

[\[New\]](#)[\[List\]](#)

File

[\[New\]](#)[\[List\]](#)

Journal

[\[New\]](#)[\[List\]](#)

Link

[\[New\]](#)[\[List\]](#)

Optlist

[\[New\]](#)[\[List\]](#)

Mapping

[\[New\]](#)[\[List\]](#)

Page

[\[New\]](#)[\[List\]](#)

Person

[\[New\]](#)[\[List\]](#)

Post

[\[New\]](#)[\[List\]](#)

Presentation

[\[New\]](#)[\[List\]](#)

Publication

[\[New\]](#)[\[List\]](#)

Project

[\[New\]](#)[\[List\]](#)

Task

[\[New\]](#)[\[List\]](#)

Template

[\[New\]](#)[\[List\]](#)

Theme

[\[New\]](#)[\[List\]](#)

Topic

[\[New\]](#)[\[List\]](#)

View

Listing 0 to 1000 of 106 feeds

[\[Harvest\]](#)[\[Retire\]](#)

Links: [ActionsFLE en formation](#) (category)

[\[Approve\]](#)

Links: [Aggregator Blog](#) (category)

[\[Approve\]](#)

Links: [Al dAa](#) (category)

[\[Approve\]](#)

Links: [Alvin's Educational Technology Blog](#) (category)

[\[Approve\]](#)

Links: [An Education and Technology Blog](#) (category)

[\[Approve\]](#)

Links: [An Oxonian's Learning Journey](#) (category)

[\[Approve\]](#)

Links: [Beespace](#) (category)

[\[Approve\]](#)

Links: [blog.puntopanto.it, bloggers she wrote](#) (category)

[\[Approve\]](#)

Links: [Bradley Shoebottom Blog](#) (category)

[\[Approve\]](#)

Links: [Brett Powell CCK](#) (category)

[\[Approve\]](#)

Links: [Buthaina-Connect08](#) (category)

[\[Approve\]](#)

Links: [CCK-No8](#) (category)

[\[Approve\]](#)

Links: [cck08 - learning](#) (category)

[\[Approve\]](#)

Links: [CCK08-Viplav Baxi](#) (category)

[\[Approve\]](#)

Links: [Classroomblogging.com](#) (category)

[\[Approve\]](#)

Links: [Coalesce](#) (category)

[\[Approve\]](#)

Links: [Concetta Gotlieb's Blog](#) (category)

[\[Approve\]](#)

Links: [Connecting Online](#) (category)

[\[Approve\]](#)

Links: [Connective Knowledge Weblog](#) (category)

[\[Approve\]](#)

Links: [Connectivism & Connective Knowledge](#) (edubloggers)

[\[Approve\]](#)

Links: [Connectivism and Connective Knowledge](#) (category)


[\[Approve\]](#)

Links: [Connectivism by the Nile](#) (category)


# Course Components

- Intro...

GettingStarted (00:05 / 00:46) ATTACHMENTS



UNIVERSITY  
OF MANITOBA



George Siemens  
Associate Director, R & D,  
LTC, U of Manitoba


Email

Outline Thumbnails Notes Search


- 1. Connectivism and Connective Knowledge: G
- 2. Slide 2
- 3. The Hub
- 4. The Daily
- 5. Slide 5
- 6. Each Week
- 7. Weekly Schedule
- 8. How to participate
- 9. Tasks

