

Semantics In Informal Logic - a pamphlet

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“Don’t shoot the messenger!”

(English proverb)

The scenery is to change

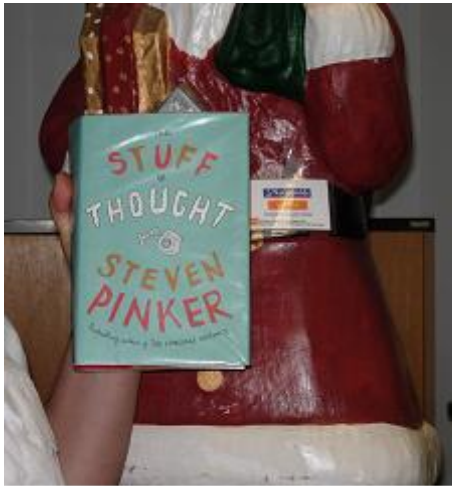
The failures to agree on the meaning of our basic vocabularies in science, the fruitlessness of trying to get an understanding of what concepts are really about, and the futility of reconciling various disciplines in a coherent whole are partly due to the fact that in most scientific endeavours common sense has been abandoned. Instead, the pursuit of formalisation (doing metrics, using maths), measurability and falsifiability come afore. But as long as people with common sense are around, there is always hope, and in case of a deadlock like this, the best approach is to go back to a point in time and space when people meant what they said and were caught, if they were making up things without reason and justification.

Do you like metaphors?

Well, do not like them any longer. Metaphors are a mess, a pain in the neck and a slippery slope to digress from a subject. Nevertheless I am going to show you two pictures, one on vapour and one on ice, both metaphors. The photo of the book cover by Steven Pinker” The Stuff of Thought¹” illustrates what vapour is. The figure on the

¹ Steven Pinker: The Stuff of Thought. Language as a Window to Human Nature, Allen Lane, an imprint of Penguin Books, 2007. He claims that language is a medium that is public and *digital* (emphasis by me), and

connections/relations of the concept of Time made by Hypercube Ltd. indicates what ice is. In contrast to them the third state of water, liquid is a flow and the best state of that matter for human understanding, because water is transparent, follows one basic rule or force (gravity), as it goes from higher altitudes to lower ones, and will pass round any obstacles on its way to unite with the rest of the waters. Then all being connected, it will show you a really big picture, that of the Ocean that triggers the circulation. But forget imagery and let us get down to do some serious business.



Picture 1 Metaphor of vapour²

What are texts composed of?

Texts in a natural language are composed of **lists**. Lists are composed of words delimited by space, and words delimited by space add up to an element or item in a list delimited by a full stop, a new line, or other delimiters.

An item in a list may be just one word, or many more. In any case such a single words or clusters come in two classes, namely **labels (headers) and messages**.³ (In fact, you will later see that they are convertible to one another). Headers are of several types, such as titles, headings, notices, keywords, tags, etc.

A label or a header either tells you what an item or a group of items is, or what it is about. Sometimes a header is just a notice or a label attached not to a piece of text, but another object indicating that it is in fact just a name or other information related to what it is attached to.

The **boundaries** of an element of a list are difficult to identify, because you are accustomed to looking for meaning, especially that of a word, some of which are called ambiguous and thus they pose a problem to understanding. **Meaning** is subject to

even goes as far as to say that ideas have their own anatomy. He also quotes Hobbes: „Words are wise men’s counters” – whatever that should mean to you today without context.

² In the way the word THOUGHT is printed, mimicking a cloud

³ W.H. Mittins: A Grammar of Modern English, Methuen, 1962

chunking, the process of demarking to identify a single word or a group of words that denote a whole in the real world. They are of nominal character, because they originate in names. A **name** is usually given to a **whole object** in reality or reversely, a whole is usually a name, either that of an object that exists or is made up, or a **concept**, which is also an object, but man made. It is in a way a tool for helping to reproduce reality in the mind in the process of **mirroring** life experience. All that seem to assemble in what we call knowledge, or more recently **knowledge representations**. Tags and similar markers tell you what such a something (object) is about. They are normally noun phrases. Thus a label on something and a title about a label on something is just the way the number of such clusters may be extended.

Messages identify an action, therefore in addition to labels above, they also consist of a predicate. Now in space and in time a label (noun phrase) may be either in front or behind a predicate, so a predicate as a verb is also a relation, between a subject and an object of a sentence/proposition.

