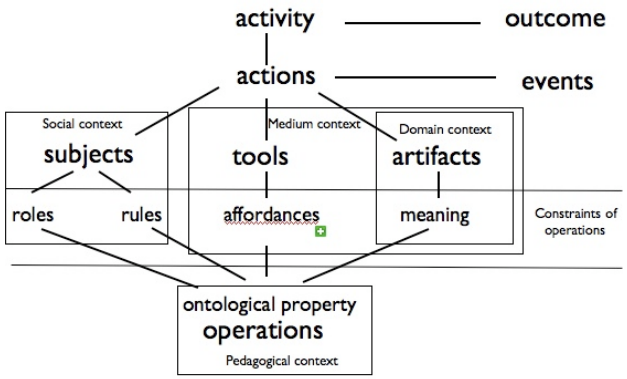
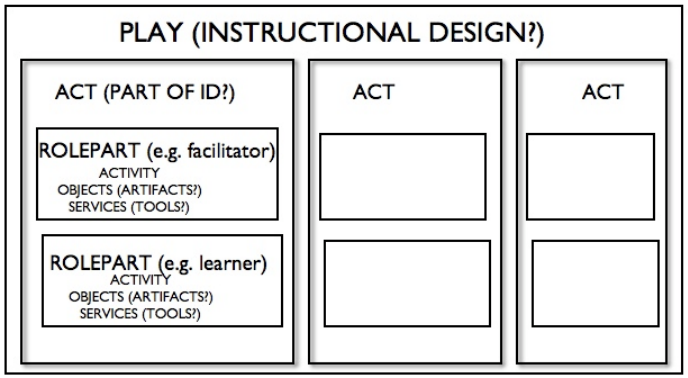
The Limits of Learning Design

Stephen Downes

February 22, 2012



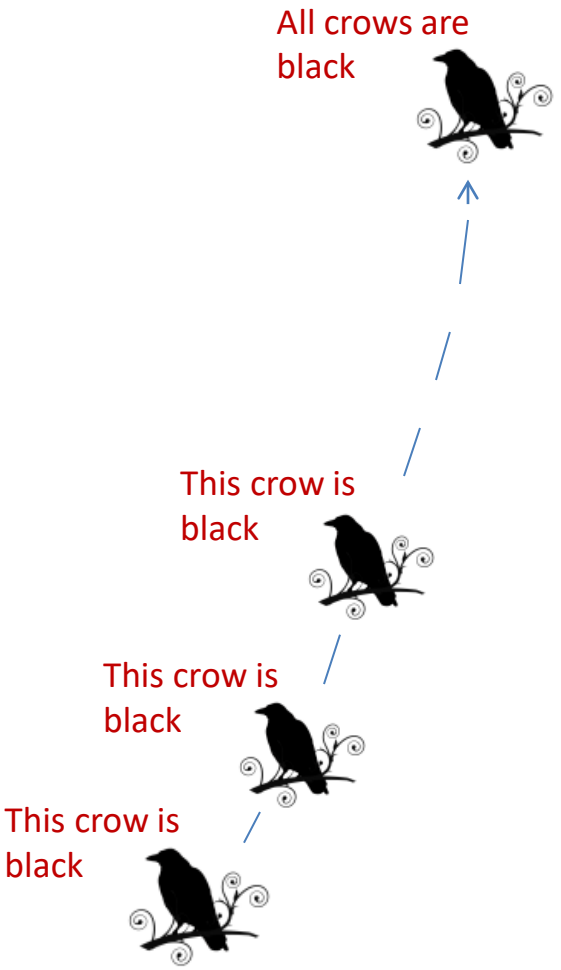


Images: http://tihane.wordpress.com/2007/01/30/ims-learning-design/

- Learning design - topic - types of LD
- The concept of patterns (designs / models / rules / principles) in general: an abstract representation of something concrete.

What is Learning Design?

Creating Abstractions



- Were thought to be created by extrapolation or generalization (1,2,3, ... infinity)
- But are in fact created through a process of subtraction. "An X is Y".
- All language abstracts in this way.

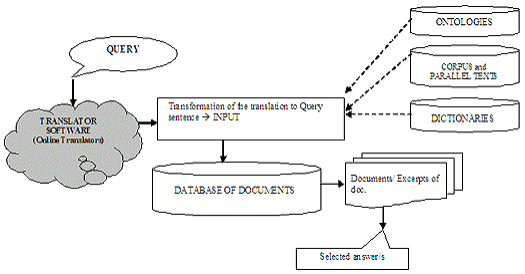


Image: http://www.translationdirectory.com/articles/article2147.php

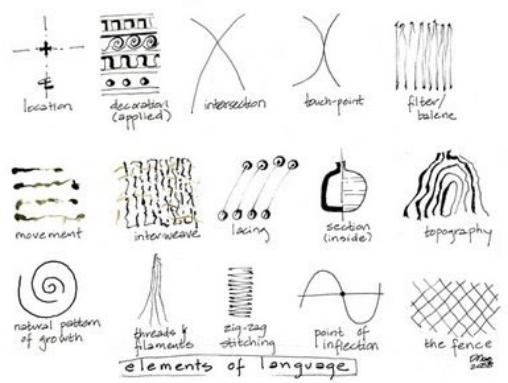


Image: http://kdokosart.blogspot.com/2008/06/elements-of-language.html

- The elements of a language are whatever is left over after the subtraction
- The grammar or syntax of the language is the set of rules for manipulating those elements.