## Connectivism and Connective Knowledge: Getting Started

Massive Open Online Course



George Siemens  
Stephen Downes

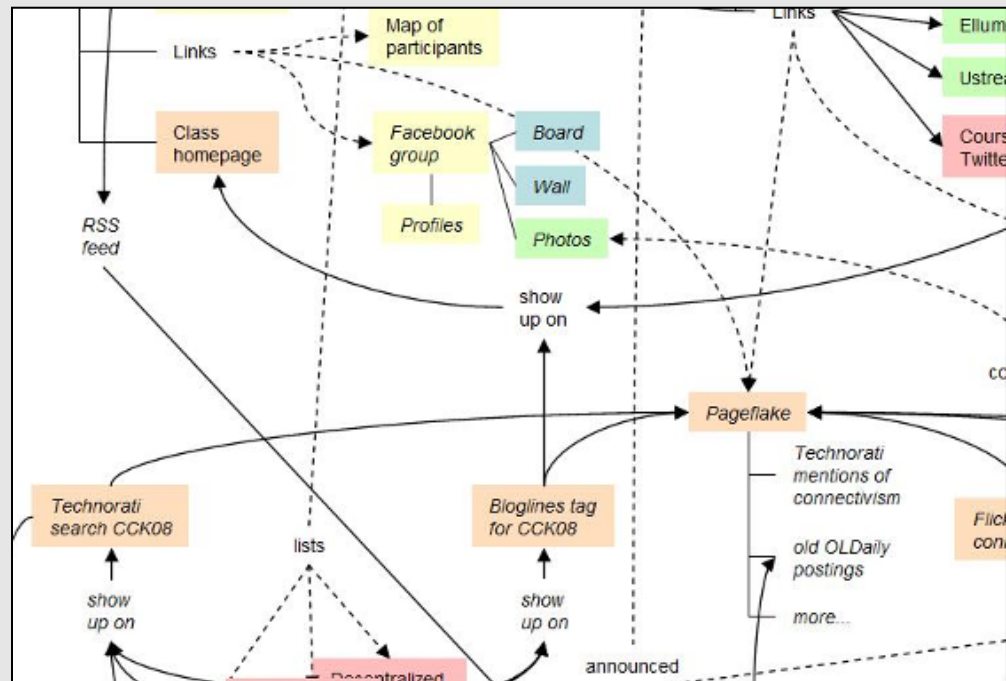


articulate  
POWERED PRESENTATION

SLIDE 1 OF 9 PAUSED 00:05 / 00:10

# The Students

- The Course Map...



<http://x28newblog.blog.uni-heidelberg.de/2008/09/06/cck08-first-impressions/>



# The Students

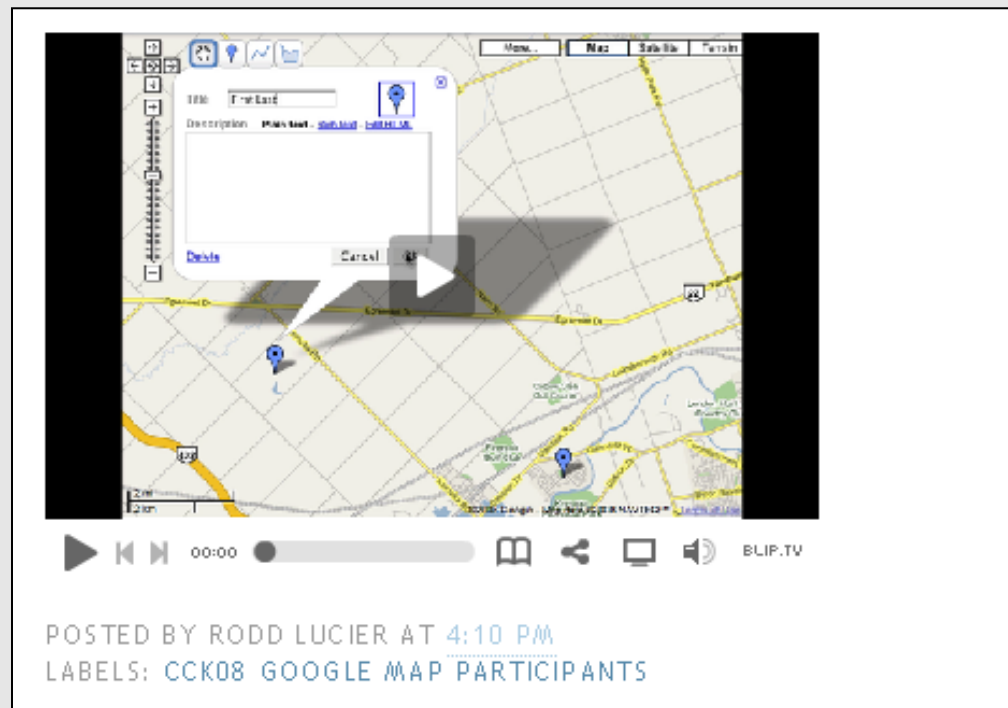
- The *Other* Course Map...



