Connectivism, MOOCs and Innovations in Future Learning

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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

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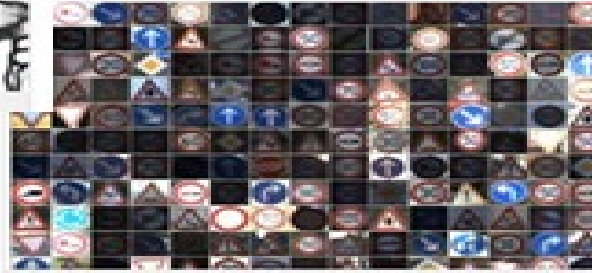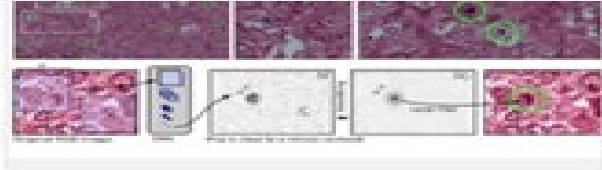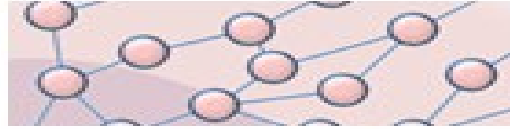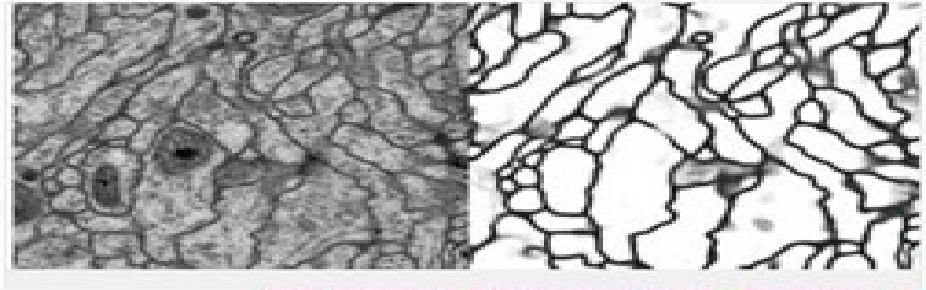
Reading the World:

- 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

	Syntax	Semantics	Context	Use	Cognition	Change
Aggregate						
Remix						
Repurpose						
Feed Forward						