Elements of a Language

Languages / Elements	Performance (the ability to adopt alternative identities for the purpose of improvisation and discovery)(subcategories?)
Syntax: - Forms - Rules - Operations - Patterns - Similarities	- Presentation acting, method acting - "Know your lines" etc http://filmtvcareers.about.com/od/gettingthejob/a/GJ_Actor_Tips.htm - Stanislavski's system (etc…) http://en.wikipedia.org/wiki/Stanislavski%27s_system - Ritual Performance (etc.) http://www.let.rug.nl/koster/papers/JHP.Koster2.Edit.pdf - Comparing Tales (etc.) http://artsedge.kennedy-center.org/content/2343/

Speaking in LOLcats
http://www.downes.ca/presentation/233

- Purposes of a language:
  - to describe / communicate
  - to explain
  - to reason
  - to define
- All languages perform all of these functions (and more!)

Purpose of a Language

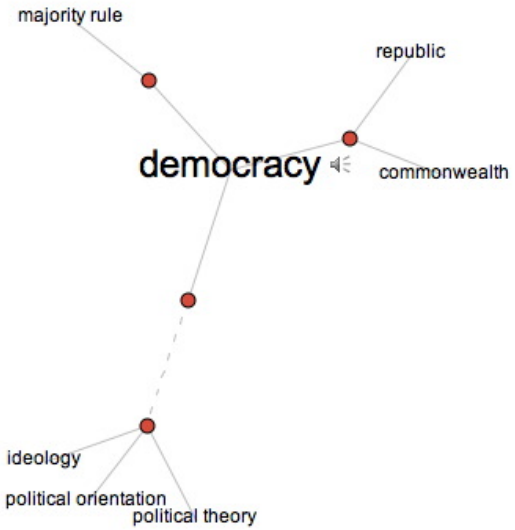


Image: http://conversations.marketing-partners.com/tag/george-lakoff/

- You can't create a language and say 'this is just to communicate'; the very act of creating a language invokes all four elements
- George Lakoff: 'Frame'

Frames

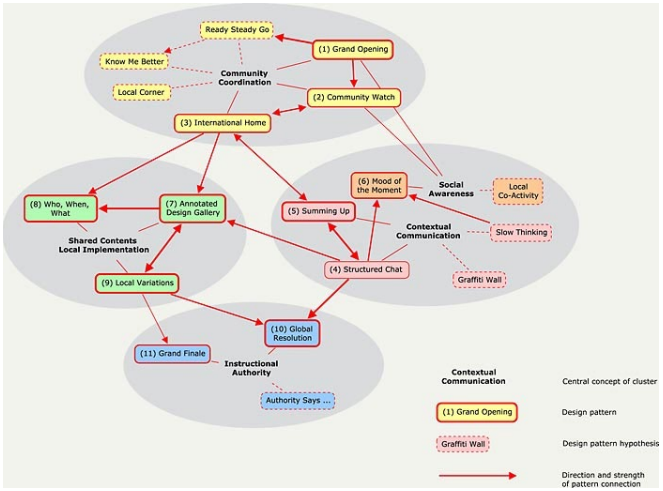


Image: http://www.ijdesign.org/ojs/index.php/IJDesign/article/view/276/273

- Also, you can't talk about LD by talking as though the language isn't there
- LD *is* the language
- Various pseudo-languages:
  - Pseudo-code
  - Globish

Learning Design as a Language

Image: http://didjelirium.wordpress.com/2011/02/19/abstraction-by-shintaro-kago/

- Languages are more or less abstract
  - Eg. greater or smaller set of elements
  - Greater or smaller set of rules / rule-base
  - Greater or Smaller expressivity

Levels of Abstraction

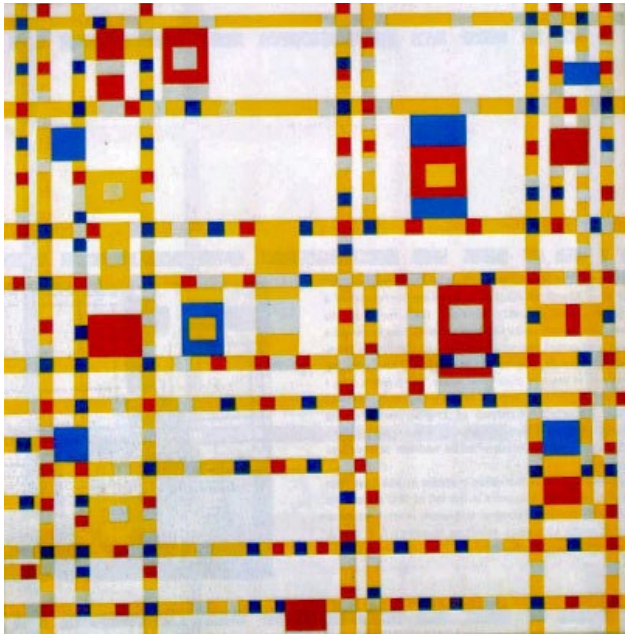


Image: http://www.artslant.com/ny/articles/show/15496

- In science, there is a methodological principle to prefer pure abstraction - fewer elements, fewer principles:
  - numbers - math - counting
  - properties - sets - grouping
  - computability - boolean - inferring/moving

