

A sunset over a city skyline. The sun is a bright yellow circle in the upper left, casting a glow across the orange and red sky. Below the horizon, the silhouettes of city buildings and mountains are visible. In the bottom left corner, a target sign is partially visible.

A Kaleidoscope of Futures: Reflections on the Reality of Virtual Learning

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AECT Anaheim
October 24, 2007

Exploring Southern California

- Disneyland
- Malls
- Crystal Cathedral



... amid the fires and the theme parks I was struck
with an overwhelming sense of unreality

What is Reality?



<http://fcis.acsu.k12.vt.us/~jbailey/>

“The reality is...”

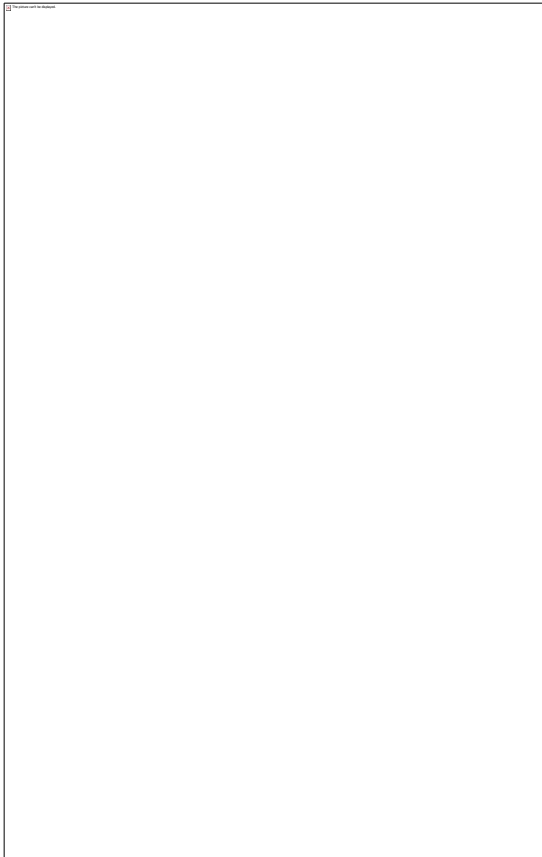


http://www.mindhacks.com/blog/2006/02/3d_rooms.html

The use of ‘reality’ as a rhetorical device...

... the enemy of innovation

“ Almost everything that we think is real is actually a construction of inferences and interpretations that we misinterpret as reality. And unfortunately, the belief that we are directly observing and understanding 'reality' discourages us from trying to change it. ”



'Real' vs 'Artificial'

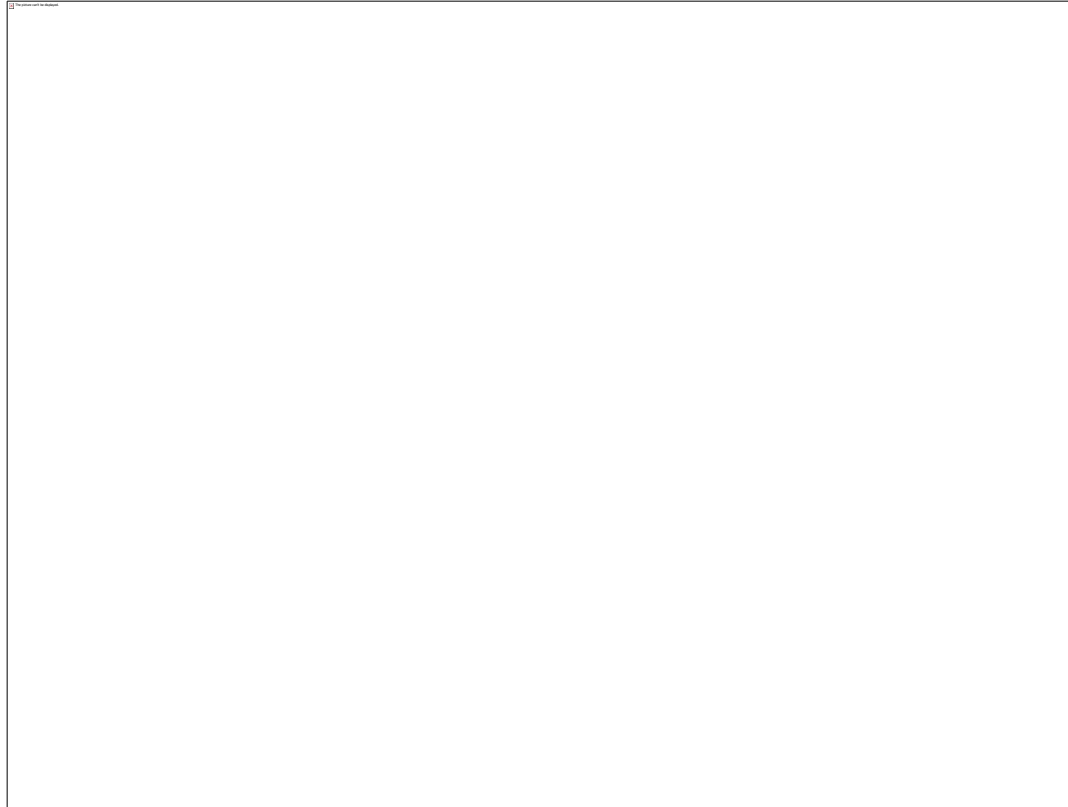
The real as
the 'natural',
the real as the
non-created

‘Real’ vs ‘Fake’

The idea of ‘real’
as ‘genuine’ or
the real as
‘original’

“It’s the real thing”

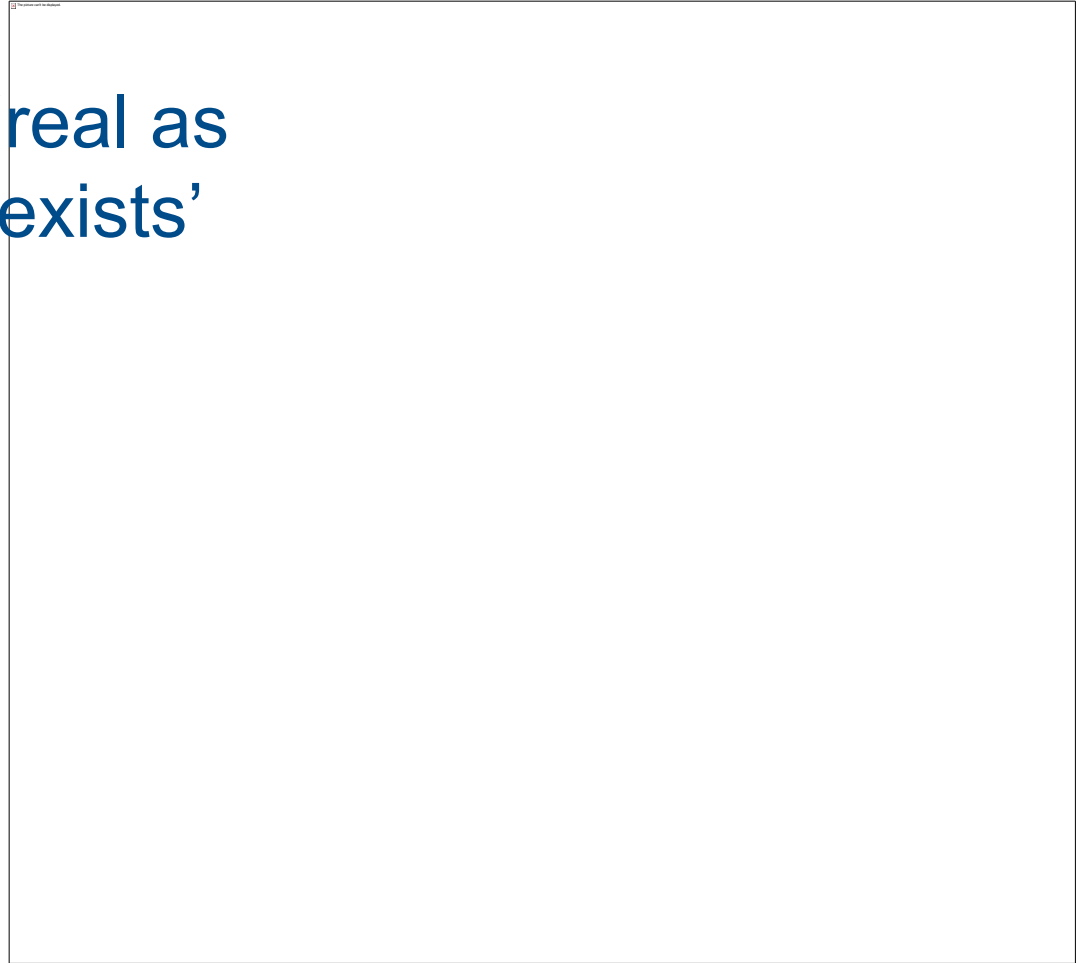
'Real' vs 'Virtual'



The idea of 'real' as being 'physical' or, at the very least, non-digital...

