



Abstract

The unicist taxonomy of complex problem solving learning

This is a synthesis on the results obtained from the research on the ontology of complex problem solving led by Peter Belohlavek.

Object driven thinking – Humans use mental “pre-built” structures to approach reality

Object driven thinking is humans’ natural approach to reality. Human mind approaches reality using cognitive objects.

A cognitive object is a structure that contains knowledge, the action procedure, the groundings of such object, and the opinion on which it is based.

The knowledge is necessary to build an understandable description of a reality. The action procedure structures the usefulness of the knowledge.

The foundations sustain the meaningfulness of knowledge. Foundations are the basis for integrating the objects into a structure or network of objects.

Opinions are the “doctrine”, or secure knowledge, on which cognitive objects are built.

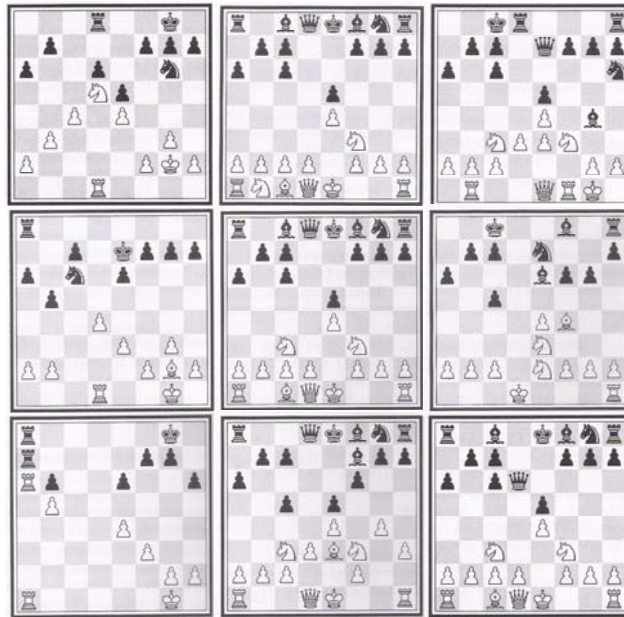
Long term memory

Cognitive objects are stored in the long term memory and are accessed if the individual approaches reality in an adapted way.

The access of long term memory requires a structural approach.

Intuition is an “automatic” response which includes the information of the objects stored in the long term memory.

Let us consider an example: The way a chess master approaches a multiple-game party.



This case has been studied by different researchers that concluded that a master recalls the multiple objects s/he has in his/her mind to categorize the situation of the opponents.

The more situations s/he can recall and relate to diagnose a situation, the more flexible his/her approach to the real game and the more chances s/he has to win.

Long term memory is integrated by:

- 1) **Episodic memory**, to recall personal experiences from our past.
- 2) **Semantic memory**, to store facts, information, concepts, rules, principles, and problem solving skills.
- 3) **Procedural memory**, to remember how to perform or employ a strategy.

These three types of long term memory are integrated. They store the cognitive objects that people need to respond on time to influence an environment.

Objects storage

The objects stored in mind must fulfill several conditions.

- 1) They must include the conceptual structure to be meaningful
- 2) They must be secure, to be reliable
- 3) They must include the individual's beliefs, to be remembered. When the individual's beliefs are not included they are forgotten.



- 4) They must include knowledge, which includes the possibility of application.
- 5) They must include groundings which have to be reasonable, comprehensible and provable.
- 6) They must include action procedures to make the objects useful.

A cognitive object is stored in the three types of long term memory:

- 1) Episodic memory pictures the object's functional experiences which permit an analogical approach.
- 2) Semantic memory stores the idea of the concept, its structure and mechanics.
- 3) Procedural memory contains the taxonomy to implement the actions that are included in the structure of the cognitive objects.

Learning Taxonomy

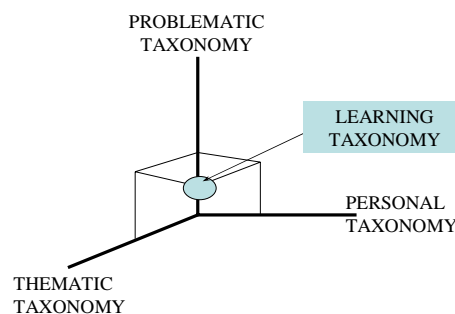
One question is to apply the knowledge already stored in the memory and another different question is to approach a learning process from “scratch”.