<http://tinyurl.com/cck08map>

# The Students

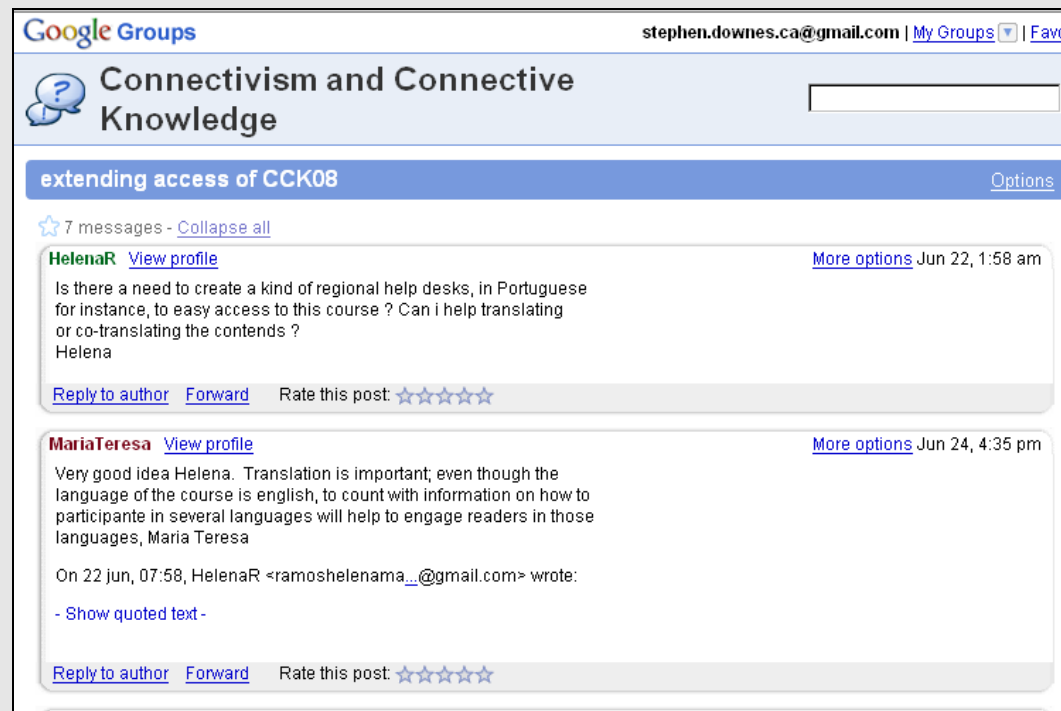
- Add to the Map - Video



<http://thecleversheep.blogspot.com/2008/09/cck08-is-truly-global.html>

# The Students

- Google Groups



<http://groups.google.com/group/connectivism>

# The Students

- Translations...

The screenshot shows a wiki page from the Learning Technologies Centre (LTC). The page title is "Conectivismo - Curso online". It features a navigation menu on the left with links to Main Page, Recent changes, Random page, sandbox, and Help. Below the navigation menu are links to LTC Website, Activities, Workshops and Resources, Teaching with Technology, and um projects. The main content area includes a welcome message, a tag "CCK08", and information about the page being available in English, Spanish, Chinese, and Italian. It also mentions a Facebook group "CCK08". A "Contents" section is visible at the bottom, listing three items: "1 Por favor, se quiser participar, (seja de forma livre ou de uma forma m formal para acreditação) insira o seu e-mail aqui", "2 Blogue do curso", and "3 Detalhes do curso".

**LTC**  
Learning Technologies Centre

Log in / create account

page discussion view source history

## Conectivismo - Curso online

Bem-vindo ao wiki de apoio ao **curso online sobre Conectivismo e Conhecimento Conectado**.

Tag do curso: CCK08

Esta página também está disponível em [Inglês](#), em [Espanhol](#) em [Chinês](#) (Versão simplificada de caracteres) e em [Italiano](#).

Esta página também tem um grupo no FaceBook em [CCK08](#)

**Contents** [hide]

- 1 Por favor, se quiser participar, (seja de forma livre ou de uma forma m formal para acreditação) insira o seu e-mail aqui
- 2 Blogue do curso
- 3 Detalhes do curso

[http://ltc.umanitoba.ca/wiki/Conectivismo - Curso online](http://ltc.umanitoba.ca/wiki/Conectivismo_-_Curso_online)

# The Students

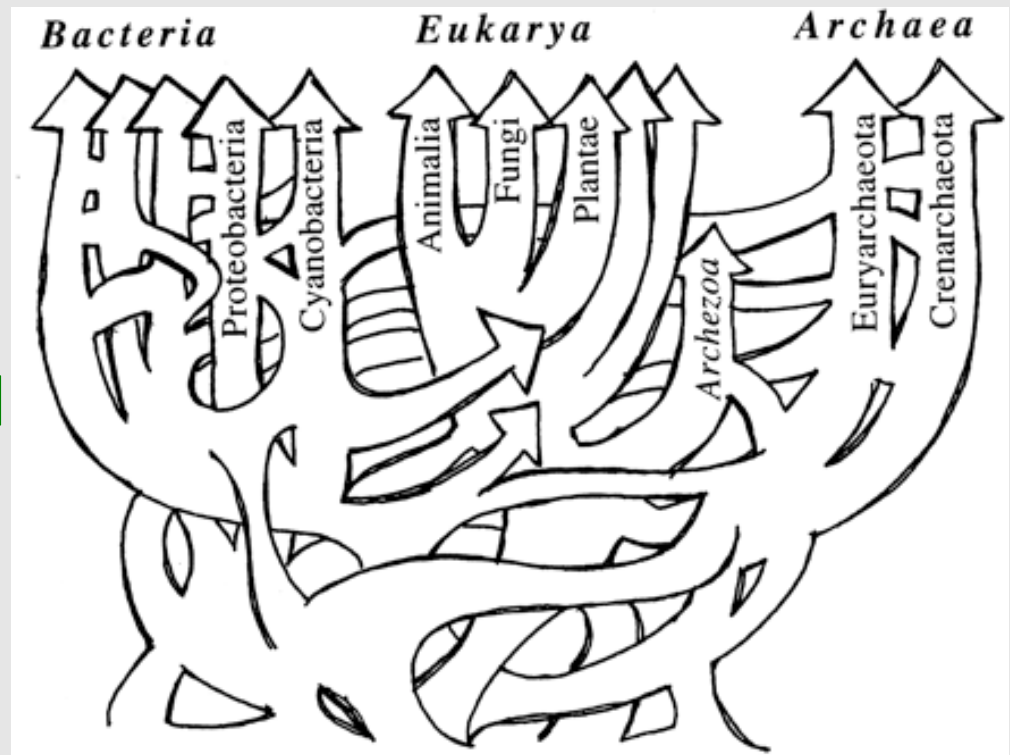
- Second Life...
- Diigo...
- de.l.icio.us
- WordPress...



