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Learning and Connectivism in MOOCs

Downes, Stephen

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11 September
2014

Stephen Downes

Learning and Connectivism in MOOCs

http://www.downes.ca/presentation/347

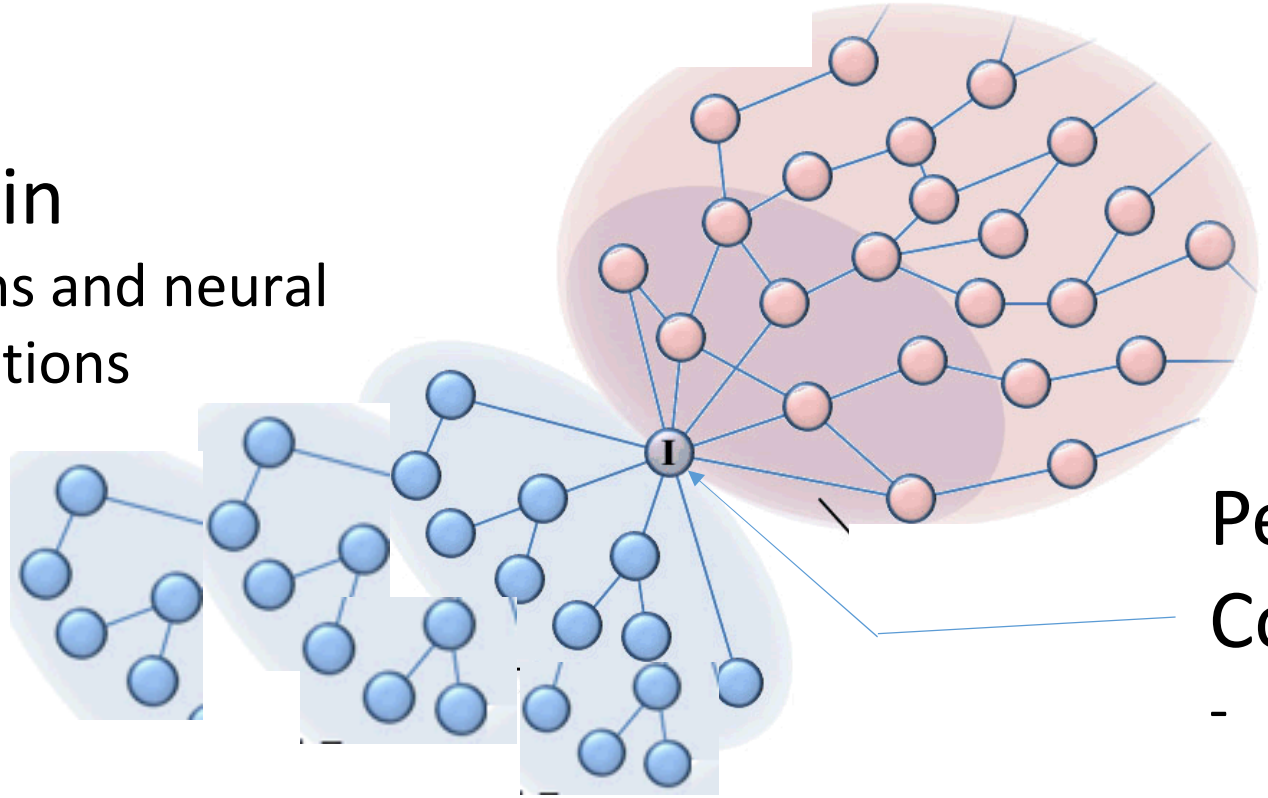
How I See the World

How I See the World

A connectivist perspective

My Brain

- Neurons and neural connections



The World