The taxonomy of a learning process has three different implicit sub-concepts.

- 1) The personal learning taxonomy that drives the learning process of an individual based on universal rules.
- 2) The thematic taxonomy that drives the learning of the methods an individual uses to approach reality.
- 3) The problematic taxonomy that defines the structure of the process necessary to deal with its solution.

The general rule implicit in this approach is that individuals approach reality to generate an influence on it. Therefore the problematic taxonomy leads to the improvement of the object that is being influenced.

FUNCTIONAL CONCEPT OF LEARNING TAXONOMIES

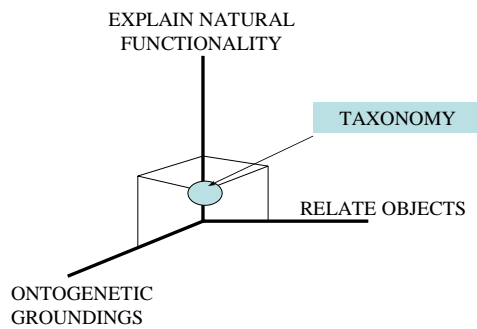


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The functionality of taxonomies is to provide a logical structure to understand and influence reality in a secure way. By following the ontology based taxonomy an individual is respecting the rules of ontogenesis.

Taxonomies describe and explain the natural functionality and establish the relationships of the objects that are part of that reality based on the ontogenesis of the evolution process.

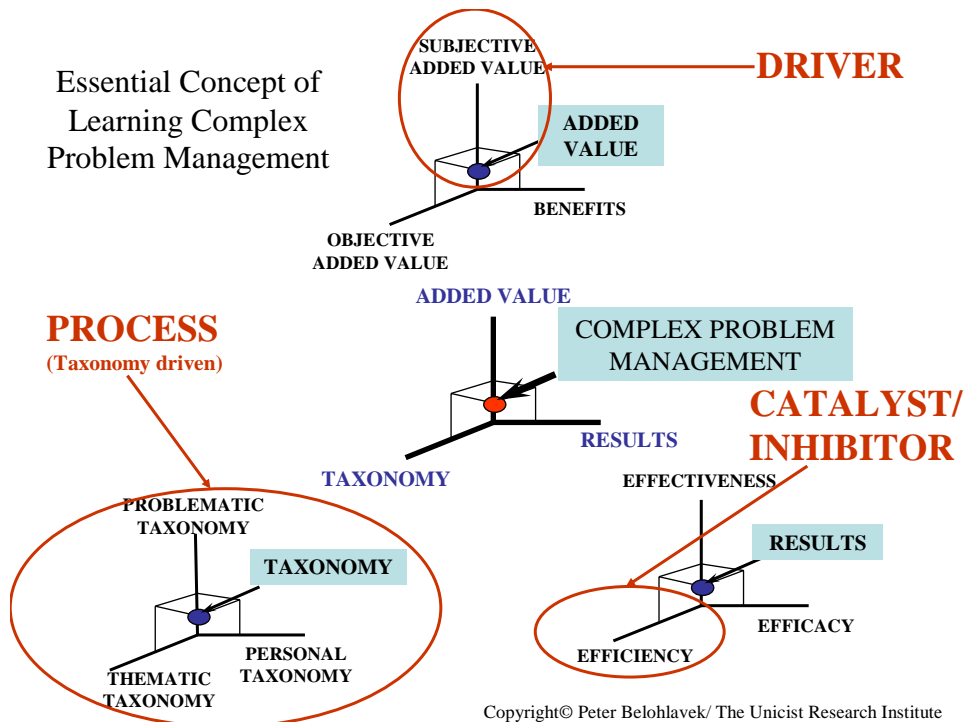
ESSENTIAL CONCEPT TAXONOMIES



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Taxonomies are the energy conservation function in the learning of a complex problem approach. The complexity requires a disciplined approach to be able to transform a complex problem into a systemic problem which can be managed using cause-effect relations.

