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"NOW THAT THE MAGIC IS GONE"
OR
TOWARD COGNITIVE ANALYSIS OF VERBAL/CO-VERBAL COMMUNICATION
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A. Martynyuk. "Now that the magic is gone" or toward cognitive analysis of verbal/co-verbal communication. The paper addresses the problem created by the gap between Cognitive Linguistics usage-based theoretical commitment and the lack of empirical cognitive research on live communication. Its primary objective is to analyse advanced models of cognition in an attempt to outline basic methodological principles of cognitive analysis of verbal/co-verbal communication and, building on these principles, define the workable units and instruments of such analysis. I propose the key unit of cognitive analysis of verbal/co-verbal communication: an inter-subjective act, i.e. an inter-action including at least two verbal / co-verbal utterances (one initial and the other responsive) embedded in the complex dynamic psychic experiential context 'shared' by the communicants focusing attention on the same utterance as a perceptual stimulus. Such perceptual stimulus triggers parallel conscious / nonconscious inference processes involving cognition, volition, and affect to issue a command of a motivated, goal-oriented communicative and/or (immediate or postponed) social action. I also suggest analysing the process of the generation of meaning in communication in terms of inference. An inference is viewed as both a natural emergent product of conscious / nonconscious interplay of volition, cognition, and affect, triggering a communicative and/or social action, and also a tool of discovering this key structure of human psychic experience in cognitive linguistic analysis of communication.

Keywords: action, affect, cognition, communication, inference, inter-subjective act, volition.

А. Мартинюк. "Тепер, коли магія розвіялася", або спроба когнітивного аналізу вербальної / невербальної комунікації. У статті піднімається проблема, спричинена розбіжністю між вихідним положенням когнітивної лінгвістики про те, що структура мови виникає з мовленнєвого вжитку, і відсутністю емпіричних когнітивних досліджень живої комунікації. Метою статті є аналіз актуальних моделей когніції для визначення базових методологічних принципів когнітивного аналізу вербальної / невербальної комунікації й, спираючись на ці принцип, – одиниць і інструментів такого аналізу. Пропонується ключова одиниця когнітивного аналізу вербальної / невербальної комунікації: інтерсуб'єктний акт. Інтерсуб'єктний акт мислиться як інтеракція, що включає мінімум два вербальних / невербальних висловлення (ініціальне і респонсивне), занурених у складно організований динамічний контекст психічного досвіду, 'спільного' для комунікантів, які фокусують увагу на одному і тому самому висловленні як перцептивному стимулові. Такий перцептивний стимул запускає паралельні усвідомлювані / неусвідомлювані інференційні процеси, що включають когніцію, волевиявлення й афект в ініціацію мотивованої, цілеспрямованої комунікативної і /або (миттєвої або відкладеної) соціальної дії. Також пропонується аналізувати процес продукування значення в комунікації в термінах інференцій. Інференція розуміється і як природний емергентний продукт усвідомлюваної / неусвідомлюваної взаємодії волі, когніції й афекту в ініціації комунікативної і/чи соціальної дії, і як інструмент виявлення цієї ключової структури психічного досвіду людини у процесі когнітивного лінгвістичного аналізу комунікації.

Ключові слова: афект, волевиявлення, дія, інтерсуб'єктний акт, інференція, когніція, комунікація.

А. Мартынюк. "Теперь, когда волшебство ушло", или опыт когнитивного анализа вербальной / невербальной коммуникации. В статье поднимается проблема расхождения между исходным теоретическим положением когнитивной лингвистики о том, что структура языка возникает из речевого употребления, и отсутствием эмпирических когнитивных исследований живой коммуникации. Цель статьи состоит в анализе актуальных моделей когниции для определения базовых методологических принципов когнитивного анализа вербальной / невербальной коммуникации, и, опираясь на эти принципы, – единиц и инструментов такого анализа. Предлагается единица когнитивного анализа вербальной / невербальной коммуникации: интерсубъектный акт. Интерсубъектный акт мыслится как интеракция, состоящая из минимум двух вербальных и/или невербальных высказываний (инициального и респонсивного), включенных в сложно организованный динамический контекст психического опыта, 'разделяемого' коммуникантами, фокусирующими внимание на одном и том же высказывании как перцептивном стимуле. Этот перцептивный стимул запускает параллельные осознаваемые / неосознаваемые процессы, вовлекающие когницию, волеизъявление и аффект в инициацию мотивированного, целенаправленного коммуникативного и/или (сиюминутного или отложенного) социального действия. Также предлагается анализировать процесс производства значений в коммуникации в терминах инференций. Инференция понимается и как естественный эмергентный продукт осознаваемого / неосознаваемого взаимодействия волеизъявления, когниции и аффекта, инициирующий коммуникативное и/или социальное действие, и как инструмент выявления этой ключевой структуры психического опыта человека в ходе когнитивного лингвистического анализа коммуникации.

Ключевые слова: аффект, волеизъявление, действие, интерсубъектный акт, инференция, когниция, коммуникация.

1. Introduction

In recent years more and more voices are heard to express their disappointment with Cognitive Linguistics project. "What attracted me to Cognitive Linguistics in the late 1980s", writes Jordan Zlatev in one of the recent issues of "Cognitive Linguistics", "was the promise of bringing language back to experience. Rather than just skeletal trees, meaningless symbols, computational algorithms, possible worlds and mathematical functions, etc. the door was opened toward understanding language as what it felt like: rich in imagination, rooted in the body, socially negotiated and driven by communicative needs. Even more, the pathway of the "three milestones" (Johnson 1987; Lakoff 1987; Langacker 1987) seemed to extend toward a better, and more humane understanding of the mind and the world at large. Such early enthusiasm was in many ways naïve" [Zlatev 2016: 559–560].

Though I certainly share the author's concern, to me it seems hardly rewarding to seek solution of the problem in the analysis, even phenomenological, of words like "dog" in abstract sentences like "The dog is sleeping" / "Dogs are domestic canines" (see Zlatev's analysis in the same article) since such data is a far cry from that of the "canonical face-to-face encounter" [Clark 1973] and for that reason is devoid of all traces of human presence – physical, psychological, social, let alone presence of the world at large – the ecological context of human existence.

However this approach highlights the cause of disappointment with Cognitive Linguistics described by Zlatev which is a strikingly wide gap between its usage-based theoretical commitment and an obvious lack of empirical cognitive research on live communication. In this connection rather refreshing is Alan Cienki's appeal "to take usage-based commitment seriously" since, in his words, "[d]iscussion of the place of studying multimodal communication within Cognitive Linguistics leads to consideration of broader political, economic, and sociological factors in academia which can play a role in determining the future of the field" [Chenki 2016: 603].

In view of the problem outlined above the objective of this article is to analyse advanced models of cognition in search of the insights that can lay down methodological principles of cognitive analysis of verbal/co-verbal communication and, building on these principles, focus on the units and instruments of such analysis.

2. An inter-subjective model of cognition as a ground for understanding language

The problem we are currently facing seems even more acute from the perspective of the relatively recent theoretical proposal called *the new science of mind* [Thompson 2007] (not to be confused with the *theory of mind* it actually opposes) – an emerging interdisciplinary field of cognitive science including philosophy, neuroscience, psychology, sociology, anthropology, linguistics, and other social sciences "transgressing the boundaries of their respective fields" [Zlatev 2012: 6].

Springing from the *enactivism* [Varela et al 1991] as one of the cluster of related models of cognition dubbed 4Es: *embodied*, i.e. involving more than the brain, including a more general involvement of bodily structures and processes; *embedded*, i.e. functioning only in a related external environment; *enacted* involving not only neural processes, but also things an organism does; *extended* into the organism's environment [Rowlands 2010: 51–85], the new science of mind explicitly posits itself as a welcome alternative to classical cognitivist tradition in its both "first generation" and "second generation" forms since the latter "was and continues to be centered on notions such as "computation", "information processing" and "symbolic representation", being divorced from "first-person" (phenomenological) experience of the world [Zlatev 2012: 6].

