

Connectivism, MOOCs and Innovations in Future Learning

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Chiang Mai, Thailand

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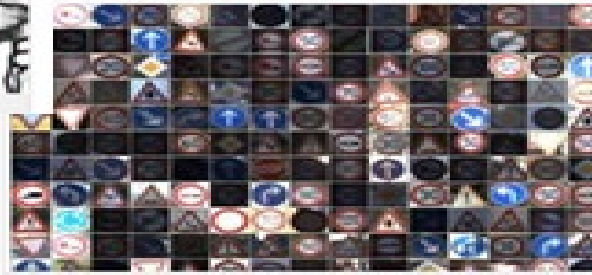
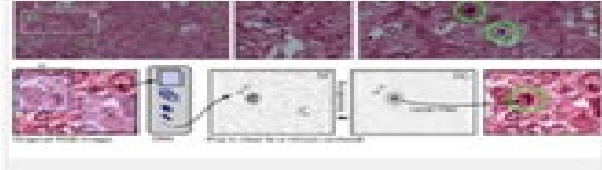
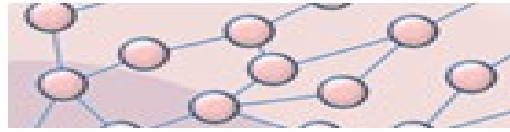
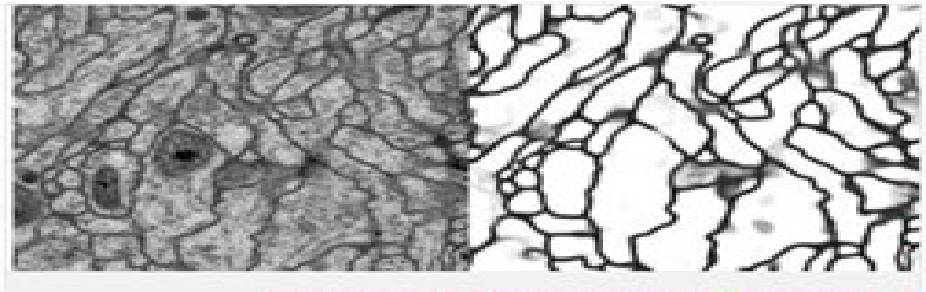
My work is focused around a few core areas:

- educational theory - specifically, ways of describing how we learn, framed as 'network learning' or 'connectivism'
- educational technology - models and systems for supporting and distributing learning through technology
- policy and process supporting free and open access to learning

Educational Theory

1





1	2	4	3	7	4	6	4	3	0
:	6	9	3	1	4	1	7	6	9
:	4	7	6	7	9	0	5	8	5
i	9	5	5	1	5	6	0	3	4

Reading the World:

- I don't see the world as neat and ordered, like logic and mathematics – I see it as messy and complex, like a language
- I don't really think the answer to "do you understand?" is "let me demonstrate". It's too easy to fake.
- But there's a sense in which knowing is about doing rather than some mental state

Literacies

Comprehension, understanding and communication

Skills

Abilities, habits, competencies

	Syntax	Semantics	Context	Use	Cognition	Change
Aggregate						
Remix						
Repurpose						
Feed Forward						

Autonomy

Diversity

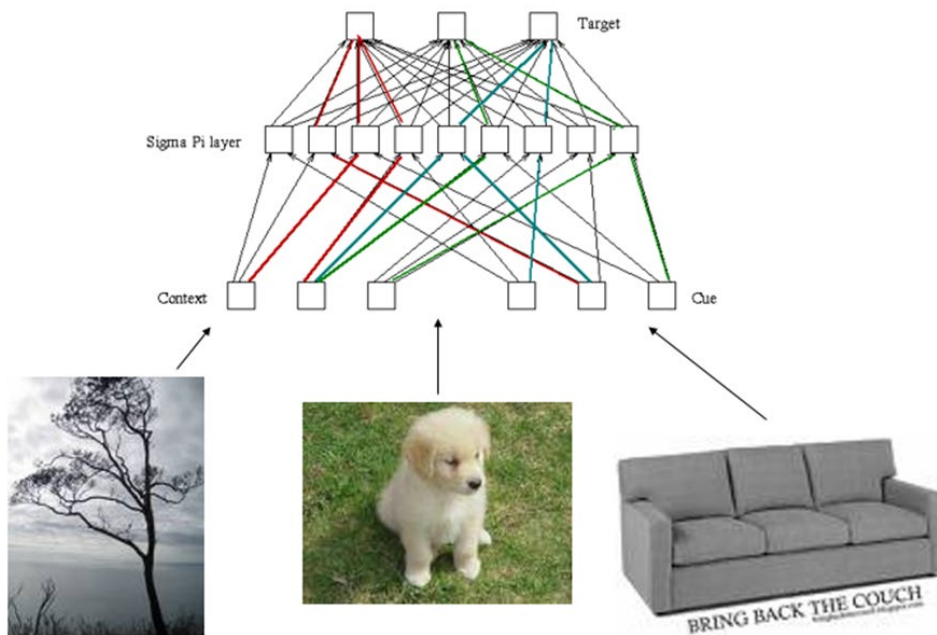
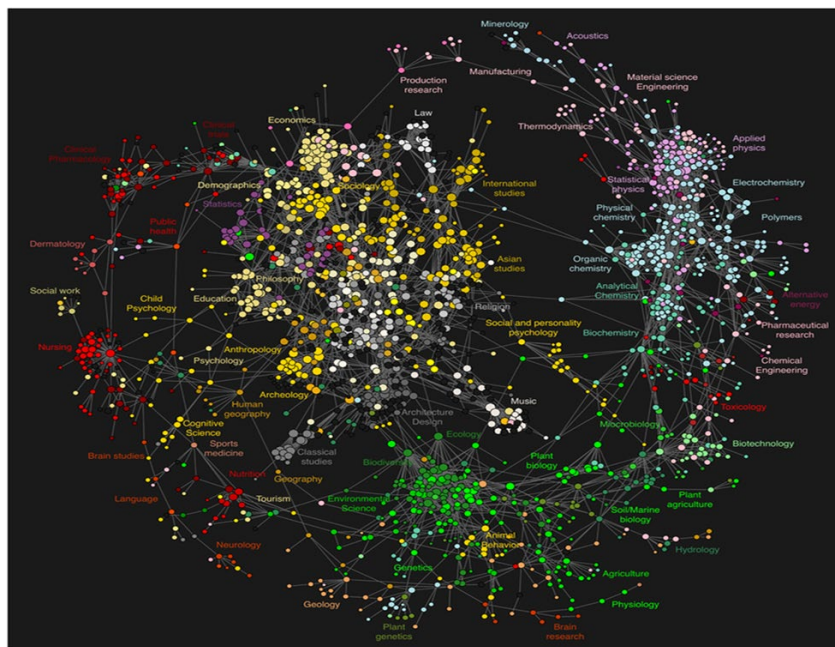
Values

Openness

Interaction

Method as Discovery:

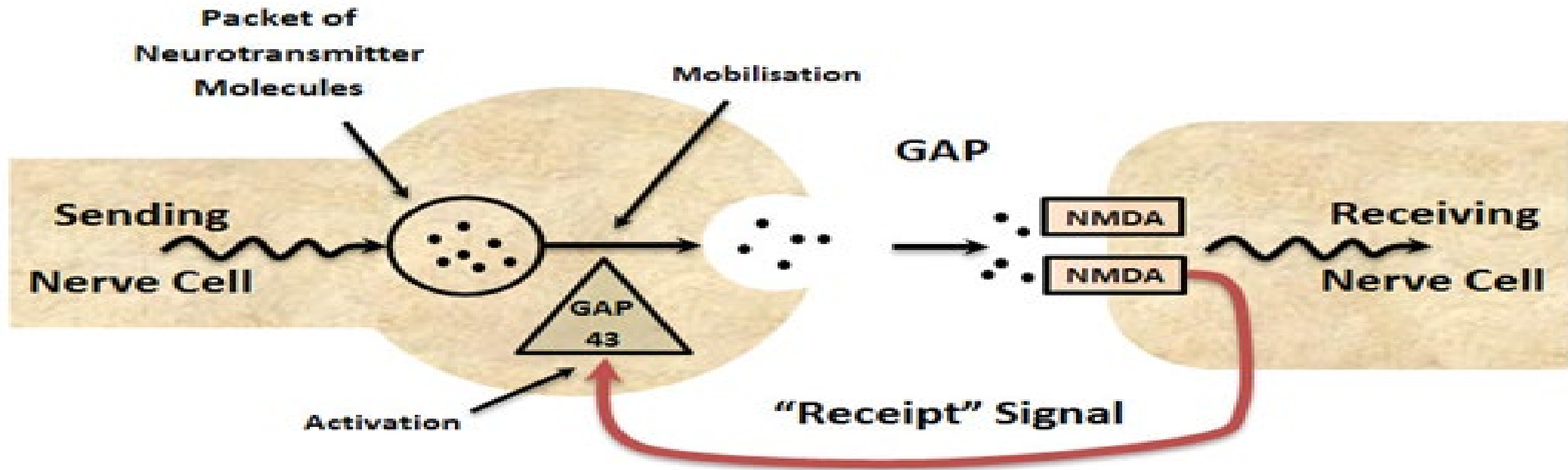
- You don't learn a language, you discover it
- To discover a language is to be immersed in it, to speak it and listen to people speaking in it
- My scientific method (if it can be called that) is to go to the office each day and immerse myself in the world – to try listening, and to try speaking



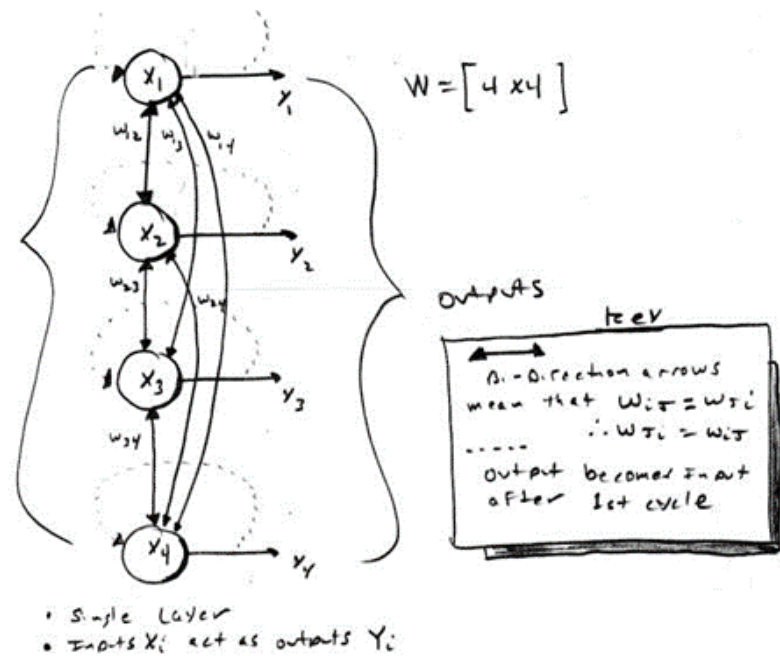
Knowledge:

is created by networks of connected entities

- Can be personal knowledge, as in neural networks
- Can be computational knowledge, as in connectionist software
- Can be social, as in social network theory



- **Personal knowledge:** The organization of neurons
- **Public Knowledge:** The organization of artifacts
 - A common underlying logic: graph theory, connectionism, social network theory, etc.
 - If a human mind can come to 'know', and if a human mind is, essentially, a network, then any network can come to 'know', and for that matter, so can a society.



Network Learning

is the creation and strength of connections

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

Learning:

is the development of these networks

- A focus on both personal experience and social networks
- Learning is a matter of practice and reflection
- To know is to recognize



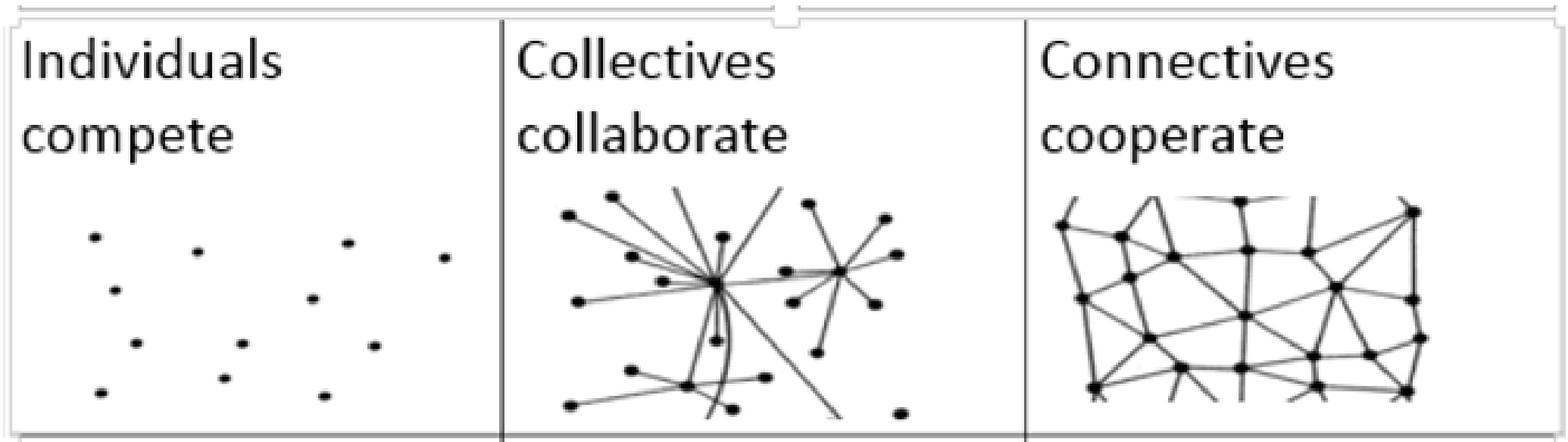
Learning Networks:

- Networked learning is a process of developing and maintaining connections with people and information, and communicating in such a way so as to support one another's learning.
- Instruction does not equate to learning. Curriculum is not driven by predefined inputs from experts. The community acts as the curriculum, spontaneously shaping, constructing, and reconstructing itself and the subject of its learning.

Educational Technology

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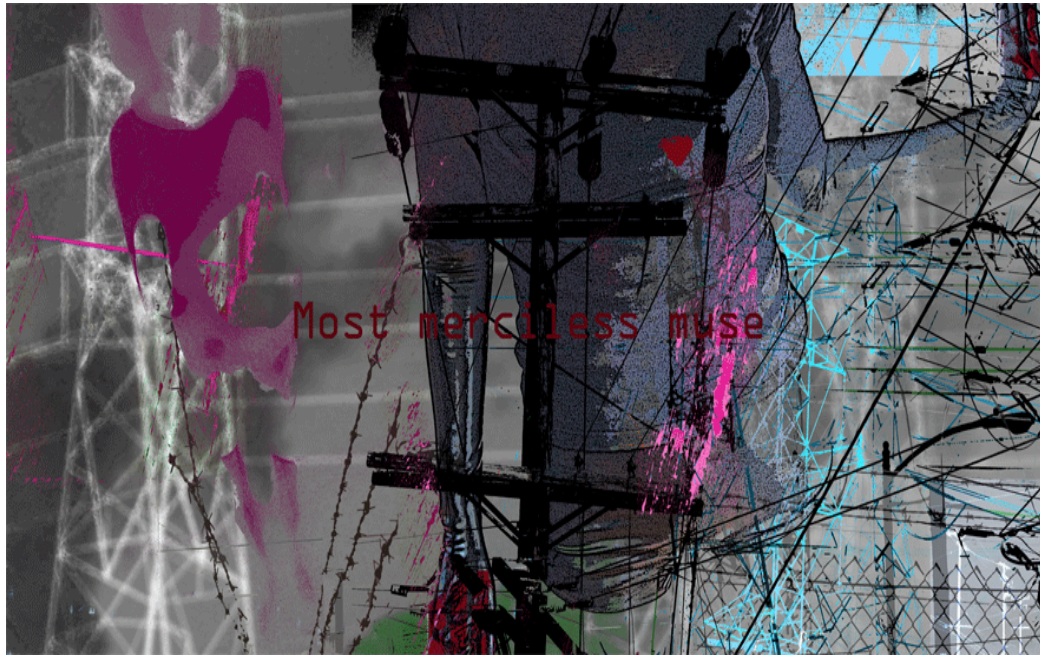
Community and Connectives:

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



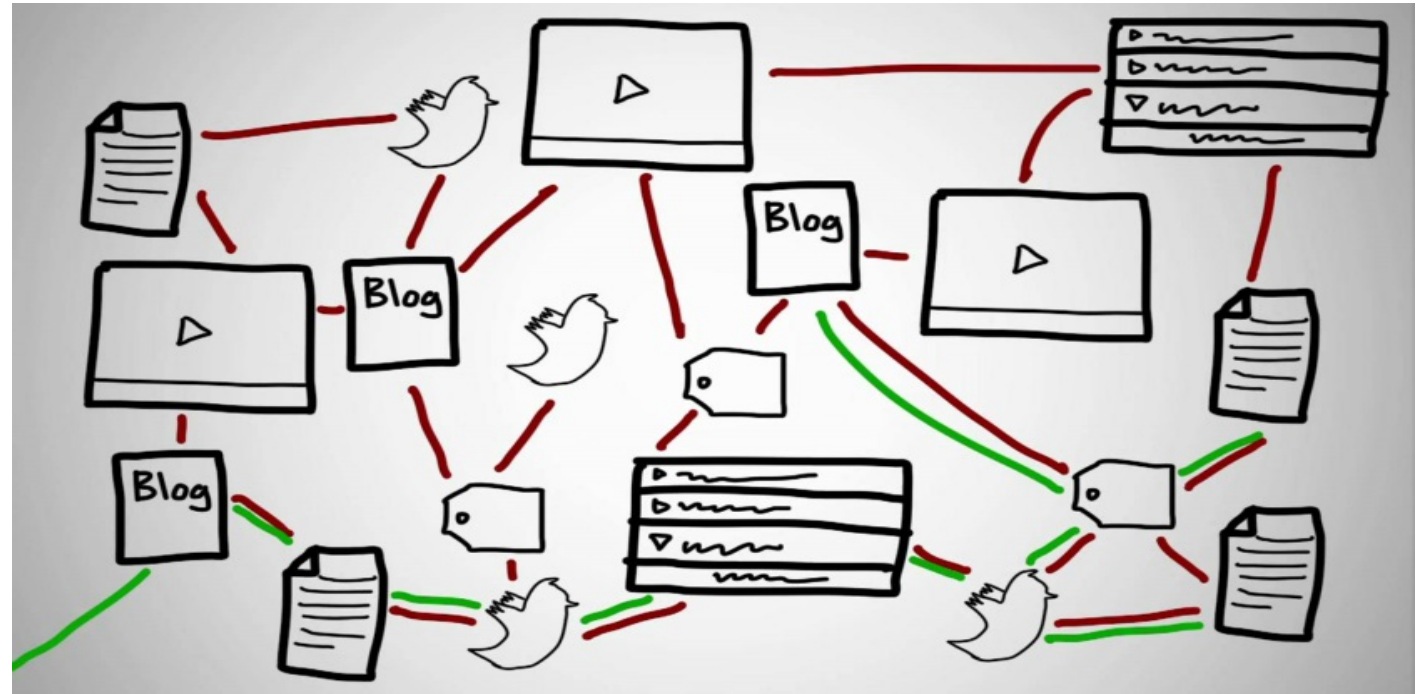
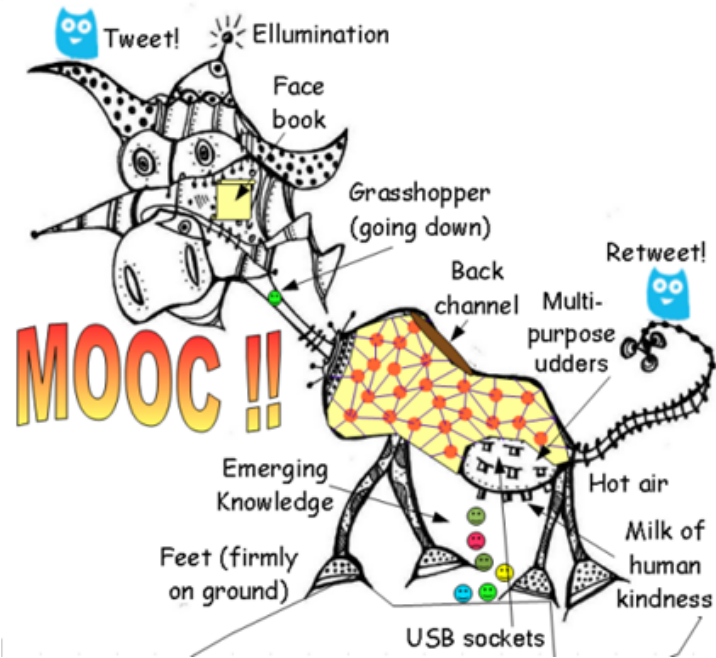
Network Development Principles :

- **Autonomy** – each entity has its own values and objectives and decides for itself
- **Diversity** – each entity in a network is unique in role, function and perspective
- **Openness** – membership in the network is fluid; content (signals, messages) can enter and exit the network
- **Interactivity** – knowledge in the network is created by the interactive process (as opposed to the content of signals propagated through the network)



A rough outline of a learning process:

- **Aggregate** – seek out connections and obtain resources through those connections
- **Remix** – join the resources from multiple connections together
- **Repurpose** – adapt the remixed resources
- **Feed Forward** – send the newly created resources on to the next nodes in the network



Massive Open Online Course (MOOC):

- **‘Massive’** by design - Network design avoids bottlenecks; scaling achieved by mesh
- **‘Open’** as in door - Free as in ‘beer’ and ‘libre’, Open as in ‘content’ and in ‘door’
- **‘Online’** as in online - Local events encouraged, but the course isn’t offline
- **‘Course’** (as opposed to community) - In the sense of ‘a course of lectures’

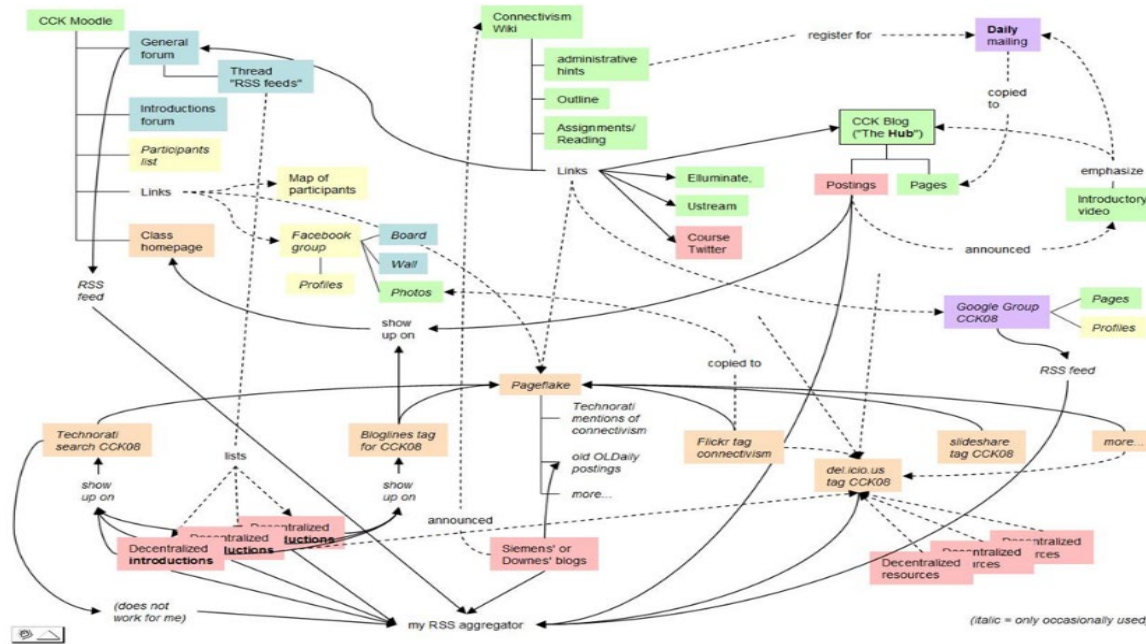


xMOOCs – the Big Elite Universities Way

- Collections of centralized resources, Mass events (like videos, live events)
- Automated grading etc.