A cluster does not have to be „complete” or detailed, subject to the context. The more context available, the shorter the length of a cluster needs to be, and you may get **ellipsis** as a result.

Should it not be possible to identify what is meant by the words spoken or written, you have to explain, i.e. to paraphrase, supplement or elaborate your wording. If you do not understand something, you may say, it is beyond me, or it is too abstract, something that you do not have sufficient knowledge to relate to. Or you may say that it is too general, and you want more specific wording until you get the complete picture.

Messages are propositions made in connection with labels or headers, so a message will usually have one or two headers with a verb in between. Therefore a verb is a **relation** between two headers, in fact two objects revealing motion or change in the world of objects usually seen and depicted in the standstill state of ice or vapour, that is in space where time is frozen, because it is forgotten about. But never mind. Just remember, that time starts when space starts (and vice versa) as far as we or the physicists can tell thinking now of the Big Bang theory.

Whenever we learn a new object and its name we immediately learn an *instance of ambiguity*. On the one hand a name or a term may be either general or specific *subject to the context available*. If it is general, then again it is ambiguous, as Dewey⁴ writes: “meaning (in its best logical sense) the related and also (in its natural usage) the indefinite, the vague. General, in the first sense, denotes the discrimination of a principle or generic relation; in the second sense, it denotes the absence of discrimination of specific or individual properties.”

“General and special (specific, peculiar, individual, one off) are the same, they overlap. Special is *nothing but general revealed* subject to various conditions. Speciality

⁴ “The old, and the near or the accustomed is not to which but with what we attend.”

(peculiarity) in the appearance of objects disclosing specific and individual nature does not separate it from the whole. Peculiar is half-way between perceptual experience and conceptual thinking. The relation between individual and general will change any metaphor of a piece of art work. Meaning and the conceptual order will set the sharpness of an image. If general, directly shows through then an image, an allegoric representation will be produced. If an idea is reflected, then the character of the symbol is shown. Allegory converts a phenomenon into a concept, and it will convert a picture into a concept so that the image includes the concept with its boundaries and identifies it in that relation. A symbol will turn a phenomenon an idea, will turn an idea into an image so that the idea in an image is always effective and inaccessible so much so that it remains unavailable for articulation in any human language.” *Goethe*

Of the twin concepts⁵ that we are fond of in describing the world and its properties general and specific are perhaps the most important concepts (qualities) in presenting or sharing knowledge. Similar twin (companion) concepts are abstract as contrasted with concrete to describe similar bipolarities. Both concept pairs are useful in our orientation in the world that we have been trying to describe verbally for a long time in words (coupled with meaning), a collection also arranged in a hierarchical fashion, as a set of interrelated objects and properties.

Now for example, any statement like the ones above is considered general, if it does not immediately evoke an image in you that you are familiar with (i.e. you understand) and which seems to support the validity of the above claims. There are also stylistic features of a statement of a general nature, but the main point is that something is considered general as long as you *cannot launch any action from* it. An action means either a mental operation or a physical reaction that seem to follow from a statement or claim.

A message or a label that are seen as general and not specific are difficult to lock your attention on. They are therefore elusive, they just do not sink in. That may be the case, because there is more than one of something seen as general, or there are several similar ones around, or they are not close enough for more detailed inspection.

It is also possible that something is seen general as a result of disregarding many (possible) properties of a message or a label, or if it is reduced to a minimum content, or it is a product of compression or simplification, or perhaps schematisation.

In contrast with general specific is seen as something easy to grasp and readily available as an image in the mind, it is usually near to us and is related to the quantity of one and the concept of the whole or totality. Specific items are very useful and are suitable for use to launch actions and since it is related to the property called detailed or elaborate, the item may be extended or contracted.

⁵ Not necessarily identical with conceptual integration or concept blending suggested by Gilles Fauconnier and Mark Turner in *The Way We Think, Conceptual Blending and the Mind's Hidden Complexities*, Basic Books, New York, 2002.

The importance of the general specific duality is best seen in looking for applications or solutions. Solutions, such as procedures and algorithms are general, if they can be reused or applied repeatedly, which means that the application of general solution is cheaper, because of their lower specific costs.