Formalism & Pure Abstraction

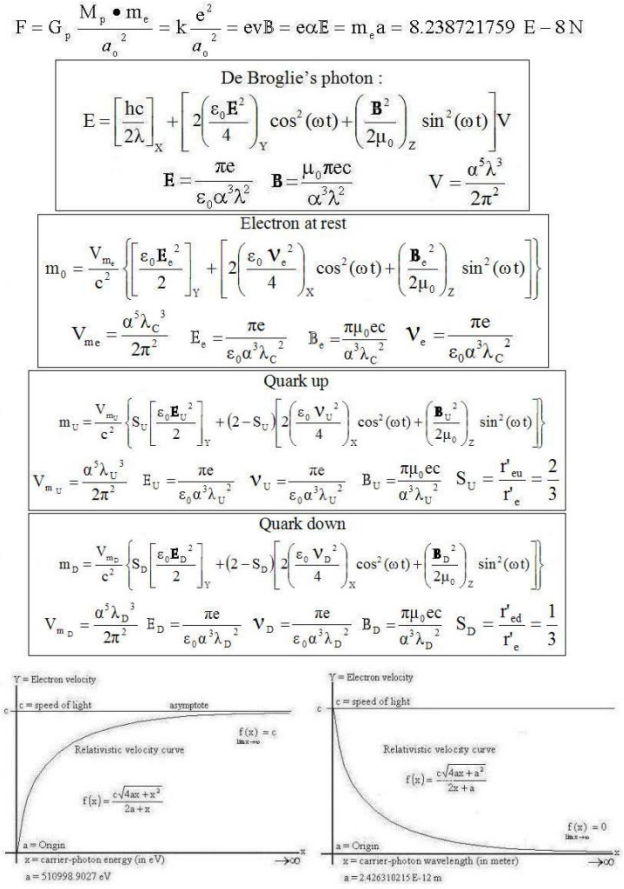
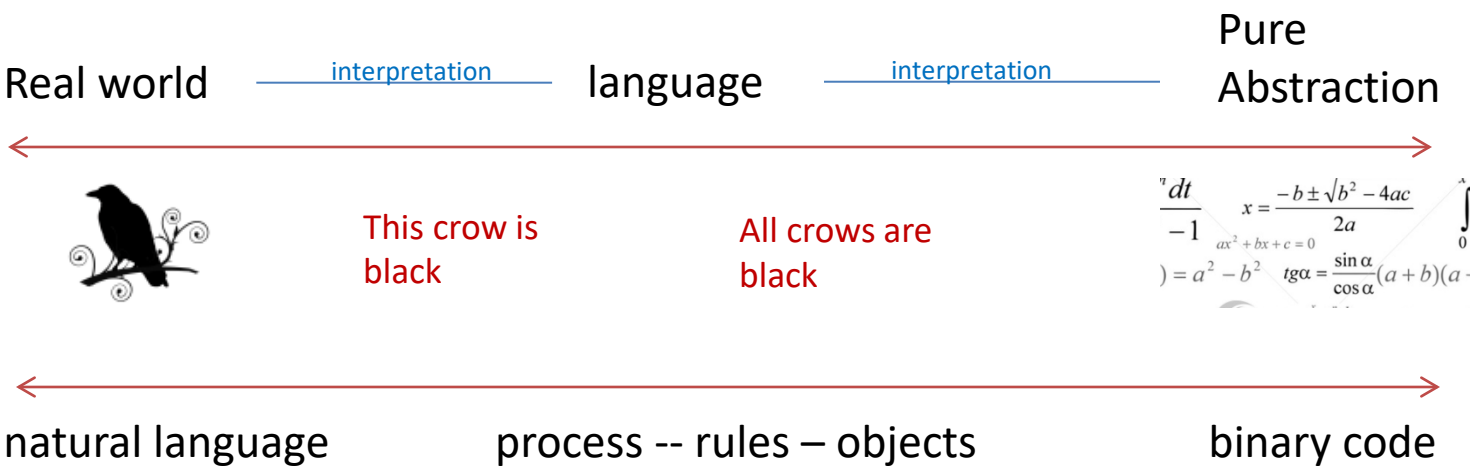


Image: http://brianclegg.blogspot.com/2010/02/maths-is-so-abitrary.html

- the world is fundamentally a mathematical entity

The World as Mathematical Entity



Interpretation

- Reusability paradox - theory & practice
  - can we bridge this with a language?