Blogs about: Ccko8

# Social Construction

- Social construction is *at best* the collaborative creation of social artifacts (such as naming conventions)
- It can be:
  - Process driven
  - Results oriented
  - Consensus-based
  - Deliberative
  - Mechanical





# Personal Knowledge

- Is not 'constructed'
- You do not 'make meaning' for yourself
- It is a matter of organic growth



(Totally *not* what personal knowledge is)

This is important because it means that developing personal knowledge is more like *exercising* than like inputting, absorbing or remembering

(How do I know this? Research on how neural networks grow, develop)

# PLE as Exercise Machine

- A PLE is a tool intended to *immerse yourself* into the workings of a community
- Once immersed, you then *practice* being one of the people characteristic of the community
  - For example, you would learn philosophy by practicing ‘being a philosopher’ in a philosophical community
- Your personal growth develops as a consequence of the interactions with that community

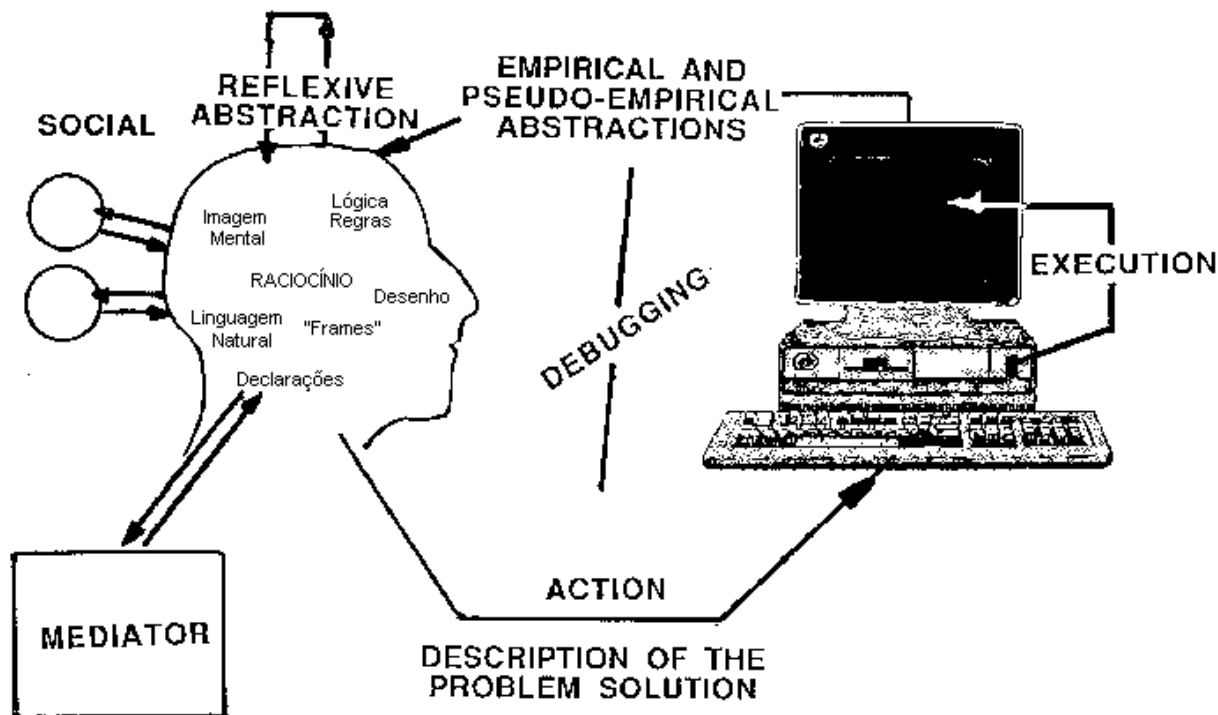
# Constructionism

- “the idea of manipulative materials to the idea that learning is most effective when part of an activity the learner experiences as constructing a meaningful product.”
- [http://en.wikipedia.org/wiki/Constructionism\\_%28learning\\_theory%29](http://en.wikipedia.org/wiki/Constructionism_%28learning_theory%29)  
“a philosophy of education in which children learn by doing and making in a public, guided, collaborative process including feedback from peers, not just from teachers.”

