situational environment

individual reality · perceptual systems

"Our perception of the external world begins with the senses, which lead us to generate empirical concepts representing the world around us, within a mental framework relating new concepts to preexisting ones. Because perception leads to an individual's impression of the world, its study may be important for those interested in better understanding communication, self, id, ego - even reality"
http://en.wikipedia.org/w/index.php?title=Philosophy_of_perception&oldid=30947840

"We all start from 'naive realism,' i. e., the doctrine that things are what they seem. We think that grass is green, that stones are hard, and that snow is cold. But physics assures us that the greenness of grass, the hardness of stones, and the coldness of snow are not the greenness, hardness, and coldness that we know in our experience, but something very different. The observer, when he seems to himself to be observing a stone, is really, if physics is to be believed, observing the effects of the stone upon himself. Thus science seems to be at war with itself: when it most means to be objective, it finds itself plunged into subjectivity against its will. Naive realism leads to physics, and physics, if true, shows that naive realism is false. Therefore naive realism, if true, is false; therefore it is false"
SOURCE: Bertrand Russell, 1940, *An Inquiry into Meaning and Truth*

human senses
SOURCE: http://en.wikipedia.org

special senses: vision (sight), audition (hearing), gustation (taste), olfaction (smell), equilibrioception (equilibrium)
somatic senses: taction (touch, pressure), thermoception (heat), nociception (pain), proprioception (body awareness)

- sensorium | "refers to the sum of an organism's perception, the 'seat of sensation' where it experiences and interprets the environments within which it lives" SOURCE: http://en.wikipedia.org
- senses | "any of the physical processes by which stimuli are received, transduced, and conducted as impulses to be interpreted in the brain; they may be classified as either special senses or somatic senses" SOURCE: *Dorland's Illustrated Medical Dictionary*
- consciousness | "a comprehensive understanding of consciousness likely requires theories of many types. One might usefully and without contradiction accept a diversity of models that each in their own way aim respectively to explain the physical, neural, cognitive, functional, representational and higher-order aspects of consciousness" SOURCE: http://plato.stanford.edu/entries/consciousness/
- consciousness | "is a quality of the mind generally regarded to comprise such key features as subjectivity, self-awareness, sentience, sapience, and the ability to perceive the relationship between oneself and one's environment … Some philosophers suggest that consciousness resists or even defies definition. Others believe it can be usefully distinguished between phenomenal consciousness and access or psychological consciousness, while still others disagree" SOURCE: http://en.wikipedia.org
- observation | "in philosophical terms [it] is the process of filtering sensory information through the thought process" SOURCE: http://en.wikipedia.org
- symbol | "a term frequently used to designate a conventional sign (for instance, a sign based on convention or established usage). But this term refers to various other types of signs as well. For Ferdinand de Saussure, a symbol is a sign in which the correlation between signifier and signified is, in some measure, motivated (that is, nonarbitrary). In Charles S. Peirce's elaborate classification of signs, a symbol is almost the opposite of this. Peirce defines symbol as part of a trichotomy: icon, index, symbol" SOURCE: Moritz Neumüller, *Hypertext Semiotics* http://www.cem.itesm.mx/dacs/publicaciones/logos/anteriores/n38/mneumuller.html

- codes are made up [of a usually bounded set] of elements with agreed upon meanings that can be combined according to an agreed upon set of rules [that is usually bounded] (for example, an alphabet or a numeral set)
- code | "is a rule-governed system of signs [note that the SOURCE below used the term 'signs' interchangeably with the term 'symbols'], whose rules and conventions are shared amongst members of a culture, and which is used to generate and circulate meanings in and for that culture" SOURCE: Fiske (1987)

- perception | "in psychology and the cognitive sciences, perception is the process of acquiring, interpreting, selecting, and organizing sensory information" SOURCE: http://en.wikipedia.org
- habituation / sensory adaptation | "is a general accommodation to unchanging [stimuli]" SOURCE: http://wordnet.princeton.edu

code
codes (or conventions of communication) are established sets | patterns of symbols (that can be combined according to implicit or explicit rules of use)

a posteriori or empirical and factual sources of knowledge

sensory system · sensorium · senses | sensations · consciousness · awareness · attention · observation · perception · phenomena · stimuli · qualia

- phenomena within the range of our sensorium result in stimuli

the abstract manifestation of something that is observable (a flow of phenomena | events and occurences perceptible by the senses)

signals

glyph · **symbol** · token
an arbitrarily dictated representation of an idea or concept

- some theorists use the term 'symbol' to mean the same as 'sign', contrary to the meaning adopted here. Within this map, 'characters' are considered to be 'symbols' that are part of alphabets, for instance

data · information · kowledge · wisdom — **dikw** hierarchy

- DIKW | "DIKW is data, information, knowledge, wisdom: an information hierarchy where each layer adds certain attributes over and above the previous one. Data is the most basic level; Information adds context; Knowledge adds how to use it; and Wisdom adds when to use it." SOURCE: http://en.wikipedia.org
- Nikhil Sharma gives us the *The Origin of the Data Information Knowledge Wisdom Hierarchy* at http://www-personal.si.umich.edu/~nsharma/dikw_origin.htm

data
signals mapped through codes (coded signals), raw elements of information (not yet interpreted symbols)

- some propose that information provides answers to 'who', 'what', 'when' or 'where' type questions
- interpretation | "the purpose of interpretation would normally be to increase the possibility of understanding, but sometimes, as in propaganda or brainwashing, the purpose may be to evade understanding and increase confusion" SOURCE: http://en.wikipedia.org

information
data structured into meaningful patterns; data with relevance and purpose; contextualized arrangement of data

gestalt

experience · trust · cognitive bias · distortion · mining · mapping · coding · decoding · processing · conceptual · perceptual · thought · filtering · reasoning · inference · analogy · deductive · inductive · abductive · logic · cognition

mechanisms by which human beings arrive at 'understanding' and derive 'meaning' from their environment

a priori and inferential sources of knowledge

"In defining knowledge, there are two further matters to be taken into consideration, namely the degree of certainty and the degree of precision. All knowledge is more or less uncertain and more or less vague. These are, in a sense, opposing characters: vague knowledge has more likelihood of truth than precise knowledge, but is less useful"
Bertrand Russell (1926), *Theory of Knowledge* for *The Encyclopaedia Britannica* SOURCE: http://www.marxists.org