‘Real’ vs ‘Illusory’

The idea of the ‘real as something that ‘exists’



‘Real’ vs ‘Delusion’

The idea of the
‘real’ as being the
mark of ‘sanity’ or
of reliable
perception

“Get real”

Finding Realities...

Model...

“what exists?”

Scale...

“how many?”

Seeing, touching, perceiving, measuring...

What are the 'realities' in your world?

Your institution?

Your students?

Your values?

Your finances?

The Traditional Conception



Knowledge, values, institutions,
facts... these were all *real* and
unchanging...

Even Change...



... is viewed as inevitable

The Reality Is...



We define what counts as real...

It's a question of *attitude*, or *perception*

This varies, person to person, time to time

<http://ilit.umbc.edu/Book/prolegomena.htm>

Some Exercises...

What is a student?

What is a natural student?

A genuine student?

A physical (non-virtual) student?

An existing student?

An actual (non-delusional) student?

What is Learning?

What is natural learning?

Genuine learning?

Physical (non-virtual) learning?

Existing learning?

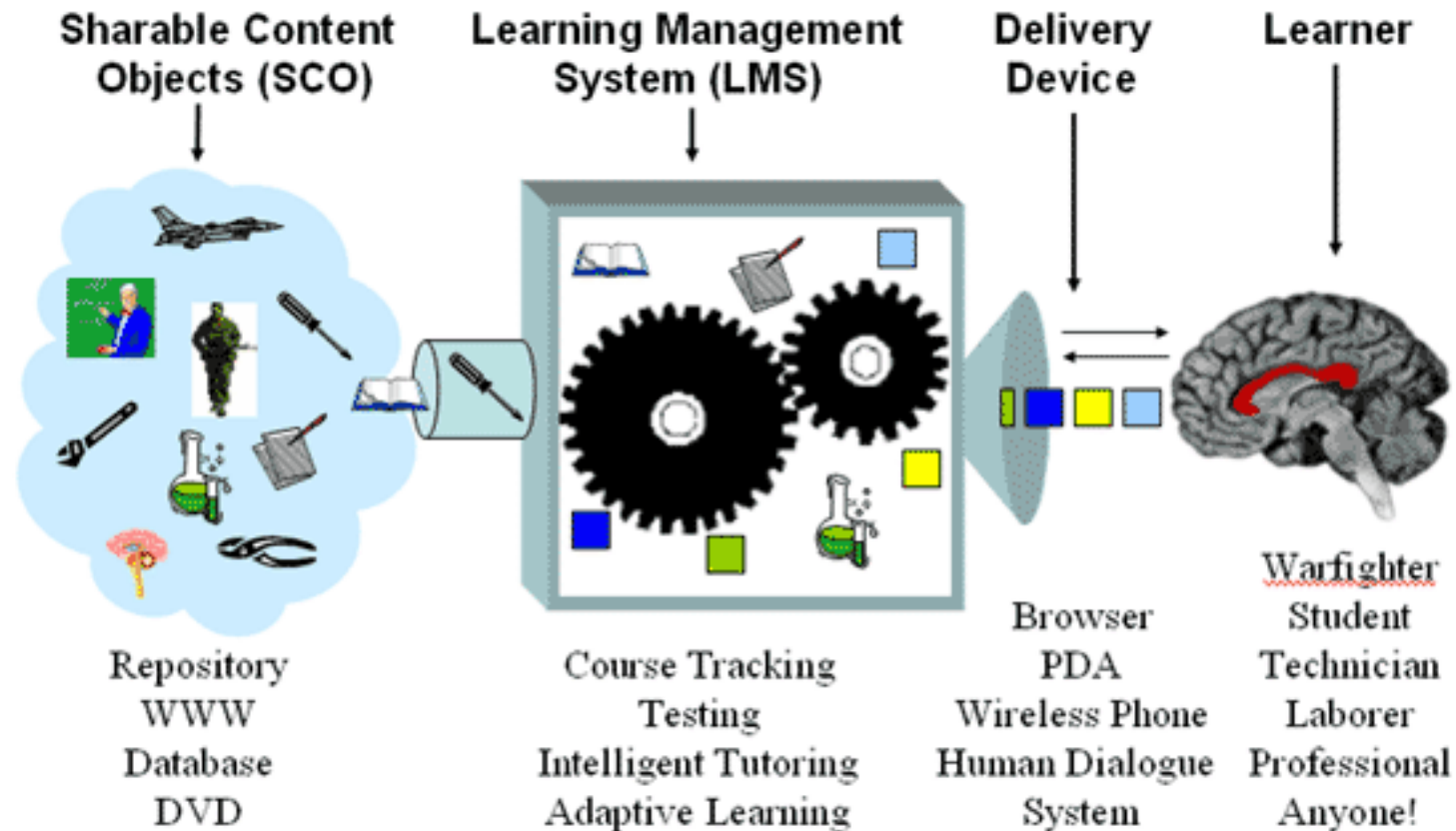
Actual (non-delusional) learning?

The Reality Is...



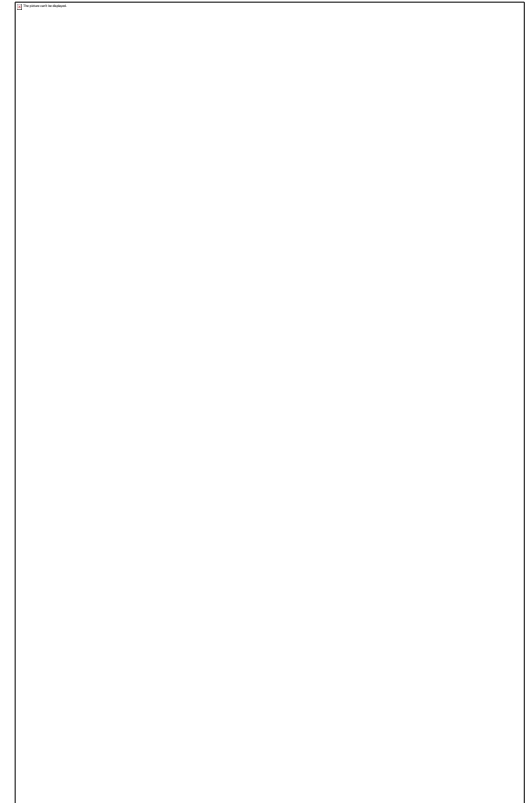
Learning has changed... from being
about reality... to *verifying* reality...
to *creating* reality...

The Old Transmission Model



Learning is not Remembering

- empty words
 - ‘twas brillig’
- empty math
 - ‘counting change’



We can remember without learning, and we can learn without remembering

Learning is not 'Content'

- Learning is a process of becoming rather than a process of acquiring
- To learn is to instantiate patterns of connectivity in the mind (in the neural net)
- You do not 'make meaning' or 'construct meaning', you grow meaning

What Learning Really Is...