cMOOCs – the Connectivist Way

- Based on community, conversation, culture, Most importantly, are distributed



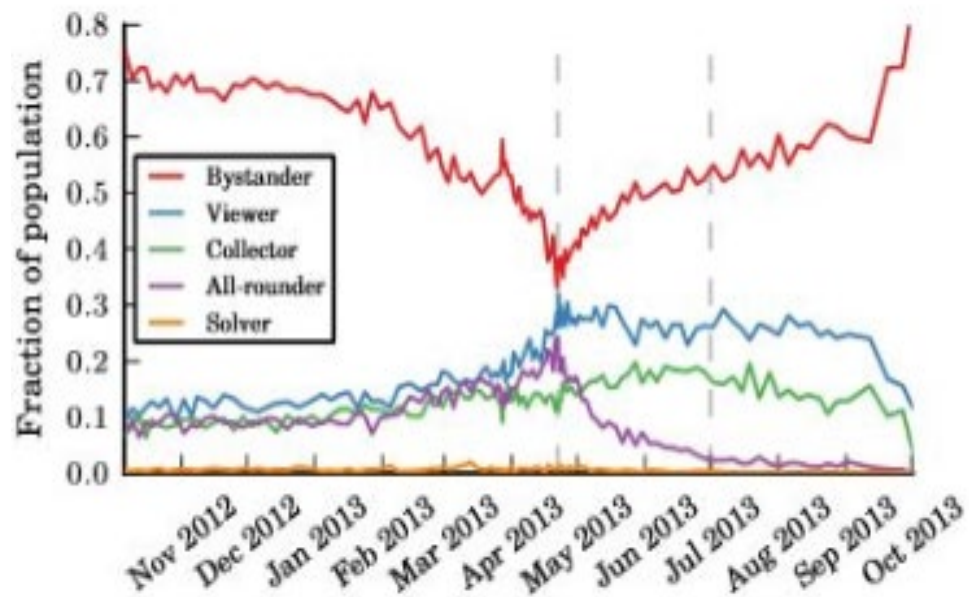
A MOOC is a Web, not a Website



The Connectivist MOOC (cMOOC) Design:

Instead of seeing a course as a series of contents to be presented, envisions a course as a network of participants who find and exchange resources with each other (2008)

- An initial structure is developed and 'seeded' with custom-built or (preferably) existing OERs
- Participants are encouraged to use their own sites to create or share resources
- A mechanism (gRSShopper) is employed to connect them



Criticisms:

- **Dropouts** - characterize users by the impact they have on the system: uploaders, commenters, subscribers, viewers, and lurkers (Avi Wolfman-Arent)
- **Quality** - MOOCs are not second rate and they are not disappearing or being absorbed or anything else. Yes, they are 'disruptive'
- **Content** - too much content, not enough time



Perfect Apple Pie recipe from Pillsbury.com



www.pillsbury.com/recipes/...apple-pie/1... Pillsbury Company ▾
3 hrs - 230 cal
A classic apple pie takes a shortcut with easy Pillsbury® unroll-fill refrigerated pie crust.

Apple Pie Recipe - Taste.com.au



www.taste.com.au/recipes/5008/apple+pie ▾
★★★★★ Rating: 4.5 - 90 reviews
Apple pie recipe - Sift flours and a pinch of salt into a large mixing bowl. Add butter and rub lightly into flour with your fingertips. Lift mixture high above the bowl ...

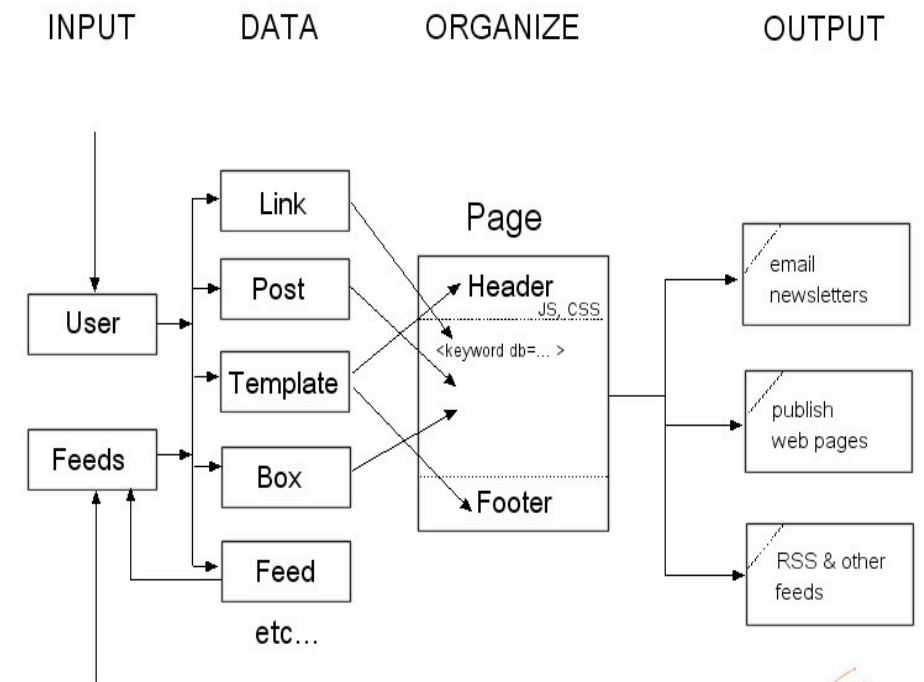
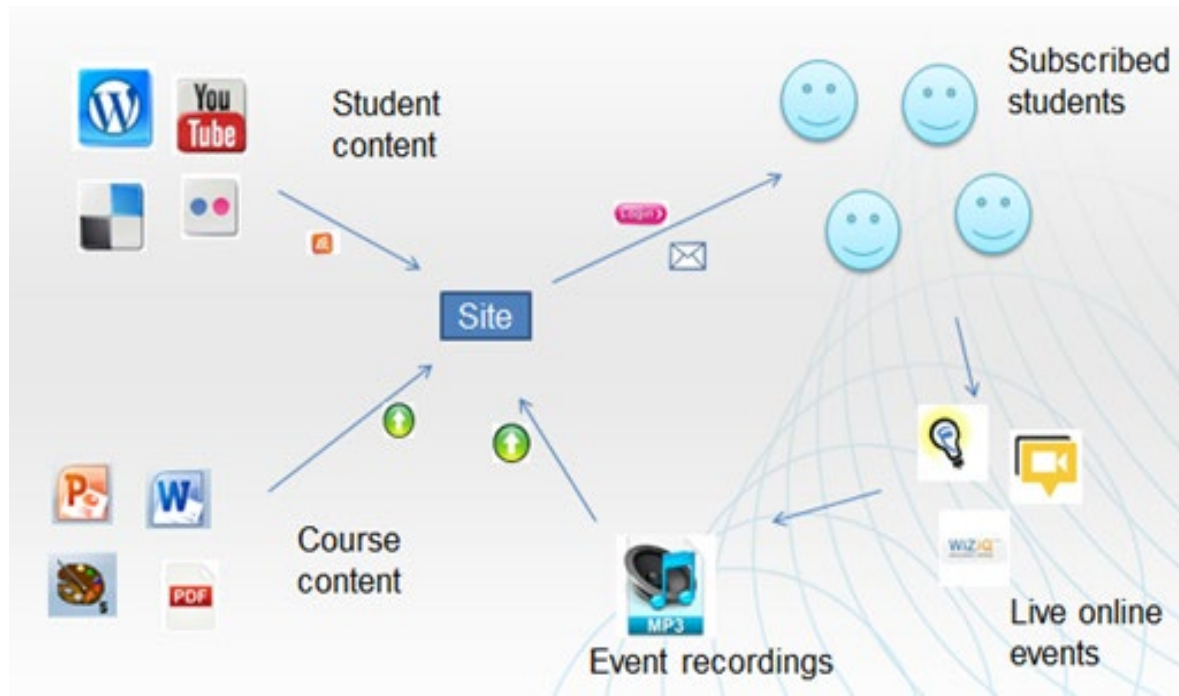
Scrumptious Apple Pie recipe from Betty Crocker