- environment | "an environment is a complex of external factors that acts on a system and determines its course and form of existence. An environment may be thought of as a superset, of which the given system is a subset. An environment may have one or more parameters, physical or otherwise. The environment of a given system must necessarily interact with that system" SOURCE: http://en.wikipedia.org
- phenomenon | "any state or process known through the senses rather than by intuition or reasoning (phenomenon stands for any observable event)" SOURCE: http://wordnet.princeton.edu
- stimulus | "(plural: stimuli) has several related meanings: in physiology, a stimulus is something external that elicits or influences a physiological or psychological activity or response. In psychology, anything effectively impinging upon any of the sensory apparatuses of a living organism, including physical phenomena both internal and external to the body. In other fields, a stimulus is anything that may have an impact on a system" SOURCE: http://en.wikipedia.org
- qualia | "are most simply defined as the properties of sensory experiences by virtue of which there is something it is like to have them. These properties are, by definition, epistemically unknowable in the absence of direct experience of them; as a result, they are also incommunicable. The existence or lack of these properties is a hotly debated topic in contemporary philosophy of mind (according to Dennet, qualia are ineffable; intrinsic; private; directly or immediately apprehensible in consciousness)" SOURCE: http://en.wikipedia.org
- signal | "a signal is any physical phenomenon that can be modelled as a function from time or position to some scalar- or vector-valued domain that can be real or complex valued" SOURCE: http://en.wikipedia.org
- signals may be characterized in a number of ways (for instance, analog versus digital, continuous versus discrete …) and may be more abstract manifestations than those implied by the wikipedia definition above
- cognition | "a diffuse term used in radically different ways by different disciplines. In psychology, it refers to an information processing view of an individual's psychological functions" SOURCE: http://en.wikipedia.org
- cognition | "that operation of the mind by which one becomes aware of objects of thought or perception; it includes all aspects of perceiving, thinking, and remembering" SOURCE: http://www.merckmedicus.com
- reasoning | "in philosophy, reason is the faculty by means of which or the process through which human beings perform thought, especially abstract thought (reasoning is the act of using reason to derive a conclusion from certain premises)" SOURCE: http://en.wikipedia.org
- thought | "thought or thinking is a mental process which allows beings to model the world, and so to deal with it effectively according to their goals, plans, ends and desires" SOURCE: http://en.wikipedia.org
- analogy | "analogy plays a significant role in problem solving, decision making, perception, memory, creativity, emotion, explanation and communication. It lies behind basic tasks such as the identification of places, objects and people, e.g. in face perception and facial recognition systems. It has been argued that analogy is *the core of cognition*" SOURCE: http://en.wikipedia.org
- inference | "the reasoning involved in drawing a conclusion or making a logical judgment on the basis of circumstantial evidence and prior conclusions rather than on the basis of direct observation" SOURCE: http://www.cogsci.princeton.edu/cgi-bin/webwn

sensory input processing and assimilation (mapping) into existing schemes of the mind

- cognitive bias | "is any of wide range of observer effects identified in cognitive science and social psychology including very basic statistical, social attribution, and memory errors that are common to all human beings" SOURCE: http://en.wikipedia.org

cognitive distortion — SOURCE: http://en.wikipedia.org
all-or-nothing thinking, overgeneralization, mental filter, disqualifying the positive, jumping to conclusions, magnification and minimization, emotional reasoning, making should statements, labelling, personalization (or attribution)

list of cognitive biases — SOURCE: http://en.wikipedia.org

- epistemology | "from the Greek words episteme (knowledge) and logos (word/speech) is the branch of philosophy that deals with the nature, origin and scope of knowledge" SOURCE: http://en.wikipedia.org

the study of knowledge

"we know more than we can tell" Michael Polanyi

philosophy of mind
philosophy

- philosophy of mind | "philosophy of mind is the philosophical study of the nature of the mind, mental events, mental functions, mental properties, and consciousness" SOURCE: http://en.wiktionary.org

300 philosophical 'isms'
SOURCE: http://en.wikipedia.org/w/index.php?title=Glossary_of_philosophical_isms&oldid=31465559

philosophy of education, philosophy of history, philosophy of language, philosophy of law, philosophy of mathematics, philosophy of mind, philosophy of perception, philosophy of philosophy (metaphilosophy), philosophy of physics, philosophy of politics, philosophy of psychology, philosophy of religion, philosophy of science, philosophy of social sciences

- philosophy | "a comprehesive system of belief that is, generally, divided into five major subtopics: Logic; Metaphysics; Epistemology; Ethics and Aesthetics." SOURCE: http://en.wiktionary.org
- philosophers | "philosophers analyse and investigate such concepts as existence or being, morality or goodness, knowledge, truth, and beauty." SOURCE: http://en.wikipedia.org

interpretation · meaning · sense · insight · comprehension · understanding

- some propose that knowledge provides answers to 'how' or 'why' type questions

meanings are only in the minds of beings; not in the various media or communication forms used to (attempt to) represent | convey them

knowledge

"we are drowning in information but are starved for knowledge" SOURCE: John Naisbitt *Megatrends: Ten New Directions Transforming Our Lives*

declarative knowledge · knowing that | procedural knowledge · knowing how · knowing to be

wisdom
knowing why

epistemology · experience

experience
phenomenal consciousness

- experience | "comprises knowledge of or skill in or observation of some thing or some event gained through involvement in or exposure to that thing or event. The history of the word experience aligns it closely with the concept of experiment. Most experience accumulates over a period of time, though one can also experience a single momentary event. Experience generally refers to know-how or procedural knowledge, rather than propositional knowledge. Philosophers dub knowledge based on experience 'empirical knowledge' or 'a posteriori knowledge'. A person with considerable experience in a certain field can gain a reputation as an expert" SOURCE: http://en.wikipedia.org
- experience | "the accumulation of knowledge or skill that results from direct participation in events or activities" SOURCE: http://www.cogsci.princeton.edu