**Skills** — Abilities, habits, competencies

Values
Autonomy
Diversity
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
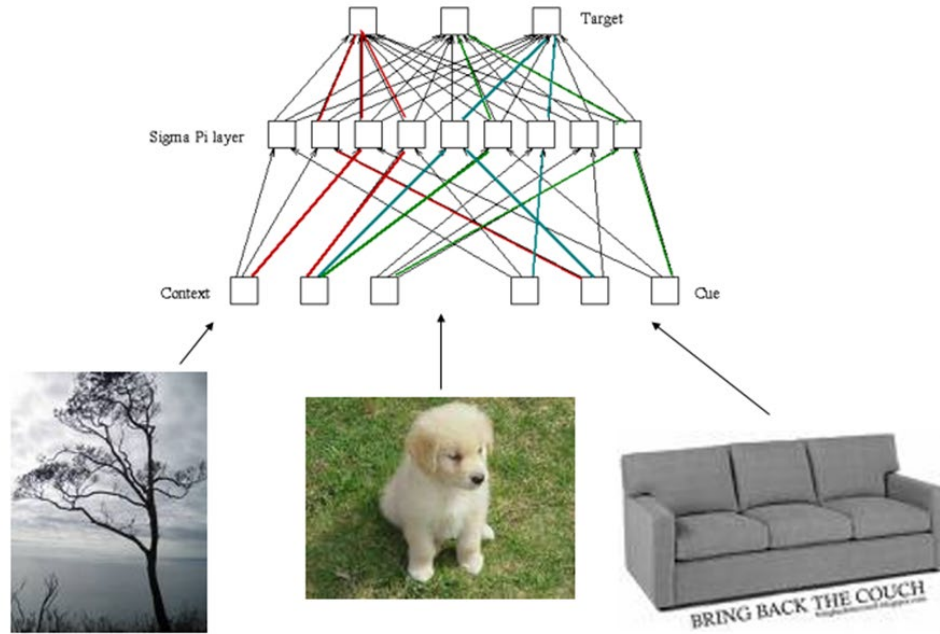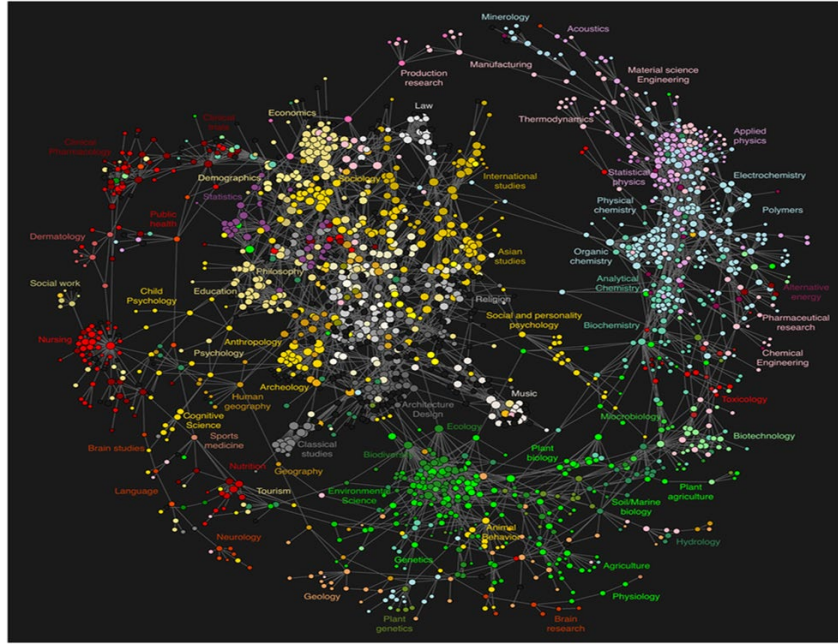
Knowledge:

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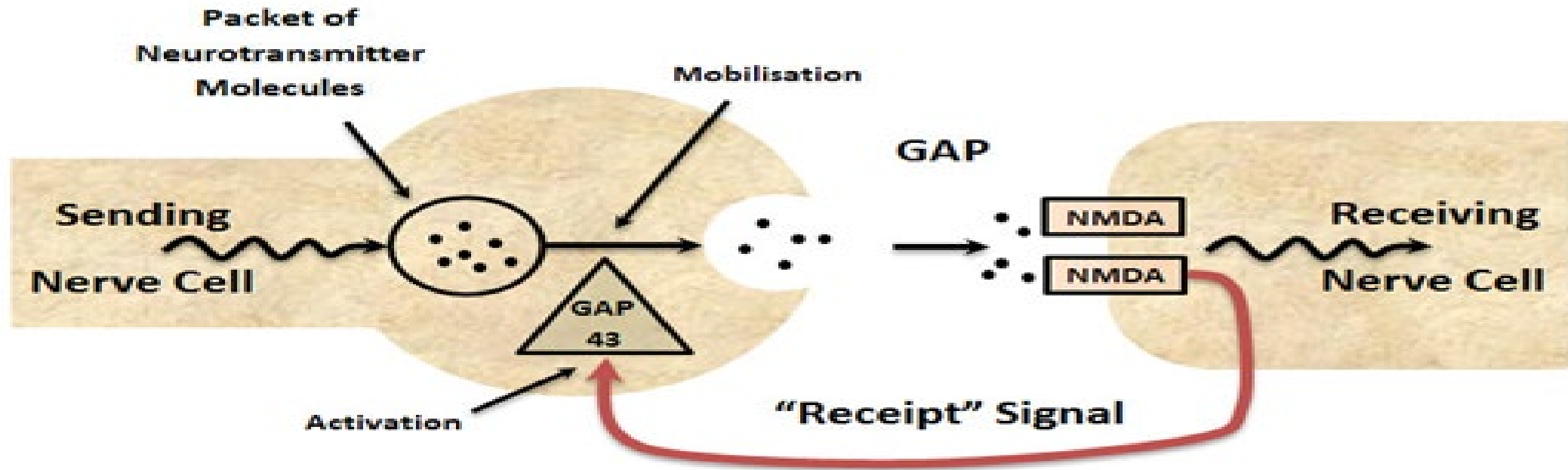
- **Personal knowledge**: The organization of neurons
- **Public Knowledge**: The organization of artifacts
    - A common underlying logic: graph theory, connectionism, social network theory, etc.
    - If a human mind can come to 'know', and if a human mind is, essentially, a network, then any network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