www.bettycrocker.com/recipes/...apple-pie/a4... Betty Crocker ▾
2 hrs 20 mins - 480 cal
This apple pie is a classic, from the scrumptious filling to the flaky pastry crust. of using fresh apples, and you'll shave about half of the prep time off this recipe.

Content:

- Weinberger: We don't feel overloaded by the effects of 1.3 million apple pie recipes or 7.6 million cute cat photos. Why not? Because we're not expected to master them. But with information it's different, because there used to be so much less that we could master all the information. But not any more.

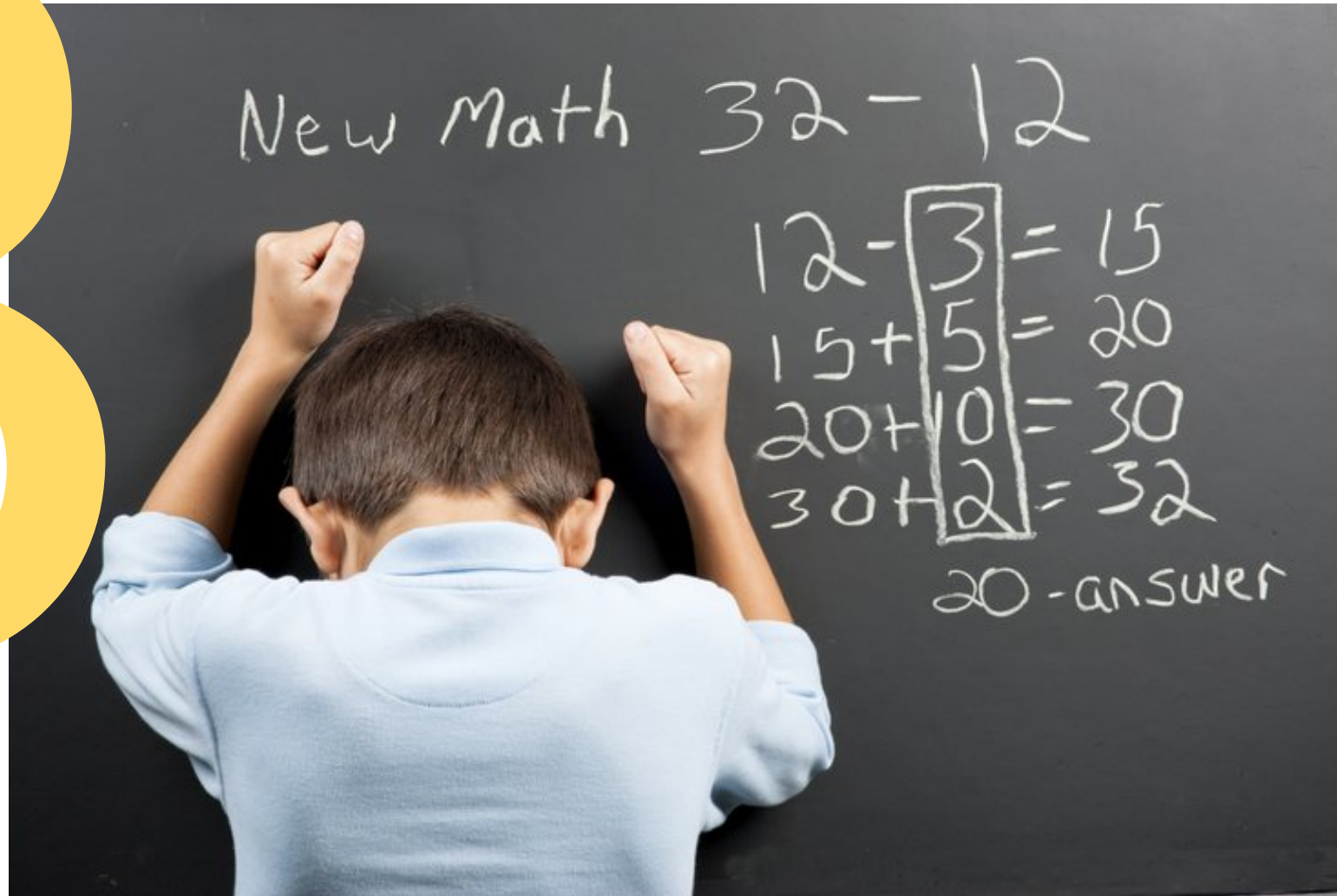


New Technology:

- The structure of the MOOC is the structure of the network; the principles of the MOOC are the principles of the network
- Explanations stem from analyses of patterns of relations... the autonomy of entities in the network, and ... strong and weak ties

Free Learning

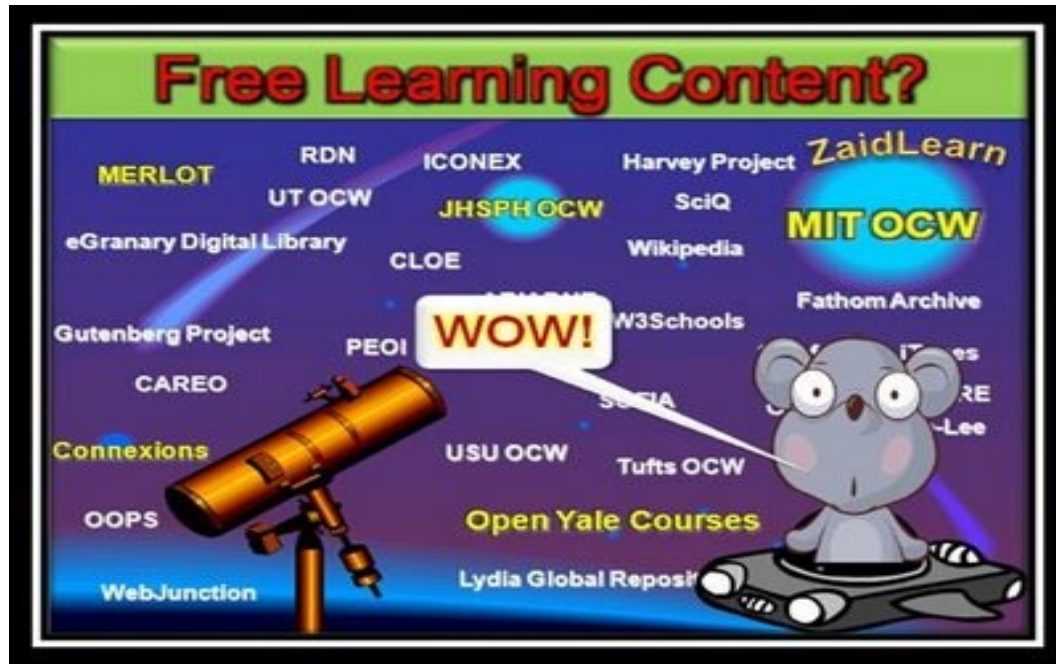
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Free Learning and Connectivism:

- These reinforce and depend on each other, for example, autonomy requires:
 - Access to learning materials and resources without cost or barriers
 - Connection with other learners by means of sending signals to other network entities (learners, instructors, friends and associates)
 - Open learning or the ability to join networks regardless of qualifications or social standing



Why Open Educational Resources?