In the emergence of thinking most of the new experience comes as specific knowledge, and by having similar or the same experience the words that have been used as unique identifiers are found to have more than one referent objects, therefore ambiguous. The fact that children first have eidetic vision⁶ translates to taking large chunks of visual stimuli as a series of whole or total impressions where an object and its context is not much differentiated.⁷ When they are more differentiated and when more than one normally identical objects are seen they need to be identified verbally in a different manner to maintain the integrity of identifiers. Therefore all the words that are first learnt are practically names or identifiers that can be used to produce an inventory of the experience tagged by verbal identifiers. Therefore our names as call words (or concepts) are grounded in experience and the physical world that scientists also take an inventory of in their nomenclatures and other classifications.

But what we do with experience in our mind is not just a connection between the name of an object and its physical existence. We produce some sort of visual memory of the object associated with verbal or cognitive mapping⁸ that is not sorted or organised in the same fashion as our direct experience or any inventory of reality.

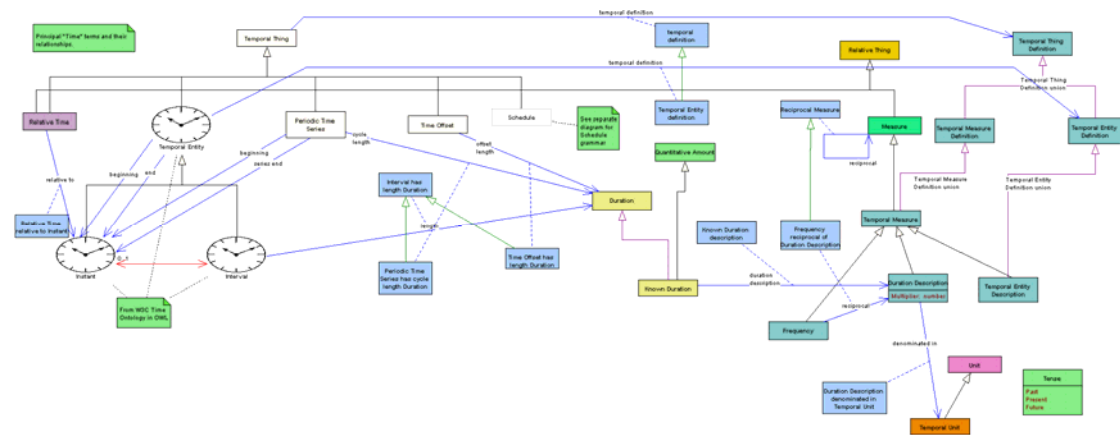


Figure 1: The concept of time and its relationships: (**Pending** Courtesy by Hypercube) <http://www.hypercube.co.uk/edmcouncil/upper/time/one.html>

We perform mental operations on our sensory input and the results of such operations are connected up to create our cognitive system that is retrievable by methods other than alphabetic (morphologic) search or numerically represented/related items of thesauri. But the **set of mental operations** so far have not been seen as the key issue, because

⁶ http://en.wikipedia.org/wiki/Eidetic_imagery

⁷ Jonn Berger: Ways Of Seeing

⁸ http://en.wikipedia.org/wiki/Cognitive_map, fairly ridiculous fabrications

people try to represent relations between concepts on a different basis, and use abstract versus concrete bipolar pairing in describing terms, which I believe is a mistake.

There are no concepts outside the mind, and whatever is in the mind is abstract, meaning that it is a result of abstraction. Concrete on the other hand means a representation in the mind that is a proper (verified) mapping of some identified chunk of reality.⁹ Reality may be chunked in various ways, but the non-verbal, yet unambiguous end result in theory is a unique time and place parameter that identifies any point in space and time, small or large unambiguously.¹⁰ The two extreme limits that cannot be so identified are at subatomic level and anything beyond the known universe. And I believe abstract nouns, abstract terms, etc., are therefore misnomers.

Formal Logic has made tremendous efforts to devise ways that would eliminate the use of human thinking allocating it to robots altogether. Logicians and ontologists as they call themselves have got funds and results, and now they have got problems that seem impossible to overcome. They are focused on syntax analysis to arrive at semantic understanding of propositions (and even Natural Languages), but they are mounted on their hobbyhorse the wrong way round. Number one, looking for resolution and terminal symbols in a natural language is an inadequate approach. You have the problem of sequential versus parallel processing at hand. Number two, they have entered a blind alley that no reasonable person wants to go down on any more.

What is meaning?