$W = [4 \times 4]$

outputs

rev

Bi-Direction arrows
mean that $W_{ij} = W_{ji}$
$\therefore W_{ji} = W_{ij}$
- - - - -
output becomes input
after 1st cycle

- Single Layer
- Inputs X_i act as outputs Y_i
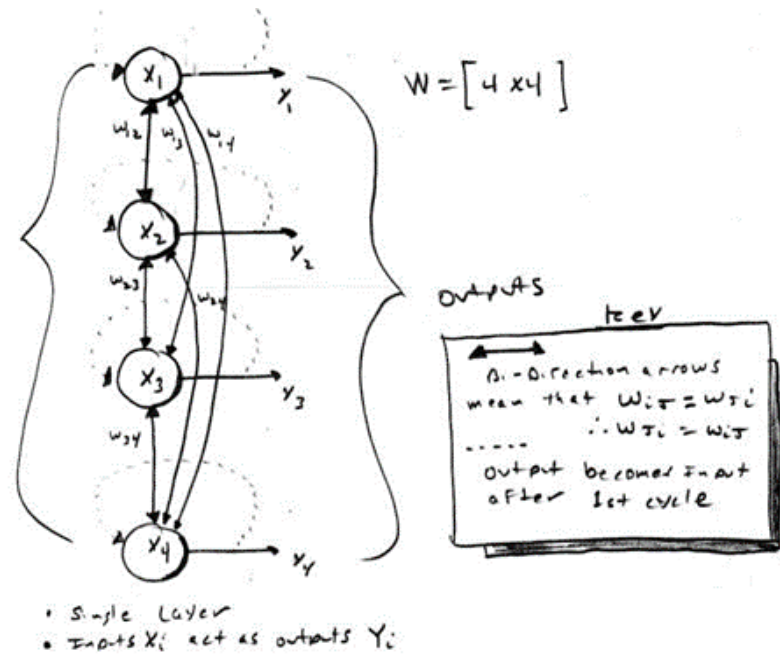
Network Learning

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.

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Educational Technology

| Individuals compete | Collectives collaborate | Connectives cooperate |
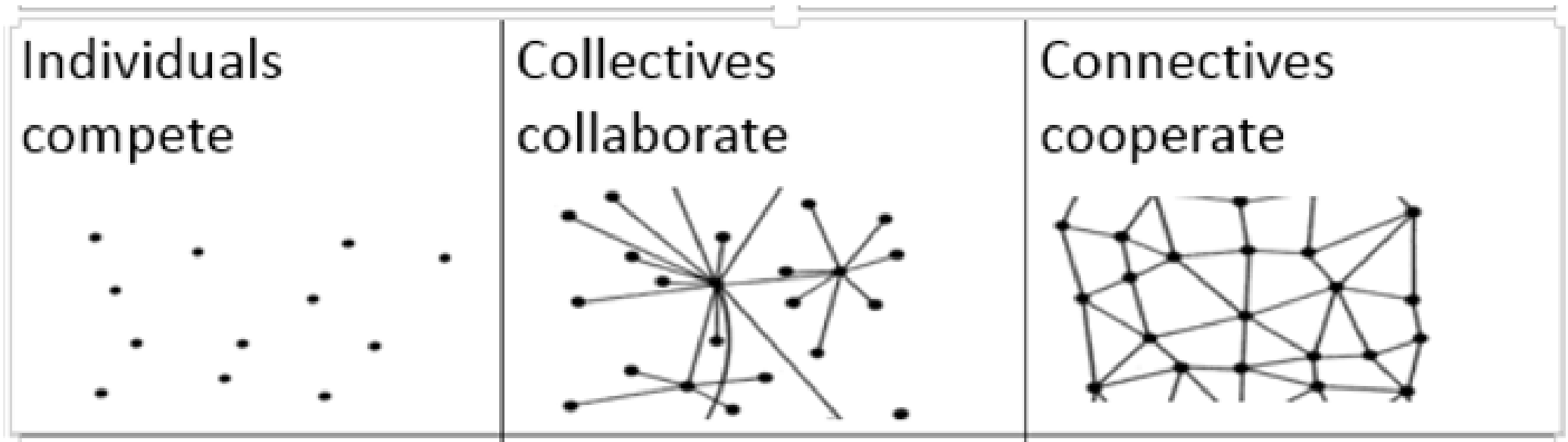
Community and Connectives:

- 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)
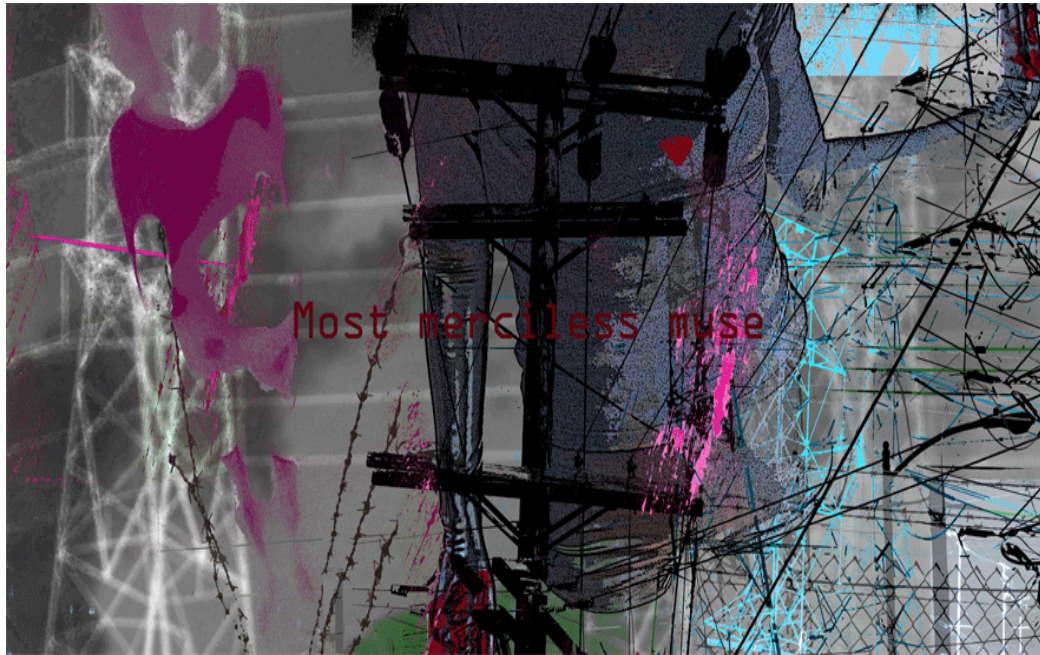
A rough outline of a learning process:

- 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
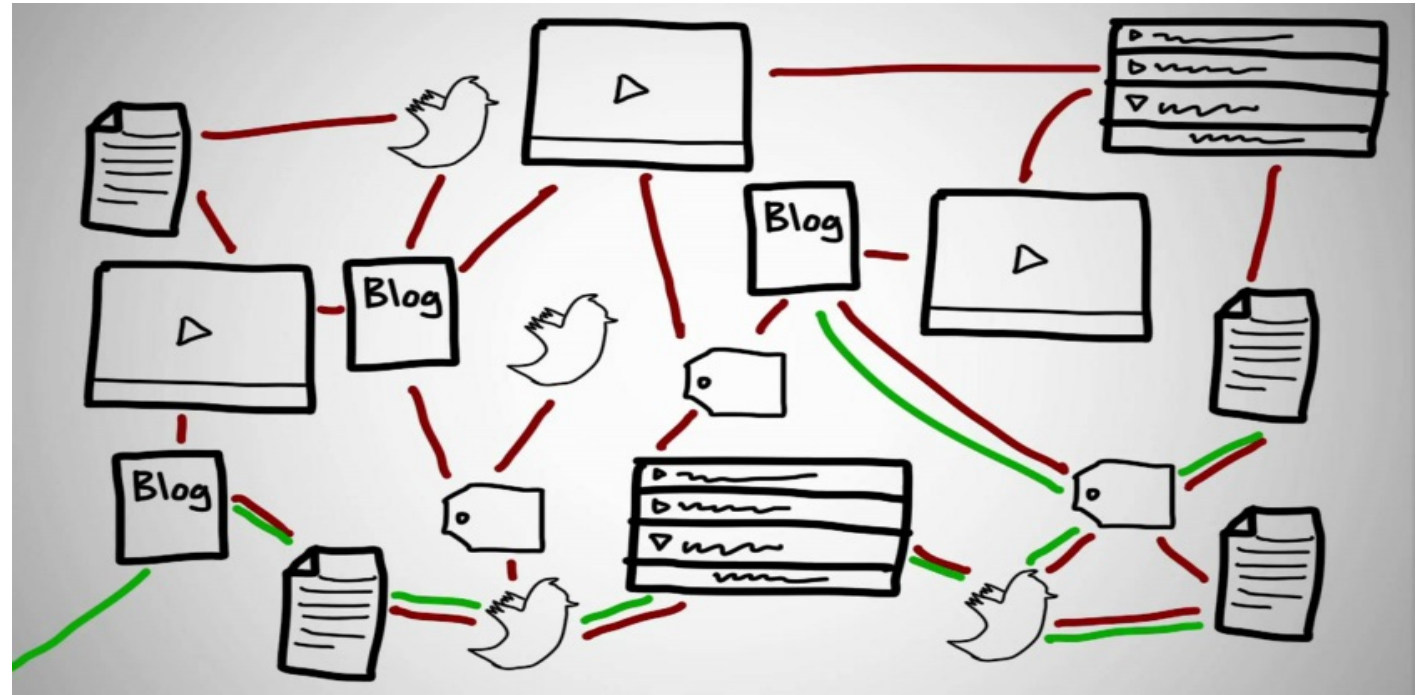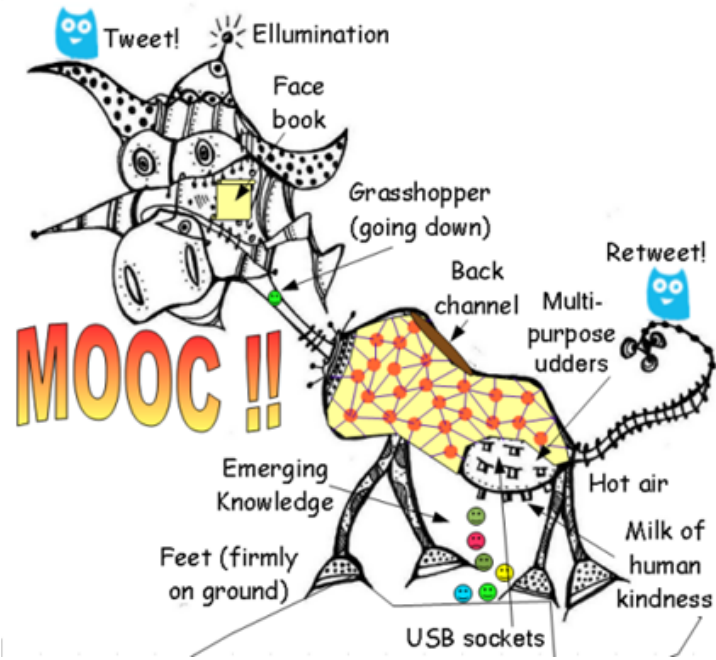
Massive Open Online Course (MOOC):

- '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'

networks ← → tasks ← → contents

CCK08

Autres cours

DS106

http://ds106.us/history/

Artificial Intelligence

https://www.ai-class.com/

coursera

Take the World's Best Courses, Online, For Free.