- tacit knowledge

- personal knowledge



Polanyi

Ineffable

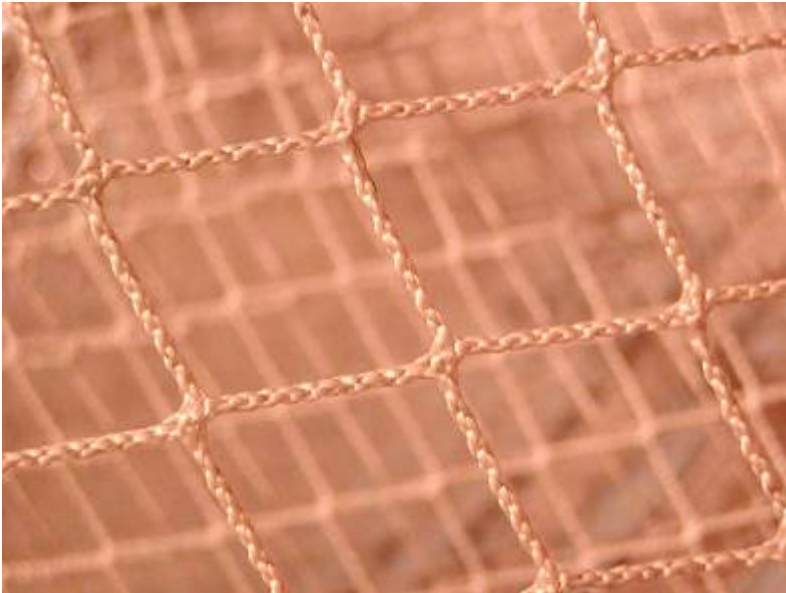
Depends on Context

You can't put it into words

You can't generalize it

What 'knowing' is...

the knowledge is in the network



Old: universals

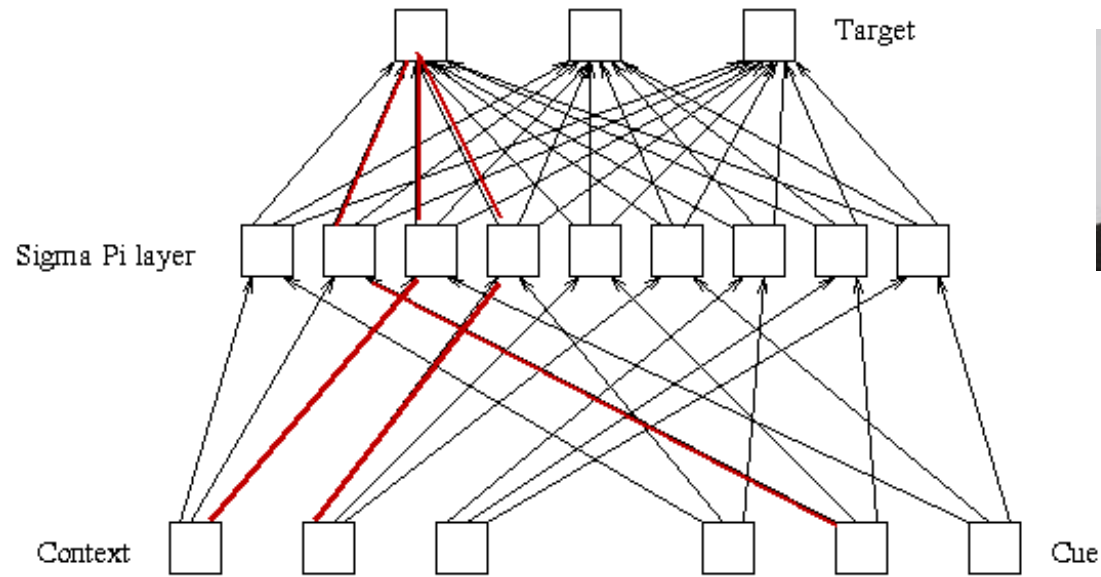
- rules
- categories

New: patterns

- patterns
- similarities

the knowledge *is* the network

stands for?

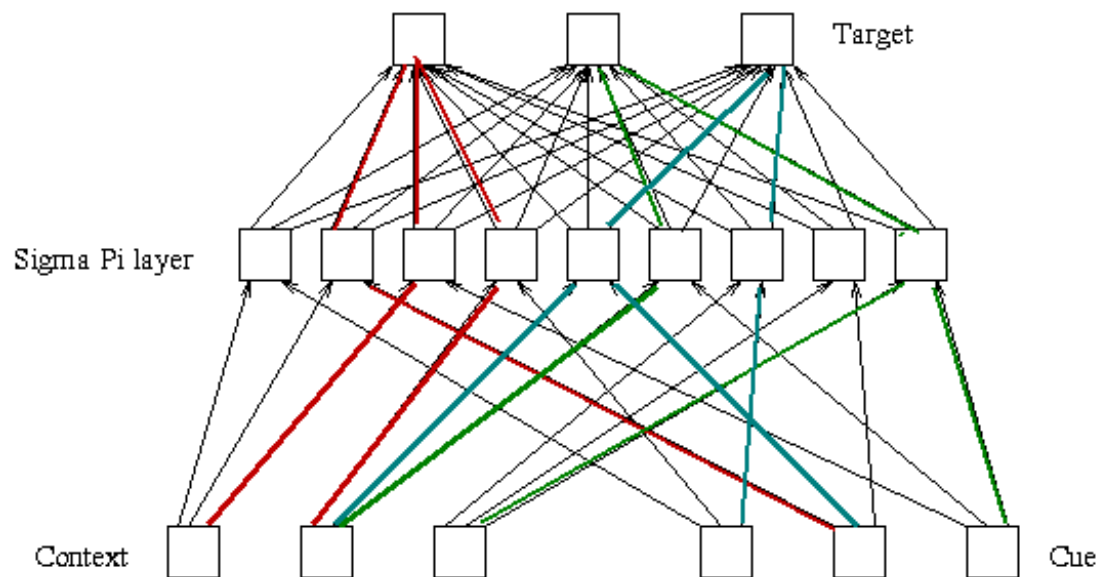


Hopfield

Or is caused by?