The main stance of the new science of mind is that human cognition (and consequently – language) can and should be explained in terms of *inter-subjectivity*, i.e. human capacity of "sharing experiential content (e.g. feelings, perceptions, thoughts, linguistic meanings) among a plurality of subjects" [Zlatev 2008: 1], "not only, and not primarily, on a cognitive level, but also (and more basically) on the level of affect, perceptual processes and conative (action-oriented) engagements" [Zlatev 2008: 3].

The concept of inter-subjectivity emerges from recognising *motion* and *emotion* the crucial ingredients of all cognitive processes governing all human physical and social engagements.

This belief brings together several more or less tightly interconnected trends of cognitive research which have roots both in phenomenology (primarily, Maurice Merleau-Ponty [1945/1962]) and neurophysiology (see more about it in 2.5) and strive to integrate phenomenological philosophy with neuropsychology, celebrating the ideas of "embodiment" [Lakoff, Johnson 1980], "enaction" [Varela et al 1991],"active perception" [Noë 2004], "extended mind" [Clark 1998, 2008], "distributed cognition" [Hutchins 1980, 1995], "situated cognition" [Barwise, Perry 1983; Brown et al 1989; Greeno 1989, 1998; Lave, Wenger 1991], "animation" [Sheets-Johnstone 2012], and also those stressing the key role of affect / emotion in cognition [Watt 1998; Damasio 1999, 2003; Panksepp 1998, 2000].

All these trends focus on complex psychophysiological phenomena, which should be given a closer look since they are basic for understanding both cognition and language/communication.

2.1. Embodiment from a third person and first person perspective

The pioneers of the embodied cognition tradition ground abstract human concepts in basic actions and bodily orientations identifying human cognitive activity with constructing metaphors [Lakoff, Johnson 1980; Lakoff 1987; Lakoff, Turner 1989; Lakoff, Johnson 1999; Lakoff, Núñez 2000]. For example, the experience of 'UPNESS' is claimed to be shaped by the specificity of the human body that defines the way it interacts with its environment. Such emotion as love is structured in terms of a journey, i.e. our common bodily experience that we have as creatures who move through the world to achieve certain purposes and goals – heading off together, finding ourselves at crossroads, dead-end streets, or on the rocks, getting off the track, taking wrong turns, or spinning our wheels, etc. Time is conceived as a moving object, i.e. time is moving and we are standing still, or as a stationary we move through, i.e. we are moving and time is standing still. In motion metaphors changes are seen as movements and a line represents the path of a moving entity from left to right.

Identifying *the dependence between human cognition and human body* is a giant step forward compared to computational cognitivist tradition conceptualising central cognitive processing ("cognition in the narrow sense") in abstraction from bodily mechanisms of sensory processing and

motor control. But this step is not enough from the phenomenological perspective of first person experience since metaphoric mappings are all about *how people understand their experience*, but not about *what people feel going through that experience*.

Mapping love in terms of journey, madness, war, patient, physical force, container, physical contact, or whatever else does structure this emotional concept which is "not clearly delineated in our experience in any direct fashion" so that it could "be comprehended primarily in-directly, via metaphor" [Lakoff, Johnson 1980/2003: 85] but it still tells us less about the emotional state experienced by a person in love than does this simple if not banal pop song taken at random from the charts of the 60-s:

Whenever he calls my name
Sounds so soft, sweet, and plain
Right then, right there
I feel this burning pain
Has high blood pressure got a hold of me
Or is this the way love's supposed to be?
It's like a heat wave ... burning in my heart!

("Heat Wave," a song by Martha & The Vandellas that first hit the charts in 1963)

In a similar way mapping motion in terms of "entity moving from left to right" tells us nothing about the complex kinesthetic dynamic of movement that carries us through every day of our lives. Addressing movement as "change of position" is an instantiation of what Maxine Sheets-Johnstone calls "received ignorance" about movement: "received ignorance is meant pejoratively not toward individuals but toward habits of thought that pass for received wisdom" [Sheets-Johnstone 2012: 37]. "To begin with, movement does not have a "position", so it cannot possibly change it. Furthermore, we clearly improperly define ourselves-in-movement as "changing position". While in moving about in our everyday world – in writing our name, washing our face, sweeping the floor, or getting into a car – we indeed change "positions", we do so only from a third person, analytical, object-in-motion perspective. We ourselves are involved not in anonymous happenings taking place between two – or even more different positions as we move in distinctive and innumerable ways throughout the day, but in rich and complex qualitative kinetic dynamics" [ibid: 38].

Another piece of received ignorance about movement is the belief that movement "takes place in time and space". There is no objection to this claim from an objective (third person) point of view but phenomenological analysis (see Sheets-Johnstone's detailed description of *tensional*, *linear*, *areal* and *projectional* qualities inherent in movement [ibid: 37–41]) exhibiting the difference between *perceiving one's movement as an objective happening* and *feeling one's movement as a qualitative kinetic dynamic*, makes it clear that "movement differs from objects in motion in creating its own time and space" [ibid: 39]. The specificity of "kinesthetic sensations" is that we do not experience movement (to some extent, it probably explains the persistence of the objective view of movement as "change of position", registered in dictionaries) "in the way we experience a twitch or an itch, a darting pain, a flash of light, a chill, or a peppery taste <...> sensations are *temporally punctual and spatially pointillist phenomena*. They are discreet bodily sensed events, *momentarily here-now bodily experiences*. <...> We do not experience our everyday movement – reaching for a glass, opening our arms to hug a friend, and so on, movements that are indeed voluntary – as a series of discreet moment-by-moment, place-by-place kinetic happenings, now-here, now-here kinetic events. What we experience is the ***kinesthetic feeling of a qualitative kinetic dynamic***. <...> Moreover, <...> *it can be shown to* **coincide** *formally* **with emotions, with feelings in an affective sense**" [ibid: 40–41].

This link between our first person kinesthetic experience and affect seems crucial for understanding cognitive processes underpinning our physical and social (including verbal and co-verbal) interaction with the world.

2.2. Diversity of enactment

Trying to cope with the problem of a third person view of motion and emotion, incompatible with phenomenological ideas, recent enactivist accounts of cognition put forward what they call "dynamical, active view of emotion along with an affect-laden view of motion" [Zlatev 2012: 6].

Most enactivists start from the same idea: no explanation of cognition can ignore the fact that conceptual understanding is rooted in our bodily actions as we interact with the environment. But at this starting point views diverge.

Some support an 'external version' of embodiment making emphasis on the environment to place conceptual understanding beyond the brain and the rest of the body. Thus proponents of the *extended mind* theory argue that mental processes extend beyond the body boundaries to include aspects of the environment in which an organism is embedded and with which it interacts [Clark, Chalmers 1998; Clark 2008]. In a similar way, supporters of the *distributed cognition* theory claim that mental content is non-reducible to individual cognition and is more properly understood as off-loaded through social and technological means into the environment, where it becomes available to other individuals [Hutchins 1980, 1995].

Others put forward an 'internal version' of embodiment placing emphasis on the processes inside the organism to ground conceptual understanding in the *active perception*, i.e. physical adjustment of the sensory organs of an individual focusing on and processing incoming stimuli while in actual or imaginary movement / action [Noë 2004].

Mainstream proponents of the enactivist tradition share the 'middle version' of embodiment stating that cognition arises through a dynamic interaction between an acting organism and its immediate environment which it selectively creates through its capacities to interact with the world [Varela et al 1991; Thompson 2008]. They build on the biological notion of autopoiesis which describes living organisms as active, adaptive, self-maintaining and self-reproducing systems, being "structurally coupled" with their environment, embedded in sensory-motor dynamic of changes. This continuous dynamic is addressed as a rudimentary form of cognition, i.e. behavior of an organism "with relevance to the maintenance of itself" [Maturana, Varela 1980: 13].