semantics — the study of meaning

- insight | "penetration: clear or deep perception of a situation; a feeling of understanding; the clear (and often sudden) understanding of a complex situation; grasping the inner nature of things intuitively" SOURCE: http://wordnet.princeton.edu
- interpretation | "a mental representation of the meaning or significance of something; an explanation that results from interpreting something; an explanation of something that is not immediately obvious" SOURCE: http://wordnet.princeton.edu
- meaning | "that which is meant or intended; intent; purpose; aim; object", "that which is signified, whether by act language; signification; sense; import", "sense; power of thinking" SOURCE: 1913 Webster
- the following are helpful statements to characterize the 'meaning of meaning'
  - "meanings are in people"
  - "communication does not consist of the transmission of meanings, but of the transmission of messages"
  - "meanings are not in the message; they are in the message-users"
  - "words do not mean at all; only people mean"
  - "people can have similar meanings only to the extent that they have had, or can anticipate having, similar experiences"
  - "meanings are never fixed; as experience changes, so meanings change"
  - "no two people can have exactly the same meaning for anything"
  SOURCE: David Berlo (1960)
- understanding | "a psychological state in relation to an object or person whereby one is able to think about it and use concepts to be able to deal adequately with that object" SOURCE: http://en.wikipedia.org
- semantics | "in the study of language, semantics is concerned with the meaning of words, expressions and sentences, often in relation to reference and truth. Semantics is contrasted with syntax (the study of logical or grammatical form) and pragmatics (the study of the contribution of contextual factors to the meaning of what language users say). Meta-semantic theories study key semantic notions such as meaning and truth and how these notions are related." SOURCE: *Glosario de términos filosóficos (en inglés)* http://www.filosofia.net/materiales/rec/glosaen.htm

common sense
- common sense | "one meaning of the term common sense (or as an adjective, commonsense) on a strict construction of the term, is what people in common would agree; that which they 'sense' in common as their common natural understanding. Some use the phrase to refer to beliefs or propositions that in their opinion they consider would in most people's experience be prudent and of sound judgment, without dependence upon esoteric knowledge or study or research, but based upon what is believed to be knowledge held by people 'in common'. The knowledge and experience most people have, or are believed to have by the person using the term" SOURCE: http://en.wikipedia.org

"it is a thousand times better to have common sense without education than to have education without common sense" Robert Green Ingersoll

ethics
morality

- ethics | "the study and evaluation of human conduct in the light of moral principles" SOURCE: The Columbia Encyclopedia
- morality | "the term is often used to refer to a system of principles and judgments shared by cultural, religious, and philosophical concepts and beliefs, by which humans subjectively determine whether given actions are right or wrong. These concepts and beliefs are often generalized and codified by a culture or group, and thus serve to regulate the behavior of its members" SOURCE: http://en.wikipedia.org
- values versus virtues | whereas a virtue can be defined as a 'moral excellence' of a man or woman, or as a 'good character trait' (vice being the opposite of virtue), values can be broader in nature (but may be anchored by certain virtues) and are usually adopted as guiding principles by entities such as people, societies, organizations …

values
ideals or beliefs linked to emotions that govern behaviours and their guiding principles

virtues and vices — SOURCE: http://en.wikipedia.org

memory biases — SOURCE: http://en.wikipedia.org

memory
the ability to retain, recall and process cognitive items including past experience

- memory | "mental faculty of retaining and recalling past experience based on the mental processes of learning, retention, recall, and recognition" SOURCE: The American Heritage® Stedman's Medical Dictionary (Houghton Mifflin Company)

beliefs
unproven assertions based on fundamental assumptions

- belief | "a belief is that upon which a man is prepared to act" SOURCE: Alexander Bain
- belief | "a representational mental state that takes the form of a propositional attitude. Belief is considered propositional in that it is an assertion, claim or expectation about reality that is presumed to be either true or false (even if this cannot be practically determined)" SOURCE: http://en.wikipedia.org
- assertion | "a declaration that is made emphatically (as if no supporting evidence were necessary)"
- assumption | "statement that is assumed to be true and from which a conclusion can be drawn"
- proposition | "(logic) a statement that affirms or denies something and is either true or false"
- impression | "a vague idea in which some confidence is placed" SOURCE: http://wordnet.princeton.edu
- opinion | "belief or conclusion held with confidence but not substantiated by positive knowledge or proof" SOURCE: The American Heritage® Stedman's Medical Dictionary
- fact | "statement or assertion of verified information about something that is the case or has happened" SOURCE: http://wordnet.princeton.edu

opinions | facts

neuroscience
cognitive neuroscience

- neurons | "are a major class of cells in the nervous system. In vertebrates, they are found in the brain, the spinal cord and in the nerves and ganglia of the peripheral nervous system, and their primary role is to process and transmit neural information" SOURCE: http://en.wikipedia.org
- synapses | "are specialized junctions through which cells of the nervous system signal to one another and to non-neuronal cells such as muscles or glands" SOURCE: http://en.wikipedia.org
- neuroscience | "is a field of study that deals with the structure, function, development, genetics, biochemistry, physiology, pharmacology, and pathology of the nervous system. The study of behavior and learning is also a division of neuroscience" SOURCE: http://en.wikipedia.org
- instinct | "term used generally to indicate an innate tendency to action, or pattern of behavior, elicited by specific stimuli and fulfilling vital needs of an organism" SOURCE: http://www.encyclopedia.com from The Columbia Encyclopedia

instincts · **intuition**
- intuition | "instinctive knowing (without the use of rational processes); an impression that something might be the case" SOURCE: http://wordnet.princeton.edu

the ladder of inference
and jumping to conclusions

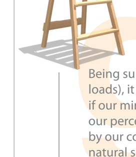
"we are all inclined to judge ourselves by our ideals; others, by their acts" Harold Nicolson

"through his research [Chris] Argyris has discovered that every person has tendencies to climb up the ladder of inference too fast. Almost instantaneously after seeing or hearing someone else speak or act, individuals integrate the new observation/information with their existing set of assumptions, sometimes prompting action that has only minimal relationship to what was originally spoken or observed. When this same ladder-climbing dynamic happens within a social or organisational setting, an environment for conflict is created that easily escalates"
SOURCE: Wendy Clark, http://www.onepine.info/pargy.htm

- The ladder of inference is a concept first presented by Chris Argyris and further popularized by Peter Senge's book *The Fifth Discipline: The Art and Practice of the Learning Organization*. In essence, it describes how events in our world lead us to perform actions through the process of reasoning, mostly by inference: it is a simple model that describes how the mind functions.

Because of its simplicity, it is an effective tool to help us realize when and how we 'jump to conclusions'; it helps to remind us that things are not always as they first seem (*cf.* naive realism). When an organization (social or otherwise) speaks of 'transparency' and 'accountability', it essentially speaks to making its members and other stakeholders aware of the various steps (in the ladder) that lead, or have led, to particular actions.

