

## THE ELEGANT MIND. A NEW INSIGHT TO THE DEEP SEMANTIC NETWORK.

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**Abstract:** *The Elegant Mind research presented in this paper provides an interactive multilingual associative experiment as an attempt to map the Cognitive Semantic Spaces of Essential Self metaphor in Czech, Russian and English. This paper brings conceptually new empirically based scientific approach to a deeper understanding on the human mind cognition. We attempted to merge cognitive metaphor theory with psychoanalysis applying associative experiment methodology on the Essential Self metaphors. The goal of the research is to create an Essential Self multilingual 3D semantic network describing the core of the human nature and to build a multilingual WordNet, which serves as the basic lexical resource for Artificial Intelligence.*

**Key words:** *semantics, associations, cognition, mind*

### 1. INTRODUCTION

Language is one of the universal cognitive tools of our mind, a communication tool reflecting our visible and inner life. The semantic aspect of a word – its real meaning – is becoming one of the most fascinating issues in contemporary computational linguistics and artificial intelligence science. Hidden senses of the cognitive metaphors are typical examples of words reflecting hidden truths we never imagined we could have a glimpse of. This research is an attempt to connect an idea solving ancient metaphysical problems with current phenomenological concepts of embodiment and cognitive linguistics. One of the fundamental characteristics of the human mind in connection with language is its hidden cognitive ability.

Current cognitive linguistics theories describe lexical units used in such expressions as a cognitive metaphor. Originally metaphor theory was presented in *Metaphors We Live By* (Lakoff & Johnson, 1980) where the authors argued that our mind is unconsciously conceptualised by metaphoric frames based on empirical sensations. In the later ground breaking work *Philosophy in the Flesh* they devote attention to the conceptualization of Essential Self. The examples collected by Yukio Hirose, Professor of Linguistics at Tsukuba University, Japan, cited in Lakoff & Johnson (1996), demonstrate that the Essential Self perception is universal, whether it be American, Japanese or another culture. Japanese has a system of metaphors for the Self that is so similar to the English system that these metaphors are tapping into some sort of real human experience (Lakoff & Johnson, 1999).

In this paper through cognitive metaphor study we are attempting to maintain a semantic cognitive network that helps neural modelling, in which potential artificial intelligence can learn how to produce Essential Self utterance, rich in emotionally natural and emphatic content. By adapting human personality, AI develops its own increasingly natural range of vocabulary. Our research claims that not only does the AI need to understand deep meaning of the human Self language, but also that it needs to learn of its own “Self” to enable it to understand the world.

### 2. METHODS

To minimize the significant gap between human and artificial intelligence we need to understand and be able to process the deep meanings of the Essential Self speech. In this research we made an effort to create multilingual probabilistic model of the human mind.

The concept is based on the psychoanalytic methodology developed by S. Freud, C.G. Jung, W. James and current cognitive linguistics theories reflecting how the mind works. In the research we provide Free Association Experiment (FAE) (Machova & Kratochvil, 2009), giving us access to information about the primary ways of thinking, individuals, social groups, representatives of a nation and totality of experience acquired by all humankind. A set of 400 cognitive Essential Self metaphors in Czech is used as stimuli for collecting respondent data. It represents a unique list reflecting the inner perception of the world of interpersonal communication - an associative model of *the Elegant Mind*. Secondly, findings gained by the FAE can be used in intercultural communication and as a means of better understanding. (Ufimceva, 2006). Thirdly, the psychoanalytic data of the Essential Self proves to be a significant contribution to the core knowledge of the human nature. The thesaurus, which was compiled by Word Association (WAT), is also an excellent resource for extending existing semantic networks like WordNet. Several general semantic WATs were created, such as Edinburgh Associative Thesaurus, and Russian Associative Thesaurus. The WAT is a fundamentally new resource of language consciousness, a platform for mind study and optimizing the human communication process with electronic resources.

### 3. EXPERIMENTAL FINDINGS

The Japanese example below notably illustrates that we are naturally talking about ourselves as an Essence without even noticing it. We do not only use cognitive metaphor when describing our Essential states as *distracted* or *concentrated*, but the metonymy used in Indo-European languages, unlike in Japanese, hides the real meaning of the words. In the example below we can see that while Japanese uses a subject - *spirits dispersed*, Indo-European languages use one word metonymy instead of an expression - *dispersed*, despite we are not aware about the real meaning of the sentence.