This concept is so much neglected and abused that even linguists fail to furnish a decent definition. Meaning however is much more simple, because it is identification. You identify things when you see them or meet them with the help of your knowledge already in your mind. So meaning may be different to different people, which is a nuisance, therefore we need to harmonize our concepts or understanding meaning.¹¹

An identification is a mental operation with at least two operands the output of which we find either identical or not identical with what we are comparing it to at the end of the day. Traditionally words are supposed to have meaning, but they create a problem through polisemy and an even bigger problem of being generic versus specific, seeing it as a form or a content, or denoting a whole versus a part. When we come to the meaning

⁹ Concept mapping has become a popular pastime recently- See: Andrew Pollard Reflective Teaching, 2nd edition. Continuum, London, 2005.

¹⁰ In “translating” or matching a chunk of reality as marked by some verbal phrase in L1 into L2 what you do is mapping the occurrence in spacetime of the same or similar chunk of reality. E.g. in a library the notice New Members translates into Beiratkozás in Hungarian (literally enrollment. Now if you were to translate new members literally as új tagok that would without context never bring you to a library where members are called readers, which in turn would take you elsewhere in English.

¹¹ “Cognitive psychologists believe that individuals have ideas, images and various languages in their id-brain. The representations are real and important and are susceptible to study by scientists and to change by educators”... „Schools must be individualised and personalized. We need to understand the specific mental representations of each student in as much details as possible. (Page 72) In: Howard Gardner: The Disciplined Mind, What all students should understand, Simon and Schuster, 1999

of concepts, the situation is more enjoyable, because you have extension and intension to play with as I am going to show it to you soon. But before that, you must imagine **meaning complete with context only**. No context, no meaning. And context is a multitude of boundaries starting with the immediate neighbourhood of the verbal phrase (collocations) and ending in various comments, explanations or references in spacetime. So in order to mine meaning you need to feel home in the exercise of parallel processing.

Some linguists do not want to get involved in the matter in such a complex way and they fabricate all sorts of rubbish now using cognitive terminology. In contrast, I want to use common sense as „linguistic science”. It is also time to summarize what I have said so far:

Concept seen as	Identification	Boundaries	Acton/reaction
Form	Name (of an object) Identifier Number	Resolution Spacetime Scales Frames of reference	Folding
Content	Properties Intension Examples (extension)	Checks Anticipation Reference to reality	Unfolding Mirroring
Whole	Definition Context	Semantic primitives	Assembly to bigger units
Part	Properties Jumping to conclusion	Unclear/ Closing up subject to expectations/anticipation Transduction/Abduction	No action without making it a whole/or jumping to conclusion
Generic	Subject to existing knowledge	Move up or down	Deduction Top down
Specific	Subject to existing knowledge	Move up or down	Induction Bottom up

Table 1 Aspects of concepts in reflective thinking

Now it must be obvious that any representation of the representation of knowledge in the form of a graph or other 2D or 3D geometrical pattern is wrong unless the parts connected that way are tessellations, that is they are properly interfaced and assembled. No maps make sense without routes to follow **in practice** or without names of destinations visible in the map. Maps are to be used for moving by it, not just look at it as if they were mandalas. No matter whether you know the actual circuitry of the brain or not, it is not enough to locate a particular area of „the memory or the CPU of the brain” pointing out that something is happening there, if you have no idea of the instructions performed on the allegedly discrete points of memory once called memes, then ideas, or just concepts, according to your liking and fantasy. And it is especially unfortunate to think of them as if they were related in terms of Boolean or other logic relations that are

basically spatial relations while you are not aware of the timing and synchronisation process of your mind, not to mention the actual neuro-physical/chemical/biological structure that works as a medium for your mind's software.

The concept of mental operations are therefore crucial to semantic understanding and parsing, and in Figure 2 another illustration will also show you how the process may be looked at in real 3D, in spacetime of the concepts produced.¹²

What are the mental operations?

Concepts are products, not creatures, like the objects of the real world. This statement does not mean that I take sides with creationism or evolutionism. On the contrary, to me, they are the same story, looked at from a different angle, with a different focus, and at a different speed of projection. Concepts are products in the algebraic sense too, adding that since they denote a whole¹³, the product is composed of ones (integers) only, making the whole more than the sum of the parts (see also synergy).

¹² “We interpret our experience in such a way as maximize the coherence of our knowledge about the world, to make sense of the experience, a part of our role experience of the world... Speech is processed in similar way to the kinds of experience since it seems clear that we take account of our total knowledge when processing visual experience”.. There are important similarities and interactions among the processes by which different kinds of information are deduced about an object such as a perceived string of sounds. In particular there can be no important discontinuity between the strictly linguistic processing, which yields a linguistic structure, and the interference mechanisms which apply to this input and yield its „content” and the general message.” Richard Hudson: English Word Grammar, Basil Blackwell, 1990. Oxford.