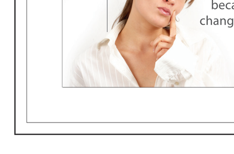
The various steps in the ladder can be described as follows (slightly modified from the original), where the basis for action starts at the lowest rung.



I formulate attitudes, intentions and ACT based on my beliefs
I modify my system of BELIEFS based in part on drawn conclusions
I make judgments and draw CONCLUSIONS (general cognition)
I make ASSUMPTIONS in part through newly added meanings
I develop (new) MEANINGS mostly by interpretation
I select DATA as filtered by my system of beliefs
I PERCEIVE my situational environment (by way of my sensorium)

Being subjected to ever increasing amounts of external stimuli (information loads), it becomes harder for humans to optimally process for action, even if our minds do continually adapt to our changing environments. In essence, our perception of the environment and subsequent 'data selection' are biased by our cognitive and emotional biases, the rest of our belief systems and by natural sensorium filtering. As such, when uttering statements like 'the truth is' or 'the fact is' in our communications with others, accuracy would be better served in most cases by using phrases such as 'I believe that' or 'I think that'.

- jumping to conclusions | in figuratively climbing the ladder, we are not normally conscious of our cognitive processes. And because of the 'blurred vision' we are creating, we draw conclusions and reshape our belief system on a less than optimal knowledge base, which in turn affects how we perceive our environment and what data we chose to process at the base. Climbing the ladder too quickly often results in taking actions not reflective of the conditions that prompted them (sometimes leading to situations where the actions can lead to various forms of human conflict).



"the range of what we think and do is limited by what we fail to notice. And because we fail to notice that we fail to notice, there is little we can do to change, until we notice how failing to notice shapes our thoughts and deeds" Ronald Laing

"reality is merely an illusion, albeit a very persistent one" Albert Einstein

"what a man believes upon grossly insufficient evidence is an index into his desires - desires of which he himself is often unconscious. If a man is offered a fact which goes against his instincts, he will scrutinize it closely, and unless the evidence is overwhelming, he will refuse to believe it. If, on the other hand, he is offered something which affords a reason for acting in accordance to his instincts, he will accept it even on the slightest evidence. The origin of myths is explained in this way" Bertrand Russell

"what is absolutely true is always correct, everywhere, all the time, under any condition. An entity's ability to discern these things is irrelevant to that state of truth" Steven Robiner

absolute truth · **truth** · ultimate reality · **reality**

notion · idea · **concept**
- idea | "a specific thought or concept that arises in the mind of a person as a result of thinking" SOURCE: http://en.wikipedia.org
- notion | "is a general inclusive concept" SOURCE: http://wordnet.princeton.edu
- concept | "is an abstract, universal idea, notion, or entity that serves to designate a category or class of entities, events, or relations" SOURCE: http://en.wikipedia.org

"sometimes a concept is baffling not because it is profound but because it is wrong" Edward O. Wilson

context
concepts that are external to, but in immediate proximity to a given concept

- context | "context includes the circumstances and conditions which 'surround' an event. In communications and linguistics, context is the meaning of a message (such as a sentence), its relationship to other parts of the message (such as a book), the environment in which the communication occurred, and any perceptions which may be associated with the communication" SOURCE: http://en.wikipedia.org

"as scarce as truth is, the supply has always been in excess of the demand". Josh Billings

- absolute truth | "absolute truth can be interpreted in different ways based on its usage, just like truth. Some believe that the correct communication cannot be found for describing ideas of absolute truth by entities that possess the metaphysically true state of the ability to lie and have lied before, thus making the following description vulnerable to potential inaccuracy as long as those entities maintain the definition." SOURCE: http://en.wikipedia.org
- truth | "narrowly speaking, the correspondence theory of truth is the view that truth is correspondence to a fact - a view that was advocated by Russell and Moore early in the 20th century. But the label is usually applied much more broadly to any view explicitly embracing the idea that truth consists in a relation to reality, i.e., that truth is a relational property involving a characteristic relation (to be specified) to some portion of reality (to be specified). This basic idea has been expressed in many ways, giving rise to an extended family of theories and, more often, theory sketches"
- truth | "according to the deflationary theory of truth, to assert that a statement is true is just to assert the statement itself. For example, to say that 'snow is white' is true, or that it is true that snow is white, is equivalent to saying simply that snow is white, and this, according to the deflationary theory, is all that can be said significantly about the truth of 'snow is white'." SOURCE: http://plato.stanford.edu
- reality | "reality in everyday usage means 'everything that exists' [but see below]. The term 'reality', in its most liberal sense, includes everything that is, whether or not it is observable, accessible or understandable by science, philosophy, theology or any other system of analysis. Reality in this sense may include both being and nothingness, whereas 'existence' is often restricted to being" SOURCE: http://en.wikipedia.org
- ultimate reality | "Ultimate Reality, in philosophy, is the absolute nature of all things. It is different from ordinary reality, which is considered a product of the individual conscious mind. Ultimate Reality is independent of observation" [note that this is inconsistent with the above definition of 'reality'] SOURCE: http://en.wikipedia.org

de Saussure
sign model — an adaptation
signification · signified · signifier · reference

- sign | "something which stands to somebody for something in some respect or capacity" SOURCE: Charles Sanders Peirce
- sign | "may be understood as a discrete unit of meaning" SOURCE: http://en.wikipedia.org
- signs are not isolated entities; they are part of systems and have relational meanings relevant to that system (signs are interpreted within particular contexts)

Peirce
sign model — an adaptation
sign vehicle (in literature, also referred to as signifier, token, representamen, utterance, symbol …) · object (not necessarily physical in nature; in literature, also referred to as concept, referent, utterer, denotation …) · sense (in literature, also referred to as signified, interpretant, meaning …) · presentation · pragmatics · semantics · syntax · perception · interpretation · truth and reality · contextual mindset · experience

sign
an entity made up of signals, symbols or data that bring to mind something other than itself (within a coded system, it is used to convey meaning)

semiotics
the study of signs and sign systems (the nature and function of signs)