<http://wiki.laptop.org/go/Constructionist>

# Constructionism (2)

## CONSTRUCTIONIST APPROACH



# Freire

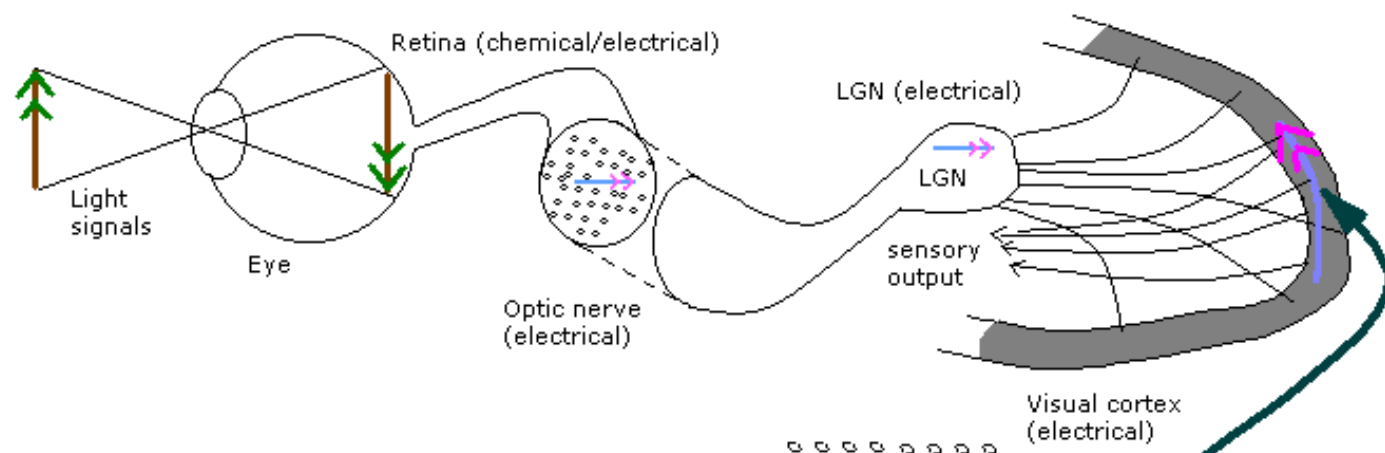
- “Students, as they are increasingly posed with problems relating to themselves in the world and with the world, will feel increasingly challenged and obliged to respond to that challenge... Their response to the challenge evokes new challenges, followed by new understandings; and gradually the students come to regard themselves as committed.”

<http://www.marxists.org/subject/education/freire/pedagogy/ch02.htm>

# The Learning in PLE

- The learning in a PLE is about developing *capacities* (not competencies, skills, etc.)
- The outcome of personal learning is engendered through *empowerment* (vs engagement, etc)

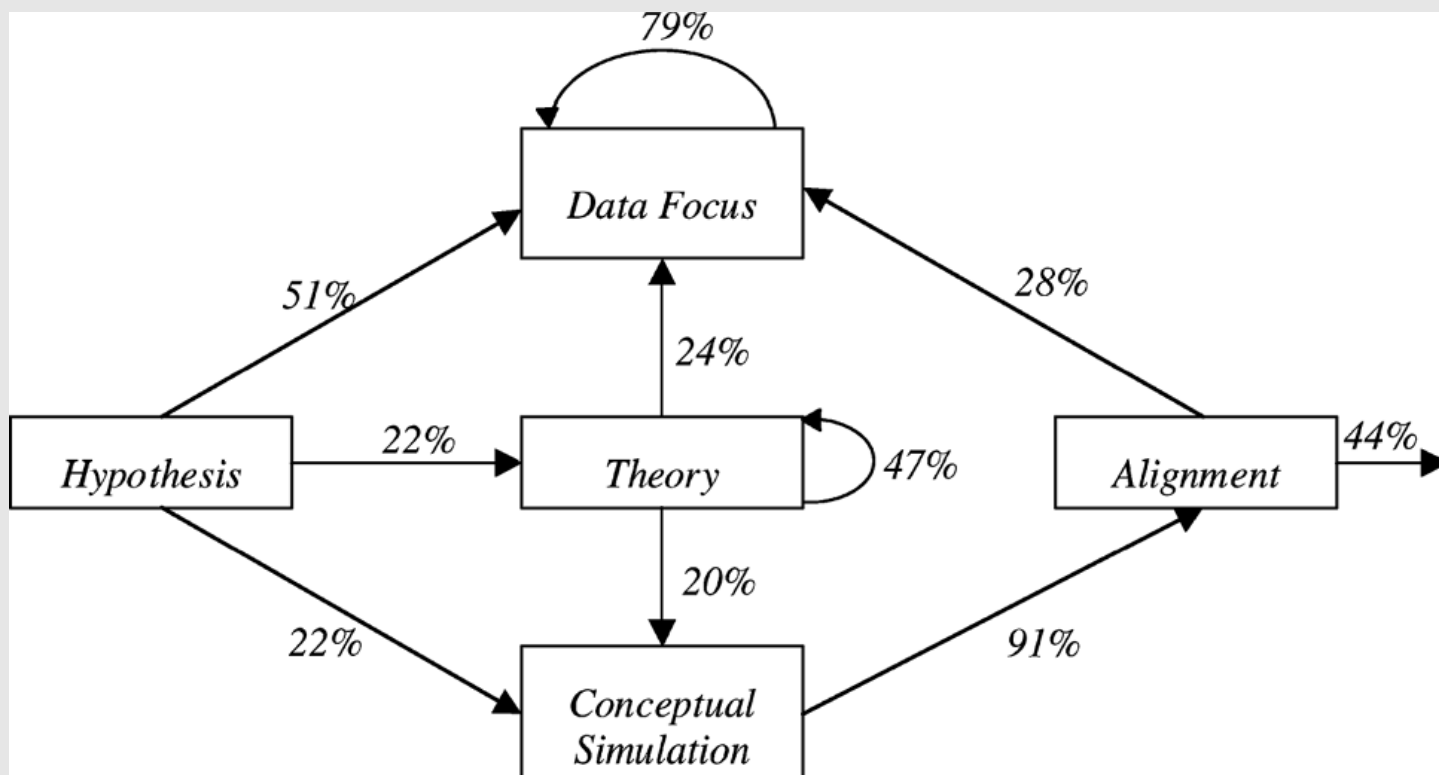
Information transfers in the nervous system