- People, things, ideas, concepts, all connected to each other

Perception and Communication

- The world speaks to me and I speak to the world

How I See the World

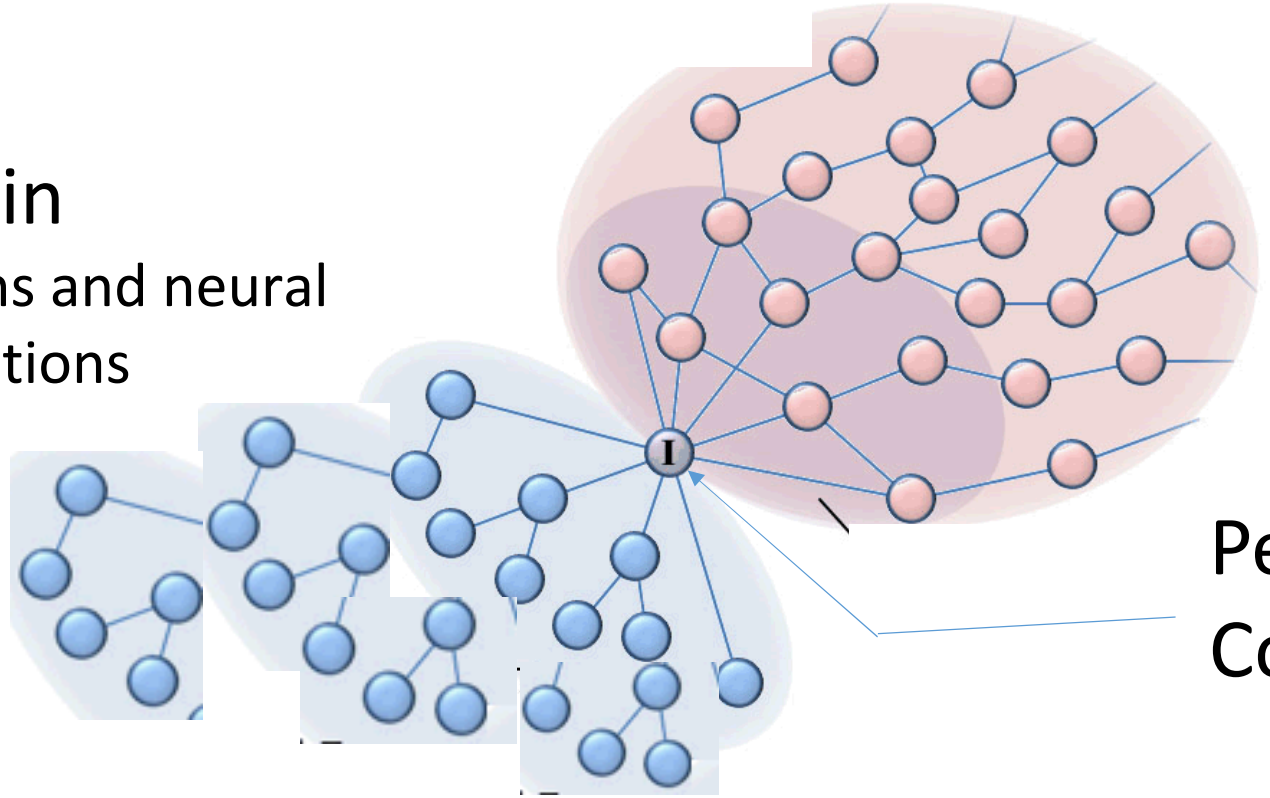
The MOOC

MOOC

- A learning network

My Brain

- Neurons and neural connections



Perception and Communication

How I See the World

Perception and Communication

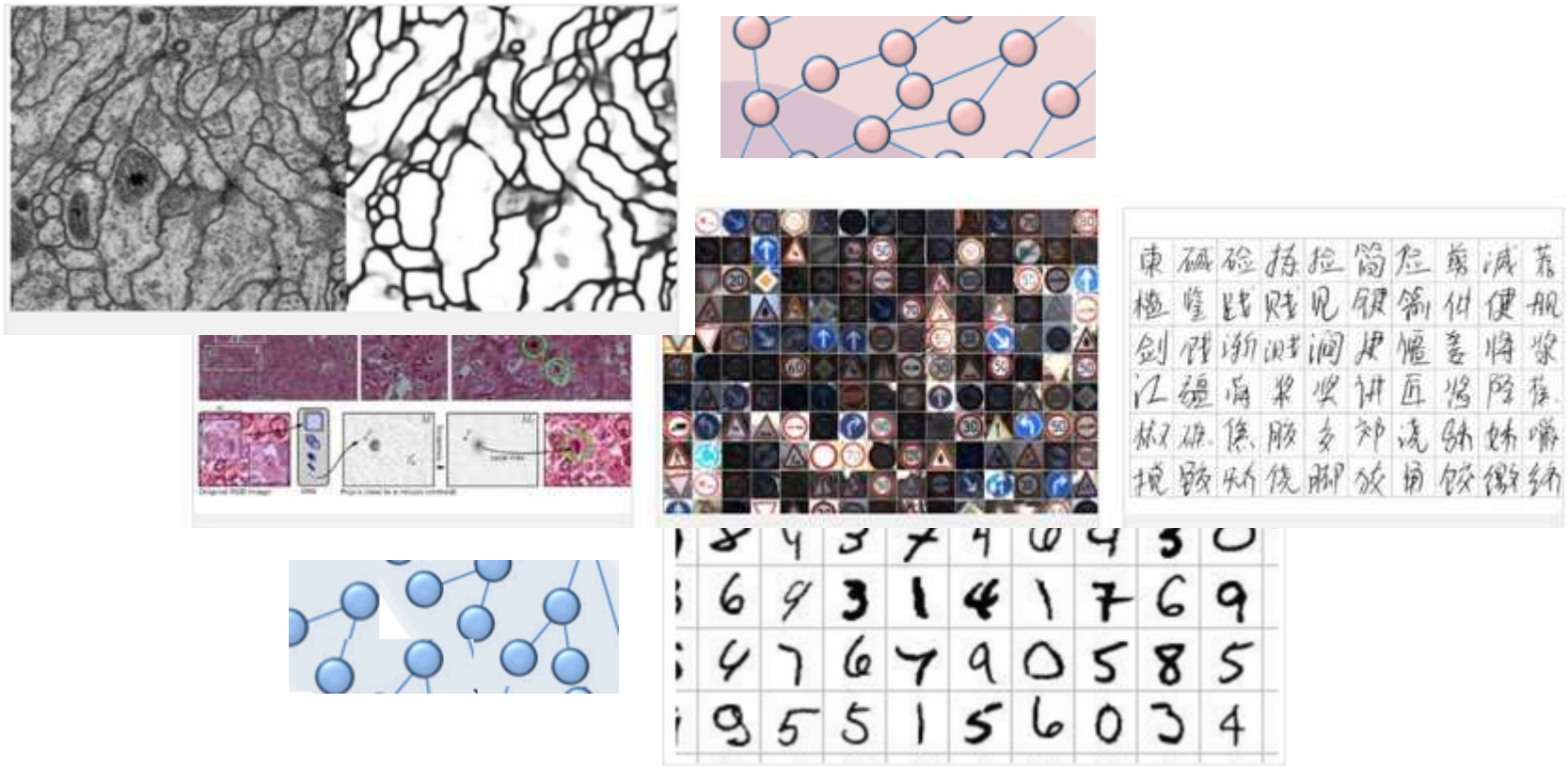
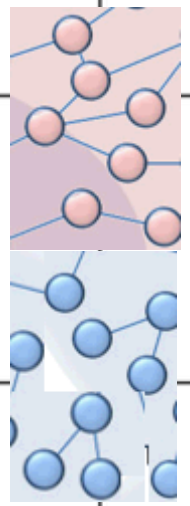