Distributed Representation

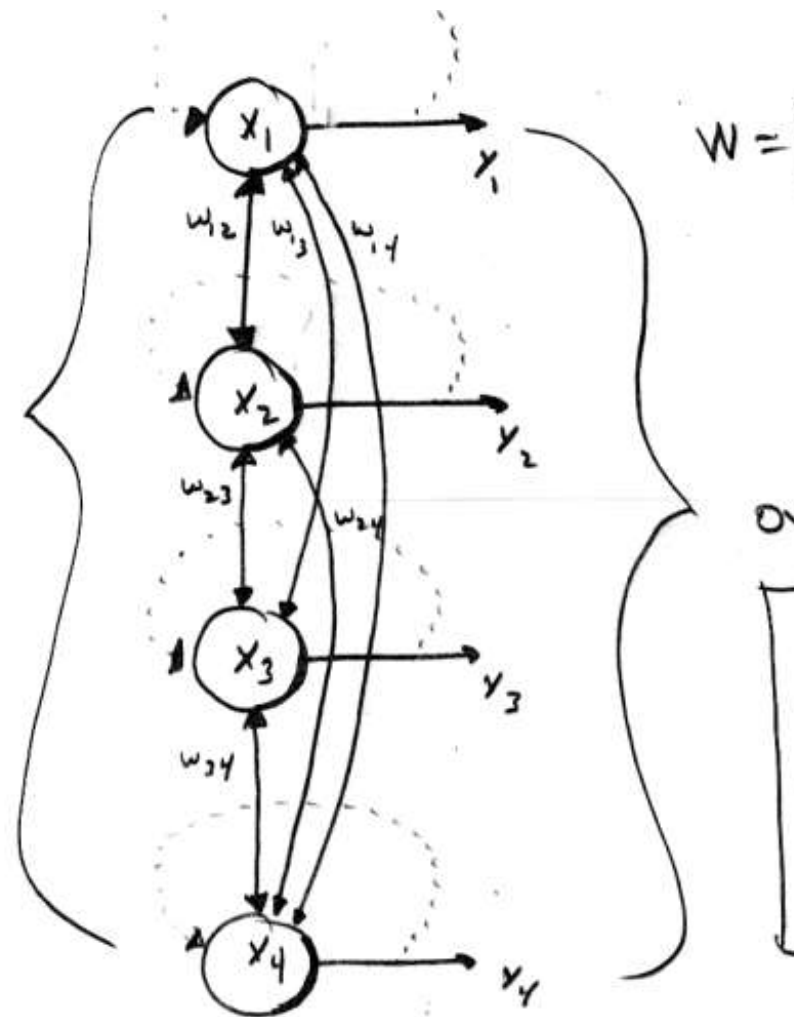
= a pattern of connectivity

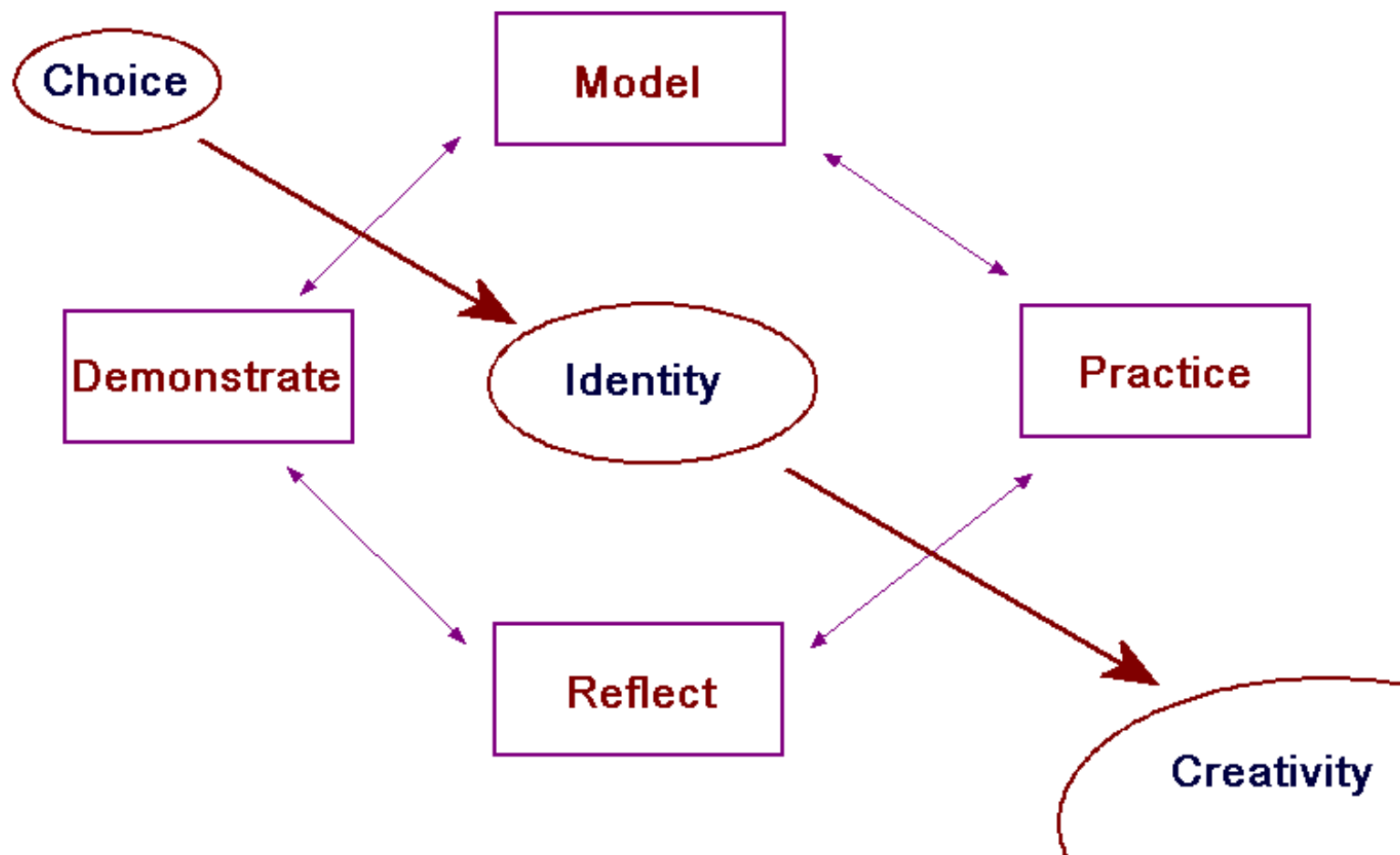


This...

Network Learning

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





E-Learning 2.0

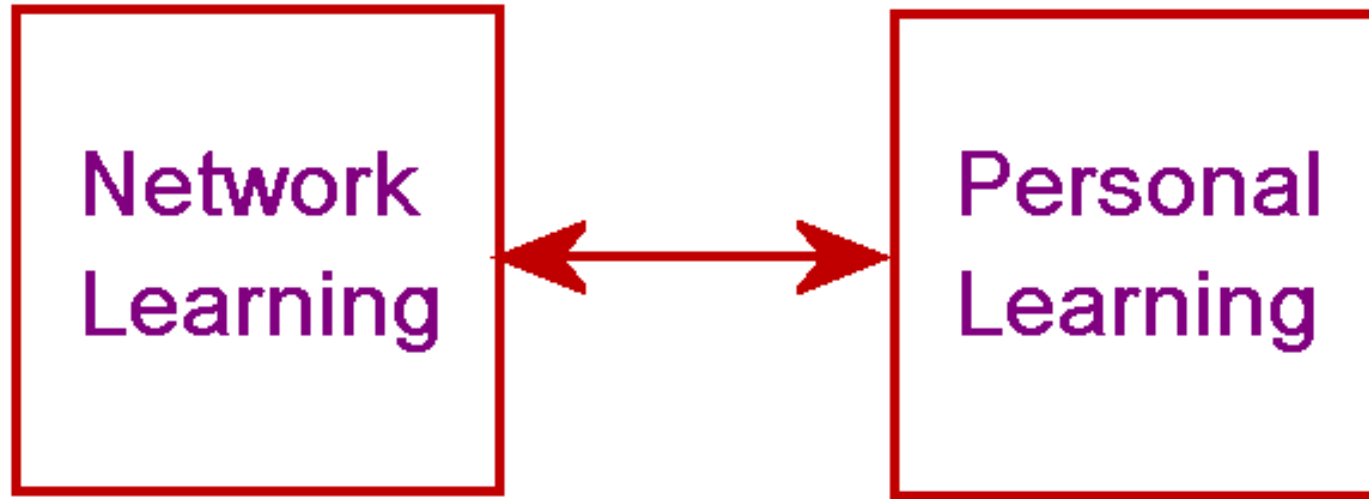
The idea is that learning is *not* based on *objects* and *contents* that are stored, as though in a library



Rather, the idea is that learning is like a utility - like water or electricity - that flows in a network or a grip, that we tap into when we want



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



- they are both complex systems
- the organization of each depends on connections

Connectivism (George Siemens)