practise ---- interpretation ---- language ------ interpretation ---- theory

The Reusability Paradox

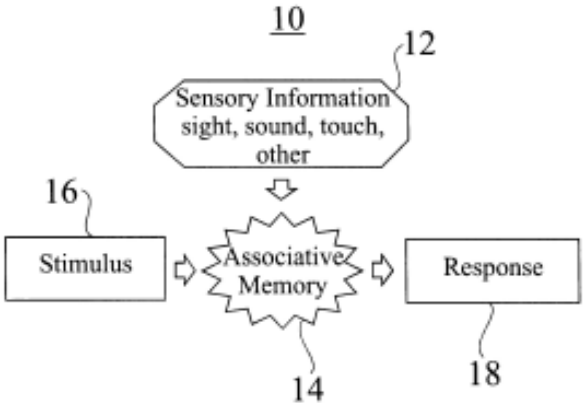


Image: http://www.freepatentsonline.com/6604094.html

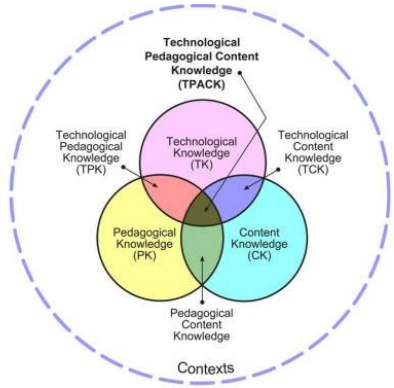
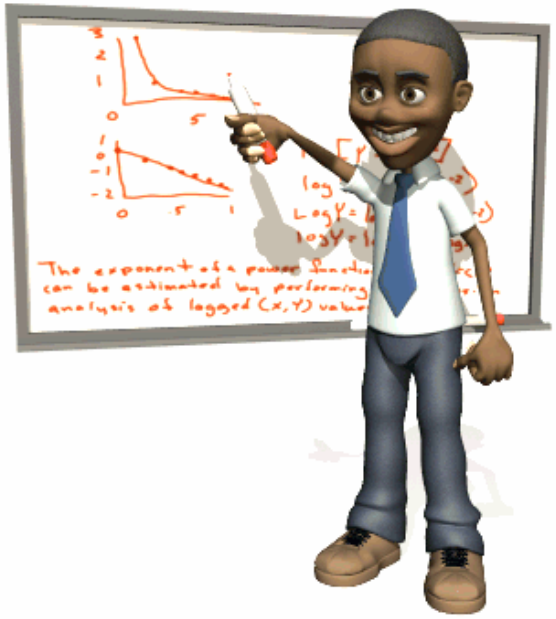


Image: http://robblogva.wordpress.com/2009/06/05/technology-for-language-learning-mini-workshop/

- Is there a functionally useful language that describes (teaching, learning, etc)?

Key Questions for Learning Design?



- If there is such a language, then we can use computers to teach
- If there is not, then we need teachers, but at a certain point, LDs become meaningless
- (and one wonders, *what* is this that teachers do?)

Image:
http://robertdaylin.wordpress.com/2008/10/23/ive-fallen-and-i-cant-get-up/

The Dilemma of Learning Design?

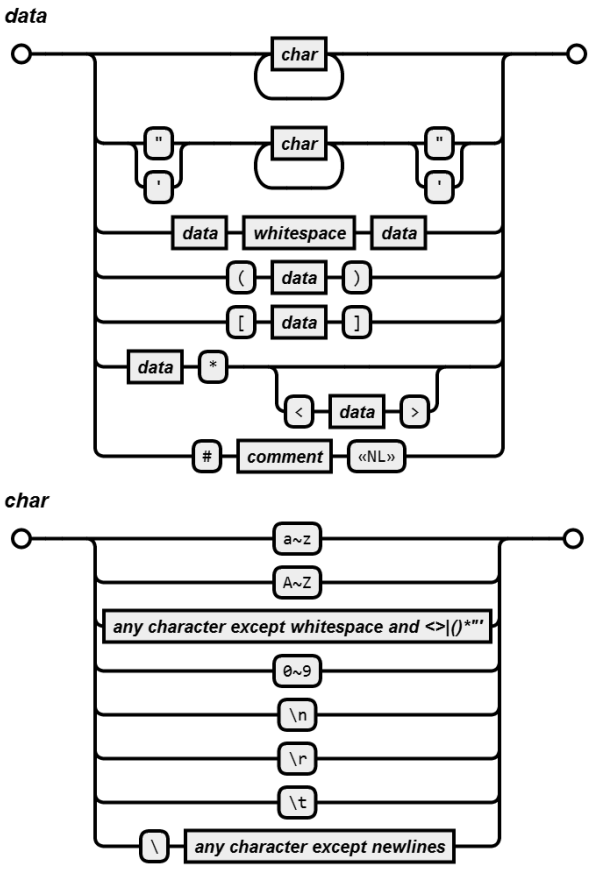
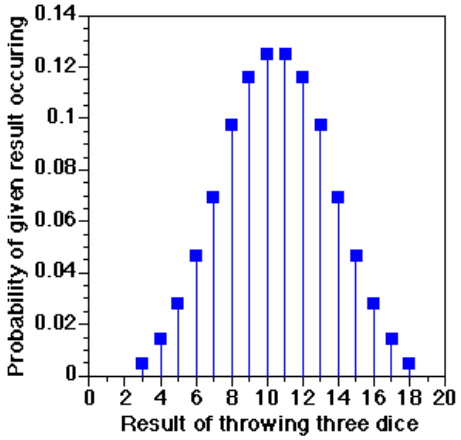


Image: https://github.com/atomble/syntax-diagram

- What are the elements and syntax of that language?
- What will ground or give meaning to those elements (i.e., what is the interpretation)?