¹³ le_illusioni_di_octavio_ocampo.pps



Not covering the whole subject area for the moment, here is, just to give you a treat of what this is about, a list of some of the basic operations all already known to you. Let's start with a definition. A mental operation is best defined in terms of the end product of such an operation. It is widely assumed that the world around us is mapped into our mind in a form that has a tangible structure. Some people call them ideas, others call them thoughts or memes, the point is that they are supposed to be discrete point like entities that can be located somewhere in the brain (simplified as memory), hence retrieved and manipulated on at will. BUT! The operations themselves are rarely mentioned or defined, so they do not always seem to be accessible by your will or separated from the object of such operations. I do not claim that I can define such operations here either physically or biologically, or can suggest any specific way to separate such operations from the use of a natural language. Instead, I am going to name a few operations that seem to belong to the operation of logic, especially non formal logic, and which also exposes the relation between language and thinking in a simple and clear model.

There are a couple of assumptions behind the following descriptions, namely:

At the beginning and a long time ago in the history of language evolvement all started with **one word**,¹⁴ obviously the first one invented. The same is true about a child learning its language. It is not very clear what exactly the first word would mean or what parts of speech category it would belong to. Some say that in the beginning there was a verb. In any case it may be right to assume that the first word would have meant several things in terms of the basic constituents of a language. It is also plausible to assume that the first words used as names identified the world around a person as well as his/her own body and partners. The very same words then by the way of analogy would be used to name other things that came into the fore of an exploring individual. I do not know of any English language study on this subject but in Hungarian there are several papers dealing with the early vocabulary of people and as they are used to denote the objects around them.

Having looked closely at some of the words used today I also find that one word may have several semantic components hidden in them. Like a word could mean an acting itself, and therefore it may be regarded as a verbal identifier, and also it would indicate the result of such an effort, thus be an object or a nominal identifier, and finally it could even indicate an essential property or quality of such an object, making the a word a composite of three semantic elements. You can still find words that would suggest you all those three meanings on their own.

¹⁴ See Haeckel's Law: Ontogenesis, or the development of the individual is a short and quick recapitulation of phylogenesis, of the development of the tribe to which it belongs, determined by the laws of inheritance and adaptation - Ernst Heinrich Haeckel. The History of Creation, 1868

Why a word or a smaller unit (morpheme) does not have a meaning?

To have meaning, you need to establish a relation. To have a relation you need to have two entities related to each other. Therefore meaning is mainly indicated by the proximity of such two entities either with a sign of relation or without an explicit sign of relation between the adjacent entities. (Everything is related to everything else.) Now if they are next to one another, they are at the same time perceived as existing simultaneously, in other words *meaning persists in the spacetime continuum*.

Now if on one side of the meaning the chunk of reality is not outside one's mind, meaning becomes personal or subjective as on the other side of the relation context is represented by his mind. It is therefore not easy to find another person whose interpretation of reality that cannot be checked out in the external world matches the experience and collection of meanings stored in his or her mind. But the issue of imaginary objects and the meaning of phrases that cannot be identified and verified by collective experience are not always a matter of life and death, and people can agree on them. It is true, however that many signs, symbols, icons and similar representations, including pictures and reality itself lend themselves to many interpretations as far as their meaning is concerned, and they are a busy battlefield. It may be a consoling thought that the issue of meaning is not always critical, and ambiguity raises attention, and it is even used to make people read on.

The questions of ambiguity

Under normal circumstances people require clear and unambiguous descriptions, signs and texts, etc. or they cannot perform any action or deed required or contemplated. Similarly, to follow a train of thought while reading, you need to be able to identify characters, places, plots, etc. to feel that your story makes sense. Man is in a constant state of predicting/anticipating the future, which behaviour is often described as that of a meaning seeking animal in life, and as such, he/she acts upon the fulfilment or failures of his/her expectations. Therefore this behaviour is part of learning about the world by doing, a process of trial and errors resulting in an increased knowledge of reality, including that of his/her own self and the environment.

Another set of words of comfort is that our mind works as a self-correcting device and where our attention or any other mental faculties fail, it would correct anything perceived as absurd to make it more meaningful. To start with, we do not seem to be able to accept contradictions and nonsense in meaning. It does not mean that we do not speak rubbish, or do not change our words from time to time (lie for example), it only means that in one particular example of human goodwill, in education we try to do our best to give a faithful picture of reality without speaking mumbo-jumbo.