The Concept

- Learner centered

Learning is centered around the interests of the learner

Learning is *owned* by the learner

This implies learner choice of subjects, materials, learning styles

- Immersive learning

Learning by doing



- Connected Learning

The computer connects the student to the rest of the world

Learning occurs through connections with other learners

Learning is based on conversation and interaction

Examples

- Game-based learning

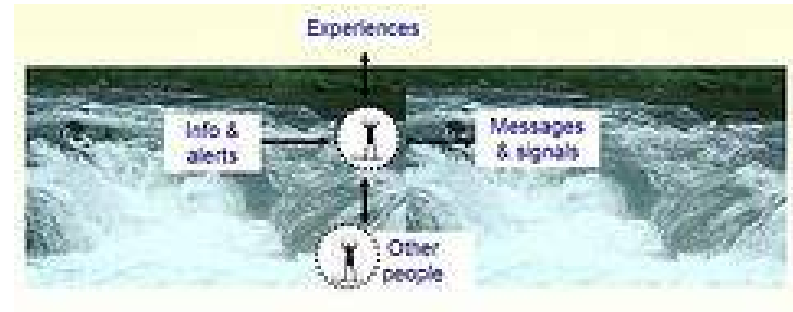
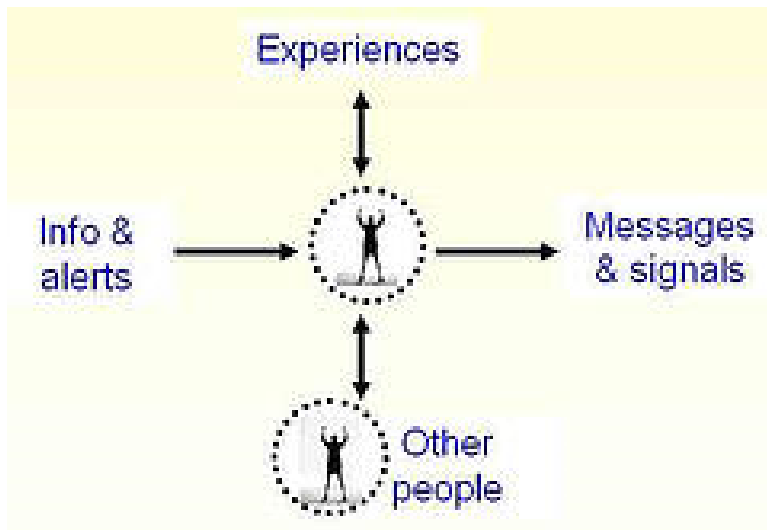


Types:

Branching, Spreadsheet, Quiz Game, Simulation Lab...

<http://www.downes.ca/post/11>

- Workflow (Informal) Learning



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

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

- Mobile Learning



Examples:

Co-op learning, drill and flash-card,
instant messaging, field trips,
resource capture (like this talk!)

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 intersection between the worlds for education, work, and home
- Key requirement is easy-to-use tools and hosting services*
- *E.g. the “e-Portfolio-as-blog” approach

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

Un...

As in, unorganized
As in *not* managed
Unconference



Messy vs. Neat

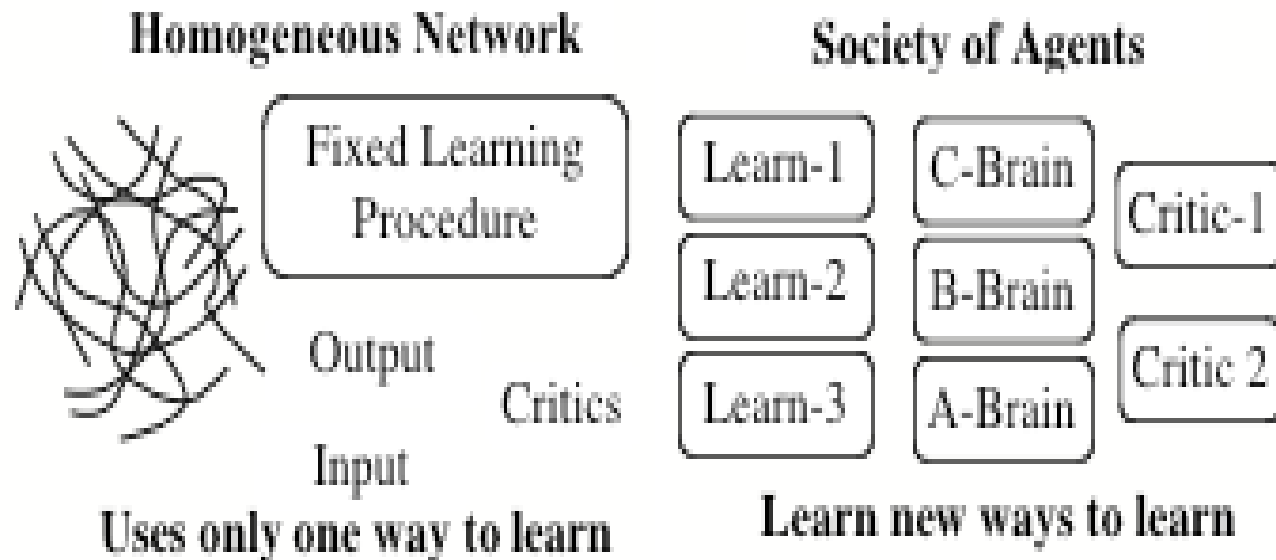
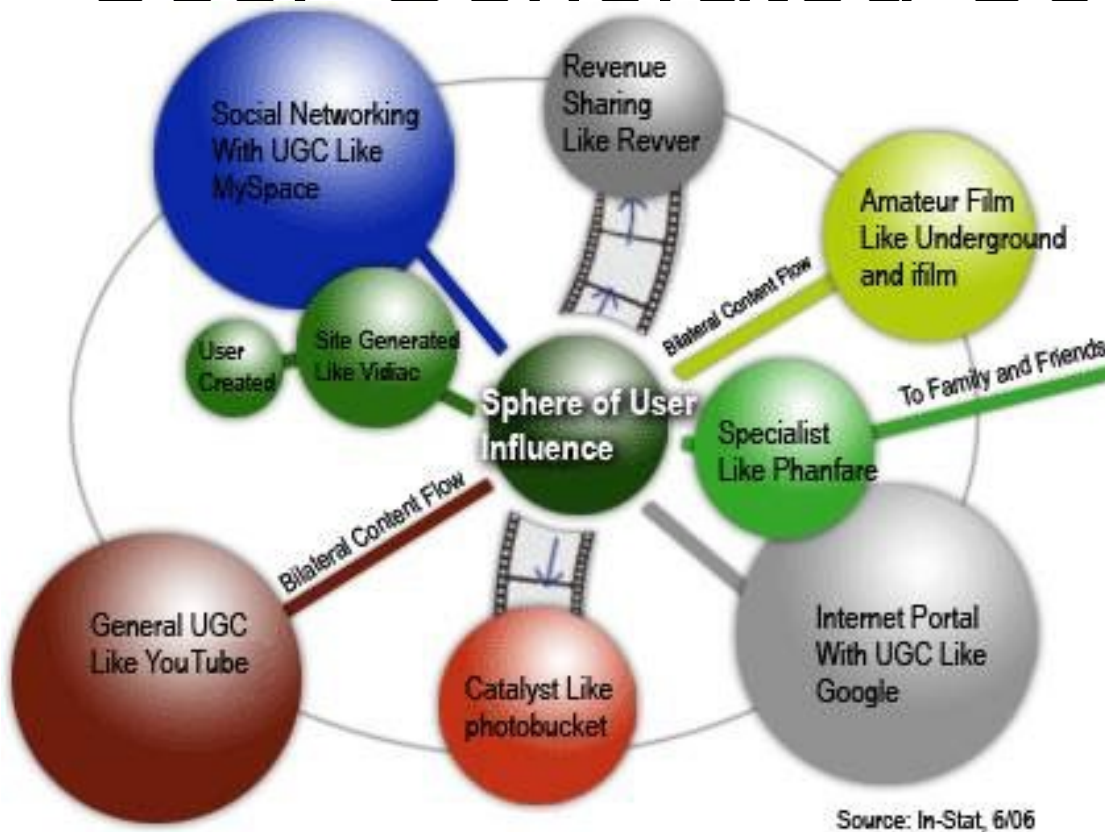


Figure. 7: Messy vs. Neat: Homostructural vs. Heterostructural

User-Generated Content



Source: In-Stat, 6/06

<http://www.linuxelectrons.com/news/general/user-generated-web-content-will-grow-rapidly-through-2010>