Learning activities are essentially conversations
OERs **are the words** used in those conversations

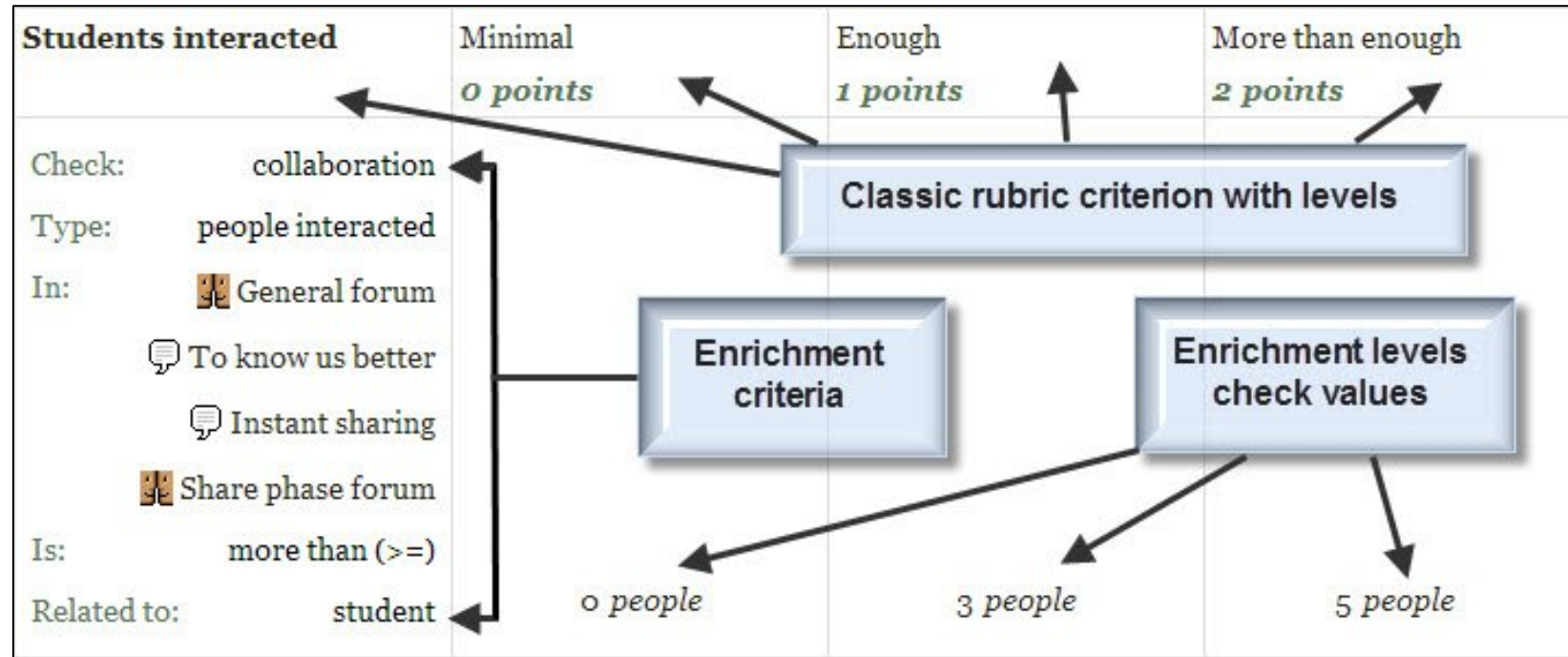
- Open design – enabling participants to create their own organization and structure
 - Example: touring a city vs being taken on a tour
 - The course as ‘environment’ rather than ‘book’

Mmmimmmm

Innovations

4





Machine learning and AI

- **decision engines** - these are expert systems that are based on rule-driven strategies
- **pattern recognition** - perceptual systems that identify patterns from partial or disorganized data
- **cluster detection** - detecting nearest neighbours and categories of things

Recognition Networks

The "what" of learning



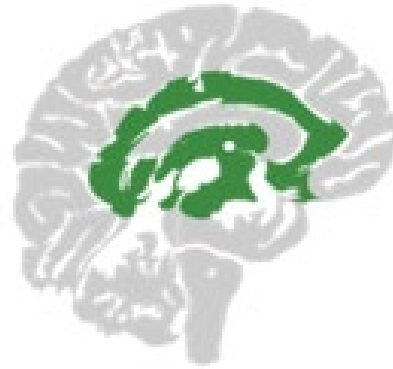
Strategic Networks

The "how" of learning



Affective Networks

The "why" of learning



Personalized Learning

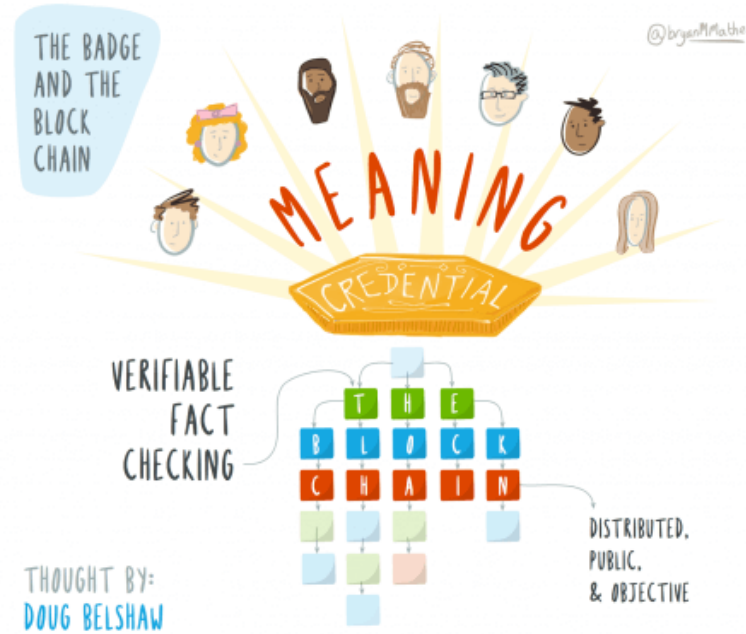
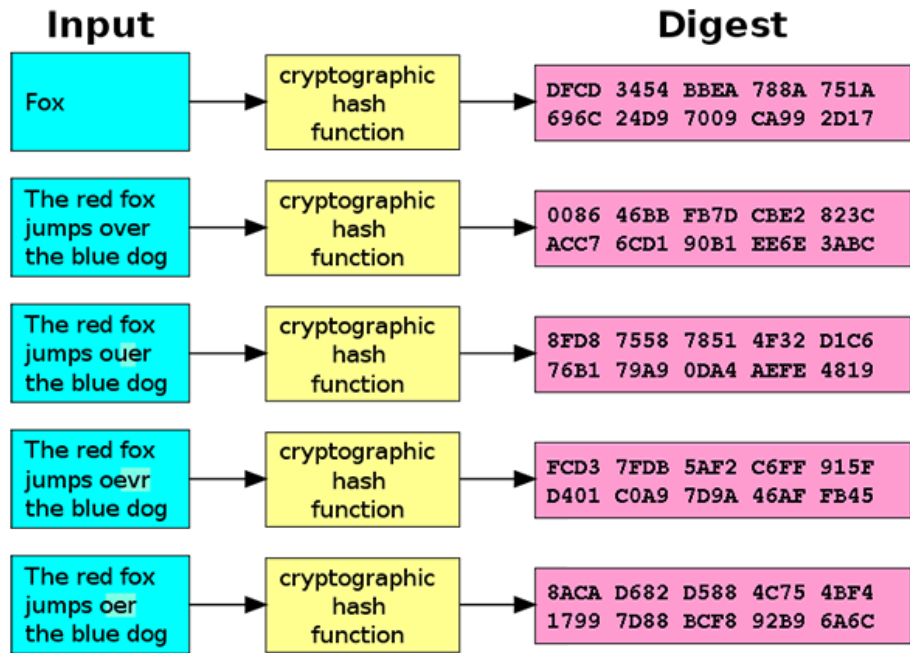
- Rules-Based Events (like notifications)
- User Models
- Adaptive Learning