Analyzing a Learning Design Language



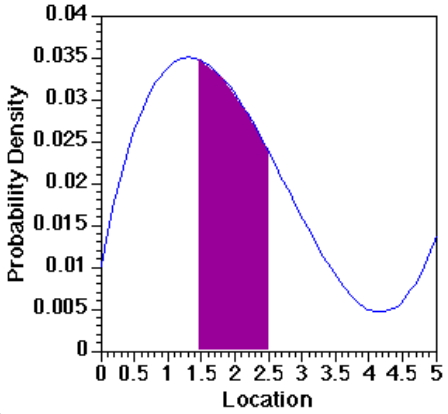


Image:
http://www.cobalt.chem.ucalgary.ca/ziegler/educmat/chm386/rudiment/mathbas/probab.htm

- If *these* are your primitives
  - what are these primitives?
  - what is their role?
- Interpretation: the logical foundations for...
- eg. probability

Primitives & Their Interpretation

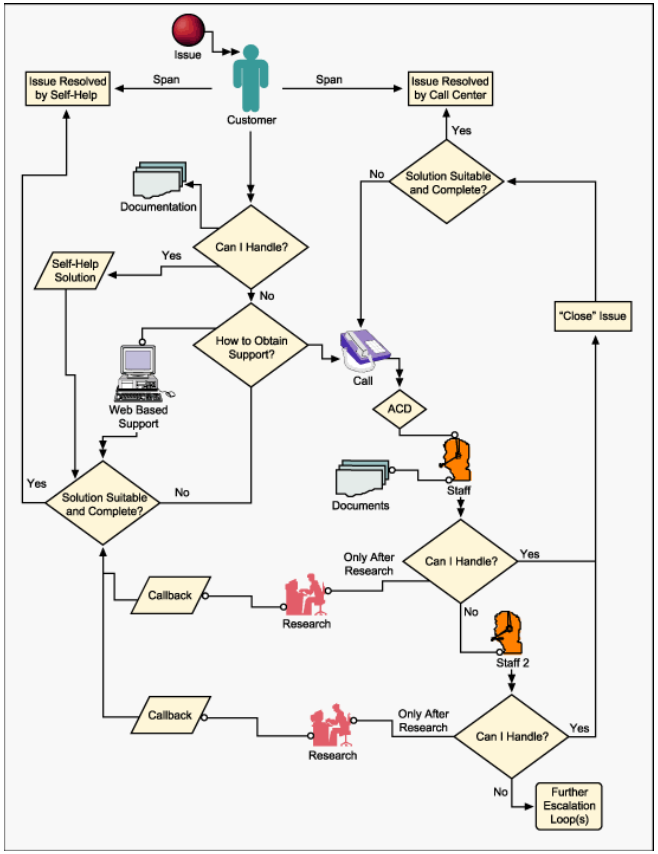


Image: http://markbland.com/process.html

- 3 models: flowchart, rule-based, object-event based

Locked into Processes

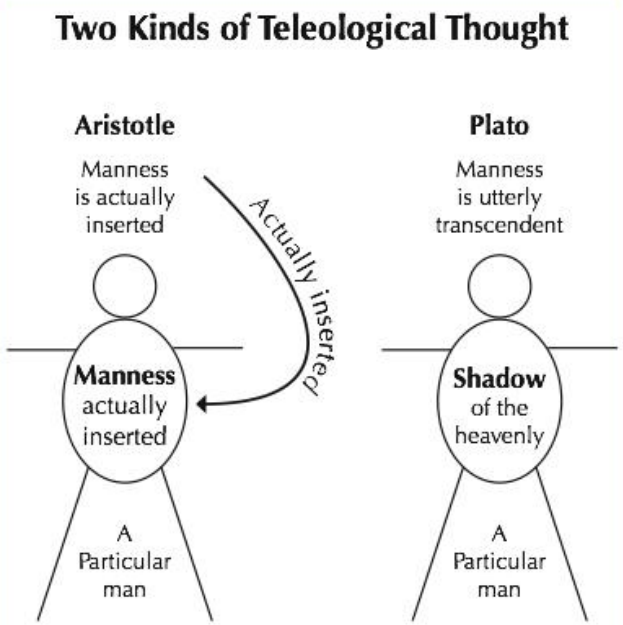
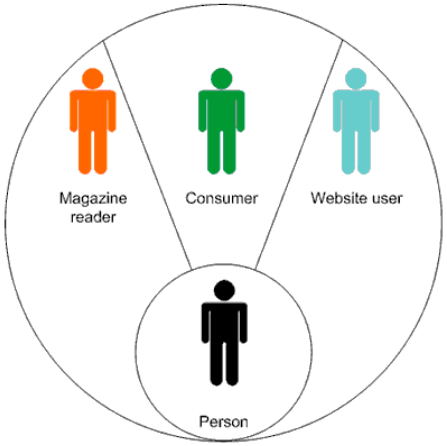