Flow

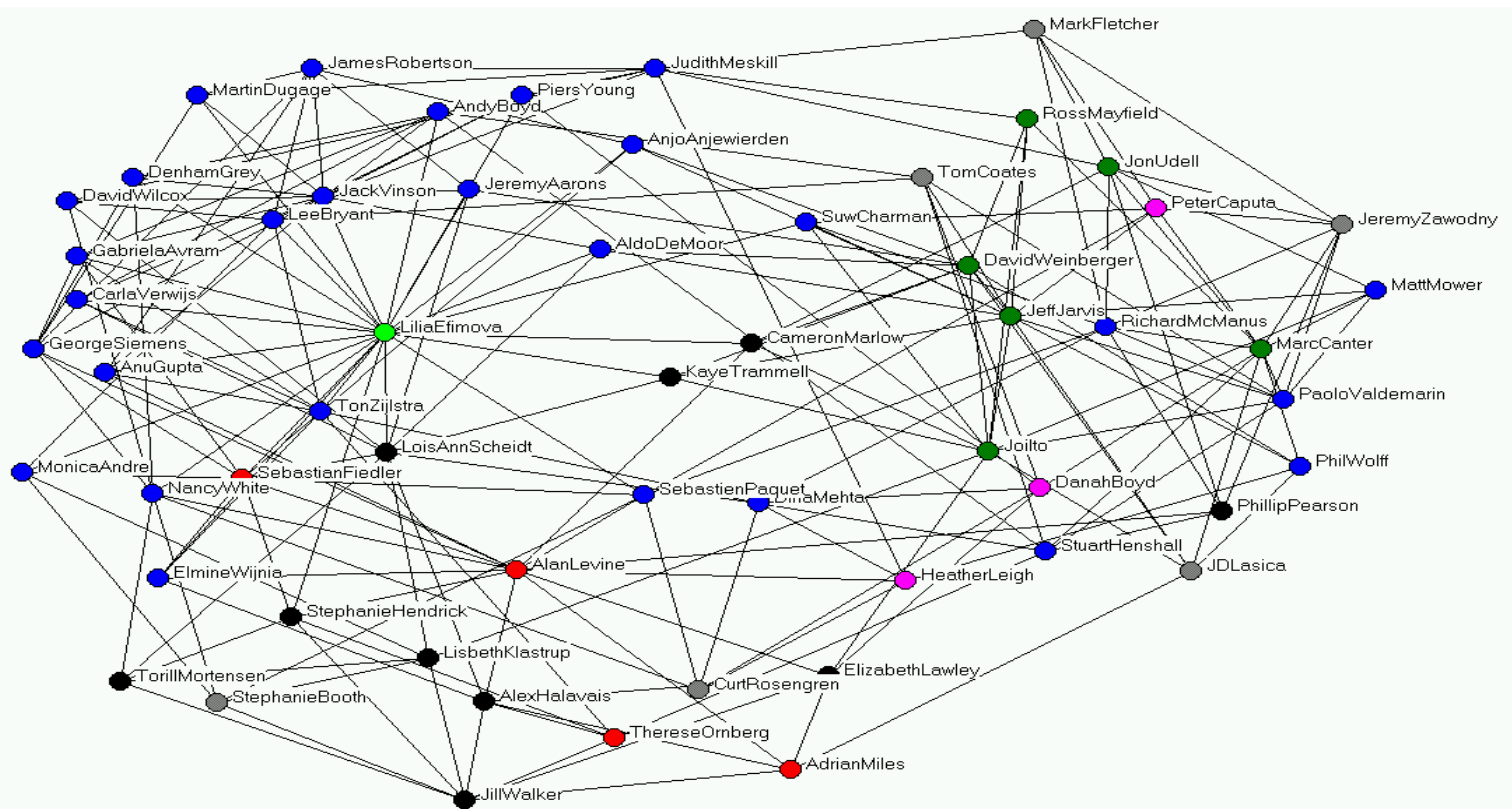
- IM and SMS expanded – Twitter
- Facebook 'status' updates – the now
- RSS, podcasting and other content feeds
- Mode – the idea of flow – how do you survive in a world of constant change?
Stop thinking of things as static

Web 2.0 - Core Technologies



Tools for worldmaking...

Social Networking



<http://staffdev.henrico.k12.va.us/parents/socnetwork.htm>

Tagging

Tagging

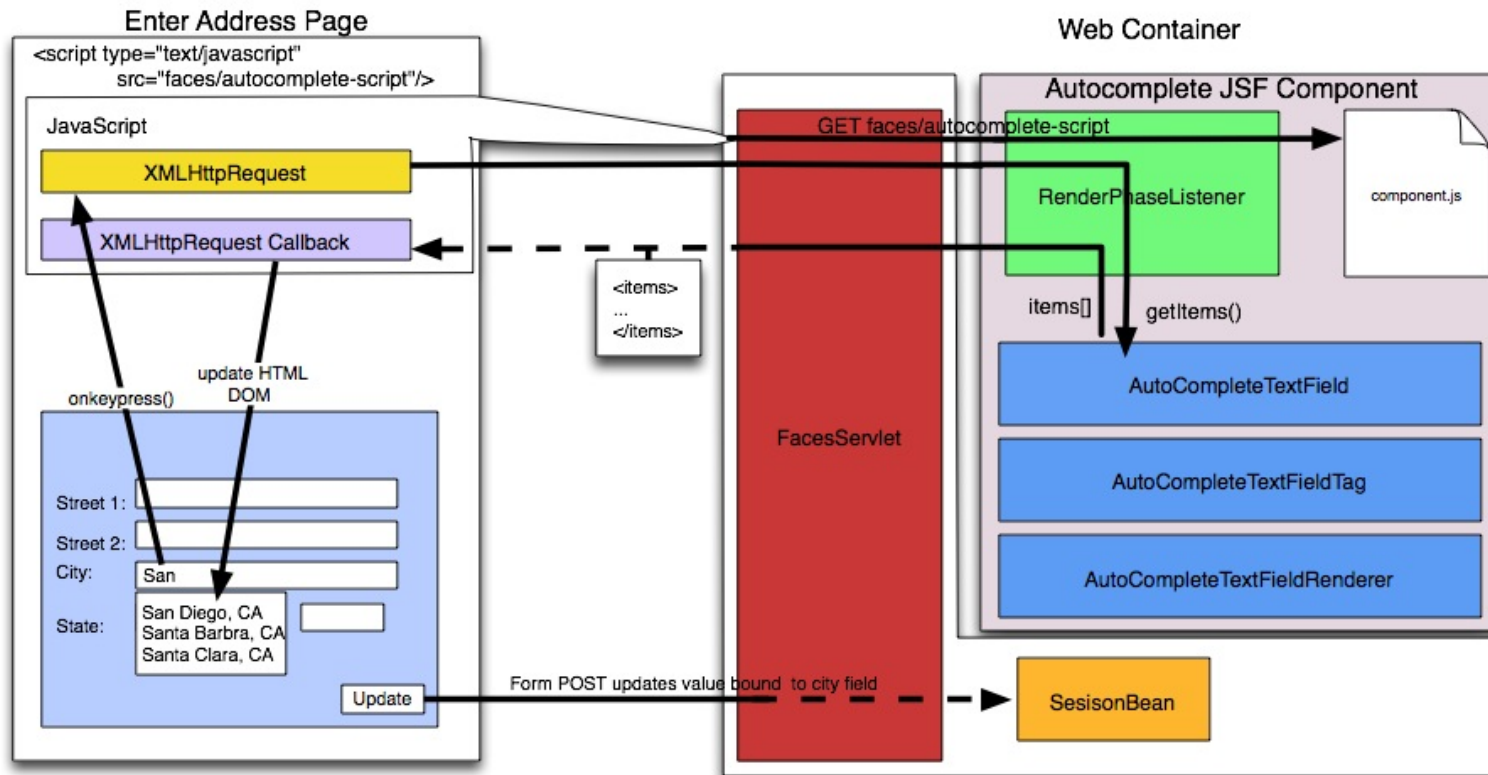
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miscellaneous **web 2.0** movies **adoption** emergence m