Francisco Varela, Evan Thompson, and Eleanor Rosch originally defined *enaction* as "a history of structural coupling that brings forth a world <…> through a network consisting of multiple levels of interconnected, sensorimotor subnetworks" [Varela et al 1991: 206].

Their emphasis on the structural coupling of brain-body-world is underpinned by the classical phenomenological idea that cognitive agents bring forth a world of meaningful experience by means of the activity of their *situated living bodies* (see [Merleau-Ponty 1945/1962]). The metaphor of "bringing forth a world" implies that "cognition is not the representation of a pre-given world by a pre-given mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs" [Varela et al 1991: 9].

At this point enactivism overlaps with the *situated cognition* tradition which claims that conceptual understanding is inseparable from doing/acting and all knowledge is situated in the activity bound to social, cultural and physical contexts [Barwise, Perry 1983; Brown et al 1989; Greeno 1989, 1998; Lave, Wenger 1991]. It is hard not to notice that this tradition owes many of its insights to Lev Vygotsky who decades earlier stated that *all higher psychic functions first emerge as forms of social-cultural interactive activity* [Vygotskij 1934: 281–282].

In explaining psychophysical nature of interaction both traditions feed on James Gibson's idea of *affordances*, central to his proposal of the ecological psychology. Gibson defines "affordance" as properties in the environment that present possibilities for action and are available for an agent (human or animal) to perceive directly and act upon. In Gibson's words, "[t]he affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill" [Gibson 1979: 127].

Gibson's idea that affordances are directly perceived by an agent instead of being mediated by mental representations is shared by enactivists in that the enactivist program practically gives the

role of cognition away to the inherent capacity of an organism to manifest an appropriate degree of *attunement* to the features of the immediate environment (threats and opportunities) with these features being specified in terms of the organism's capacities for activity. So the organism's intelligent behaviour with respect to such features does not require computation or deliberation to translate information about objective features of the environment into terms relating to the organism's capacities, activities and interests, since the organism is already attuned to its environment in just such terms (for a detailed analysis see [Ward, Stapleton 2012]).

Some enactivists take this idea as far as to explicitly ground human cognition in the *direct perception* of overt actions in face-to-face communication, addressing these actions as "natural signs" humans are able to understand directly without "the manipulation of representations or any inferential thought" being "intentionally directed at the intentional and affective attitudes of others" [Hutto 2006: 165–166].

This discussion brings us to the issue of a *mental representation* and its role in cognition and language/communication.

2.3. Complexity of a mental representation

The term "representation" has been a source of confusion in recent literature. There is the computational approach to mental representations [Newell, Simon 1972; Fodor, Pylyshyn 1988] based on at least three fundamental principles: 1) information conveyed by a mental representation exhibits no modality-specific feature (in this sense, representations are autonomous from perceptual systems, bodily action, and their operational details); 2) knowledge is organised propositionally, with the meaning of words emerging from their relations to internal symbols; 3) internal representations are used to instruct motor programs, which are essentially separate and independent from cognition; hence, cognitive processing is not inextricably shaped by bodily actions [Wilson, Foglia 2015].

And enactivists are right to reject this approach for treating representations as "meaningless symbols that map into the external world and are manipulated by mental calculators" [Ellis, Newton 2012: 75]. However, one can't agree more with Raph Ellis and Natika Newton in that "if they do so by denying a role of representation in any sense of the term, enactivism will fall" [Ellis, Newton 2012: 75]. In this context rather promising is Ellis and Newton's proposal grounding conceptual understanding in our early motor movements in infancy which lay down experimental patterns that become the basis for action representations [ibid: 65].

They begin with stressing the difference between representations as *visual images* and representations as *action images*. Traditionally the term "image" refers to sensory visual images representing "what I would look like doing the action". Unlike visual images, action images represent "the way my body feels when doing it" [ibid]. Like sensory visual images, action images are reproductions of earlier experiential traces of performing the actions and they represent actions in that they can be used in planning, initiating, and evaluating these actions.

Ellis and Newton argue that "very primitive forms of these images are laid down during the original thrashings and flailings of the infant even before voluntary movement becomes possible. They are the results not only of *sensory input* produced by the action, but also of the "efferent copy" (by "efferent" they mean "nervous activity that normally would lead to some bodily movement, unless inhibited to form action imagery" [ibid: 70] – A.M.) – *the **action pattern*** that the motor system saves in issuing a motor command, and *the memory of the **emotional valence** of the action* – was it successful or frustrating in trying to reach the toy? The infant produces an initial repertoire of these action images, which it can then draw upon, consciously or unconsciously, when it is ready for volitional action. Involuntary reaching for a desired toy provides imagery of all the arm's motions, as well as of the desirable toy; when more control is gained, the infant can select from that repertoire the movements that were most successful in attaining the goal" [ibid: 66].

This idea of a mental representation is fundamentally different not only from the computational view where a representation is *amodal* and hence divorced from the bodily

experience of interacting with the world, but also from the view of cognitive semanticists addressing linguistic meaning (semantic structure) as a partial and incomplete representation of conceptual structure (encyclopaedic knowledge) which is *multimodal* since it arises from the bodily experience of interacting with the world and also relies on introspective experience involving reflection on our inner bodily, emotional and mental states.

Cognitive semanticists view mental processes in terms of the imaginative projection of bodily experience onto abstract cognitive models like frames [Fillmore 1982], domains [Langacker 1987], image-schemas [Johnson 1987], idealised cognitive models [Lakoff 1987], mental spaces [Fauconnier 1985], etc.

Since *frame s*eems to be the prototypical model in the above list, and also has different interpretations being used in different fields of research, it seems appropriate to have a closer look at what it means in cognitive semantics.

Cognitive semanticists basically view *frame* in Charles Fillmore's interpretation as "any system of concepts related in such a way that to understand any one of them you have to understand the whole structure in which it fits" [Fillmore 1982: 111]. For instance, COMMERCIAL EVENT frame includes at the very least such participant roles as BUYER, SELLER, GOODS and MONEY engaged in a particular semantic relationship [ibid: 116–117]. For purposes of modelling encyclopaedic knowledge this visual third person experience schema is reduced to a *proposition* – an even more abstract schema addressing participant roles in terms of arguments (semantic roles), i.e. abstract concepts like AGENT, PATIENCE, INSTRUMENT, RECEPIENT, etc. which depend on the predicate to specify the relations between them, e.g. [BUYER-agent *buys* GOODS-patience from SELLER-donor with MONEY-instrument].

Cognitive semanticists' models organise 'static' *declarative knowledge* (i.e. conscious precise memories and recognition of objects and events as expressed through language) which is distinguished from 'dynamic' *procedural knowledge* (i.e. implicit memory of psychomotor processes as procedures that have become automatic and nonconscious) [Anderson 1976]. A somewhat analogous scheme was proposed by Karl Popper and John Eccles to distinguish between *implicit memory* that organises deeply ingrained linguistic-semantic and psychomotor processes (such as gestures, speech, writing, reading, walking, common tool handling, etc.), relatively unaffected by events, and *explicit memory* which is linked to specific events and objects (such as faces, patterns, different kinds of conceptual information, etc.) and needs repetition to be sustained [Popper, Eccles1977].