By being able to look at one word with three aspects (parallel processing) we must also be able to shift angles and change the object in our focus. Such operation is likely to be repeated as many times as necessary, just as in algebra where you add up numbers in

counting in one number system, and when you arrive at the end of the symbols, **you shift or fold** and start all over again

Mental operations are difficult to identify because of the speed that they take place, and because in terms of experience they all seem to be of the same kind, whether we call them comprehension, recall, thinking, or dreaming. When I say they are of the same kind, I mean that it is difficult to separate them just by calling them by different names. We do not seem to have the means to break them down into smaller units, or identify explain the concept next above it (the broader term or the higher category). We are not aware of the underlying processes either, despite a lot of new knowledge being collected by neuroscientists. And if you add that some people use the word mind, or the soul, or use words like ego, personality, feelings and ideas to grasp anything specific, then clearly you see that you are walking on swampy terrain.

They are also difficult to grasp, because thinking starts as soon as we become aware of our existence in this world, well before we have learnt to speak. Before speech we must have some sort of operations on our visual and audio input probably interpreted in terms of their emotional consequences and a limited set of meaning stemming in our environment.

However, there are some operations that are easy to imagine and accept, such as perception, exploration, focusing, concentration, separation, or abstraction. Probably because we have their equivalent in the physical world as well, and therefore they are easier to visualize. Therefore next, I am going to cover the most important of such operations, as they are seen in logic, and as they can be useful for our purpose of defining the **semantic primitives for semantic parsing**. It is the result of such operations that we write down a narrative where we are trying to tell something we have in our mind to other people, who are using the same repertory of mental operations, whether they are aware of it or not. They constitute the **subject of reflective thinking**, a kind of effort to slow down the process to document and to take pictures of the operations, a kind of dump of your mindset.