Image: http://www.pastorshearer.net/Bible%20Studies/Calvinism%20Studies/twoteleologies.html

- Is there a directionality in the process?
- Locked into objectives (?)
  - problem solving, discovery ... others?
  - development of capacities vs development of knowledge

Locked into Directionality



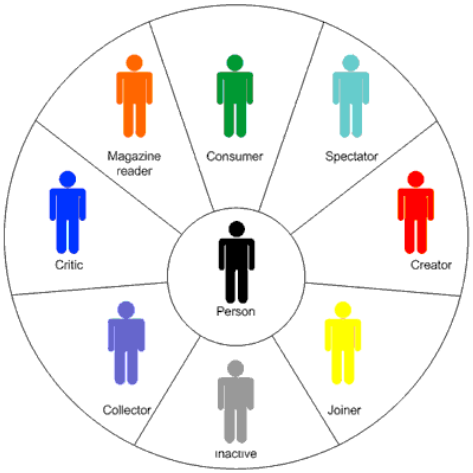
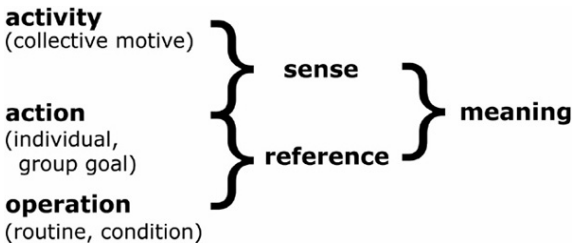


Image: http://magia3e.wordpress.com/2007/12/21/whats-my-scene-user-roles-and-needs-in-social-computing/

- What are the primitive objects? What are their properties?
- Locked into roles
  - e.g. conversational framework - teacher - student - other student
  - want to look at the substructure

Locked into Roles / Entities



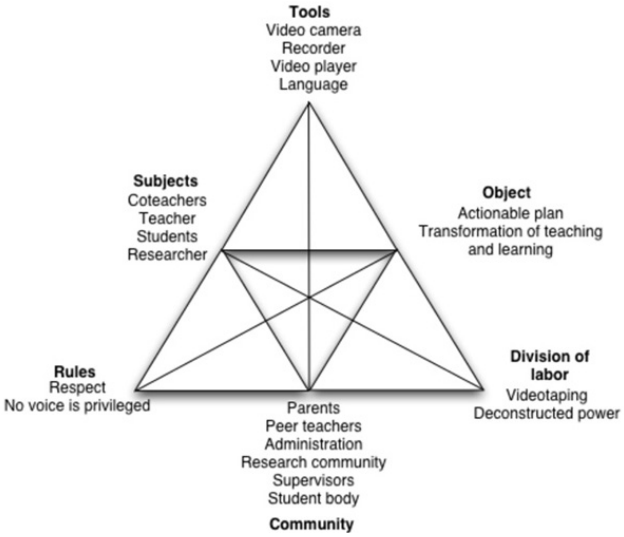


Image: http://www.qualitative-research.net/index.php/fqs/article/view/124/261

- Epistemology - what grounds your theories
- Theories of truth and reference
- other approaches:
  - coherence 'webs of belief‘
  - world as 'will and representation'

Meaning and Reference

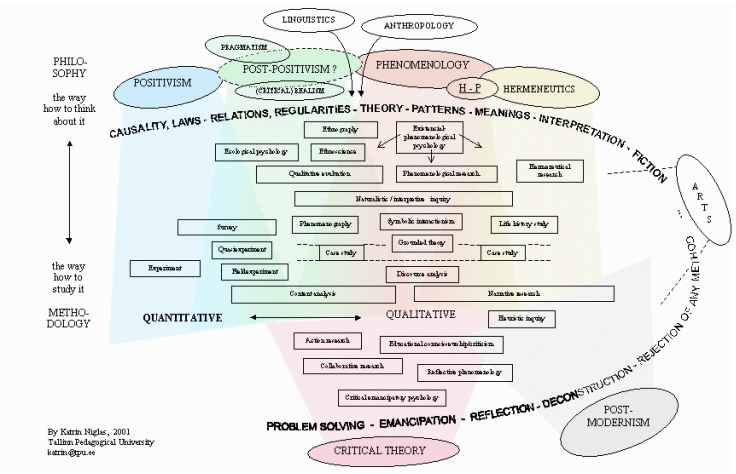


Image:
http://www.leeds.ac.uk/educol/documents/00001840.htm

- Positivism: saying there is some set of facts - even e.g. the 'existing theories'
- (Most people are positivists - it takes real guts to be a coherentist, or a relativist)