Image: http://devblogs.nvidia.com/parallelforall/cuda-spotlight-gpu-accelerated-deep-neural-networks/

How I See the World

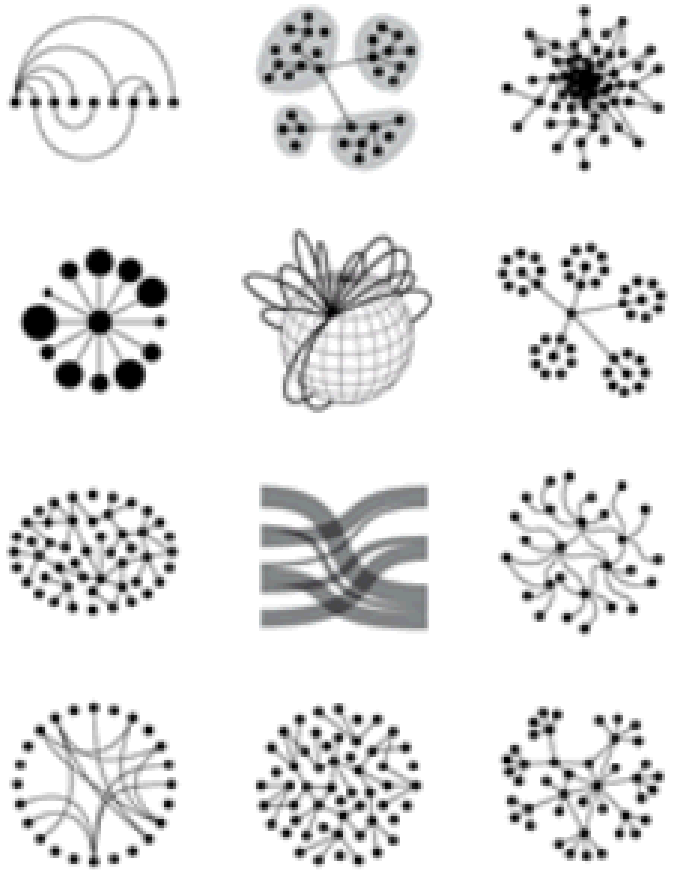
The Critical Literacies

Syntax	Cognition
Semantics	Context
Pragmatics	Change



Syntax

Not just rules and grammar



Forms: archetypes? Platonic ideals?
Rules: grammar = logical syntax
Operations: procedures, motor skills
Patterns: regularities, substitutivity
Similarities: Tversky - properties, etc

Image: http://www.visualcomplexity.com/vc/blog/?author=1

Syntax

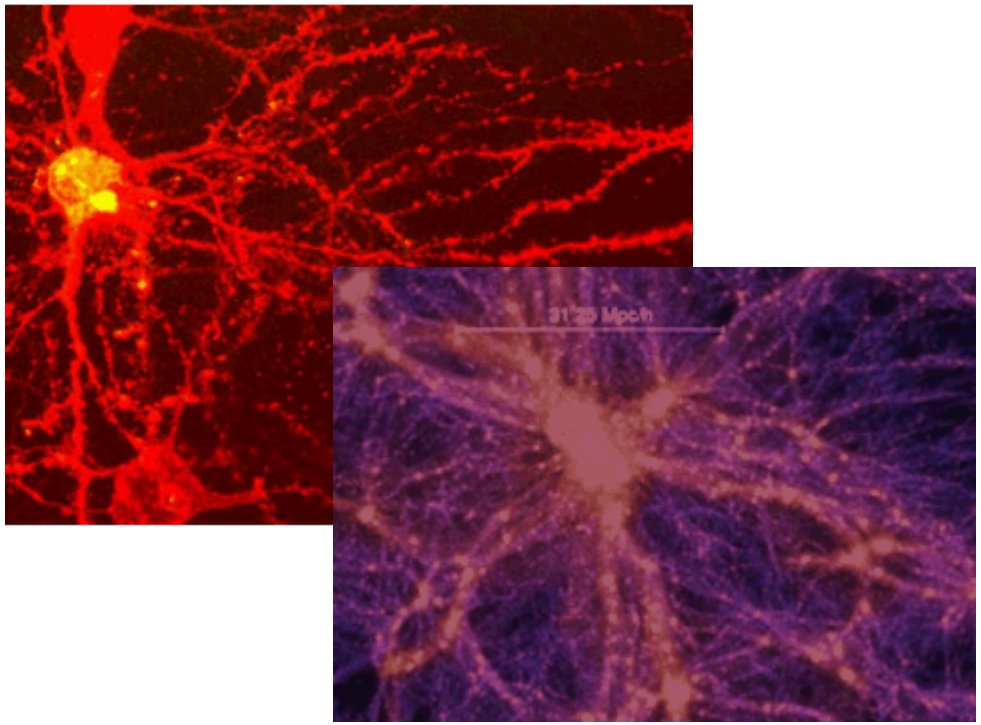
Learning Theories: trying to find patterns in phenomena