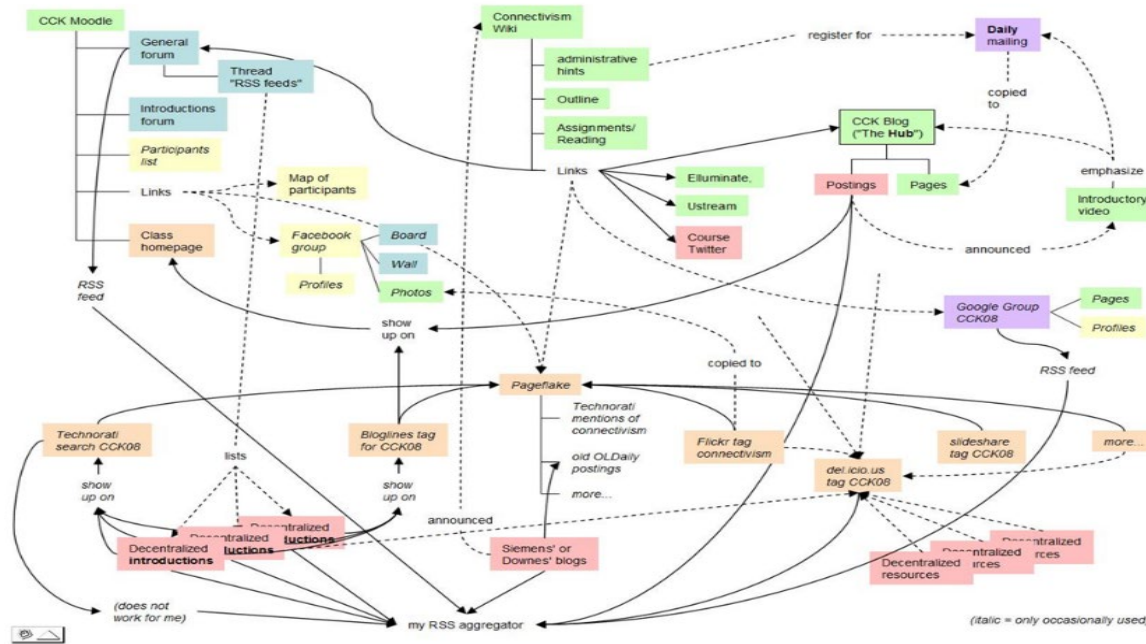https://www.coursera.org/

coursera   KHAN

udemy   edX

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
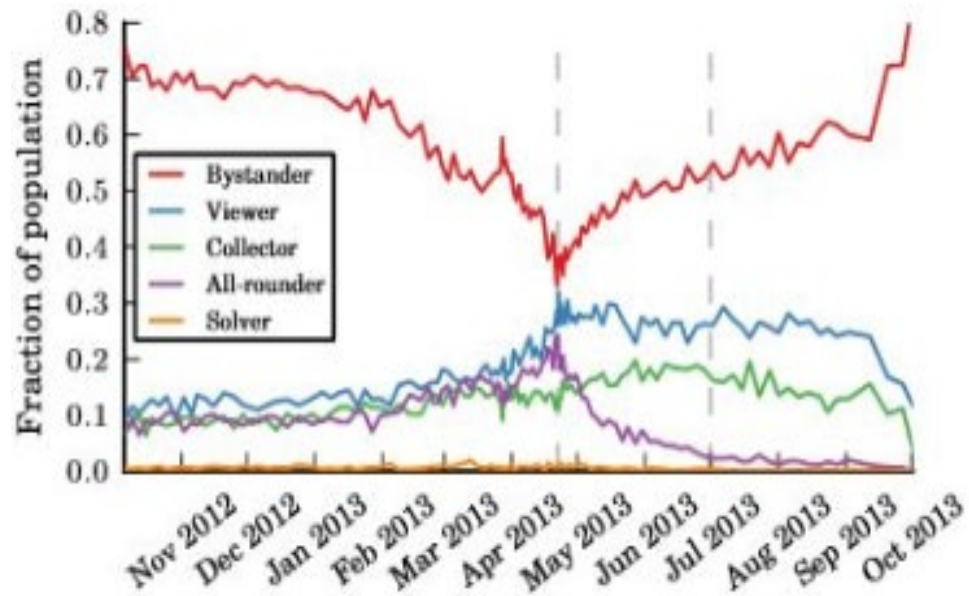
Criticisms:

- 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 of being absorbed or anything else. Yes, they are 'disruptive'
- Content - too much content, not enough time

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.
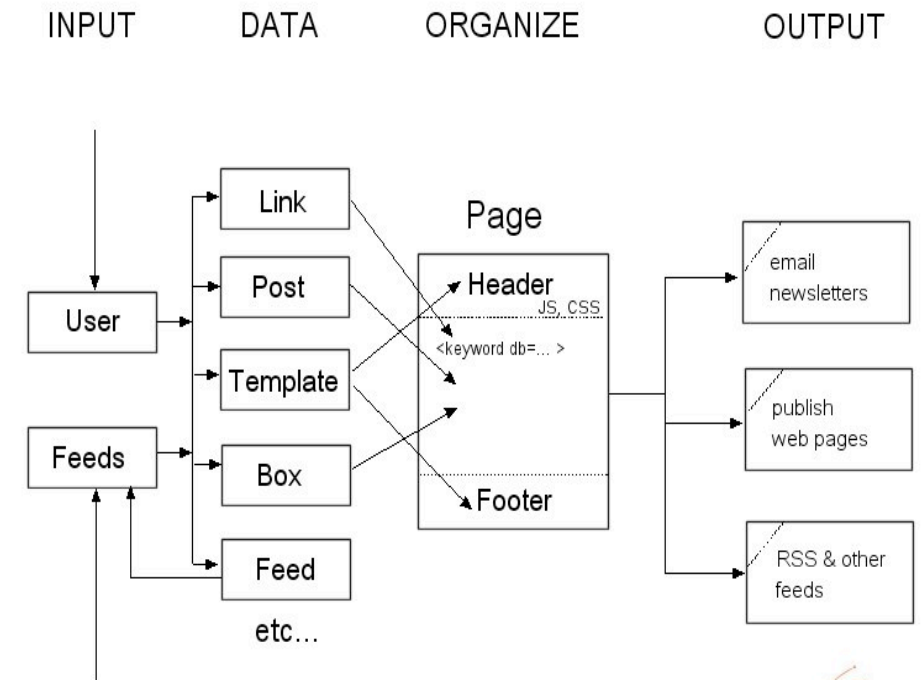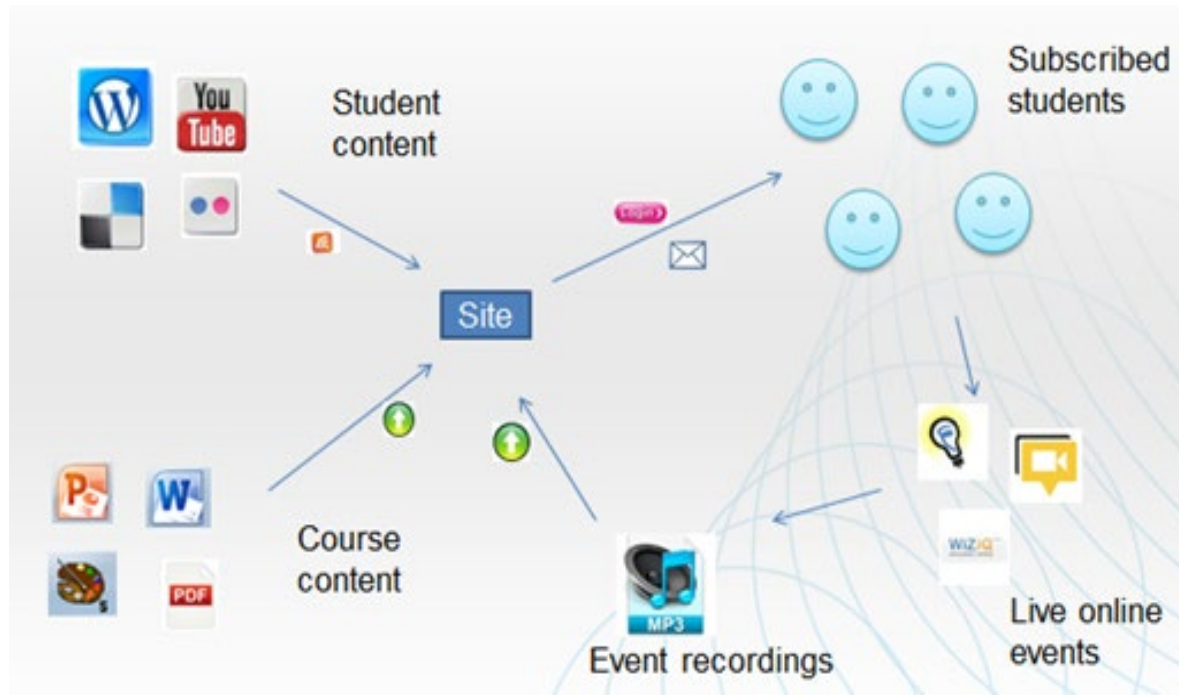
New Technology:

- 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

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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

Have Network, Will Travel

Open Access and Open Educational Resources:

Definition
- OERs – UNESCO – "teaching, learning or research materials that are in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution."
- Open Archives Initiative – "interoperability standards that aim to facilitate the efficient dissemination of e-prints andmmmmmimmmmimmmimmmmmmimmmmmmmimmmmmmmmmmmimmmmi

Open Education Logic Model:

Taylor, J.C. 2007. Open courseware futures: Creating a parallel universe. e-Journal of Instructional Science and Technology (e-JIST), Vol 10, No. 1. Online: http://www.ascilite.org.au/ajet/e-jist/docs/vol10_no1/papers/full_papers/taylorj.htmmmmmmmmmmmmimmmmmmimmmmm
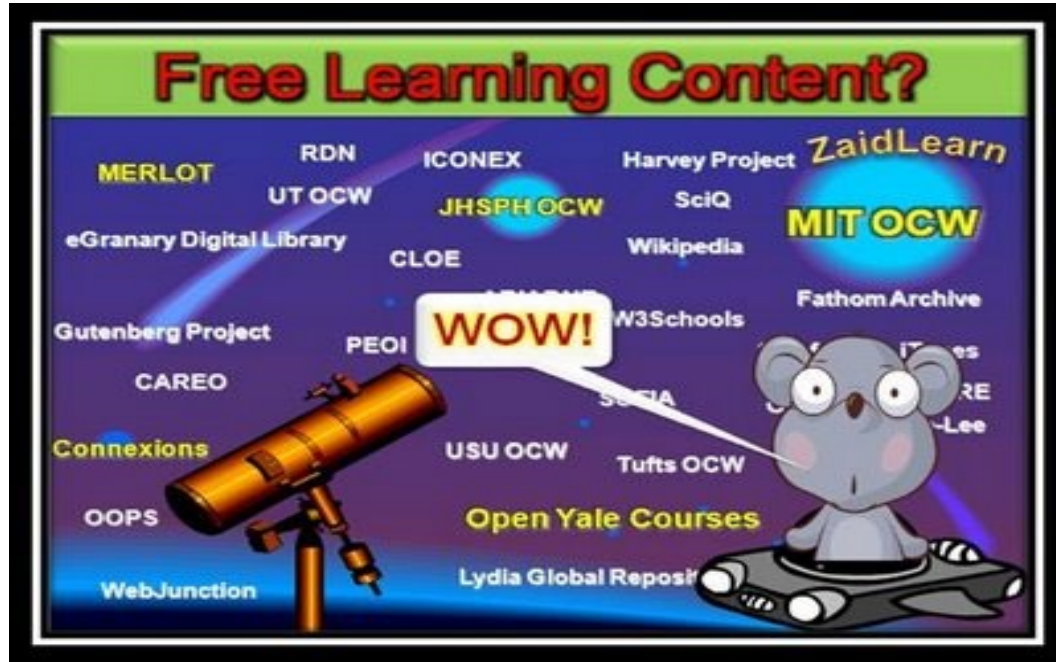
Why Open Educational Resources?

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'

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