- *Kare-wa ki-ga titule-i-ru (Japanese)*
- *Lit. He has his spirits dispersed. –*
- *He is distracted. (Lakoff & Johnson 1999)*

One interesting finding is that Scattered Self metaphor concepts correlate with Positron emission tomography (PET) scan data showing the level of blood circulation in the striatum brain area. PET scan shows that patients with ADHD (*distracted Self*), have lower levels of dopamine transporters in the nucleus accumbens. (Volkov, 2006)

Essential Self. States of Matter	English	Czech	Russian
<b>Self in a Liquid state</b>	To influence smn	Má v-liv na někoho (lit. Poor Self into someone else), je vliv-ný	Она сильно влияет на М..(lit.She strongly pooring herself into M.)
<b>Self as an Unstable Matter</b>	Someone is broken down. He is teared to pieces	Ona se zhroutil. (lit.she got ruined) Je roztržitý.	Ona sovsem rassypalas ot gorja.(lit.scattered)
<b>Self as a Light</b>	Shine with happiness. Her personality is shining trough. lets shine true colors	vlité světlo víry, zářit radosti- (lit.shine with happiness)	Sijat ot radosti.
<b>Separating of two Selves is a Light dividing</b>	Dissociate, disjoin	Roz-louč-it se. (lit.To divide-light rays)	Raz-luchit (.lit.To divide light rays)
<b>Self as a Darkness</b>	Have a dark thoughts	Mít temné myšlenky, mít zatemněno	Temnyj celovek eto.

Tab. 1. Essential Self in the different physical states

The cognitive metaphors of Self as a Light above suggest that the Essential Self could have a nature similar to Light as described by quantum mechanics. Free particles in Broglie's wave-particle theory also have both functions as an Essential Self. So, are we *Light* waves or are we *Dispersed* particles? This question arises when we look at the above examples.

One of the most important fact about this phenomenon is its universality. There are more examples of the metaphors of Essential Self as a Fluid in other languages: *Siya ay may malaking im-pluwensiya sa Maria* (Philipin), *Ha una grande in-fluenza su Maria* (Italian), *Sie hat einen großen Ein-fluss auf Mary* (German), *Sy het 'n groot invloed op Mary* (African). The noun "influence" is of Latin origin – *fluentum*, means *flow, stream, stellar emanation*. The mechanism of *in-flu-ence*, the subject of many theories, has the same concept as an *inspiration*, thus to *influence* someone we must literally *in-spire* that person.

After comparison of these examples through languages we can claim, in accordance with Lakoff & Johnson (1999), that cognitive Essential Self metaphor cannot be considered "dead metaphors" but literal reflections of the internal truth. Moreover, metaphors with the same etymological motivation, the same conceptuality could not have just incidentally appeared with the same conceptuality all over the world in all languages.

#### 4. FURTHER RESEARCH

The Elegant Mind project presented in this paper is supported by the Czech Science Foundation grant 2C06009. The uniqueness of this pilot concept is an idea to draw a picture of the universal language framework of Essential Self and its interaction. New paradigms in computational linguistics are reflected by new research methods using Free Association Experiment. It is the first of its kind of NLP tool, providing a fundamentally new source of language research. Further research plans are: within the processing of associative data we aim to build a 3D Semantic network, which creates the model of Inner Self life and Self interaction, simulate Essential Self life of the "average" Czech speaker (and potentially other

languages speakers), and visualize the cognitive function of the mind and unconsciousness.

Essential Self. States of Matter	English	Czech	Russian
<b>Self in a Gaseous matter, Ether state. Sublimation phenomena</b>	To be distracted, concentrated, dispersed	Rozptýlený, koncentrováný. Ona působila velmi étericky.	Rassejanyj (lit.), dispersed
<b>Cloudy Self</b>	Frowned at, scowl at,	Zamračený, zakaboněný, chmuřit se (lit. He is cloudy)	Nachmurennij, Moročit komu .to golovu (lit. Making clouds around smbs. head)
<b>Essential Self is Creating its unique/ common Atmosphere/Spirit</b>	To create/ fun atmosphere/ learning atm. His presence still lingers here.	Zanechával za sebou atmosféru strachu. Vytvářel příjemnou atmosféru	Sozdal prijatnuju atmosféru otdyxa. V offise byla veselaja atmosféra
<b>Self as a Fire</b>	She has a fire inside	Být zapálený pro něco	Gorjačeje serdce. V duše ogon.

Tab. 2. Essential Self in the different physical states

The associative experiment fully describes the nature of reality, building upon the conceptual model of the language semantic field. It is also an attempt to describe the cognitive transmission between language and self giving us an insight into interlingual universal aspects of semantic cognition.

#### 5. CONCLUSION

Empirical findings about the phenomenology of mind, gained from natural language, has opened a new dimension of artificial intelligence research, allowing us to create a link between an unconscious level of cognition and surface level common sense used in language. Word meaning comprehension consequently leads us to a deeper understanding of the world of our mind, and of cognitive processes of mind. Essential self metaphors described by the association experiment allow us to identify the main structures and deep semantic networks hidden beyond the language. Before drawing any conclusion, we acknowledge the fact that the Free Association method should be applied to all languages to determine a common language view of the inner life of mind.

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