- Behaviourism – learning & practice
- Instructivism – learning from worked examples, testing
- Cognitivist – the importance of models and comprehension
- Constructivist – creating our own learning

Image: http://www.visualcomplexity.com/vc/blog/?author=1

Syntax

Networks and Connections in the World

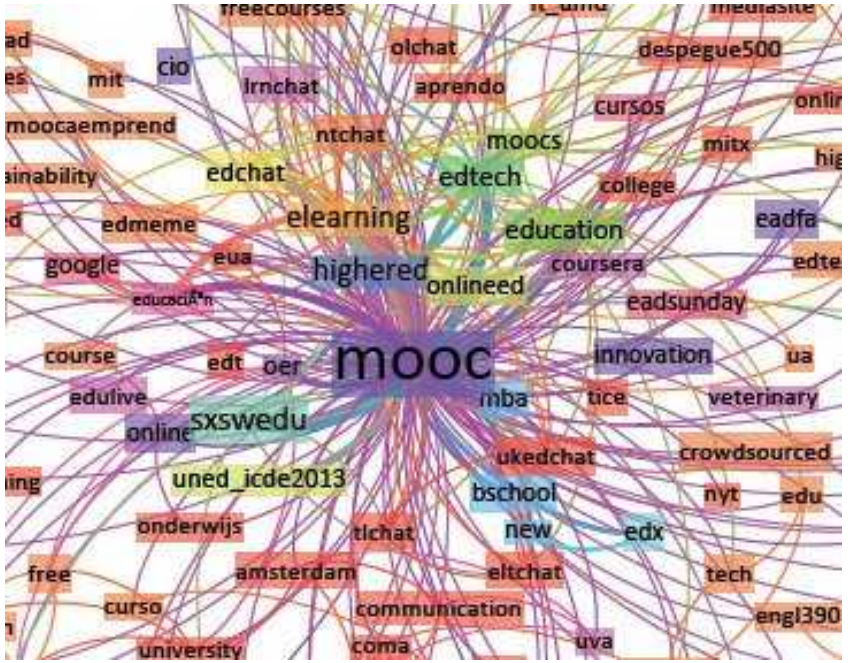


- The way things are organized in the world is important
- A pile of sand is different from a sand castle
- We observe individual entities self-organizing
- These form complex networks from the brain to galaxies

Image: http://www.visualcomplexity.com/vc/blog/?p=1312

Syntax

Massive / Open / Online / Course



- Massive – networks grow
- Open – networks have no edges
- Online – creates the first real networks for learning
- Courses – creating temporary networks

Image: http://themoocexperience.wordpress.com/2013/03/08/being-social-in-a-mooc/

Semantics

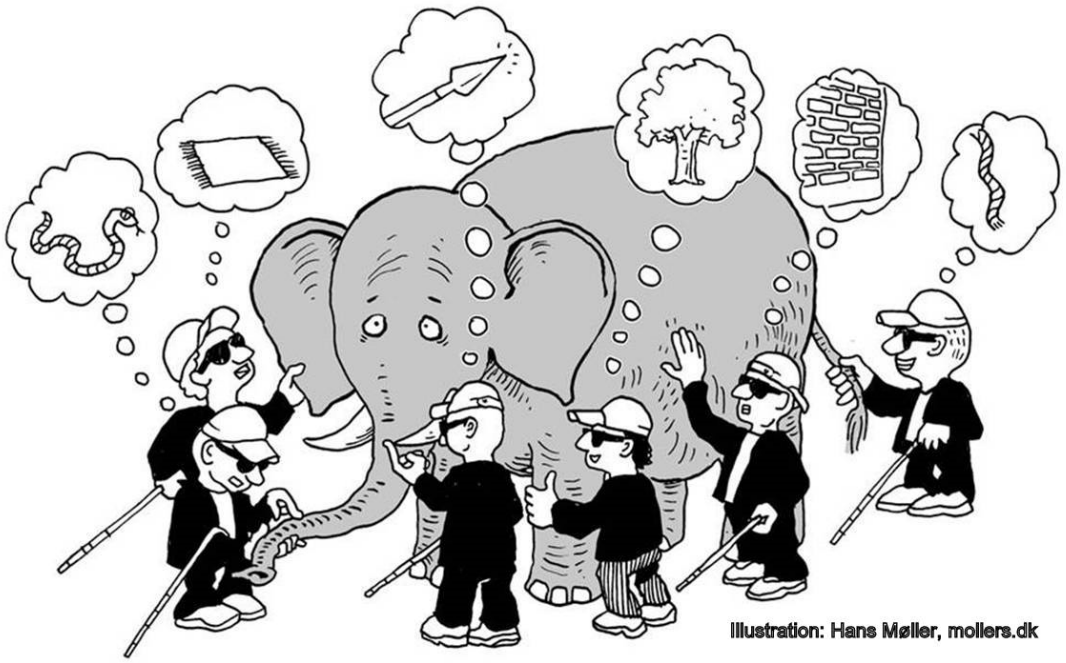
Theories of truth / meaning / purpose / goal

- Truth and belief: sense and reference
- Interpretation and models (probability, logical space, frequency, wagering / strength)
- Learning theories: Hebbian, back-prop, Boltzmann
- Decisions: voting / consensus / emergence