Hidden Positivism

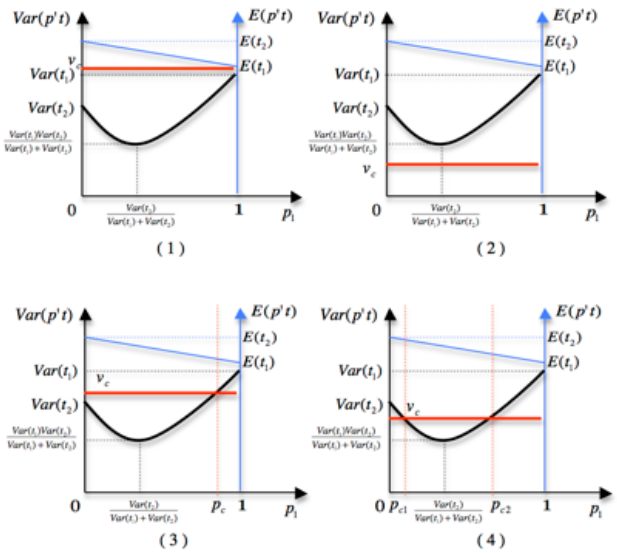
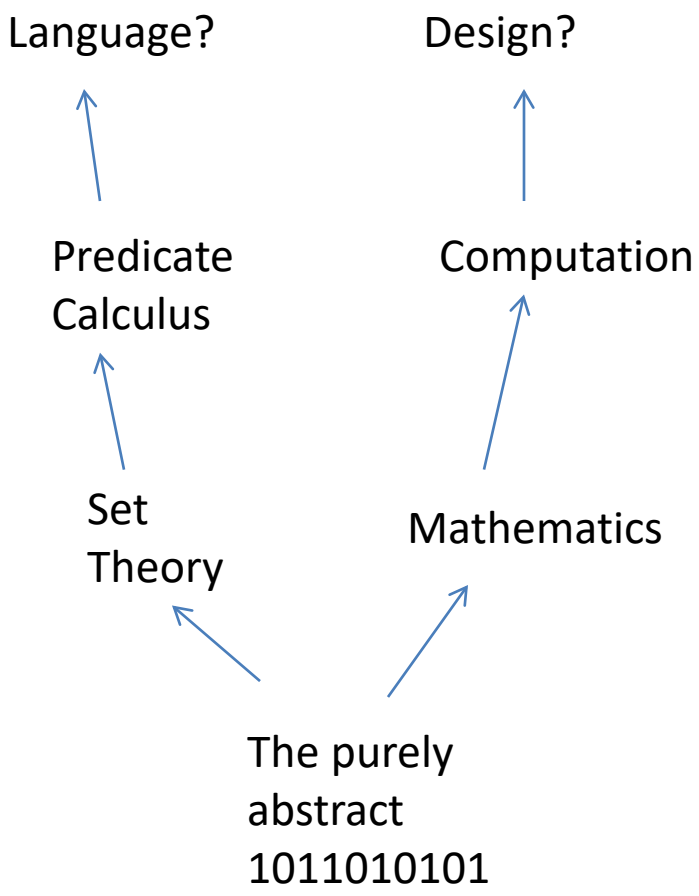


Image: http://blog.lib.umn.edu/levin031/transportationist/2011/08/a-portfolio-theory-of-route-ch.html

- The general principle is - you don't want to build the interpretation into the language - keep the language 'stupid' - put semantics at the edges
- That's why e.g. LD wanted to be 'theory-neutral'

Theory-Neutrality



- but your primitives don't *have* to be pure basic abstracts...
- We can 'reach out' from pure abstraction (via computability & decidability)

The Nature of the Purely Abstract

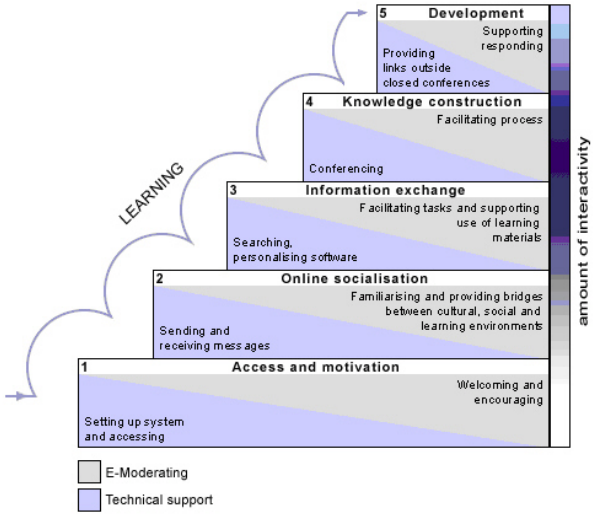


Image: http://www.newcastle.edu.au/staff/teaching-in-the-online-environment/starting/course-design/course-design-models.html