Procedural knowledge is thought to be structured by s*cripts.* Originally, *scrip theory* emerged as part of the *affect theory* developed by Silvan Tomkins in the 40–60-s of the last century [Tomkins 1979]. Tomkins studied humans' affects, i.e. emotional responses to stimuli and noticed that the purely biological response of affect may be followed by *awareness of what we cognitively do in terms of **acting on that affect***. In his script theory, the basic unit of analysis is called a "scene", i.e. a sequence of events linked by the affects triggered during the experience of those events. Tomkins recognised that our affective experiences fall into patterns which constitute scripts that *inform our behavior in an effort to maximise positive affect and to minimise negative affect.*

Roger Schank and Robert Abelson extended Tomkins' theory to use scripts as a model of representing procedural knowledge in artificial intelligence work. They address a script as a schema structuring a canonic sequence of events in some socio-cultural context [Schank, Abelson 1977: 151], e.g. a script for drinks in a restaurant would involve: *finding a seat, reading the menu, ordering drinks*, etc. Since artificial intellect is not capable of emotion, affect naturally moved out of the focus of Schank and Abelson's script theory. Their theory eventually developed into a method for computer reasoning (case based reasoning) also used in everyday human problem solving. This method is rule-driven, based on analogy and it incorporates four algorithmic steps: retrieve (given a target problem, retrieve from memory cases relevant to solving it); reuse (map the solution from the previous case to the target problem); revise (having mapped the previous solution

to the target situation, test the new solution in the real world (or a simulation) and, if necessary, revise); retain (after the solution has been successfully adapted to the target problem, store the resulting experience as a new case in memory) [Agnar, Plaza 1994]. A variety of scripts schematising knowledge about various types of speech situations are also referred to as *speech event frames* [Saville-Troike 1987] – schemas that are thought to structure knowledge about styles and registers of language use, licensing certain lexical items and grammatical constructions and contributing to their interpretation. For example, we have speech event frames for fairytales, academic lectures, spoken conversations, obituaries, newspaper reports, horoscopes and business letters, among others. In other words, these speech event frames contain schematic knowledge about styles or registers of language use [Evans, Green 2006: 228].

It seems that frames and scripts focus on different parts of a psychic act both missing the idea of *a psychic act as an indivisible whole*. Frames take into account perceptual and cognitive (in the narrow sense) processes involved in interpretation of the material world, but ignore action while scripts focus on action (sequence of actions) to perform a task / solve a problem, but, having lost touch with affect, ignore psychic processes, triggering action.

The problem of inattention to action in psychophysiological theory was raised in the middle of the 19th century by Ivan Sechenov who recognised that *a psychic act begins with perception of the world and ends in an action*. Discussing the problem, Sechenov asks a rhetoric question whether it is acceptable "to tear apart what is united by nature", i.e. "tear the element of consciousness from its beginning, external impulse, and its ending, action; tear out the middle, isolate it, and oppose it to the rest as the psychic to the material" [Sechenov 1947: 240].

From a different angle the importance of action was accentuated at the beginning of the 20th century by Mikhail Bakhtin. Action is an integral part of his dialogical conception of language and culture. He asserted that interpretation of language signs does not equate passive understanding; it is a "*responsive understanding of **a delayed action***: sooner or later what was heard and actively understood will responsively materialise in speech or behaviour of the listener" [Bahtin 1979: 246–247].

This idea is fully consistent with the phenomenologists' and neurologists' view of the brain as "a dynamic organ" [Sheets-Johnstone 2012: 48]; the organ for movement that functions as integral whole on behalf of "a preparation for response" [Sperry 1952: 301] (see more about it in 2.5).

Unfortunately, the problem of inattention to action, outlined by Sechenov, is still with us. Going back to frames and scripts, it should be noticed that as a result of inattention to action triggered by affect both frames and scripts provide a purely rational, logical account of psychic processes including interpretation of linguistic signs.

However, neurological data show that though we certainly engage in rational reasoning, this is hardly the way our mind operates most of the time: nonconscious thought processes operate in parallel to the conscious stream of thought: "[c]omputational rule-bound processing, as expressed in logical or mathematical reasoning, must be seen as a high-level process – more akin to something we *painfully learn and force our minds into*, rather than a basic, natural working of the mind" [Hardy 1998: 6].

Natural thought processes appear to be nonlogical, "arational" [Reber 1993], underpinned by low-level spontaneous nonlinear connective dynamic where intuition, creativity and insights prove more powerful than linear reasoning [Hardy 1998: 216]; see also [Kihlstrom 1996]. For instance, such mental act as a statement during a dialogue "relies on numerous nonconscious processes, both at the semantic and at the neural level (e.g., search for the right words, the building of a grammatically correct sentence, tones and gestures, quasi-automatic adaptation to the other person's style of communication, etc.). At the neuromotor level, it involves activation of neural pathways and brain areas, psychomotor coordination of the larynx muscles, coordination of diverse sensory maps, control of posture and spatial orientation, and so on. In short, even in the simple act of forming a single statement, the mind triggers – and somehow directs – extensive nonconscious processes, searches, and computations at both neural and linguistic levels. In critical situations, we

may experience extremely rapid and intelligent reflex actions that have not been consciously thought out or decided upon – for example, bringing a car out of a dangerous skid without ever having been in that situation before (or ever being instructed in the proper way to control a skid). Unlike a mere automatism (e.g., jerking one's hand away from a very hot surface), *such actions involve a complex assessment of the situation and rapid adjustments and error correction*. They thus underscore the existence of processes that, **although lying beyond the conscious self, are nevertheless intelligent and goal-directed**. [Hardy 1998: 28–29].

Nonconscious mental processes are *goal-oriented* in the sense of self-organisation, i.e. they are implicitly oriented toward goals we need to attain for maintaining ourselves as living organisms seeking homeostasis. Our inter-action with the world (verbal and co-verbal interaction in the first place) is always implicitly or explicitly oriented toward satisfying our needs and purposes; it is exactly what our survival is all about – social no less than biological.

Attaining homeostasis requires a *motivated action* (conscious or unconscious, since (paradoxical as it may sound) a motivated action is not necessarily conscious (see [Ellis, Newton 2012])). And a motivated action is not possible without *emotional evaluation of the valence of the action*. So it is only natural that more and more experimental data [Watt 1998; Damasio 1999, 2003; Panksepp 1998, 2000] prove emotion to be not only an indispensable ingredient of consciousness in all modalities, but the condition of its functioning: "we can gradually eliminate cortical areas without eliminating "core consciousness", whereas if we knock out emotional areas, all types of consciousness become impossible" [Ellis, Newton 2012: 67].

This means that to execute cognition and communication a mental representation should account for a goal-oriented motivated action, and, consequently, for emotion that issues a command for a motivated action. In the opposite case we are left with naked rationality of abstract models in which logics of brilliant scientific minds are confused with happenings of a real brain.

2.4. The difference emotion makes

So, in Ellis and Newton's framework the desired objects – like the toy – are understood in terms of initial movements/actions as attainable by means of those actions; i.e. the toy is an early "affordance" in the infant's environment.

Radically new in their proposal is the account of the role emotion plays in motivating action commands in terms of which the action affordances of environment are understood; the account which eventually leads to recognition that *representations of the goals of motivated actions* and *emotions motivating those actions* are *"indispensable part of the actual substrates of consciousness"* [Ellis, Newton 2012: 64].

Ellis and Newton suggest that afferent input (by "afferent" they mean "resulting from receiving and transformation of incoming perceptual information" [ibid: 70] – A.M.) may be necessary for conscious perception only in the way that the perceived object is necessary. Afferent input affects the what-content of consciousness, but is not sufficient, at least not by itself, to execute the consciousness. *The actual consciousness is executed by self-initiated action commands, which ground the action imagery* [ibid: 64].

What Ellis and Newton actually say is that executing a voluntary action, (or at least imagining ourselves doing so) we have to be able to (consciously or nonconsciously) form an image of ourselves performing the action that is rich enough to be used *to plan* the movement and the achievement of the goals of the action. In planning a voluntary action we activate the various images and simultaneously inhibit them from triggering actual movements. And that means that initiation of a voluntary action is not possible without some kind of representation. Action images are necessary for conscious action because we must try out the various hypothetical experiences that will result from the various choices, and compare them. Comparing, we are paying attention to the *feelings aroused by the various images* and these positive or negative feelings motivate our choice of the action. And moreover, this *motivated attention brings us to consciousness* [ibid: 67].