Image: https://darkjapanese.wordpress.com/tag/collocations/

Semantics

A MOOC as a way of Seeing the World



- The MOOC brings together many perspectives
- No one perspective is correct or true
- The whole is created by *interaction*

Image: http://rathchakra.wordpress.com/

Semantics

Knowledge is not Transmitted, it is *Created*

- Each piece contributes to the whole
- Each person sees the *new* from a certain perspective
- We feed back and forth

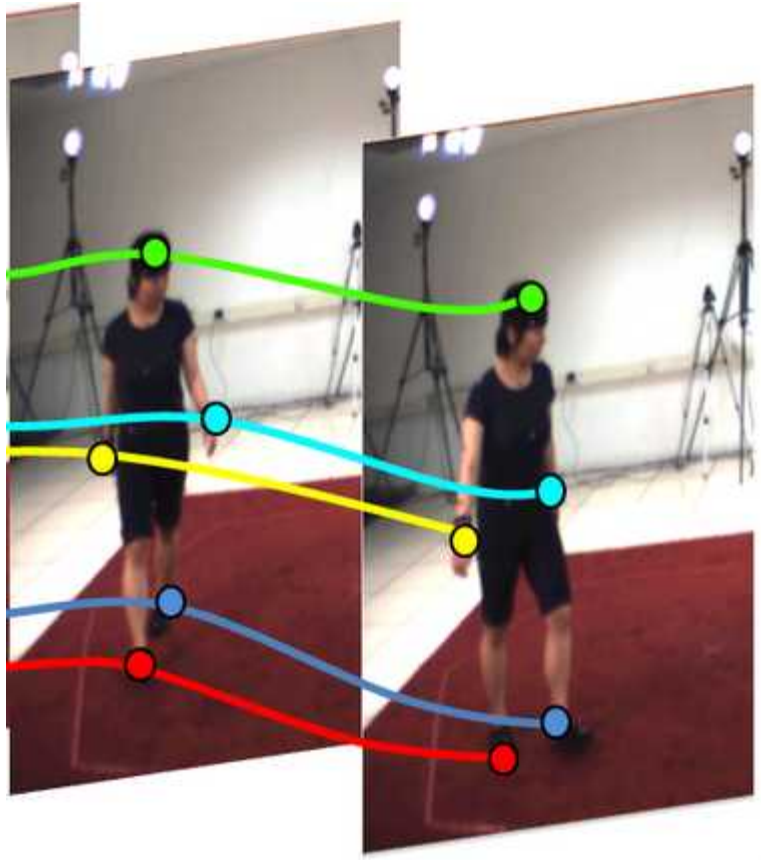
Semantics

What We Learn Depends on How We Interact

- Autonomy – each individual decides for him or her self
- Diversity – each person has their own values and goals
- Openness – new members and new ideas are welcome
- Interactivity – we learn through communication

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

Image: http://ftp.tnt.uni-hannover.de/print/papers/view.php?ind=1&ord=month&mod=DESC

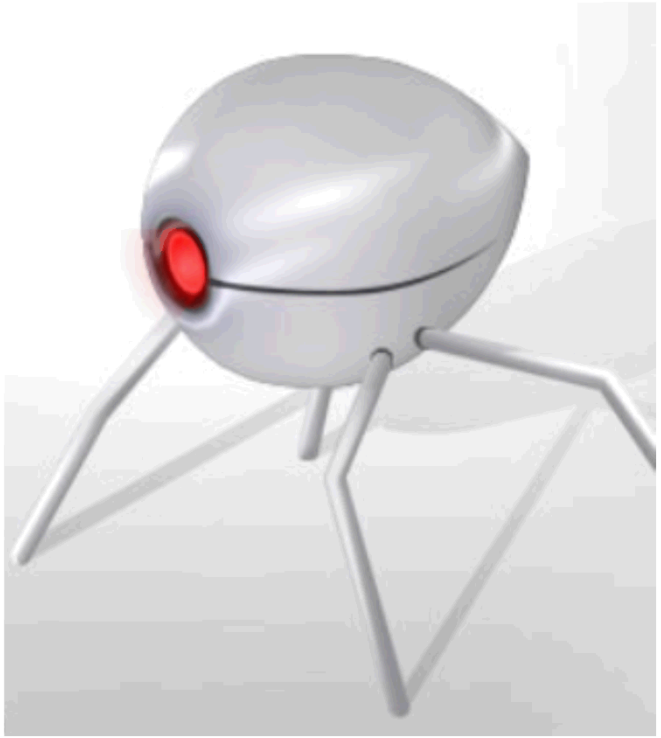
Pragmatics

How to Do Things With MOOCs

- Educate – model and demonstrate processes and actions
- Inform – tell stories, recount experiences
- Promote - Pass on an idea or a way of life (memetics)
- Recruit – find others to join

Pragmatics

How to do things *in* MOOCs



- Aggregate – listen to many diverse sources
- Remix – bring these different perspective together
- Repurpose – reform these new ideas in your own way
- Feed Forward – share your perspectives

Image: http://www.lifeaftercoffee.com/2008/11/03/hello-iamthenode-and-im-here-to-make-you-vomit/