# Network Learning

- Science as language, learning as conversation, knowledge as inference

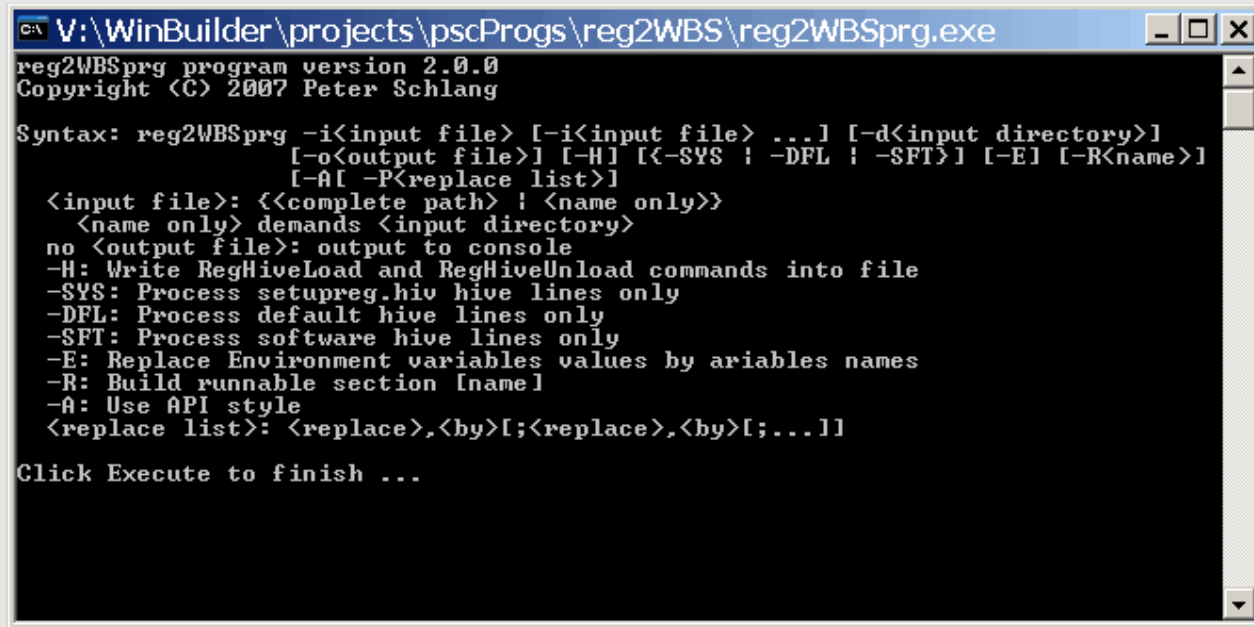


# A Frame For Critical Literacy

|            |           |
|------------|-----------|
| Syntax     | Cognition |
| Semantics  | Context   |
| Pragmatics | Change    |

# Syntax

## Not just rules and grammar



```
C:\V:\WinBuilder\projects\pscProgs\reg2WBS\reg2WBSprg.exe
reg2WBSprg program version 2.0.0
Copyright (C) 2007 Peter Schlang

Syntax: reg2WBSprg -i<input file> [-i<input file> ...] [-d<input directory>]
        [-o<output file>] [-H] [<-SYS | -DFL | -SFT>] [-E] [-R<name>]
        [-A] [-P<replace list>]
  <input file>: <<complete path> | <name only>>
    <name only> demands <input directory>
  no <output file>: output to console
  -H: Write RegHiveLoad and RegHiveUnload commands into file
  -SYS: Process setupreg.hiv hive lines only
  -DFL: Process default hive lines only
  -SFT: Process software hive lines only
  -E: Replace Environment variables values by ariables names
  -R: Build runnable section [name]
  -A: Use API style
  <replace list>: <replace>,<by>[;<replace>,<by>[;...]]

Click Execute to finish ...
```

Forms: archetypes? Platonic ideals?