- semiotics are concerned with 'how' signs 'mean' whereas semantics are concerned with 'what' signs 'mean'
- sign | "its Object is all that the sign recognizes; since the sign cannot be understood until the Object is already identically known, though it may be indefinite. If so, it need only be known in its indefiniteness. The interpretant is the mental action on the Object that the sign excites" SOURCE: Charles Sanders Peirce (c. 1911)

channel

source
emitter · encoding · **transmitter**

"how many legs does a dog have if you call the tail a leg? 4; calling a tail a leg doesn't make it a leg" Abraham Lincoln

message
a bounded expression of any thought or idea that serves as the object of communication

distortion · **noise**
- noise | "fluctuations in and the addition of external factors to a stream of target information [or more generally, signals] being received at a detector [sink]" SOURCE: http://en.wikipedia.org

dis | mis information
- the intentional and purposeful (disinformation) or unintended (misinformation) distortion of a message (or information in general). Both terms imply that some significant portion of the relevant or target information is pragmatically verifiable and falsifiable

channel · **medium**
- medium (*pl.* media) | in communications, it is the means (as bearer or carrier) to support the storage or transmission of information signals (the medium itself may or may not be bounded)
- channel | in some instances, 'channel' and 'medium' are treated as equivalent entities or concepts, but in most cases, a channel is a bounded sub region of a given medium

"the quality of our thoughts is bordered on all sides by our facility with language" J. Michael Straczynski

vocabulary
a bounded body of elements that serves as a means of expression

linguistics subfields — SOURCE: http://en.wikipedia.org
- linguistics | "the study of the structures, sounds, forms, functions and varieties of specific languages and of human speech in general" SOURCE: http://www.translationbureau.gc.ca

linguistics · **language**
- language | "a system of symbols, generally known as lexemes, and the rules by which they are manipulated" SOURCE: http://en.wikipedia.org

grammar
- grammar | "the study of rules governing the use of language. Grammar is part of the general study of language called linguistics. The subfields of modern grammar are phonetics, phonology, morphology, syntax, and semantics. Traditional grammars include only morphology and syntax" SOURCE: http://en.wikipedia.org

communication may be understood as the exchange of information (or any other form meaning representation) using codes for the purpose of conveying messages

communication

- communication | "the process of transmitting and receiving messages. According to Roman Jakobson and others, an analysis of this process yields six factors: addresser, addressee, contact (or channel), context, code, and the message itself. Corresponding to these factors are six functions: emotive, conative, phatic, reference, metalinguistic (or metacommunicative), and aesthetic or poetic. This process has been taken as the focal object of semiotics" SOURCE: *Hypertext Semiotics*, Moritz Neumüller http://www.cem.itesm.mx/dacs/publicaciones/logos/anteriores/n38/mneumuller.htm
- communication | "… is the consideration and action of impelling an impulse or particle from source point across a distance to receipt point, with the intention of bringing into being at the receipt point a duplication and understanding of that which emanated from the source point. The formula of communication is: cause, distance, effect, with intention, attention and duplication with understanding" SOURCE: http://theology.scientology.org

modality · channel · model adapted from Shannon and Weaver

decoding · receiver · **sink** · destination

- communication theories | the University of Twente maintains a list (with overviews) of human communication theories
- TCW — 60+ communication theories — SOURCE: Universiteit Twente, Theorieënoverzicht TCW http://www.tcw.utwente.nl/theorieenoverzicht

behaviourism · cognitivism · constructivism

TIP
theories into practice — 50+ learning theories
SOURCE: Greg Kearsley http://tip.psychology.org/theories.html

- learning theories | most learning theories are anchored by three leading philosophical perspectives; behaviourism, cognitivism and constructivism.

free will · maslow's hierarchy of needs: biological and physiological, safety, belongingness and love, esteem, self-actualization

"we learn by example and by direct experience because there are real limits to the adequacy of verbal instruction" SOURCE: *Blink: The Power of Thinking Without Thinking*, Malcolm Gladwell

- intentionality | "is the power of minds to be about, to represent, or to stand for, things, properties and states of affairs" SOURCE: http://plato.stanford.edu

motivation · wants > desires > needs · **attitudes**
- attitude | "is a complex mental state involving beliefs and feelings and values and dispositions to act in certain ways" SOURCE: http://wordnet.princeton.edu

persuasion · manipulation · coercion

cognitive, emotional and social biases · **intentions**

- intention | intent | purpose | goal | end | aim | object | objective | "these nouns refer to what one plans to do or achieve. Intention simply signifies a course of action that one proposes to follow. Intent more strongly implies deliberateness. Purpose strengthens the idea of resolution or determination. Goal may suggest an idealistic or long-term purpose. End suggests a long-range goal. Aim stresses the direction one's efforts take in pursuit of an end. An object is an end that one tries to carry out. Objective often implies that the end or goal can be reached" SOURCE: The American Heritage® Dictionary of the English Language: 4th Edition (Houghton Mifflin Company)

cybernetics
- systems theory | "is an interdisciplinary field which studies relationships of systems as a whole … Cybernetics is a closely related field. In recent times systems science, systemics and complex systems have been used as synonyms" SOURCE: http://en.wikipedia.org
- cybernetics | "defined as the study of communication and control, typically involving regulatory feedback, in living beings and machines, and in combinations of the two" SOURCE: http://en.wikipedia.org
- cybernetics | "the art of assuring efficiency of action" SOURCE: Louis Couffignal

input · **system** · output
- system | "any assemblage which accepts an input, processes it, and produces an output" SOURCE: http://en.wikipedia.org
- system | "any portion of the [material] universe which we choose to separate in thought from the rest of the universe for the purpose of considering and discussing the various changes which may occur within it under various conditions is called a system" (note that we omit here the word 'material' from Gibbs' original formulation). SOURCE: J. W. Gibbs
- outcomes | is a term frequently used in organizational planning. In such contexts, anticipated or targeted outcomes usually serve as the object of goals or objectives. In a broader sense, outcomes are states of affairs brought about by impacts, influences, effects, consequences … of outputs from multiple (material or conceptual) systems

- performance | efficiency | effectiveness | Performance may be defined as the degree to which planned or desired results are achieved when measured against (or otherwise compared with) targets, norms or other criteria. In performance management, efficiency frequently applies to the internal performance of a system (in achieving its outputs) whereas effectiveness applies to the peformance of a system's outputs in contributing to target or desired outcomes.

responsibility · efficiency | effectiveness · performance · actions · **outputs**

- inputs, outputs and outcomes | inputs of a system comprise all changes external to it that modify it in any pragmatically observable manner. Outputs are any pragmatically observable changes produced by the system within its situational environment. A system's outputs contribute to outcomes in the universal environment.