Pragmatics

What a MOOC *Does*

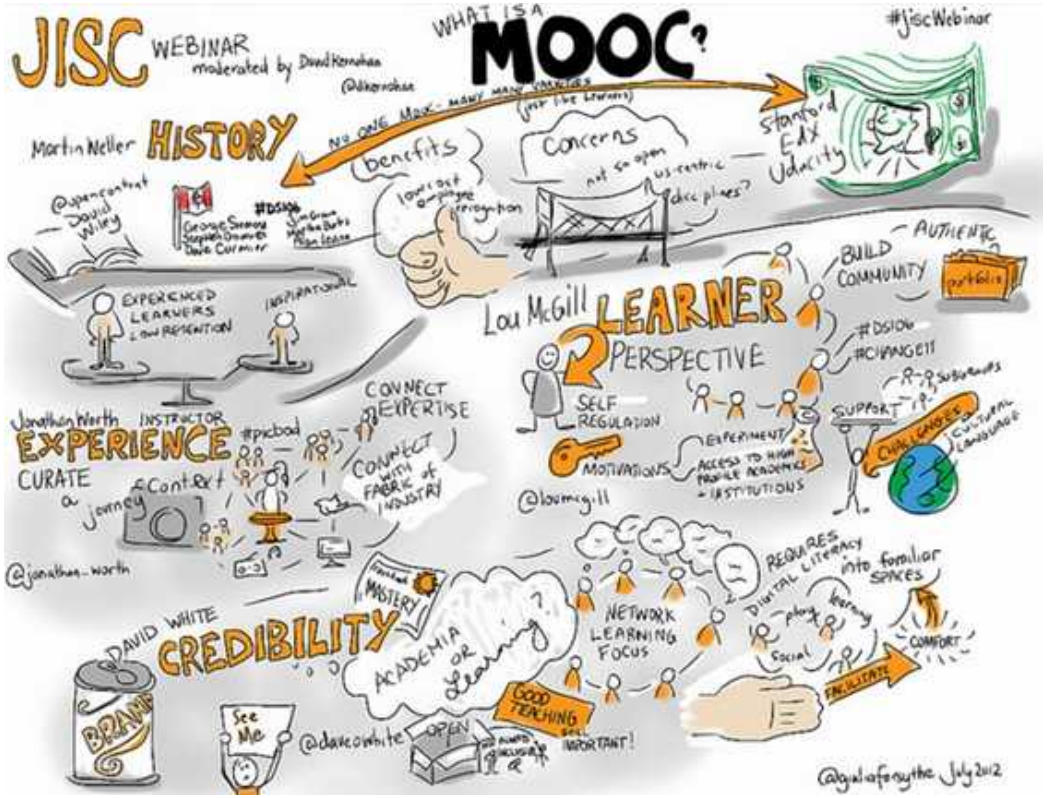


Image: http://www.jiscinfonet.ac.uk/topics/moocs/

- Asks questions
- Experiments
- Explores
- Discovers
- Creates

Context

Placement, environment

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

Image: http://www.visualcomplexity.com/VC/index.cfm?domain=Pattern%20Recognition

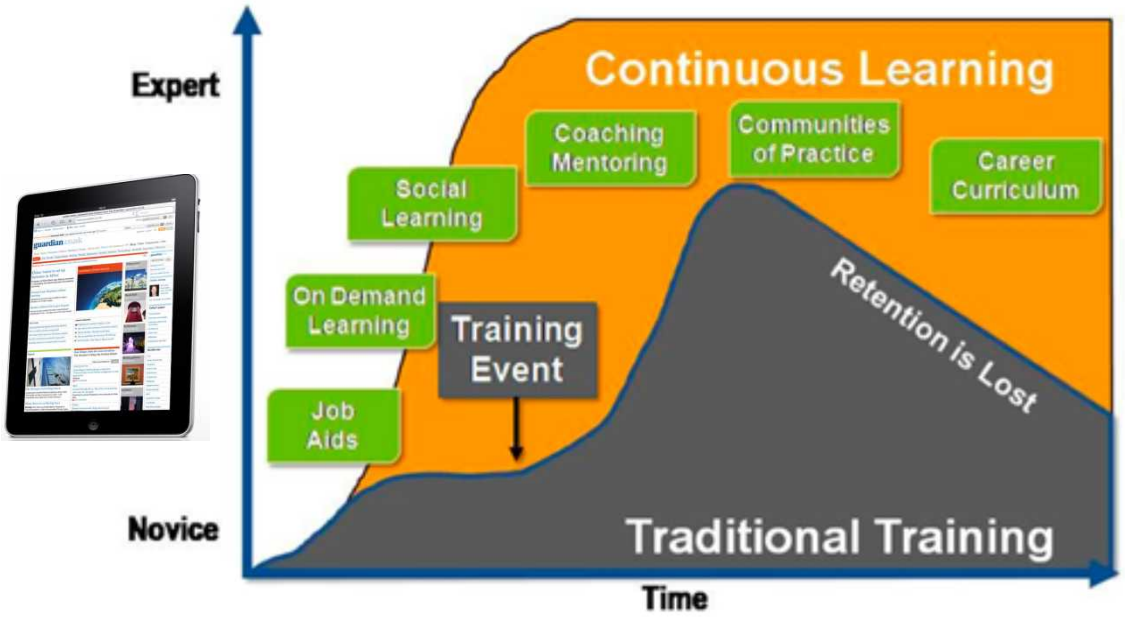
Context

Possibilities for Learning on the Internet

- The internet created a location where networks could form
- Online communities *already* learning in self-organizing groups
- eg. OSS, Napster…