Rules: grammar = logical syntax

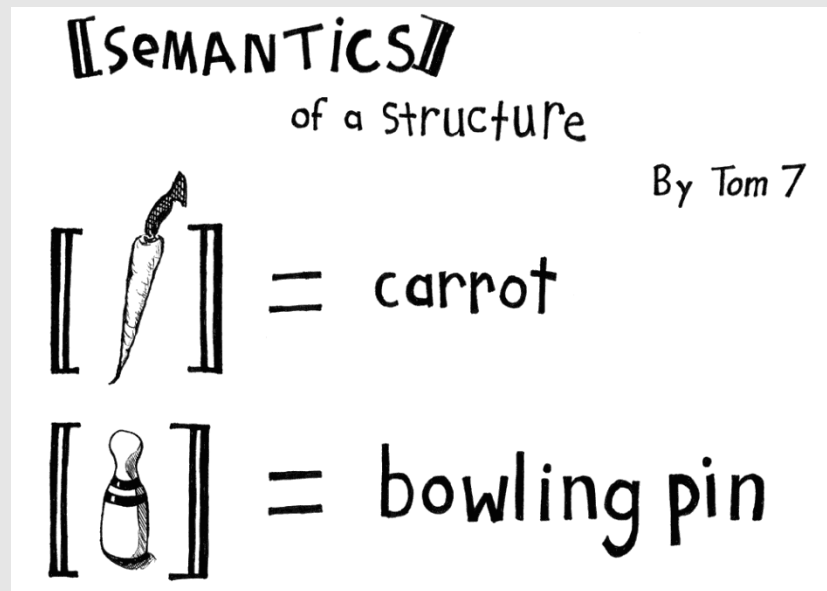
Operations: procedures, motor skills

Patterns: regularities, substitutivity (eggcorns, tropes)

Similarities: Tversky - properties, etc

# Semantics Semantics

theories of truth / meaning / purpose / goal



<http://www.cs.cmu.edu/~tom7/csnotes/fall02/semantics.gif>

- Sense and reference (connotation and denotation)
- Interpretation (Eg. In probability, Carnap - logical space; Reichenbach - frequency; Ramsey - wagering / strength of belief)
- Forms of association: Hebbian, contiguity, back-prop, Boltzmann
- Decisions and decision theory: voting / consensus / emergence

# Pragmatics

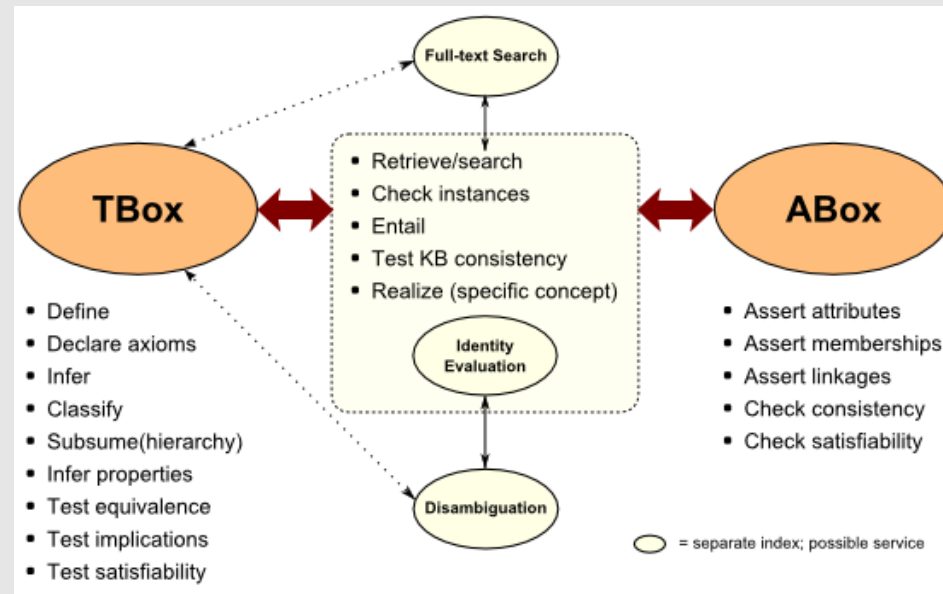
use, actions, impact



- Speech acts (J.L. Austin, Searle) assertives, directives, commissives, expressives, declarations (but also - harmful acts, harassment, etc)
- Interrogation (Heidegger) and presupposition
- Meaning (Wittgenstein - meaning is use)

# Cognition

## reasoning, inference and explanation



<http://www.mkbergman.com/category/description-logics/>

- **description** - X (definite description, allegory, metaphor)
- **definition** - X is Y (ostensive, lexical, logical (necess. & suff conds), family resemblance - but also, identity, personal identity, etc)
- **argument** - X therefore Y - inductive, deductive, abductive (but also: modal, probability (Bayesian), deontic (obligations), doxastic (belief), etc.)
- **explanation** - X because of Y (causal, statistical, chaotic/emergent)