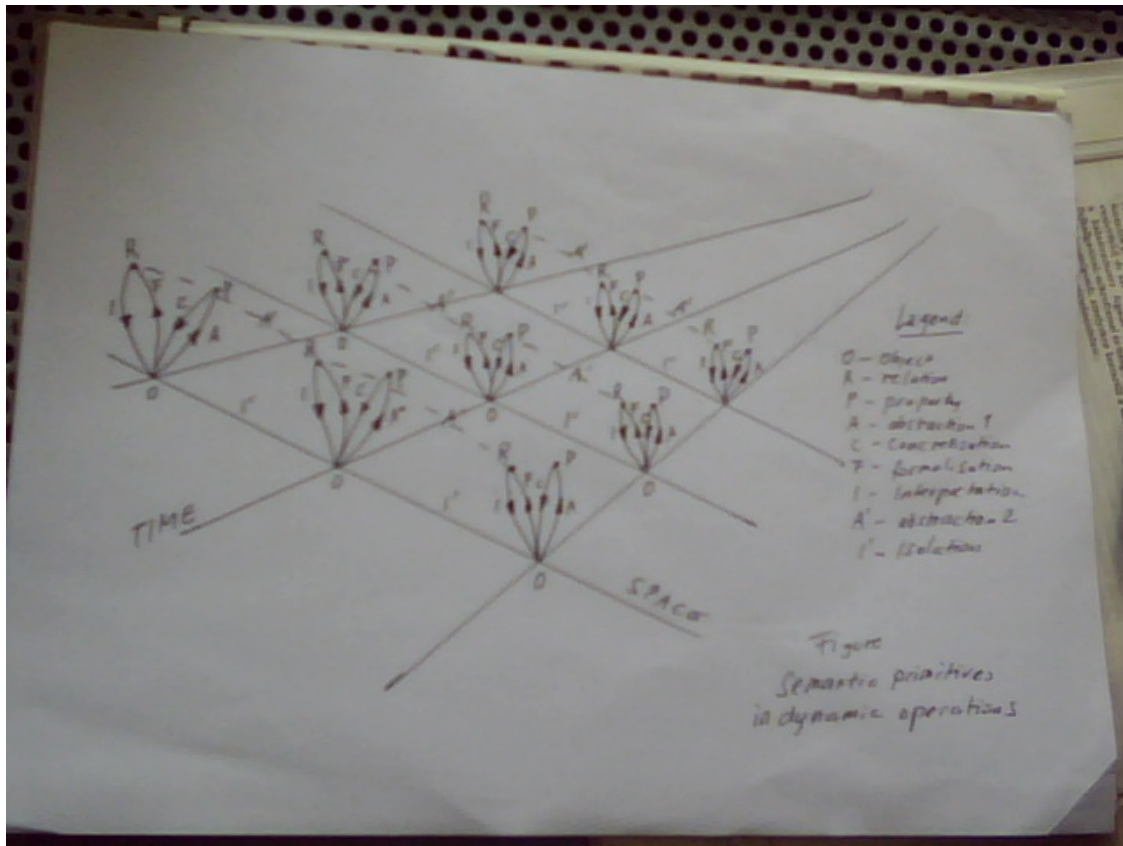


Figure 2 Semantic primitives portrayed in dynamic operations

1 Folding and Chunking. Exploration/separation/abstraction/

The need to identify something (verbally as well) in the focus of our attention or sight, the practice or operation to separate or isolate something from its context, background or environment must be familiar to every one of us. This operation is required when we are faced with an occurrence of reality that is too complex to be grasped and remembered as a single glance, or as a short stimulus. In this operation we decide to see something as a whole and therefore being one, or as being too complex (e.g. a system), having many parts, and not to be analysed (or be taken apart) any further. The identification of a stimulus is usually required when we meet some new, unfamiliar or extraordinary.

Now this operation is common to thinking in general and learning. In either case you deal with the issue of **identification**, which is just another word used for **recognition**. Recognition and identification serve practical purposes and the outcome is usually simple.

When someone notices something (a pattern, a whole) as new, by observation, learning, perception, or experience, etc. identifies it as new (not known so far) as a result of comparison with old knowledge and vocabulary. If you do not have a word for it, you

name it and spread the word. The word will find its way in the language and the dictionaries with some notes on the background of its first occurrence (original context).

In most cases we need to break down whatever we see or perceive into smaller constituents. But that number should not be very high, in fact, the minimum number of components of such a breakdown is two, so typically we work in word pairs and concept pairs, and change focus as required to get an optimum of the total number of components. But the number of such elements may just as well be three, if we are to learn or recall them. We shall see later why.

Also, we are capable of replacing or swapping something in **focus** with “a domus”, and vice versa. Besides, we can move closer or away which has the effect of changing scale of a map. In other words, we can modify our perception and toggle between at least two possible interpretations, which may have nothing to do with reason or logic, mind you. Once we have established that we are dealing with something identified, i.e. you have the experience of seeing **the whole picture**, we can start further manipulations as follows below.

*The outcome of this operation in terms of semantic primitives is an **object**.*

This object may be new to you and/or it may not have a name. Therefore more often than not, you will start analyzing the object by trying to remember anything similar to it. You need to have the boundaries (contours of a pattern) and the character of the object established, like if it a whole, or a part of its environment (context) and how you are related to the object. Your possible relations are in fact verbs describing what you do the object, or what the objects does to you. It may also be possible that the object is related to a third party, such as another object. In any case, next you try to look at the objects with an eye to identify its properties. This shift in your mental state requires that you change your view of the object and put the features of the object into focus by **folding**.



Picture 2 Illustration of the results of chunking (Compare the same in other cultures/languages/technologies)

2 Folding from objects to properties (qualities and attributes)

After identifying something either as being a particular thing (recognition), or a member of a class, we are likely to assign this entity in our focus as belonging to one of the following three very broad categories: i.e. object, property and relation. When we are finished with that, we may want to move further, and use folding to change the status of that thing identified that way and move on in the process of acquiring new knowledge..

After this primary and most common operation of grabbing something and having it separated from its environment, and arriving at the three basic concepts of object, property and relation, next you take your separation further and pick anything striking to you in your object, and select it as having something common in other, or different things or objects, and disregard the rest. This operation is called **abstraction** where any number of objects may be used, a single one even (if you think of one object as two identical objects.) When you assign your particular thing to the class of objects you have already performed an abstraction, and therefore now you have the picture of not just one specific object, but an abstraction of that object through the label in your mind.

This folding operation enables you to see the same thing or object as an association on the level of two existences, namely specific and abstract, and you can switch between the two aspects, as you can transfer across the existing connections as you like. Therefore you may decide to go back on the road in space and time by performing the inverse, or reverse of this operation, which is called **concretisation**. In that case you work your way back, and you recall the name an object that features the properties in question. In this particular example you will see it as the original, genuine object (with an individual, and not group name, if you like).