It seems, Ellis and Newton's proposal sheds more light on the role of emotion in cognition than quite a number of phenomenological and neurophysiological accounts observing the correlations between emotion and cognition/consciousness, "without emphasising <...> the capacity for action as the missing element in non-conscious information processing" [ibid: 58]. For instance, for Antonio Damasio who treats emotions as "brain states and bodily responses" and claims that "feelings are functionally distinctive because their essence consists of the thoughts that represent the body involved in a reactive process" [Damasio 2003: 86] *emotion* is a result of receiving interoceptive (encompassing the sense of the internal state of the body – A.M.) afferent signal which is not different from receiving an afferent signal when perceiving an external object. In both cases the signal is afferent in that it travels toward the central nervous system from more remote areas – either the body's extremities, or the viscera (the internal organs of the body – A.M.). So, in Damasio's view the conscious feeling results from a receiving of interoceptive information, not from the initiating of an action command. As a result, "introducing feeling and emotion into the traditional perceptual model of consciousness adds no further participation on the part of the subject, who still remains a passive recipient of interoceptive signals" [Ellis, Newton 2012: 62].

Ellis and Newton underline that most enactivist accounts of consciousness, at least in principle, acknowledge that emotion is inseparable from self-motivated, consciousness producing activity on the part of the subject. But emphasising the importance of action as a necessary grounding of consciousness these accounts fail to stress the difference between *action* and *mere reaction* which is interconnected with the *difference that emotion makes* [Ellis, Newton 2012: 58].

The criticised view is clearly illustrated by Varela's description of *emotion* as "the tonality of the affect that accompanies a shift in transparency" ("unreflected absorption" in the world accompanying our everyday activities) and *affect* as "a broader dispositional orientation which will precondition the emotional tone that may appear" [Varela 1999: 299–230]. In simpler words it means that emotion is seen as a kind of switch which brings us back to conscious state from our "unreflected absorption" in the world when there is a sudden break in our "coping" with some familiar practical task – using Heidegger's classic example of "hammering" [Heidegger 1962: 98], when "the hammer slips and lands on the finger" [Varela 1999: 299].

This view fails to grasp what Sheets-Johnstone calls "affectively-felt dynamic contours" of emotion [Sheets-Johnstone 2012: 49], i.e. semantic congruency between emotion and motion which motivates action. This idea underpins a broader perspective of the "living dynamics of affectivity and cognition" [ibid: 47] captured by the concept of "animation" which grounds our capacity to make sense of ourselves as well as make sense of others in the "synergies of meaningful movement", informed by "spatio-temporal-energic concepts" [ibid: 46].

In Sheets-Johnstone's view affectivity is inseparable from cognition in that affectivity is not a "state" of an organism but a "framework", *motivating* and *articulating* "*a movement-perceptual-cognitive relationship*" [ibid: 47] in which cognition is also inseparable from movement as "*cognitive achievements are consistently the result of thinking in movement*" [ibid: 50]. As for "transparency", it is accounted for by such a cognitive activity as *learning*, i.e. "kinetic-affective-cognitive engagement with the world" which with time makes "doing" so familiar that we become "unreflectively absorbed" in it [ibid: 49]. Sheets-Johnstone roots transparency in the qualitative tactile-kinesthetically felt kinetic dynamics of motions in learning described by Alexander Luria as *kinesthetic/kinetic melodies*.

Luria, who developed Vygotsky's ideas, applied this description to *speech* addressing it as *an inter-subjective psychic activity similar in nature to any other types of higher psychic human activity*. He also identified two conditions allowing its development: firstly, it should initially rest on some external anchors like knots tied to remember a thing or words/letters written down not to forget a useful thought; secondly, it should rely on painstaking and complex conscious learning: thus learning to write presupposes activation of a graphical image of every letter in a word and is executed by a series of isolated motor impulses each of which enables completion of just one

element of the graphic structure; but with time, as a result of exercising, the structure of this process radically changes and writing turns into an automatic kinesthetic melody [Lurija 1973/2003: 296].

The above discussion has at least two important implications. It reminds that our everyday automatic nonconscious *re-active* engagement with the world results from conscious *active* learning which is impossible without representations of visual images of external objects and motor images of our inter-actions with these objects. It also reminds that our conscious actions are motivated by feelings aroused by those objects and apprehension of the prospective goals we may achieve interacting with those objects.

In spite of its tremendous importance in cognitive (in the broad sense) processes the role of *emotion*, *motivating action* escapes practically all existing theories of language and specifically theories of linguistic meaning.

2.5. Interplay of action and perception, emotion, cognition: a glimpse of experimental data

The inter-subjectivity proposal, implying that our capacity to interact with the world rests on the interplay of perception, emotion, cognition and action, is fully consistent with quality psychophysical and neurophysiological experimental data, dating from the 19th century till today. Specifically, it correlates with Hermann von Helmholtz' idea of "unconscious inference", a product of visual perception, needed for guiding all actions of our self in the world [Helmholtz 1925]; Charles Sherrington's account of the integrative action of the nervous system, attributing the power of cognition to knowledge inferred though the "extero-ceptive projicience" (anticipation of the satisfaction of vital needs by "distant receptors" (those perceiving smell, light, sound "at a distance")), guiding our "integrated self" by "affective appraisals" of senses which measure values of objects taken up by the body [Sherrington 1906]; Nikolai Bernstein's theory of prospective motor control executed by generating "motor images" for desired movements [Bernshtejn 1966]; Roger Sperry's discovery of the capacity of the brain to predict the consequences of movements with "images" of the internal effects and the eventual engagements with environment [Sperry 1952]; Alexander Luria's notion of kinesthetic/kinetic melodies [Lurija 1973, 1975, 1979].

Discovery of *mirror neurons* in the 1980-s, also referred to as *resonance systems*, proved that brain actions predictive of the consequences of moving can be used not only to guide movements of the self, but also to detect and evaluate the motivation of others and, this, in Colwyn Trevarthen's words, "revolutionized psychological theory of both subjective and inter-subjective regulations" [Trevarthen, Frank 2012: 265].

Mirror neurons were originally discovered in the macaque monkey [Di Pellegrino et al 1992] and later were identified in the human brain [Fatiga et al 1995]. In a nutshell, mirror neurons are neural systems which are located in the premotor cortex and parietal areas and are activated when subjects: 1) intentionally *act* in specific ways (classic examples are reaching and grasping), *observe* the same kind of action, *imagine* such action [Jeannerod 1997; Ruby, Decety 2001]; 2) *experience* certain *emotions* and *observe* others experiencing these emotions [Adolphs 2003] (for further details see [Gallagher 2012]).

In recent years this line of research has been extended to processing linguistic information to show that words recruit the same neural systems that are engaged in actions and emotions represented by their meanings [Vigliocco et al. 2009]: words for action activate the motor system [Pulvermuller, Fadiga 2010], emotion-laden words activate the limbic system, the complex of emotional centers in the brain, in particular in the right hemisphere, which is strong in processing prosody, and gesture [Landis 2006].

Going back to Ellis and Newton's action images it should be noted that they correspond to the sense of action image in Marc Jeannerod's usage: they are initiated in the cerebellum and the motor cortices and precede implementation of overt actions and they represent *what it would feel like* for the subject to perform an action [Jeannerod 1997]. So, put into the context of mirror neuron's

discovery, action images contribute to the explanation of inter-subjectivity in that they ground it in the natural acquisition of the earliest concepts of other persons.

Mirror neurons hypothesis is also fully consonant with ideas of developmental scientists, primarily Trevarthen who in the past 40 years has demonstrated that "humans are motivated from birth to act and learn as persons who intend to relate to other persons" [Trevarthen, Frank 2012: 263]; and children learn the socially accepted meanings that constitute a "culture" with its traditional practices and language through "innate impulses to move as coherent intentional and conscious selves in emotional engagement with the sensitive responses to the intentions of other persons in inter-subjectivity" [ibid].

The issue of inter-subjectivity, grasping cognitive, affective, perceptive and conative aspects of human interaction with the world, lays down methodological assumptions which seem fruitful for understanding a human language.