Context

Learning in the Workplace

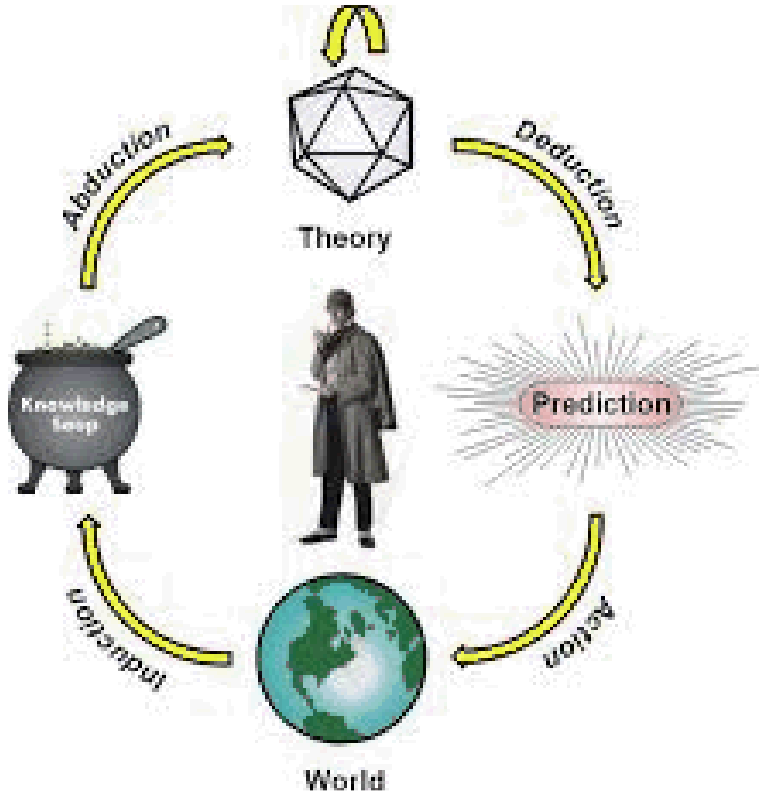


- the skills gap
- informal learning
- just-in-time learning (vs just-in-case)
- learning as something we support rather than provide

Image: http://www.goodpractice.com/blog/future-of-workplace-learning-in-2015/

Cognition

Reasoning, inference and explanation

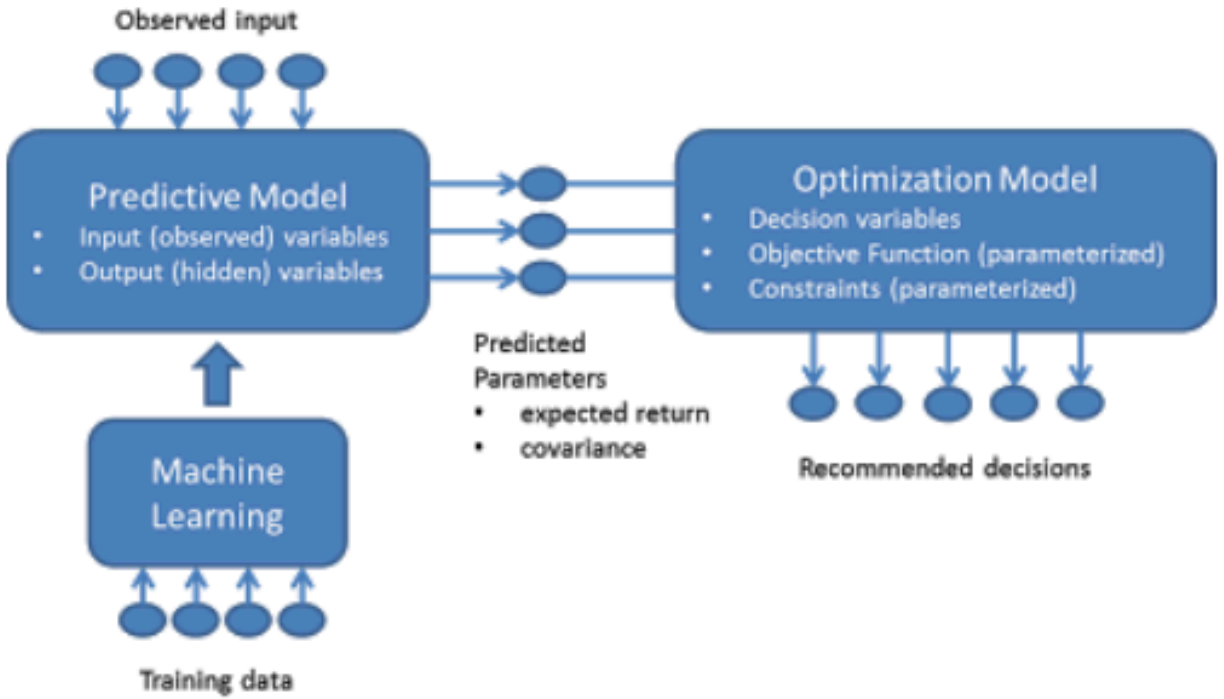


- description - X (definite , allegory, metaphor)
- definition - X is Y (ostensive, lexical, logical (necess. & suff conds), family resemblance, identity, personal identity, etc
- argument - X therefore Y - inductive, deductive, abductive, modal, probability (Bayesian), deontic (obligations), doxastic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

Image: http://www.jfsowa.com/pubs/challenge

Cognition

The Challenge of Learning Analytics



- Analytics predict performance using neural network techniques (machine learning)
- *But* this process requires 'Big Data' – with resulting privacy issues

Image: http://horicky.blogspot.com/2013/01/optimization-in-r.html

Cognition

How do we infer someone has learned?