PHOTO COURTESY B

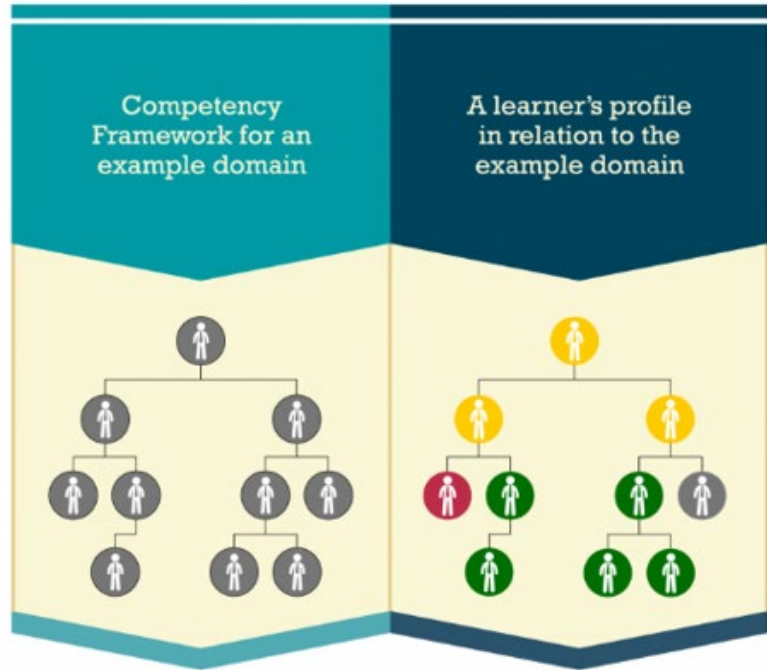
Handheld and Mobile Computing

- Performance Support
 - The future of learning isn't the mobile phone
 - It's in the *integrated* performance support system

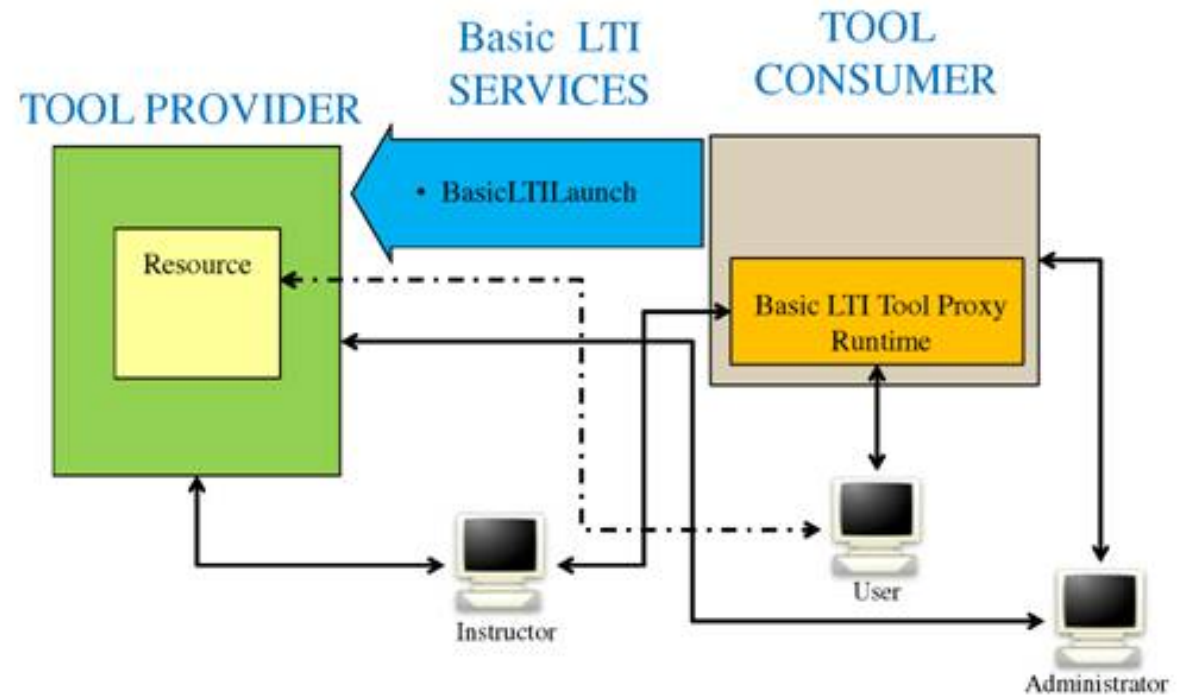


Badges and Blockchain

- Belshaw: we could prove beyond reasonable doubt that the person receiving badge Y is the same person who created evidence X.
- Sony plans to launch a testing platform powered by blockchain and that IBM plans to offer 'blockchain-as-a-service,'"



Competency and Skills System (CASS)



Games, Sims and Virtual Reality

- ‘Gamification’ – adds game elements to learning
- ‘Serious Games’ – employs a game to facilitate learning
 - What happens when companies know the state of all your devices?
- Learning Tools
 - LTI Producer – provides features
 - LTI Consumer – connects to features



Collaboration:

working together
for an agreed-upon objective

Cooperation:

sharing freely

with no expectation of direct reciprocation

jarche.com

Translation and Collaborative Technology

- Communication is and will be everywhere
- But the future lies in cooperation, not collaboration

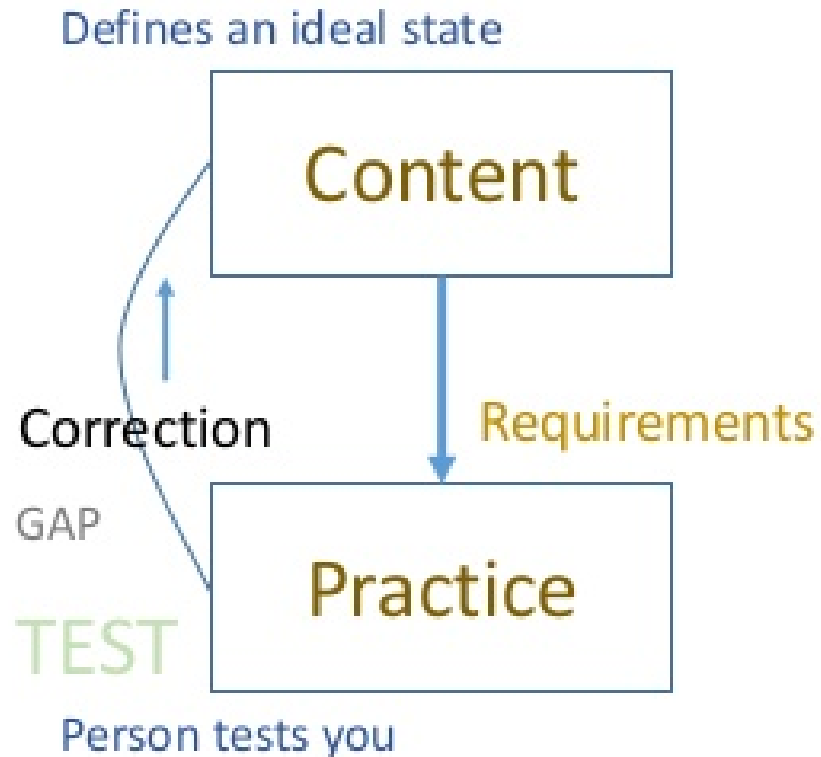
What happens when companies know the state of all your devices?