Folding means that we transfer something or some person in focus from one place to another. It also means the change itself, when or where something is moved from one person or place to another, that is the operation that happens when something is transferred.

We do not know what is happening in reality in our brains, therefore we call for an analogy, as a usual device in any similar situation.

3 Folding from objects to other objects

This operation is called **isolation**. Each object may be isolated from the rest of the other objects. If the relations are properly understood, isolation can be done. Both in reality and in the mind, working with the concepts.

An object is abstracted/isolated from a context, which is a totality of objects. Isolation is folding from one set of objects to another set of objects, and it is disjunctive.

Example: A object B context (seen as another object)

By moving our focus from B to A, we isolate A, or vice versa. We cannot have both in focus, we see either A or B.

4 Folding from relations to objects

This operation is called **interpretation**, or changing over from a syntactic (formal system) to a **semantic system**. The resulting product is uncertain (you have disjunct elements to chose from, and one is selected). And as we said, this operation is the inverse of formalisation that comes later.

5 Folding from properties to objects

This process is called **specification** (concretisation), and it is folding in the reverse direction as was done with abstraction. As a special case you have folding from abstract to specific. Even more special is folding from abstract to “not concrete”. A good example is found in profiling. By selecting newer and newer properties you narrow the memebership in multiple sets until you get the one with a long description, but a one off specimen. (start with big, old, hairy, four legged to get to my dog). Relations may also be

drawn from properties, like Relation: father, Pete's father where the phrase is the relativisation of a property.

6 Folding from objects and relations to properties

In this operation you define relations between objects, and then such relations are derived, or named, and sometimes formalised. Such relations are of equal type: they are interchangeable, mutually mapable, and what they share is a content, and it is their property that will be abstracted, or distilled from them.

Such a property is not directly derived from the objects themselves, but from the relation existing among the objects. Such operation may usually be the source of new information!

7 Folding to relations

This operation is more complex than the operation of picking individual properties. It is called **formalisation** and this is the reverse of interpretation: $x,y,z R (x,y,z)$ (see below).

One of the problems arising from the mutual interrelation and transformation performed among objects, properties and relationships results in the exaggeration of the importance of one of the three basic terms, which then may become an *ism. (In case of semantic primitives they are called objectivism, propertism and relationism respectively.) But that is wrong, because it is hypostasy, the assumption that something conceptual is in fact real, and forms a part of the world existing outside our mind (undue augmentation). Apart from that, if you look at an object, a property and a relation, you will see that each of them is a special/degraded case of the other two. It does not mean that one of those categories is a "regular" special case of the other, because that would result in the annihilation (cessation) of one category and the hypostasy of another.

There are some basic assumptions concerning these three terms (i.e. objects, properties and relations), namely:

- a) the very same relationship may exist among different (various) objects,
- b) the elements related to each other may be different in different (various) objects,
- c) any particular relationship and any particular property may be present in different (various) objects.
- d) relations may be defined by objects as defined by other relations

These give you an ample choice of following various paths among objects, properties and relations to be explored.

Example: A word is defined (morphologically) as the mutual relationship of syllables, or the interrelationship of sounds, etc.

A property as a relation cannot be thought of as a relation in general, because a property relates to specific objects: aRb

We carry on operations on objects, properties and relations normally on a level of concrete words in context. That means that we rarely think of a word as being of one particular category (object, property or relation), instead, we are accustomed to the use of the grammatical descriptive terms of our mother tongue. But in reflective thinking we can learn to identify them and by becoming aware of them, we can practise those skills to acquire fast and forward thinking.

We may also have a better understanding of formal logic or the related data-processing, all dealing with the same phenomenon, but using a different jargon in many cases without justification.

As we know little of the actual operations of the brain that we call thinking, our means of describing any functions in there are likely to be borrowed from elsewhere, such as the computer paradigm that provides a fairly good insight into something similar taking place inside our mind. A word of warning: you must realize that as soon as you switch your computer off, no software exists any more. With living organisms a similar switch will determine whether to supply oxygen and water to us, or to make us degrade and send down the drain, if we do not learn how to think fast and forward in order to navigate on the seas of knowledge (metaphor), the only state of water (reality) that enables reflecting (common sense modelling experience).



Picture 3 A photo of a part of a marina on a lake (name of location, or GPS and date and time parameters omitted) There is no way to find this place in reality, unless you have seen it before. In other words you are unable to relate to a location without a map that does not show ROUTES that can be transversed from your point to a destination point.

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