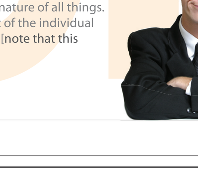
if outcomes are seen as alterations within the universal environment then outputs may be seen as alterations within the situational environment

social norms
behaviors
actions | reactions in response to internal | external stimuli

- behavior | "refers to the actions or reactions of an object or organism, usually in relation to the environment. Behavior can be conscious or unconscious, overt or covert, and voluntary or involuntary"
- human behavior | "the collection of activities performed by human beings and influenced by culture, attitudes, emotions, values, ethics, authority, rapport, hypnosis, persuasion, and/or coercion" SOURCE: http://en.wikipedia.org

outcomes

- happiness | "according to different ethical views, happiness might be one goal in life, the only possible goal, or a fortunate by-product of the pursuit of other goals. Happiness might concern one's aggregate of pleasure or require a complex balance involving virtue, pleasure, achievement and good fortune" SOURCE: http://www.filosofia.net/materiales/rec/glosaen.htm



"there is a fallacious mode of presenting the attainment of happiness; namely, that happiness is best secured by not being aimed at. We should be aiming always at something else. When examined closely, the doctrine resolves itself into a kind of paradox. All sorts of puzzles come up when we attempt to follow it to its consequences" Alexander Bain, *Practical Essays*

- happiness | "happiness, pleasure or joy is an emotional or affective state in which we feel good or happy. The term pleasure is sometimes used to indicate a short-term response, while happiness is used to refer specifically to a more long-term state" SOURCE: http://en.wikipedia.org

"happiness is when what you think, what you say, and what you do are in harmony" Mohandas K. Gandhi

happiness · universal environment

how
mechanisms and processes

- taxonomic classification | "is the act of placing an object or concept into a set or sets of categories (such as a taxonomy or a subject index), based on the properties of the object or concept"
- taxonomy | "initially it was only the science of classifying living organisms, but later the word was applied in a wider sense, and may also refer to either a classification of things, or the principles underlying the classification"
- library classification | "is a system of coding and organizing library materials (books, serials, audiovisual materials, computer files, maps, manuscripts, realia) according to their subject" SOURCES: http://en.wikipedia.org

the players: developers, distributors, teachers, learners

what
the substance
internal processes
external factors and influences

when
lifelong learning: synchronous, asynchronous, concept maps
needs analysis

where
distributed space
effort

why
the purpose

closed environment

sub disciplines
teaching, distant, information arts, information architecture, cognitive frameworks, content areas, disciplines, desing dependant content

definitions
- definition | "a definition may be a statement of the essential properties of a certain thing, or a statement of equivalence between one expression and another, usually more complex expression that gives the meaning of the first. These two senses are not mutually exclusive, nor are they equivalent" SOURCE: http://en.wikipedia.org

"I used to think I was poor. Then they told me I wasn't poor, I was needy. Then they told me it was self-defeating to think of myself as needy. I was deprived (Oh not deprived but rather underprivileged). Then they told me that underprivileged was overused. I was disadvantaged. I still don't have a dime. But I have a great vocabulary" Jules Feiffer

http://www.artsymbolism.com/1.html
A symbol stands for the unknown, something that is beyond the obvious. It is different from a sign, which merely designates something. Mankind uses symbols to represent what we can't define or fully understand. Symbolism exists in everyday life; in religion, there is a more conscious use of symbolism, whereas the unconscious produces dream symbolism.

- gestalt theory | "school of psychology that interprets phenomena as organized wholes rather than as aggregates of distinct parts, maintaining that the whole is greater than the sum of its parts" SOURCE: The Columbia Encyclopedia, 6th Edition
- gestalt theory | "a school of psychological thought characterized by the phrase 'the whole is greater than the sum of its parts' - hence, 'wholistic' or 'holistic'. It is probably most famous for the Gestalt 'laws' of perception, which attempted to describe which properties of visual elements make them appear to 'belong together' as an entity" SOURCE: Crystal Reference Encyclopedia

The taxonomy proposes a classification of educational goals and objectives organized according to levels of complexity (in terms of intellectual functions and behaviors related to learning).

initial knowledge state · **K_0** · PLAR

k | s | a · learning curves

- learning path vs learning curve | curve is personal (time, effort, intelligence) while path is environmental (content, theory, support infrastructure). The 2 are co-dependant especially with regards to conent and learning styles.

For each individual, and for each Kn, an LC is associated with each LP. So if you want to optimize LC (i.e. get the best one), you have to target the LP.

Pizza in the blender analogy. Nutrition is nutrition no matter the meal. (AIGA form+content+context divided by t is experience design.

learning path

- learning path | the adopted view here is that learning is the process by which the minds of beings change knowledge states (minutely, significantly, or to any other degree). As such, and by drawing from existing definitions and their associated interpretations, it can be argued that learning permeates living, i.e. that living in fact entails learning (to some degree, but not necessarily to a significant degree at all times). Given these assumptions, and that knowledge is representative of all of its forms (including skills), the term 'learning path' represents the set of social and other environmental circumstances that help bring about this state change (throughout life's experiences).

$$\delta \int_{T_R, T_L} T_R \otimes T_L \, dtd\$ = 0$$

Pragmatism

The pragmatist philosopher William James suggests that, ultimately, everyone settles at some level of explanation based on one's personal preferences that fit the particular individual's psychological needs. People select whatever level of explanation fits their needs, and things other than logic and reason determine those needs.

In The Sentiment of Rationality, James compares the philosopher, who insists on high degree of justification, and the boor, who accepts or rejects ideals without much thought:

"The philosopher's logical tranquillity is thus in essence no other than the boor's. They differ only as to the point at which each refuses to let further considerations upset the absoluteness of the data he assumes."

http://en.wikipedia.org/wiki/Regress_argument

education

formal · informal · non-formal

"we are faced with the paradoxical fact that education has become one of the chief obstacles to intelligence and freedom of thought" SOURCE: Bertrand Russell