Transformation



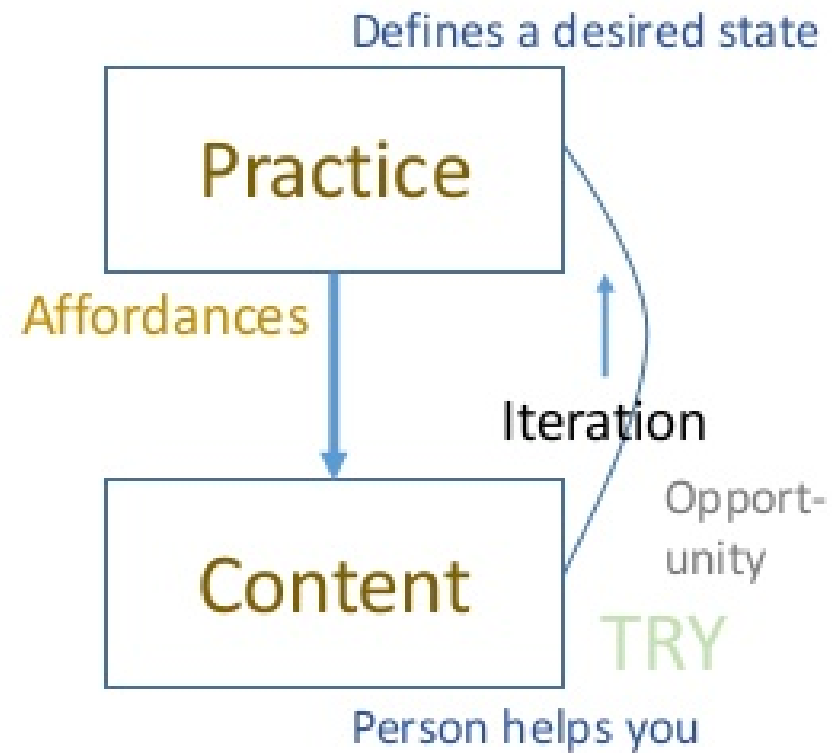
Personalized

We do for you

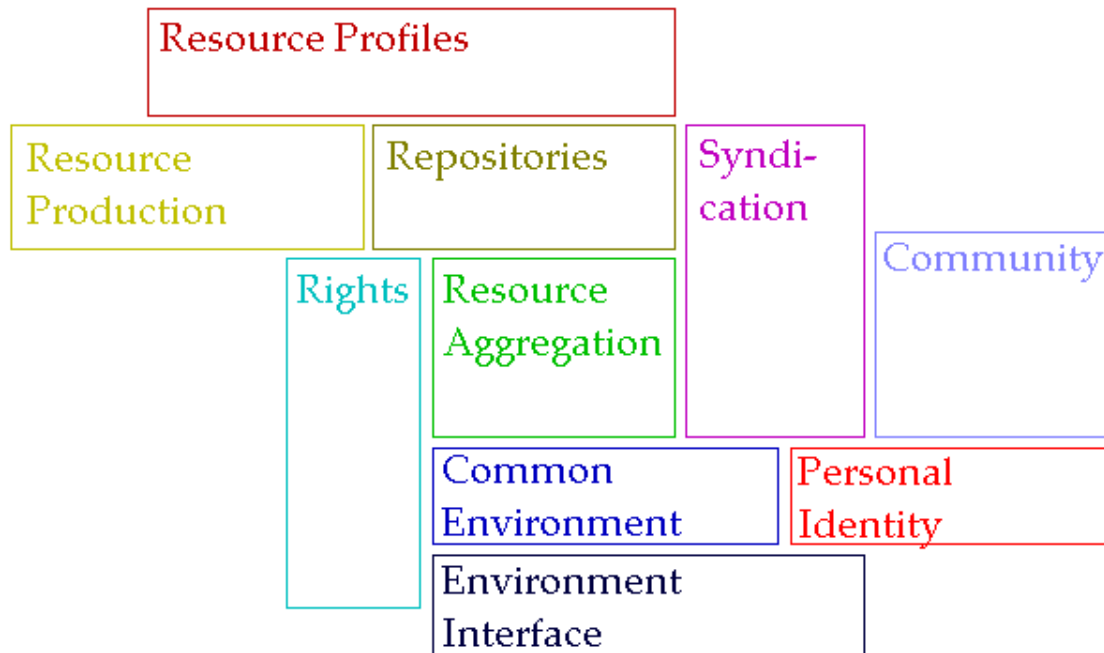


Personal

You do for yourself

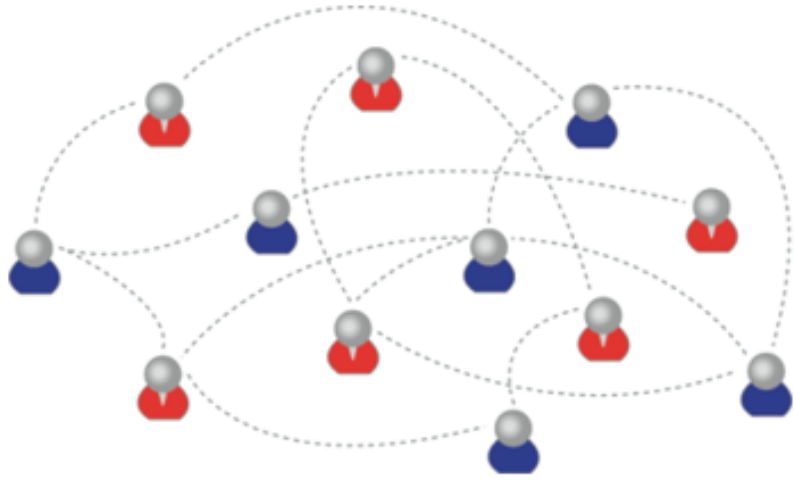


Learning is Personal



The New Institutional Perspective

- From Management to Meaning
- Don't do things to people, do things with people, help people do things
- If we have to ask "how do we motivate people" then we're taking the wrong approach – Kohn; "Knowledge sharing is your job" – Buckman; Provide opportunities for autonomy, mastery, purpose – Pink



We are using one of these

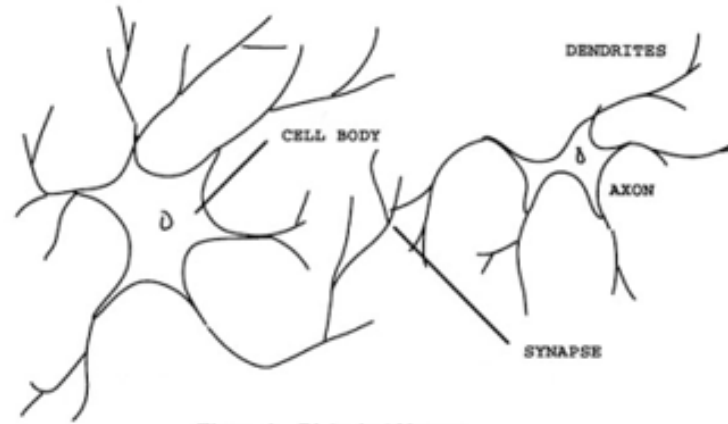


Figure 1. Biological Neuron

To create one of these

Learning Outcomes

- Learning a discipline is a total state and not a collection of specific states
- It is obtained through immersion in an environment rather than acquisition of particular entities
- It is expressed functionally (can you perform 'as a geographer'?) rather than cognitively (can you state 'geography facts' or do 'geography tasks'?)



The New Model of Work and Learning

- **Sharing** - create linked documents, data, and objects within a distributed network
- **Contributing** - employ social networking applications of the Web to facilitate group communication
- **Co-creating** - work through networks that facilitate cooperative group work toward common goals



<http://www.downes.ca>