# Context

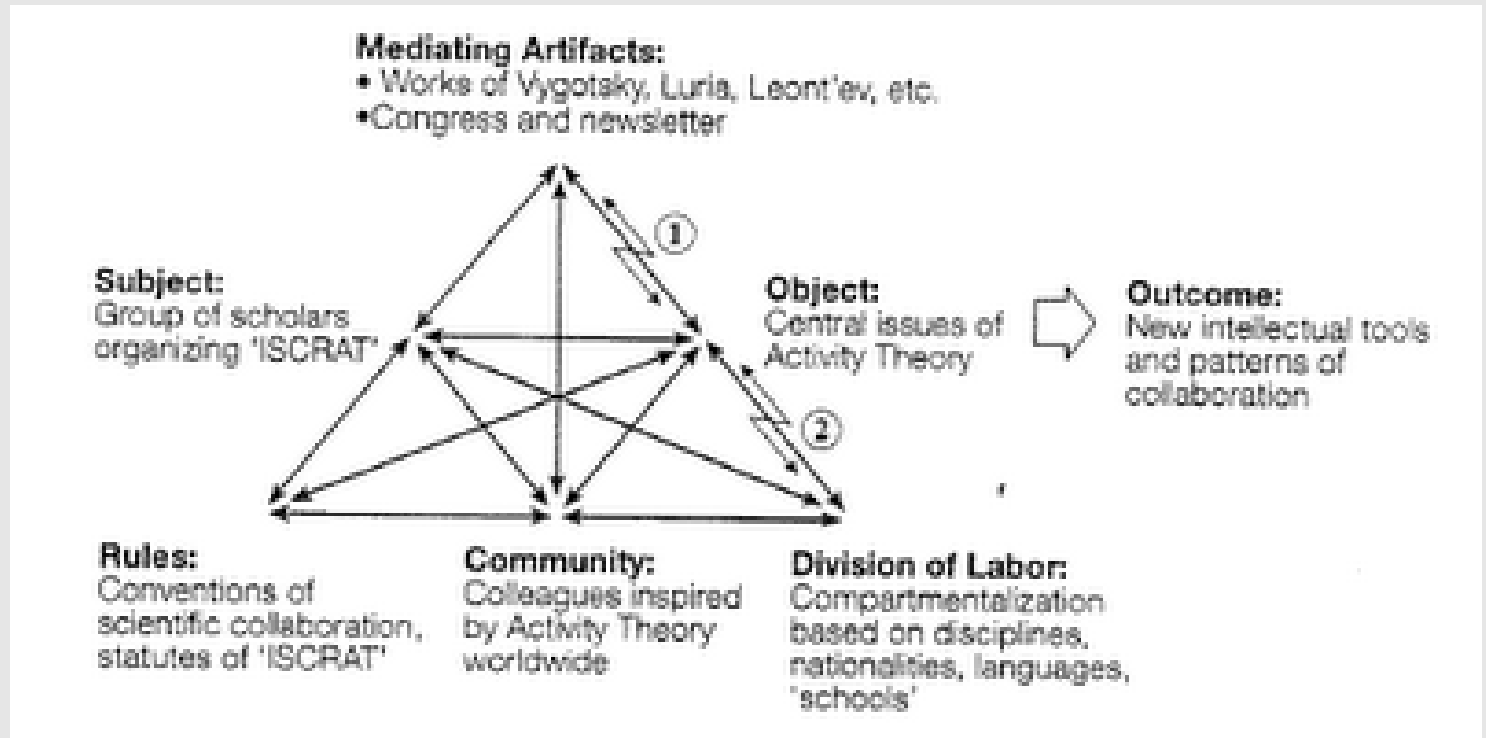
## placement, environment



<http://www.occasionbasedmarketing.com/what-it-is>

- explanation (Hanson, van Fraassen, Heidegger)
- meaning (Quine); tense - range of possibilities
- vocabulary (Derrida); ontologies, logical space
- Frames (Lakoff) and worldviews

# Change



- relation and connection: I Ching, logical relation
- flow: Hegel - historicity, directionality; McLuhan - 4 things
- progression / logic -- games, for example: quiz&points, branch-and-tree, database
- scheduling - timetabling - events; activity theory / LaaN



# 21<sup>st</sup> Century ~~Skills~~ Languages



[http://spotlight.macfound.org/btr/entry/new\\_media\\_literacies/](http://spotlight.macfound.org/btr/entry/new_media_literacies/)

The 'skills' described by Jenkins and others—*performance, simulation, appropriation, etc* - are actually *languages* and should be understood in terms of these six dimensions

# PLE Pedagogy

- The six frames are the *elements of language* used to communicate between individuals in a community
- Learning in a PLE involves *immersion in this community* and communication involving *reflective awareness* of these six frames
- *Pedagogy* in a PLE environment is the *modeling* of these skills and feedback along these frames

# Stephen Downes



<http://www.downes.ca>