3. An outline of an inter-subjective model of linguistic analysis

It is obvious that an inter-subjective model of language has to be a cognitive(in the broad sense)-communicative model since face-to-face communication is the only natural medium where we can observe and investigate the complex interplay in which our kinaesthetic-perceptive-affective-volitional-cognitive(in the narrow sense)-conative first person experience of interaction with and in the world becomes 'shared' to ensure the attaining of our needs and purposes.

An inter-subjective model of language is naturally opposed to its symbolic model that rests on the idea of a semiotic code put forward by Ferdinand de Saussure at the beginning of the last century and readily embraced a little more than half a century later by computational cognitivists whose abstract, amodal, symbolic representations, labelled by words, are recognisable echoes of Saussure's arbitrary symbolic language signs.

The same idea underpins the code model of communication – the assumption that people understand each other through encoding and decoding messages contained in linguistic signs as if they were containers with meanings. To be able to communicate people just have to know these correlations between forms and meanings of linguistic signs and the rules of combining them to express all kinds of ideas.

In many ways an inter-subjective model of language goes beyond the cognitive semanticists' proposal, since stressing the importance of bodily experience in understanding the nature of linguistic signs cognitive semanticists fail to account for its impact when it comes to interpretation of linguistic meanings in interaction. Probably it happens because they do not investigate face-to-face interaction being focused on abstract examples of language use. However "looking at real spoken language usage can reveal that our object of investigation is not what we could have predicted based upon intuition" [Chenki 2016: 608].

In the cognitive semanticists' usage-based model of language linguistic meanings are seen as *construed in the act of speech* ("usage event") rather than encoded/decoded 'ready-made'. A body of conceptual content associated with a linguistic unit used by a speaker is regarded as *a prompt* or *purport* [Croft, Cruse 2004: 100-101] which is defined as "some function of previous experiences of construed occurrences of the word in specific situations" which is "continually developing: every experience of the user of a word modifies the word's purport to some degree" [ibid: 101]. This conceptual content provides raw material for *conceptualisation*, i.e. an array of cognitive operations recruiting conceptual structure (encyclopaedic knowledge) for construing linguistic meaning within a context. Thus, conceptual structures are seen as partly stable (stored) knowledge systems and partly dynamic (on-line) conceptualisations creating a semantic network of interrelated concepts.

According to Ronald Langacker, the conceptualisation, inherent in a usage event, incorporates the interlocutors' apprehension of *the ground* (i.e. the speech event itself, the speaker and hearer, their interaction, and the immediate circumstances (notably the time and place of speech)) and *the current discourse space* (i.e. the mental space comprising those elements and relations construed as

being shared by the speaker and hearer as a basis for communication at a given moment in the flow of discourse). The ground and the current discourse space are among the cognitive domains capable of being evoked as the conceptual base for the meanings of linguistic elements. The usage event is viewed as *an action* carried out by the speaker *acting* in an initiative capacity, and the hearer being responsive. The speaker's and hearer's action involves *the directing and focusing of attention* (- - ->). In successful communication, they manage to coordinate this action and focus attention on the same conceived entity. Metaphorically, it is as if they are "looking at" the world through a window, or *viewing frame*. The immediate scope of their conception at any one moment is limited to what appears in this frame. The "window'" they are looking through is part of the speech context. *The speech context* is interpreted as part of the current discourse space that includes all the physical, mental, social, and cultural circumstances with the ground as its center. Besides the speech context, the current discourse space includes *a body of knowledge* presumed to be shared and reasonably accessible. It also includes *the speaker's and hearer's apprehension of the ongoing discourse* itself: a series of previous usage events, as well as subsequent events that might be anticipated. Any facet of this can be drawn upon or alluded to in the current utterance [Langacker 2001: 144–145].

The cognitive (in the narrow sense) experience involved in conceptualisation has many facets and is categorised and described in many ways. Langacker addresses the communicants' conceptual content evoked by a linguistic unit in a usage event (i.e. "specification") in terms of *centrality*, i.e. the degree of salience of certain aspects of the conceptual content associated with a linguistic unit used in some context. In the long run, the centrality depends on 1) how well established ("entrenched") the conceptual content is in the memory; 2) the particular context in which a linguistic unit is embedded [Langacker 1987: 159–161].

The centrality "tends to correlate with the extent to which a specification is conventional, generic, intrinsic, and characteristic" [ibid: 159]. Being the most important factor, contributing to centrality, *conventionality* of knowledge (the extent to which it is being shared throughout the speech community) is closely linked to its being *generic* rather than *specific* ("the information that two of my colleagues are allergic to my cat Metathesis is quite specific, whereas the fact that they are allergic to cats in general is partially generic, and the knowledge that many people are allergic to cats is highly generic" [ibid: 160]). The third factor contributing to centrality is intrinsicness: "A property is *intrinsic* to the extent that its characterization makes no essential reference to external entities. Shape, for example, is a highly intrinsic property of physical objects, as it reduces to relations between the parts of an object and does not require interaction or comparison with other entities. Size, on the other hand, implies comparison either with other objects or with some scale of measurement" [ibid: 160–161]. And "the final factor contributing to centrality is the extent to which a specification is *characteristic* in the sense of being unique to the class of entities designated by an expression and consequently sufficient to identify a class member. Shape is generally more characteristic than color" [ibid: 161]. All these parameters are interdependent with more probability for generic / intrinsic / characteristic knowledge to become conventional.

As for 'the extent of conventionality', in linguistic literature encyclopaedic knowledge is addressed as *universal*, *cultural*, *socio-cultural* and (theoretically) *individual* where socio-cultural dimension seems to be the basic operational level of categorisation. In any culture in the course of their lives people participate in a variety of socio-cultural *communities of practice* [Eckert, McConnell-Ginet 1995: 469-470], formed on different principles: ethnicity, gender, education, social status, income, family, profession, territory, religion, friendly ties, interests and hobbies like sports, fishing, diving, etc. Taking or not taking part in the activities of such communities of practice shapes people's experience differently and defines its place in the continuum of conventionality. The number and variety of socio-cultural communities of practice an individual can become involved in during his / her social life is only limited by his / her motives/purposes, biological faculties and the opportunities given by the family at birth, on the one hand, and also the opportunities offered by the culture, in general, on the other hand.

In the two following examples taken from popular feature TV series, modelling live communication, the generation of linguistic meanings can be accounted for in terms of degree of centrality of encyclopaedic knowledge evoked in the memory of the participants in the usage event:

WILSON: *Well, you are a very special man. Quite like Galileo.*

TIM: *Yeah, I had his wine!*

WILSON: *No, no, no, Tim. I'm talking about the 17th century Italian astronomer. He was ridiculed for teaching that the Earth revolves around the Sun.*

TIM: *And he believed that?!*

WILSON: *Tim. The Earth does revolve around the Sun.*

TIM: [Grunting] *Oh yeah yeah, sure yeah, does. It's just that we're spinning so we don't notice it.* (Home Improvement)

For most people the personality of Galileo and the fact that the Earth rotates around the Sun is part of conventional knowledge. So, mentioning Galileo, Wilson expects Tim to interpret it within ASTRONOMY frame since this conceptual content naturally appears central for him in this usage event. Yet, for Tim this knowledge is evidently on the periphery of his conceptual system since he interprets the utterance within WINE-MAKING frame, probably, well established in his memory, which makes the association between Galileo and the name of the wine producer more salient.

PENNY: *Come on, everybody has a deal.*

HOWARD: *Not Sheldon. Over the years, we've formulated many theories about how he might reproduce. I'm an advocate of mitosis.*

PENNY: *I'm sorry?*

HOWARD: *I believe one day Sheldon will eat an enormous amount of Thai food and split into two Sheldons.* (The Big Bang Theory)

Interacting with Howard, Penny cannot interpret the biophysical term "mitosis". This communicative failure occurs because for Howard who is a physicist and intellectual the concept of mitosis is part of conventional knowledge while for Penny who is a waitress, not interested in science, this concept is highly specific; evidently, it is not established in her memory at all since the word "mitosis" does not activate any conceptual content.