"since happiness is the sole possible object of human striving, a good education develops the capacity to reject avoidable misery" SOURCE: Dictionary of the History of Ideas, General Will http://etext.lib.virginia.edu/cgi-local/DHI/dhi.cgi?id=dv2-33

learning

learning is essentially about creating a better understanding of our immersed environment (which includes ourself), the results of which can then be adapted to modify our existence (usually with the goal of enhancing our quality of life)

intentional | unintentional
accidental | incidental
conscious of | oblivious to

- learning | "the process of acquiring knowledge or skill through study, experience or teaching. It is a process that depends on experience and leads to long-term changes in behavior potential. Behavior potential describes the possible behavior of an individual (not actual behavior) in a given situation in order to achieve a goal" SOURCE: http://en.wikipedia.org

expected | unanticipated

education versus learning

conscience
- conscience | "is generally thought of as a moral faculty, sense, or feeling that impels individuals to believe that particular actions are morally right or wrong. Modern day scientists in the fields of Ethology, Cognitive Neuroscience and Evolutionary psychology seek to explain it as a function of the human brain that evolved to facilitate reciprocal altruism within societies. As such it could be instinctive (genetically determined) or learnt" SOURCE: http://en.wikipedia.org

abilities
- ability | capacity | faculty | talent | skill | competence | aptitude | "these nouns denote qualities that enable a person to achieve or accomplish something. Ability is the mental or physical power to do something (the quality of being able to do something). Capacity refers to the potential for acquiring that power. Faculty denotes an inherent ability. Talent emphasizes inborn ability. Skill stresses ability acquired or developed through experience. Competence suggests the ability to do something satisfactorily but not necessarily outstandingly. Aptitude implies inherent capacity for learning, understanding, or performing" SOURCE: The American Heritage® Dictionary of the English Language: 4th Edition (Houghton Mifflin Company)

dreams

Kirkpatrick levels
KIRKPATRICK (quatre niveaux d'évaluation)
- *réaction* (I)
- *apprentissage* (II)
- *comportements* (III)
- *efficacité, résultats tangibles* (IV)

formative evaluation · summative evaluation · assessment · accreditation

evaluation · **accreditation**

K_n attained or desired knowledge state

competency phases: unconscious incompetence, conscious incompetence, conscious competence, unconscious competence

"if facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow" Rachel Carson

- teaching | teaching (as contrasted to learning) is mostly about facilitating the construction (or building) of knowledge bases (behavioral potentials) and the exchange of meanings between individuals of a culture

jtb — justified true belief
- knowledge | in his formulation of the definiton attributed to Plato or Socrates, Gettier writes:
  [If P is a given proposition, and S is a given subject, then:]
  S knows that P IFF (if and only if)
  i. P is true,
  ii. S believes that P, and
  iii. S is justified in believing that P
  SOURCE: Edmund L. Gettier (1963), *Is Justified True Belief Knowledge? Analysis 23 (1963): 121-123*

The regress argument
http://en.wikipedia.org/wiki/Regress_argument

bloom's taxonomy of education domains
SOURCE: http://www.businessballs.com/bloomstaxonomyoflearningdomains.htm

cognitive		psychomotor			affective
bloom	anderson	simpson	dave	harlow	bloom
knowledge	remembering	perception	imitation	involuntary (reflex) movement	receiving
comprehension	understanding	set	manipulation	fundamental movements	responding
application	applying	guided response	precision	perception	valuing
analysis	analysing	mechanism	articulation	physical abilities	organizing
synthesis	evaluating	complex overt response	naturalization	skilled movements	characterizing
evaluation	creating	adaptation		non-discursive communication	
		origination			
k (knowledge)		s (skills)			a (attitudes)

list of emotions — SOURCE: W. G. Parrott, *Emotions in Social Psychology*, 2000
fear · sadness · anger · surprise · joy · love

- emotion | "strong feeling state, such as excitement, distress, happiness, sadness, love, hate, fear, or anger, arising subjectively and directed toward a specific object, with physiological, somatic, and behavioral components. In psychoanalytic theory, it is a state of tension associated with an instinctual drive. The external manifestation of emotion is called affect; a pervasive and sustained emotional state, mood" SOURCE: http://www.merckmedicus.com

- "intelligence is a general mental capability that involves the ability to reason, plan, solve problems, think abstractly, comprehend ideas and language, and learn. In psychology, the study of intelligence is related to the study of personality" SOURCE: http://en.wikipedia.org

intelligence
personal trait | ability to build and make use of knowledge, including the potential | capacity to learn

emotion
mental state or process characterized by strong (internal) sentations that one experiences

emotional intelligence
- emotion intelligence | "…is the capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth." SOURCE: J. D. Mayer, P. Salovey and D. R. Caruso, *Emotional Intelligence: Theory, Findings, and Implications*, 2004
- emotion intelligence | "… in navigating our lives, it is our fears and envies, our rages and depressions, our worries and anxieties that steer us day to day. Even the most academically brilliant among us are vulnerable to being undone by unruly emotions." SOURCE: Daniel Goleman, *Emotional Intelligence : Why It Can Matter More Than IQ*, 1995

multiple intelligences
- In *Frames of Mind* Howard Gardner suggests that his proposed theory of Multiple Intelligences provides "a new definition of human nature, cognitively speaking". He did not claim this to be a bounded set and in recent years other 'intelligences' have been suggested to expand the initial list (including the last two below).

linguistic • interpersonal
logical | mathematical • intrapersonal
visual | spatial • naturalist
bodily | kinesthetic • existentialist
musical •

SOURCE: Howard Gardner, 1983 and 1999

content domains
Many systems of taxonomic classification have been developed for the purpose of organizing domains (or entities) of human knowledge inquiry. Several of these have been developed specifically for library or bibliographic usage (for instance, The Library of Congress, the Dewey Decimal, the Bliss Bibliographic, the Colon, the Cutter expansive, the Universal Decimal and other classifications). Because of their natural affinity, there are strong resemblances between educational content domain classifications, human knowledge classification and library classifications. A few example classifications are shown on the right (the Holtz and Dewey Decimal at the top right and the ASCE at the bottom right).

dewey decimal classification (edition 22) — SOURCE: http://www.oclc.org/dewey

field of education classification — SOURCE: Module/Unit of Competency Field of Education from the Australian Bureau of Statistics, Australian Standard Classification of Education (ABS Catalogue No 1272.0, July 2001)

holtz classification of human knowledge — SOURCE: *Human Knowledge: Foundations and Limits*, http://humanknowledge.net/Thoughts.html

UNESCO nomenclature — SOURCE: UNESCO 4 digit nomenclature for fields of science and technology

inquiry
research

the inputs
who · why · requisites

Although this section speaks to the value and virtues of learning, it is understood that they speak more the the outcomes of learning itself. The capacity to learn is intelligence where is the result of the learning process is knowledge. Both are important to build the capacity to learn.