UX METHODS TRADING CARDS

13

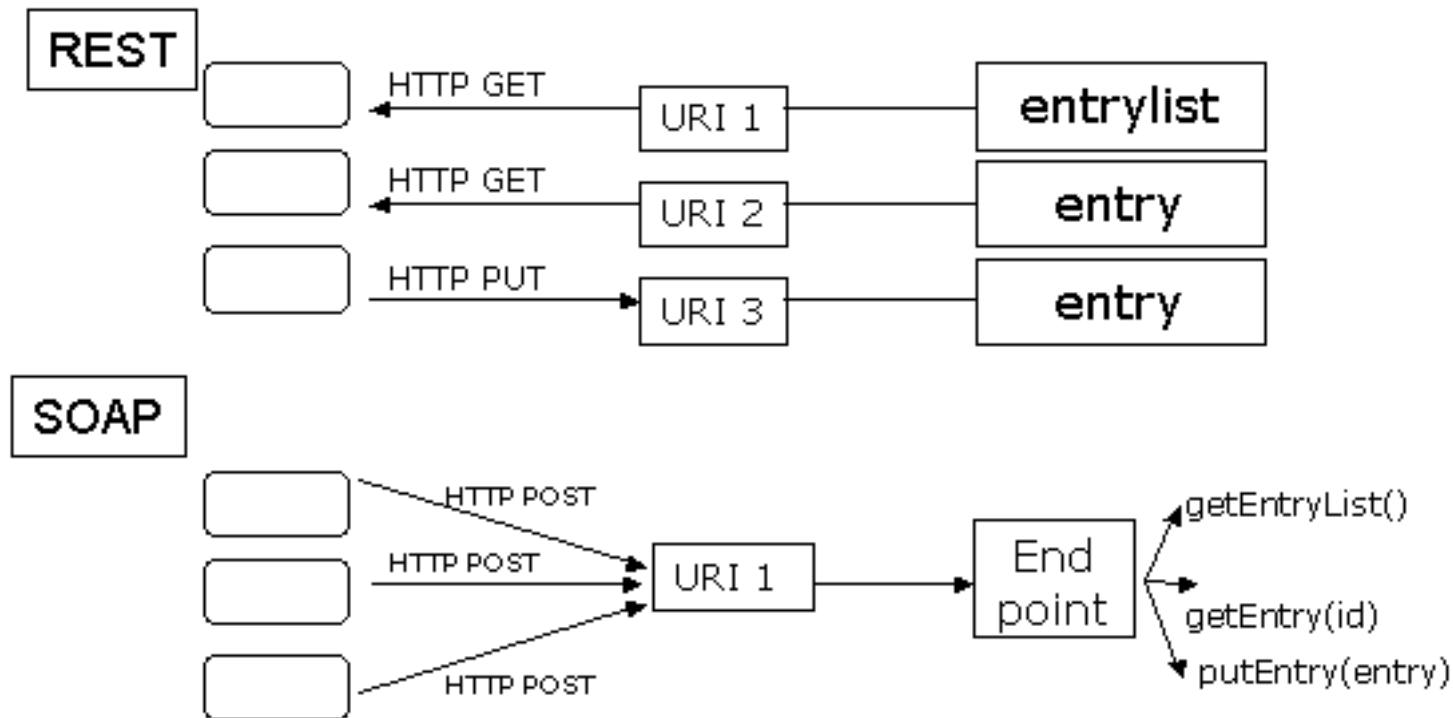
Asynchronous Javascript and XML (AJAX)

Jesse James Garrett in February 2005.



<https://bpcatalog.dev.java.net/ajax/textfield-jsf/design.html>

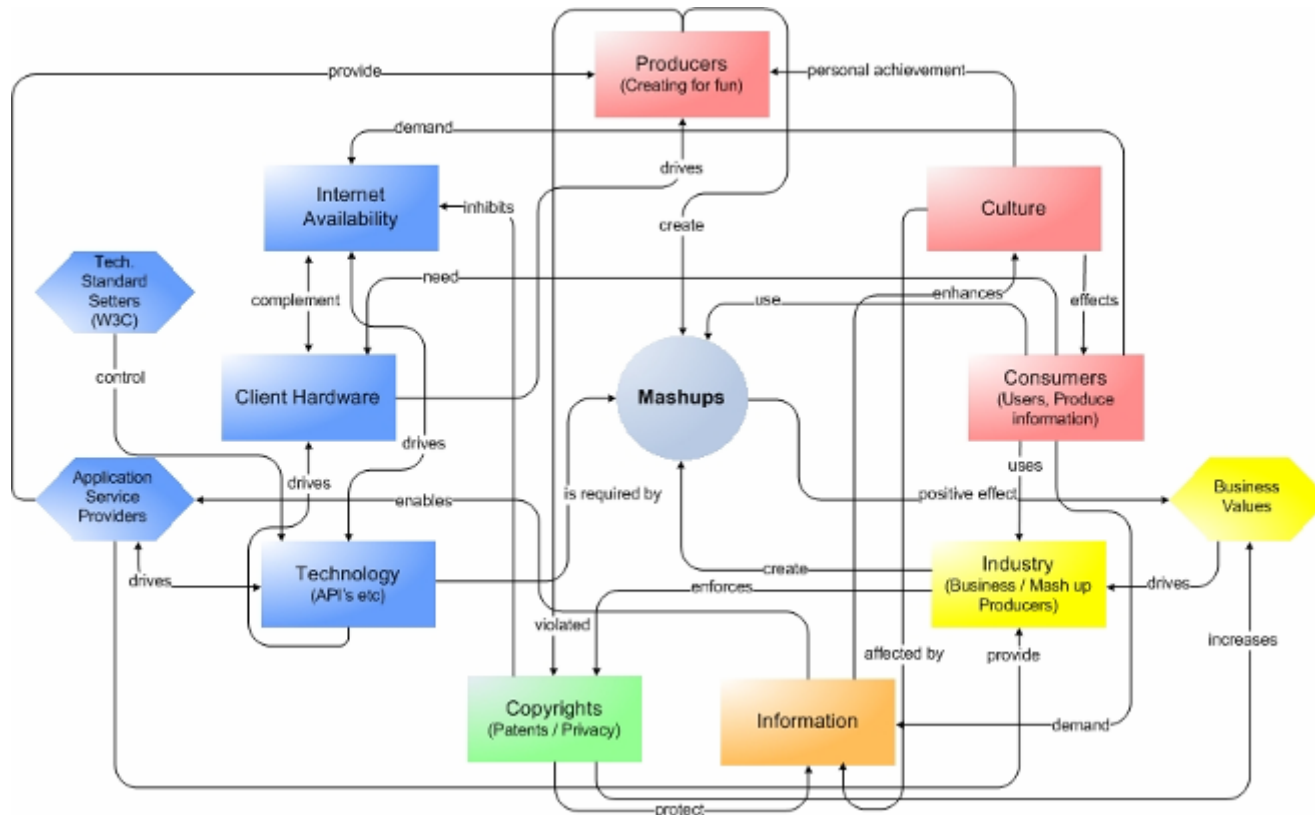
Representational State Transfer (REST)



- principles that outline how resources are defined and addressed
- looser sense: domain-specific data over HTTP