- Cognitivist theories - where the pure abstraction is based in the pure elements of thought
- These elements are mapped to a ‘language of thought’ which is used to express abstractions
- The theory-theory

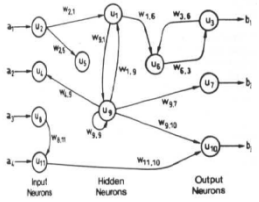
Cognitivism

- Another version of the same framework

Image:
http://www.doc.ic.ac.uk/~nd/surprise_96/journal/vol4/cs11/report.html

This crow is black

All crows are black



real world ---- interpretation ---- language ------ interpretation ---- HUMAN

The Human Equation

Image: http://www.vegas-times.com/litf/wikis/connectivism/

- Non-theory-based theory
  - What do we believe are elements of the world? connections
  - What do we believe are the fundamentals of human thought? connections
- Humans are fundamentally connective entities (and *not* cognitive entities)

The Non-Theory Theory

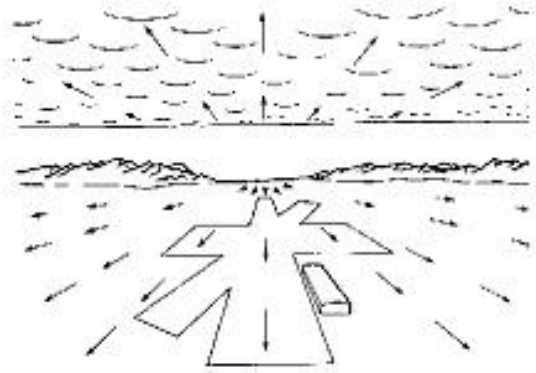


Image:
http://www.users.totalise.co.uk/~kbroom/Lectures/gibson.htm

Image:
http://www.users.totalise.co.uk/~kbroom/Lectures/autism_files/frame.htm

- In LEARNING no langauge per se in between them
  - It is a process of direct recognition (JJ Gibson)

- real world ---- pattern recognition ---- HUMAN

Direct Representation

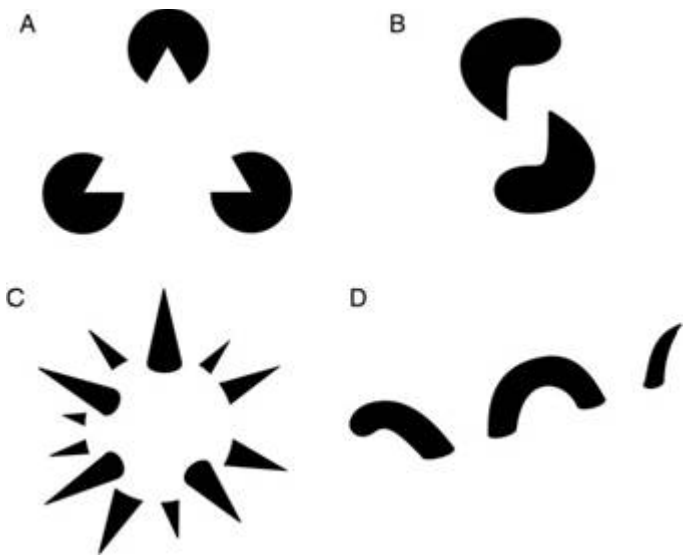


Image: http://machineslikeus.com/the-constructive-aspect-of-visual-perception

- We use language to talk about this, but we should not confuse the language with the learning process
  - How do people learn then?
  - How do you get a person to know 'x‘?
- I said it takes courage to not be a positivist

Language and Learning

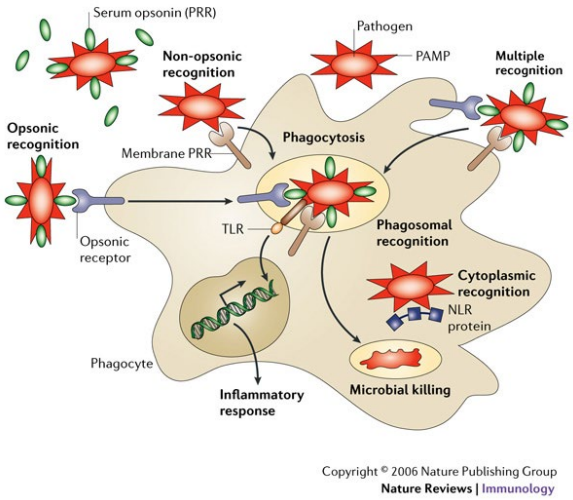


Image: http://www.nature.com/nri/journal/v6/n1/fig_tab/nri1745_F1.html

- To learn:
  - *Not* to remember a set of facts (and/or theories)
  - Becoming a good recognizer, a good pattern creator
- These are based in the principles of effective networks

Pattern Recognition

Image:
http://dogonablog.wordpress.com/2007/08/05/this-is-what-im-not/

- Teaser argument to conclude:
- How do we learn languages?
  - we don't create a language to learn a language
  - a language is learned via the direct recognition of the language
- aka 'thinking in French' -- vs 'thinking in physics', etc.

Direct Perception

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