

Semiotics by Ch. S. PEIRCE and a new Human Orientation Paradigm of IT (HOP-IT) by F. PLOCHBERGER

A fructuous comparison on theoretical level over 150 years.

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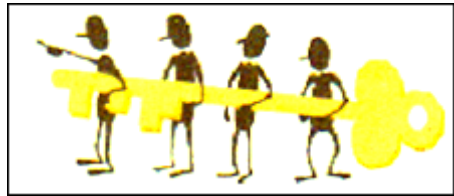
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Author: DI Franz PLOCHBERGER

Doctoral Student with Misses Prof. Dr. DI Renate MOTSCHNIG, University of Vienna

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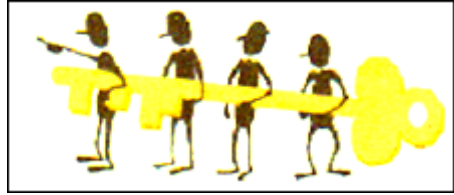


Content

1. Abstract	3
2. Semiotics-Theory of Charles S. PEIRCE	3
2.1. Icon	5
2.2. Index	5
2.3. Symbol	5
3. The comparison with HOP-IT	6
4. Involved Literature	8

Devotement

...this short manuscript is written for my loved daughters Clara and Isabelle!



1. Abstract

The first starts in Information Sciences (HARTLEY, SHANNON) where in the 1940s near 100 years after PEIRCE's Semiotic. But we can say that the mathematic background and the intention for structuring made PEIRCE to a very early Informatician too.

For HOP-IT (Human Orientation Paradigm of IT) Semiotics of PEIRCE is interesting because of it's clear theoretical thinking. The theory of PEIRCE is elected, because it's roughly valid further on. A direct comparison of both theories, a comparison over 150 years of science, is pointed out in this script.

2. Semiotics-Theory of Charles S. PEIRCE

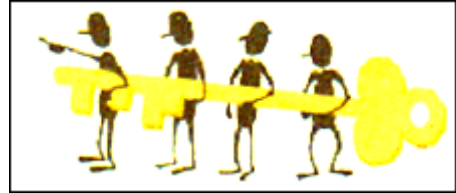
He lived from 1839-1914. The importance of PEIRCE's Semiotics for HCI (Human Computer Interface) and HOP-IT is sourced in the biological evolution of our brain. We can learn a **significant way of evolution of our brain**. PEIRCE got famous by his relations in philosophical logic, mathematics and grammar of language (formal semiotics). Today a significant relation between evolution of our brain and his theory can be showed by vervet monkeys (1). He didn't yet know this, he fixed his theory as typical human.

First of all let's remember PEIRCE about 1860. The **investigation of language and communication** is based on **PEIRCE's Semiotic-Theory**.

He defined in the 1860s "**Semiosis**" as an "action, or influence, which is or involves a cooperation of three subjects" (1). It's today better to say: three interdependent separate "(logical) elements":

- a) **Object**
- b) **Sign**
- c) **Effect on an Interpretant.**

These have a triadic relation, no disaggregation into possible dual relations is allowed. We feel his influences of philosophical logic, mathematics and pragmatism.



PEIRCE takes the Sign as existing separate subject, logical unit or element. It can be a special sequence of sounds or an optical appearance of even known or unexpected new accidents. Living or not living carriers of a Sign may be possible (living natural organism or physical material in any forms). The carrier of a Sign is a property of a Sign.

The origin of his Sign is a separate living or not living Object for his Sign. An irreducible relation is created, coming from the origin and leading to the acceptor or Interpretant.

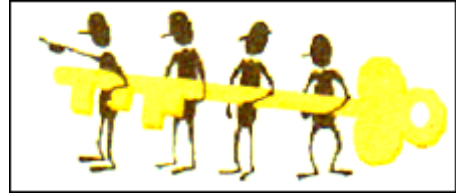
The Sign gets valid in the Interpretant as subjective acceptor. He called it Meaning. This subject is a real subject, because it starts a reaction or not, depending on the relevance of the Object to the Interpretant. An irreducible relation between all three elements gets valid.

PEIRCE made over 60 different definitions of Sign. Three main groups stayed till today.

PEIRCE's three main classes or typologies of a Signs:

- a) **Icon**
- b) **Index**
- c) **Symbol**

We can say that these terms are still used in different semantic in ISc (Information Sciences) today. In the 1860s they had much more philosophical semantic. So let's research their definition by PEIRCE. As an additional source literature (4) is used.



2.1. Icon

Source: Greek $\epsilon\iota\kappa\omega\nu$ = picture, emblem, allegory, ensign, symbol.

Typical characteristics: **likeness, semblance or similarity** to a real object.

In **Informatics** it's a graphical picture of a software-element, startable by clicking on the screen.

So we can say: "an Icon of an object" is "**a Sign of an object, which is similar to it and makes a significant impression in Interpretant**". It generates an irreducible relation between PEIRCE's three semiotic elements (Object, Icon, and Effect in Interpretant).

2.2. Index

In **Linguistics** it is one word with different semantics depending on different persons who use it.