The above usage events do not presuppose any immediate responsive action and this creates an illusion that explanation involving rational thinking in terms of centrality of encyclopaedic knowledge is sufficient to account for the generation of meaning in communication.

Besides, encyclopaedic knowledge involved in the generation of linguistic meaning in such usage events is of *declarative* nature. Thematically it is *ontological* since it structures information about entities and their relations within a hierarchy. It can well be modelled in *propositional schemas* and *visual images*. This kind of knowledge constitutes 'the what-content of consciousness', but it does not *execute consciousness unless it participates in issuing a command of a goal-oriented action* because **communication is not about 'exchange of information' between 'sharing minds', it is about gaining our social goals**.

Natural and simple as it might sound this idea is lost in cognitive semanticists' proposal because of their inattention to action.

Acting involves evaluation of our choices: we must try out the various experiences that will result from our various actions. It means that besides ontological knowledge our interaction is governed by *ethological knowledge* of the system of social values and ethic norms of social behaviour and *lingua-ethological knowledge* of the patterns of communicative behaviour suitable for attaining communicative goals in different usage events. This kind of knowledge is both *declarative* and *procedural*: I *have an idea* of a university lecture and I 'know' *how to act* reading a lecture. And modelling this type of knowledge involves *action images* including sensory input produced by the action, the memory of the emotional valence of the action, and the motor pattern of the action incorporating the goal of the action.

A still more important thing is that all our knowledge involved in conceptualisation is not abstract, it is *intimately personal*. "When interacting with cultural concepts, individuals build their own world vision; they generally do not simply accept or reject them, but rather modify or remold the associated meanings, *adapting them to their needs or feelings* through their own experiences and understandings" [Hardy 1998: 16]. Our knowledge involved in the generation of meaning is being *affected* by our interests, wishes, needs, and feelings shaping our motives and goals because we use it (consciously or nonconsciously) to *inform our behavior in reaching our communicative* and – through them – *social goals*.

So it seems appropriate to suggest that in the inter-subjective framework the unit of analysis of communication will have to account not only for cognitive (in the narrow sense) experience creating the basis for the generation of meaning but also for volition and affect, adapting this cognitive experience to the needs and feelings of the interlocutors and triggering their goal-oriented motivated communicative (verbal and co-verbal) actions.

I propose to call such a unit of analysis **an inter-subjective act**, i.e. an *inter-action*, structurally including at least two verbal or/and co-verbal utterances: one initial and the other responsive, embedded in *the complex dynamic psychic experiential context* 'shared' by the communicants focusing attention on the same verbal/co-verbal utterance as *a perceptual stimulus* which triggers parallel conscious / nonconscious inference processes involving cognition, volition, and affect to issue a command of a meaningful goal-oriented communicative and/or (immediate or postponed) social action.

The psychic experiential context serving as a base for the creation of meaning by the participants of an inter-subjective act seems far more complex structure than such as to be adequately described as a "body of knowledge". To reveal the complexities we are dealing with I turn to Christine Hardy's advanced cognitive *theory of semantic constellations* which offers quite a number of insights into the process of the creation of meaning in communication [Hardy1998]. This is a rare case when a cognitive scientist turns to the study of meaning (semantics) as the foundation on which to build a working theory of the mind. Though Hardy formulated her theory 20 years ago it has not lost its innovative flavor (actually, she builds her recent theories on the assumptions of semantic constellations theory: see, for example, [Hardy 2017]) because the gap between traditional cognitive semantics with its schemas and propositional semantic networks and "a more humane understanding of the mind and language" she is trying to bridge is still wide.

In the first place, **the psychic experiential context** (in Hardy's terms, *the endo-context* – "within a person") providing the ground for the generation of meaning, incorporates the apprehension of the circumstances of an inter-subjective act *external to the communicant* that *can be perceived*, i.e. **the perceptual context**. Hardy terms such circumstances *exo-context* and defines it as "an ensemble of environmental and situational forces that are of paramount importance in an individual's interpretation of a given event" [Hardy 1998: 128]. The exo-context is rather complex multi-level structure: "[w]hat we typically deal with <…> is neither objects nor just objects within an isolated context, but rather levels of exo-context, nested in one another" [ibid], including levels of *a proximate exo-context* and *a broader exo-context* [ibid].

Using Hardy's terminology, *the proximate exo-context* of an inter-subjective act will include the perceptual input which appears *in the focus of attention* of the communicants at a given moment of the flow of discourse: the *verbal utterance* (linguistic unit), vocalised and intonated and perceived by the ear and/or *co-verbal "utterance"*, objectivised by gesture, facial expression, posture, and perceived by the eye. As Langacker puts it, "it includes the full phonetic detail of an utterance, as well as any other kinds of signals, such as gestures and body language (conceivably even pheromones)" [Langacker 2008: 457]. *The broader exo-context* of an inter-subjective act incorporates all the physical, mental, social, and cultural circumstances that can be *perceived* in an inter-subjective act and appear to be *in the scope of attention* of the communicants.

Being culturally constructed (since in our modern societies we are not that much exposed to natural environment) exo-contexts are "intentionally set up" "to induce specific mental states upon the individuals present, and confer certain meanings upon the experienced events" [Hardy 1998: 132].

The psychic experiential context providing the ground for the generation of meaning *in an inter-subjective act* is understood as "a semantic lattice", i.e. "the network organization of the whole mind-psyche of an individual" [ibid: 17], housing "all of a person's knowledge, sensoriality, affectivity, and behavior patterns – both as memory clusters and as a living, growing experience; it constitutes the totality of an individual's cognitive/affective dynamics, grounding the capacity for global consciousness" [ibid: 18].

The semantic lattice is hypothesised "to interconnect with neuronal and subneuronal networks – whereby semantic networks branch into neuronal networks *in a distributed, parallel and dynamical fashion*" creating "*transversal mental-neural network*: the interlacing of mental and neural networks into a single, comprehensive whole" [ibid: 59].

In a structural-systemic aspect, the semantic lattice is viewed as a dynamical matrix of semantic constellations whereby *a semantic constellation* is addressed as "the simplest semantic object, a dynamical and self-organizing system that constitutes the "unit," so to speak, of our mental life" [ibid: 14]. These constellations "***are far more than just "belief-sets" or "declarative knowledge-sets"***" [ibid: 4]. Rather, they are "dynamical and evolving networks of meanings and related processes, organized around a nucleus. The nucleus, the central meaning, ties together interrelated concepts, internal sensations, images, sounds, colors, gestures, acts, attitudes, behaviors, moods, and so forth" [ibid: 14], while the semantic constellation is "the ensemble, the network *implicating* all these various elements"[ibid].

Clusters of semantic elements are attracted to, and link themselves to, other semantically related clusters in *the spontaneous linkage process* [ibid: 6] based upon a wide variety of connections such as contiguity, metaphor, analogy, contradiction, differentiation, sets and subsets, and more. "This highly generative dynamic, based on network connections rather than algorithmic operations, is proposed to be the ground of thought. This is what creates the network of semantic constellations that operate at the semantic level and branche into neuronal networks" [ibid].

Similarly to exo-context, endo-context is multi-level structure. Hardy proposes that "[a]t the lowest level, the organization and contents of the lattice – the accumulated experience, knowledge, and memory of the person – play the role of *a broad* and *remote endo-context*, a general background for the interpretation of meaning" [ibid: 129]. But there is always a specific semantic constellation, "primed' of a particular time period, called the *noo-field* and it "acts as a more delimited and *proximate endo-context*, coloring and influencing the perception / interpretation of events and objects, and thus the creation of meaning. Finally, at the most immediate level, the activated semantic constellation, filling the flow of consciousness with its numerous Links, constitutes a *focused endo-context* [ibid].