intent
resources
basic skills (link to environment and senses also codes)

the means
who · where · when
black box processes and support

the mind and body → learning styles (efficiency), abilities/MI (potential), neurology (cognition), physiology (senses, communication)
theories and applications → TIP, cognition, behaviour …
supporting elements → technology, services, content (K base); society, culture, governments, schools, teachers, administration

the products
what
intents and use
byproducts

"pragmatism asks its usual question. 'Grant an idea or belief to be true,' it says, 'what concrete difference will its being true make in anyone's actual life? How will the truth be realized? What experiences will be different from those which would obtain if the belief were false? What, in short, is the truth's cash-value in experiential terms?'" *Pragmatism*, William James

- systems thinking | "involves the use of various techniques to study systems of many kinds. It includes studying things in a holistic way, rather than through purely reductionist techniques. It aims to gain insights into the whole by understanding the linkages and interactions between the elements that comprise the whole "system". Systems thinking can help avoid the silo effect, where a lack of organizational communication can cause a change in one area of a system to adversely affect another area of the system." SOURCE: http://en.wikipedia.org
- In many instances, desired outcomes are known. Outputs (or actions) are then identified in order to contribute to these outcomes. The appropriate system (and inputs) are thus determined to produce the relevant outputs.

TRAINING — "Training" I see as a full subset of "education". How could certain aspects, methods, properties … of "training" not be considered part of "education"?

EDUCATION — I assume that we take the position that "education" has as a primary goal the enablement of "learning". As such, there are many elements, properties, methods … of "education" that make it impossible for it to be a subset of learning. And by the assumption, it is clear that "learning" cannot be a fully contained subset of "education" (having all the elements of "education" does not guarantee "learning").

E-LEARNING — Historically, e-learning has come to take on the "meanings" of both e-education and e-learning. What I mean by that is that it is seen from both the provider / receiver points of view (teacher/learner, professor/student, school/individual …). As such, components of e-learning do not fit within the "learning" definition and cannot therefore be a subset of it. And learning cannot be seen as a subset of e-learning for obvious reasons.

LEARNING — Learning can occur with or without the provisions of "training" and "education" (e.g. "googling", informal …). As such, it cannot be considered a subset of either.

how to read this map

1. build draft
2. prepare reading list and references
2.1 verify all sources and attributions
3. circulate draft to a few individuals
4. modify and widely circulate for comments
5. make modifications as necessary
6. start working on interactive model
7. develop feedback loop
8. gather institutional interest areas accross Canada
9. develop sub models (drilled down)

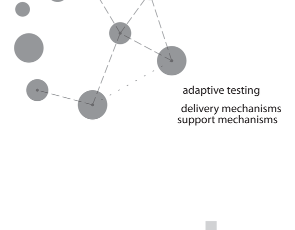
1 Philosophy of truth
  1.1 Signs, sentences, and propositions
  1.2 Truthbearers
  1.3 Truth predicates
2 Major theories of truth
  2.1 Traditional (substantive) theories
    2.1.1 Coherence theory
    2.1.2 Correspondence theory
    2.1.3 Constructivist theory
    2.1.4 Consensus theory
    2.1.5 Pragmatic theory
  2.2 Deflationary (minimalist) theories
    2.2.1 Performative theory of truth
    2.2.2 Redundancy and related theories
3 Formal definitions of truth
  3.1 Semantic theory of truth
  3.2 Kripke's theory of truth
4 Types of truth
5 Truth in law
6 Truth in mathematics
7 Truth in political economy
8 Truth in religion
  8.1 Buddhism
  8.2 Christianity
9 Additional observations about truth
10 Notes and references
11 See also
  11.1 Truth in logic
  11.2 Theories of truth
  11.3 Major theorists
12 External links

absolute versus relative and subjective versus objective

- truth | "common dictionary definitions of truth mention some form of accord with fact or reality. There is, however, no single definition of truth about which scholars agree. Numerous theories of truth continue to be widely debated. There are many other issues about which scholars disagree. What sorts of things can properly be called true or false? What tests can establish a claim as being true? How do we know something to be true? Which truths, if any, are subjective, relative, objective, or absolute? Does truth, as a concept, have a rigorous definition, or is it unavoidably imprecise?"
- traditional (substantive) theories of truth | "traditional theories of truth treat truth as a meaningful concept, taking it to refer to significant properties of meaning-bearing entities, to relations that connect them to each other, and to relations that involve them with other things in the world. According to these theories, ascribing truth to meaning-bearing elements says something significant about them. Such theories analyze truth as a descriptive property with a nature that can be discovered through philosophical investigation and reflection. The task for such theories is to explain the alleged nature of truth"
- deflationary (minimalist) theories of truth | "the deflationary theory of truth is a family of theories which all have in common the belief that assertions that predicate truth of a statement do not provide any substantive information or insight into the nature of truth. Deflationary theories need to be carefully distinguished from so-called primitivist theories of truth, which claim that truth is a fundamental, indefinable, irreducible property of propositions, on the one hand, and from currently fashionable identity theories of truth, which claim that truth is a relation of identity between truth-bearers and truthmakers on the other"
SOURCE: http://en.wikipedia.org
The regress argument
http://en.wikipedia.org/wiki/Regress_argument

- good | "many approaches to ethics are centred on achieving what is good, although others are based on doing what is right. Priority to one goal need not exclude the other, but might shape the contents or limit how we pursue the other. We can ask about the relationship between human goodness and the goodness of other things, such as a knife that cuts well. On some views, goodness is reduced to one quality, like happiness or pleasure or satisfying desire, but others think of goodness as inherently complex. In either case, goodness has a place in moral psychology, motivating our actions and explaining our emotions" SOURCE: http://www.filosofia.net/materiales/rec/glosaen.htm

about this map



bibliography and references

personality

Passive filtering (like our surroundings), filtering is easier at the lower cognitive levels (for instance the color of my walls at the office). No reinforcement of memory. Active filterning involves cognitive "work" and meshing with current schemes of the mind.

Picture of "cognitive overflow" would be good.

The color of the walls produces signals but they are stored in very short memory and are not being cognitively processed (very raw signals). But if someone passes in front of them, then that signal get treated differently.

Multiple streams get filtered differently. A commercial on tv gets "mined" one way, the show we are watching gets mined another way (mined, mostly emotional, and still in short memory for immediate use).

Picture of filtering of communication channels. Big flows like the colors and sound around us, and small flows (like an explosion).

Plus, highlight the reality of chosing different perspectives (cube with one face saying "danger").

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a conceptual and relational representation of knowledge and learning: or how we derive meaning from our environment

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