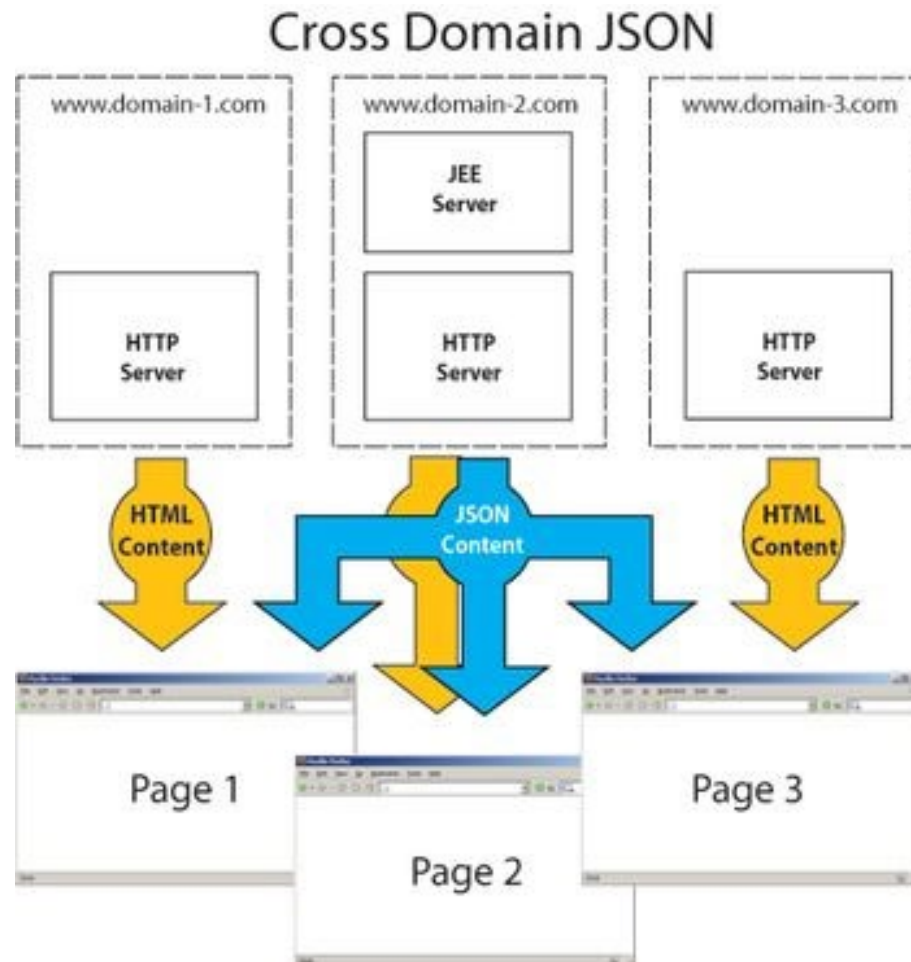
http://en.wikipedia.org/wiki/Representational_State_Transfer
<http://itpro.nikkeibp.co.jp/article/Watcher/20060315/232492/>

Application Program Interface (API) and Mash-Ups

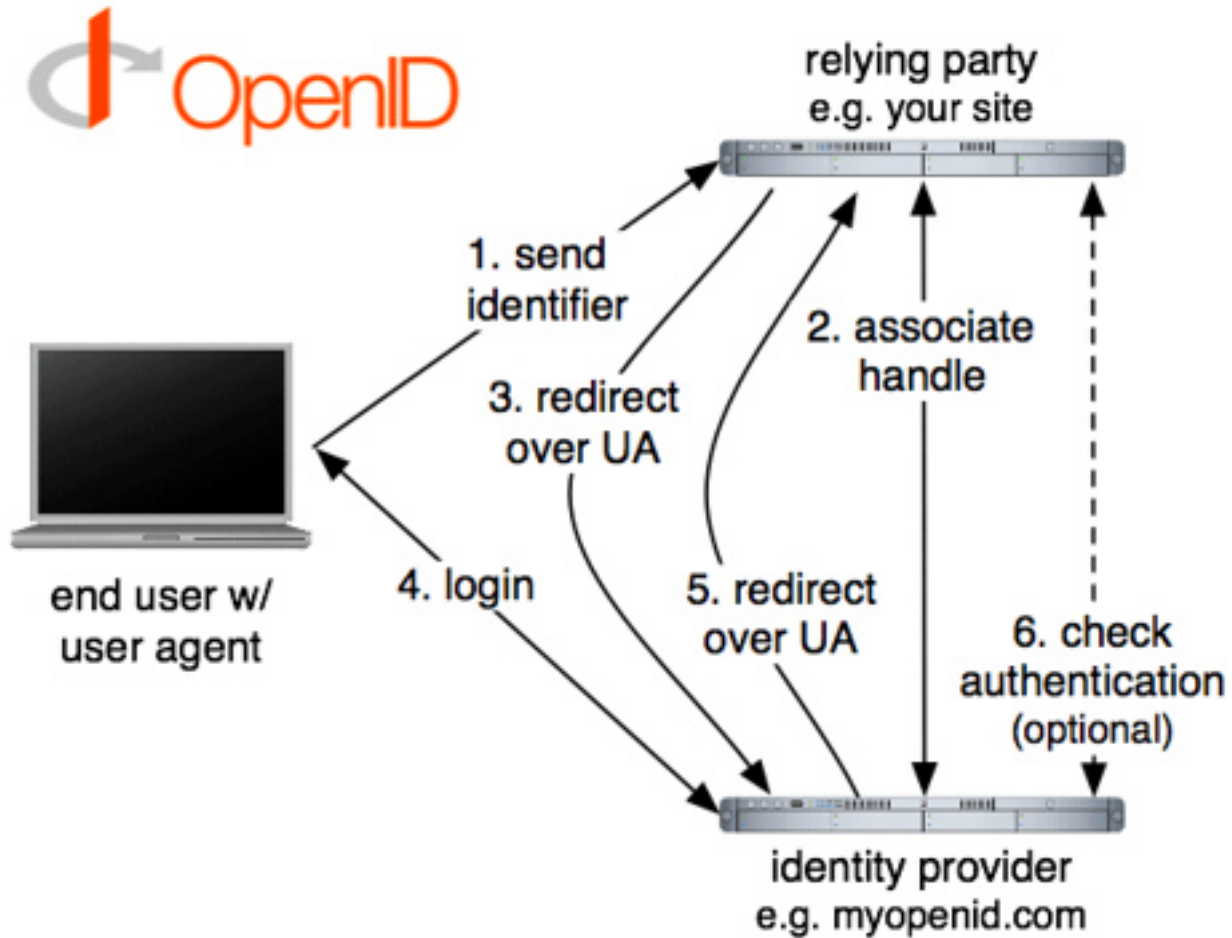


<http://scenariothinking.org/wiki/images/b/b6/MashUpSysDiagramV6.0.jpg>

Javascript Object Notation (JSON)



- OpenID



Identity

- The idea: identity as personal, not institutional
- You own your data
- Identity 2.0 – Dick Hardt
http://talk.talis.com/archives/2005/10/dick_hardt_on_i.html
<http://identity20.com/media/OSCON2005/>
- OpenID <http://openid.net/>

No More Walled Gardens

- Social and content networks distributed across services
- But also... importantly... the walls or institutions and corporations are also less important

Different Realities...

Network Semantics



Why Networks?

- **Nature of the knower:** humans are more like networks
- **Quality of the knowledge:** groups are limited by the capacity of the leader
- **Nature of the knowledge:** group knowledge is *transmitted* and *simple* (cause-effect, yes-no, etc) while network knowledge is *emergent* and *complex*

Groups vs. Networks

- *A group* is a collection of entities or members according to their nature; what defines a group is the quality members possess and number
- *A network* is an association of entities or members via a set of connections; what defines a network is the extent and nature of this connectivity

Groups, Schools, Classes

- A group, in other words, is a ***school*** (of thought, of fish...) or a ***class*** of some sort.
- Or: classes and schools are just groups. They are *defined* as groups.
- Can we even think of schools – and of learning – without thinking at the same time of the attributes of groups?

A Group...

- A group is **elemental**, defined by mass and sameness – like an ingot of metal (Aside: democracy is a group phenomenon)



A Network...

- A network is diverse and changing, defined by interactions – like an **ecosystem**

Can we achieve order, responsibility, identity in an ecosystem? Do we need the iron hand? (Aside: Solon, learning, justice)

The Semantic Principle

- Groups require unity, networks require diversity
- Groups require coherence, networks require autonomy
- Groups require privacy or segregation, networks require openness
- Groups require focus of voice, networks require interaction

<http://www.downes.ca/cgi-bin/page.cgi?post=35839>

Diversity

- Did the process involve the widest possible spectrum of points of view?
- Did people who interpret the matter one way, and from one set of background assumptions, interact with people who approach the matter from a different perspective?

Autonomy

- Were the individual knowers contributing to the interaction of their own accord, according to their own knowledge, values and decisions,
- Or were they acting at the behest of some external agency seeking to magnify a certain point of view through quantity rather than reason and reflection?

Openness

- Is there a mechanism that allows a given perspective to be entered into the system, to be heard and interacted with by others?

Connectivity

- Is the knowledge being produced the product of an interaction between the members, or is it a (mere) aggregation of the members' perspectives?
- *A different* type of knowledge is produced one way as opposed to the other.

Thanks!

Stephen Downes

<http://www.downes.ca>