- Traditional testing is a very poor sort of induction
- We identify good doctors, good food, good writers by *recognizing them*
- In a MOOC, achievement is demonstrated in open work, and recognized by peers

Change

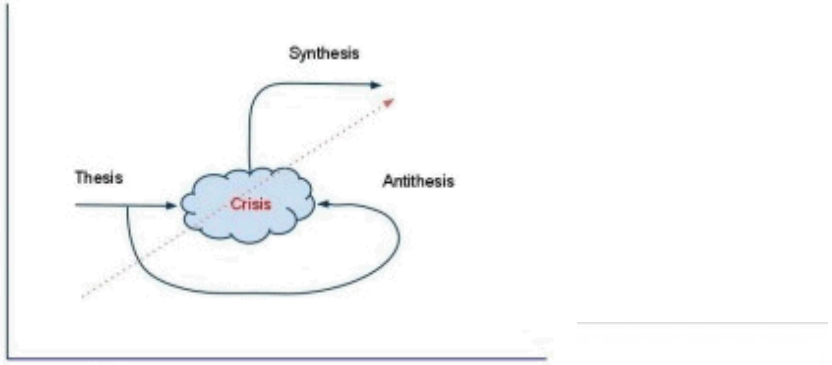
Graphs / Drivers / Attractors / Forces

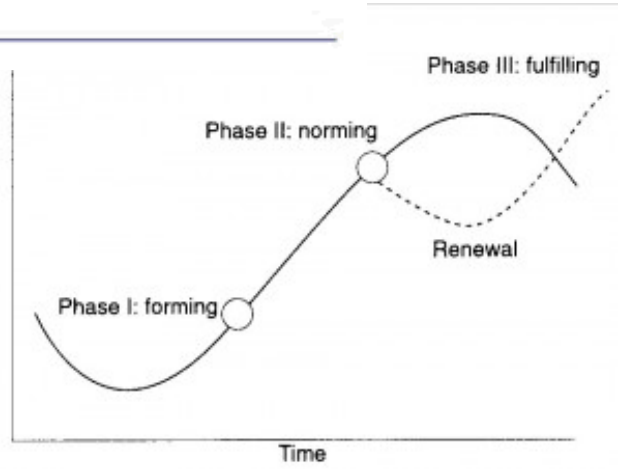
- relation and connection: I Ching, logical relation
- flow: Hegel - historicity, directionality; McLuhan
- games, for example: branch and tree, database
- scheduling - events; activity theory / LaaN

Image: http://www.motikon.com/2011/12/19/from-data-to-design/

Change

Varieties of Change

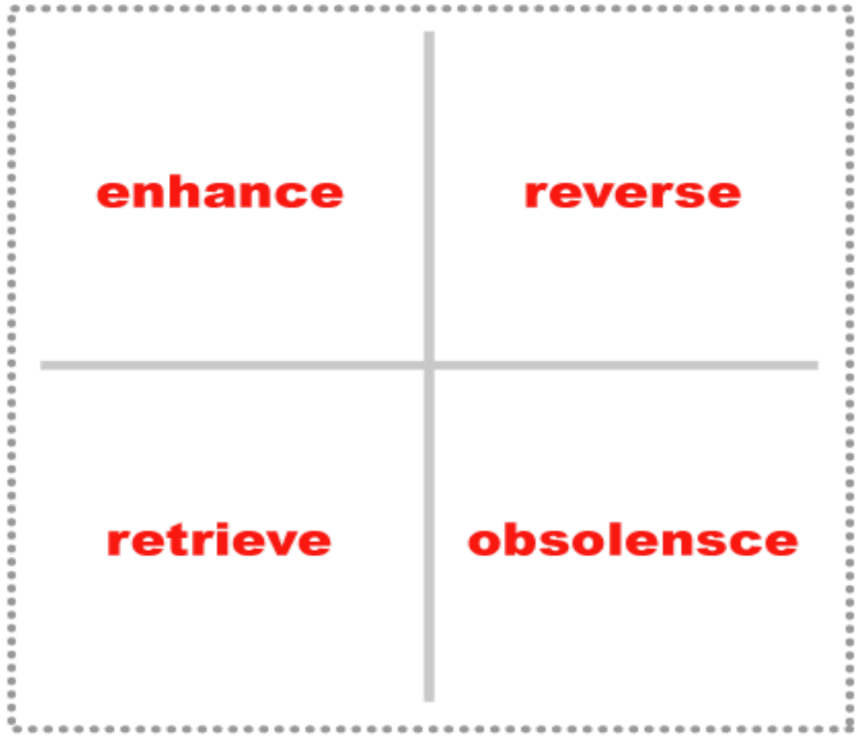




- Easy to think things will always be the same (vs the Tipping Point)
- Cycles and Arcs
- The dialectic

Change

Consequences of Change



- What do MOOCs and connectivism enhance?
- What do they reverse?
- What thing from the past do they retrieve and make new?
- What current thing do MOOCs make obsolete?

Image: http://www.provenmodels.com/18/four-laws-of-media/marshall-mcluhan/

Change

Drivers and (Strange) Attractors

- We think of the future in terms of today's imperatives: jobs, money, security
- But what is important to us today may not always be
- There's no way to *predict* but we can imagine what will matter…

Image: http://chaoticatmospheres.deviantart.com/art/Strange-Attractors-The-Dadras-Attractor-376066266

How I See the World

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