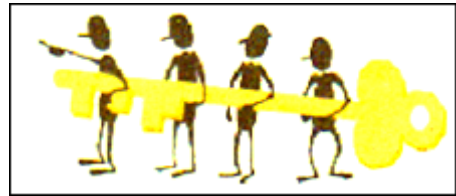
In **Informatics** it's a relation between two or more rows of numbers. The second and all following rows are variable and changeable. The first (the index) is constant. So the index can be related to different and variable predefined numbers.

PEIRCE used it for a spatial and temporal relation between Meaning-Sign-Object. One Sign (=Index) stands for **variable** physical objects at one place at one time and produces correlated variable Meanings in Interpretant. The Meaning is dependent on his knowledge and experiences. A true PEIRCE's **Index compels, enforces attention of Interpretant to the Object, it denotes the Object.**

2.3. Symbol

In **Neurosciences** it is a mental picture or terminus in our brain, a well-known element of human cognition.

PEIRCE defines it as a relation between Sign, Object and Effect in Interpretant, which bases on a determination by habit, law, rule or convention. It communicates a law, etc. in the Interpretant. It is a (in the Interpretant) defined relation between sign and object. **This definition is a result of regularity.** It leads to a secondary level in the brain of the Interpretant. It may consist of more than one stimuli which are correlated by the Symbol.



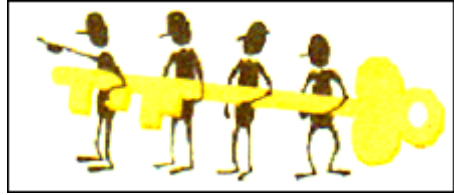
3. The comparison with HOP-IT

PEIRCE is interesting till today. In (1) scientific citations of works about PEIRCE till present time are found. For the author a direct comparison HOP-IT and PEIRCE's Semiotic makes sense too. PEIRCE's theory is now 150 years old and mainly valid. It's a good chance to show the efficiency of a new HO (Human Orientated) -Paradigm.

Look at the more common and differentiated new theory **HOP-IT** (Human Orientated Paradigm of IT). You can read it in Literature (2) and (3). It's a dissertation at University of Vienna (Prof. Dr. Renate MOTSCHNIG and the author).

Semiotics of C. S. PEIRCE		HOP-IT
a) Object	is equal to	Object, with significant properties
b) Sign	is a special	Information, based on an irreducible relation
c) effect on an Interpretant ("Meaning")	is the	subjective recognized "significant" Information from and about a related Object
Interpretant	is a real	living subject, mainly human
Meaning	is	(verbal, optical) Information accepted and recognized by a subject and irreducible related to Sign and Object

Table 1



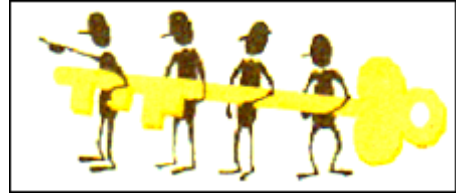
We see clear that the terminus Object (a) is used in the same way.

In point (b) the terminus Sign can be related very exactly with the terminus (significant) Information in HOP-IT. So PEIRCE defined a first separation of Information and Object.

The terminus Interpretant is the terminus subject (c) and mainly human in HOP-IT. As found in (1) also animals are possible. First one direction is thought, that from Object to subject – the recognition of the Object by the subject. The reaction of the subject is depending on his Meaning, his decision what to do: nothing, flight or even defending. The reaction “defending” is not recognized by Joao QUEIROZ (1) and the Vervet Monkeys but can be abstracted very easy – thinking on any other subjects in general.

Final result:

In HOP-IT we can define very clear the **Sign of PEIRCE as significant Information**. It is certain related to an Object. It acts from Object to subject (human or any living organism) and stimulates a certain Meaning and potentially following active (motoric) reaction in the subject.



4. Involved Literature

- (1) Sidarta RIBEIRO, Angelo LOULA, Ivan de ARAUJO, Ricardo GUDWIN and Joao QUEIROZ, Symbols are not uniquely human, 2006, Universities in USA and Brazil, [Symbols are not uniquely human](#) or search by GOOGLE
- (2) Franz PLOCHBERGER, Informationswissenschaftliche Grundlagen und Termini, 2011, Eigenverlag, <https://www.triboox.de/buchladen/produkt/ingeniosus/informationswissenschaft-grundlagen-und-termini/ebook/4HpCA5QXRScA/>, please join
- (3) Franz PLOCHBERGER, Humanorientierung der IT, ein Paradigma, 2012, Eigenverlag, [Homepage HOP-IT, Human Orientation of IT](#), please join
- (4) WIKIPEDIA, 2011, [http://en.wikipedia.org/wiki/Semiotic_elements_and_classes_of_signs_\(Peirce\)](http://en.wikipedia.org/wiki/Semiotic_elements_and_classes_of_signs_(Peirce))
- (5) Internet <http://www.philognosie.net/index.php/article/articleview/349/>, Stand 3/2009, Eine Zusammenfassung des Buches von Humberto Maturana : „Die Organisation und Verkörperung der Wirklichkeit – lebendige biologische Systeme“
- (6) SCHMIDT.SCHAIBLE (Hrsg.), Neuro- und Sinnesphysiologie, Springer-Lehrbuch, 2000, ISBN 3-540-41347-2, 4.Auflage