Essential Concept of Learning Complex Problem Management



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The active principle in the learning of complex problems is the real action of the individual on the reality where he is adding value. Results are necessary in complex problem solving learning.

Those who approach complexity studying the problem based on virtual elements, such as books, are unable to face complexity, because rational approaches lead to univocal cause-effect relations. Biunivocity can only be experienced to be approached.

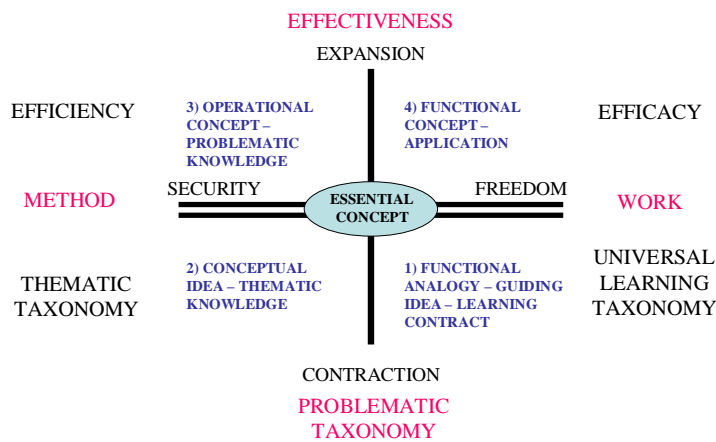
The catalyst of taxonomy using is efficiency. Those individuals who accept following a system have their learning process catalyzed.

The driver of taxonomy acceptance is the need to produce real added value. It is the core of the necessary background to deal with taxonomies. Therefore individuals need to have the added value ethics to respect and acquire taxonomy driven purposes.

Survivors cannot recognize taxonomies and consider them arbitrary methods to be followed and earned value ethics considers taxonomic learning as an excessive effort.

Both learning attitudes drive towards rationalism, subjectivism and voluntarism.

ESSENTIAL CONCEPT OF LEARNIG COMPLEX PROBLEM MANAGEMENT



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Synthetically, the learning taxonomy of complex problem management is the following:

Problematic Taxonomy

The taxonomy to generate added value

- 1) The discover of a functional analogy
- 2) The development of the idea of the concept



- 3) Development of the operational concept
- 4) Development of the functional concept
- 5) Development of the essential concept

Thematic taxonomy

Taxonomy of the unicist logic learning process

- 1) What for
- 2) Knowledge of the unicist logic's axiom.
- 3) Management of the conjunction "and"
- 4) Reading of the unicist conceptual language
- 5) Comprehension of the double dialectics
- 6) Comprehension of complementation and supplementation laws
- 7) Comprehension and application of researched concepts

Universal adult learning taxonomy

Personal learning taxonomy

STEP "0"

Development of the Guiding Idea

STEP "1"

Syncretic - thematic - knowledge

STEP "2"

Analytic - thematic – knowledge

STEP "3"

Synthetic - thematic – knowledge

STEP "4"

Analytic comprehension of the problem

STEP "5"

Syncretic comprehension of the problem

STEP "6"

Analytic implementation on the problem

STEP "7"

Synthetic implementation on the problem

Depending on the results the learning process has to be restarted or not. After having developed several implementations in analogous and homologous fields it can be considered that "childhood" is over and the learner begins to fly on his/her own.

After the "dark" adolescent period, counselors and counselees relate as peers, based on the authority each part has in the field they share.



Conclusion

To have the necessary knowledge objects stored in your mind, such objects have to be registered in the long term memory. Reflection requires a smooth natural use of the integration of an individual with the environment. While the knowledge objects are not stored in the long term memory it is impossible to approach complexity but on a rationalist approach.

In the conclusion we would like to recall the conditions that are necessary to store knowledge in the long term memory.

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- 2) They must be secure, to be reliable
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- 4) They must include knowledge, which includes the possibility of application.
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A cognitive object is stored in the three types of long term memory:

- 1) Episodic memory pictures the object's functional experiences which permit an analogical approach.
- 2) Semantic memory stores the idea of the concept, its structure and mechanics.
- 3) Procedural memory contains the taxonomy to implement the actions that are included in the structure of the cognitive objects.

Without having stored the necessary taxonomy a knowledge cannot be used but in a fallacious way.

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