Recognising that the semantic lattice is "characterized by a degree of closure that allows for its self-organizing properties", Hardy posits that "it extends beyond the individual, interchanging with semantic fields of the environment or of objects" what she calls *eco-fields* [ibid: 18]: "the mind informs and organizes the surrounding eco-fields, and inversely <…> it is itself influenced and shaped by environmental semantic fields" [ibid: 152].

Hardy's account also captures *the inter-subjective nature of the generation of meaning* through the notion of the *interface-semantic constellation*, i.e. "a semantic network of shared meaning, *generated by an interaction between individuals* who are focused on a common attentional object" [ibid: 182].

The inter-subject linkages occur on several physiological and psychic levels involving rational logical thinking, feelings and affects, volition with conscious semantic processes going in parallel to nonconscious processes. Thus, in parallel to their explicit, verbal dialogue, interlocutors "will

unconsciously be engaged in other forms of exchange, such as body language, mirrored sensations or emotions, and so forth" [ibid: 181].

As a result, "the *interface-semantic constellation* includes both shared and divergent meanings, as well as emergent significations that spring forth from the exchange and that were not previously contained in the individual semantic constellations of the interlocutors. Each person will, of course, relate to the interface-semantic constellation in his or her unique way. On the other hand, the interface-semantic constellation may produce chain-linkages that may allow each of the two individuals to "penetrate" deeper into the other's noo-field, while following the activated links. As a striking side effect of their exchange – and depending upon the level of empathy between the two individuals – a "fusional" dynamic may emerge, whereby one person is practically capable of perceiving things through the other person's mind" [ibid: 192].

It is clear that we cannot explore the dynamics of the spontaneous linkage process directly. But we *can infer* its dynamics indirectly through *inferential analysis* of communication.

Inference is viewed here as a product of the process of the generation of meaning: contextually motivated semantic structure, emerging in an inter-subjective act as a result of complex parallel conscious and nonconscious multi-level inter-subject linkage processes recruiting the multi-level cognitive, volitional and affective elements of the psychic experiential context of the inter-subjective act.

The logic of the above discussion leads to the idea to differentiate between *classifying/ qualifying inferences* and *behavioural inferences* made in the process of the generation of meaning in an inter-subjective act (this idea was proposed earlier in [Martynyuk 2016a,b]). *Classifying/ qualifying inferences* (What am I dealing with? Is it good or bad for me?) are based on declarative knowledge while *behavioural inferences* (How am I to deal with it for my benefit?) rely on both declarative and procedural knowledge.

Though an inference is prototypically treated as a rational structure, in view of the complexity of the interplay of rational, volitional and emotional, conscious and unconscious in an inter-subjective act classifying/qualifying and behavioural inferences are further divided into:

1) *rational* that take shape of *identification/categorisation* of the referents of the verbal and co-verbal utterances (the participants of the referential situation of an inter-subjective act) and of the interlocutors, participating in an inter-subjective act, and also *rational assessment* of the referents and the communicative partners by the interlocutors in relation to their interests, wishes, needs and communicative goals;

2) *emotional* that result from psychophysiological states, sensations, feelings and also positive/negative emotional attitudes evoked by the referents and the interlocutors in an inter-subjective act;

3) *volitional* that are dictated by the wishes/desires and needs of the interlocutors.

It also seems plausible to speak about not only *conscious* but also *nonconscious (heuristic) inferences* fed by implicit knowledge and intuition which underpin the generation of meaning since conscious thought is just the end product of the internal connective processes at work.

Being a natural product of the working mind, ***inference*** appears an ***efficient instrument of cognitive analysis of communication*** intentionally applied by a linguist to discover not only rational but also affective and volitional aspects of experience influencing the generation of linguistic meanings. For example:

GRACE: *Karen, how about some coffee?*

KAREN: ***Oh, no, I had some on the way in. Thanks***. [beat] ***Oh, you want some.*** (Will and Grace)

Karen, Grace's assistant and also friend, fails to make the expected classifying/qualifying inference and interprets Grace's utterance as an *invitation* for a cup of coffee while Karen' intention is clearly to make a *request* for a cup of coffee. Consequently Karen makes the wrong behavioural inference *acting as a friend* instead of *performing her duties of an assistant*. This communicative failure can hardly be accounted for by the lack of declarative or even procedural (ontological, ethological or/and lingua-ethological) knowledge required to successfully participate in the usage

event "boss and assistant", since this kind of knowledge is highly conventional. It seems more relevant to suggest that Karen's inferences are dictated by the *volitional aspect* of generating meaning in communication, her *intentional choice* of the behavioural pattern which fits more with her interests and wishes than the expected pattern dictated by the communicative situation: having a coffee with a friend is a more pleasant experience than making and serving coffee to a superior. Her communicative/social behaviour is a good illustration of *acting on the affect* in an effort "to minimise negative affect", to put it in Tomkins' words. Acting on the affect, Karen adapts the interpretation of the linguistic meaning to her own interests.

A similar case is illustrated by another example:

RONDALL: *Hm. I think he has a problem with me.*

JILL: *No, he really likes you.*

RONDALL: *Does he?*

JILL: *Yeah*. [Rondall laughs].

RONDALL: *I think he's a little bit uncomfortable with me.* **And I think it's because he's sensing what I've been sensing.**

JILL: *Which is what?*

RONDALL: **Well, you have been sending out signals.** [Jill looks at him].

JILL: *Signals?*

RONDALL: **Hm-mm**.

JILL: *What signals?*

RONDALL: **Oh, you asked me out for coffee after class.**

JILL: *Oh, no, no. No, no. That was just, there were four of us, you were just across, way across the table.*

RONDALL: **Yeah, but, y'know, everytime I turn around from the blackboard, I see you, staring into my eyes.**

JILL: *No, that's, that's just paying attention. That's a good thing.*

RONDALL: **I don't know why you're fighting it, Jill. There's obviously something happening between us. I mean, I feel it, you feel it, it's chemistry.**

JILL: *No, I flunked chemistry.* [Jill gets up and takes their coffee cups over to the kitchen. Rondall gets up].

RONDALL: **Jill, you're playing hard to get. I love that.**

JILL: *No, no, I'm playing no get. I am a no get woman. I'm a happy, married, no get woman, with a, with a wonderful husband.* (Home Improvement)

Rondall makes the wrong classifying/qualifying and behavioural inferences about Jill's behaviour because he just *does not want* to accept the truth: thinking that Jill is making passes at him is more pleasant and hence more desirable for him than realising that she is just being polite and attentive. This example also reminds us about the importance of body language in communication since Ronald feeds his inferences on Jill's and probably her husband's co-verbal "utterances" like Jill's "staring into his eyes" and also others implied by Ronald's words about "sensing" that Jill's husband is "sensing" what he himself is "sensing" which is "the chemistry" between him and Jill they both "feel". This "chemistry" serving as the basis for inferences makes Langacker's mentioning pheromones rather more realistic than humorous.

The next example creates an opportunity to observe communicative behaviour driven primarily by emotional inferences:

DAPHNE: Dr. Crane...

NILES: [Passionately:] Yes, Daphne?

DAPHNE: **We're losing the fire.**

NILES: **No we're not, it's burning with the heat of a thousand suns!**

DAPHNE: [Turning to the fire:] *But it's down to its last embers!*

NILES: [Calming down:] *Well then... I'll put some wood on it!* (Frasier)

Seeing that the fire is going to die, Daphne asks Niles to keep it burning, putting a literary meaning into her utterance *We're losing the fire* since the focus of her attention is on the possible loss of the source of energy and getting cold. At the same time Niles whose focus of attention is on his feelings for Daphne, interprets the utterance metaphorically. The inferences Niles makes (both classifying/qualifying and behavioural) are motivated by his emotional state of love switching off his rational thinking.

Such communicative failures cannot be explained in terms of the centrality of knowledge. They are accounted for by affect, the interlocutor's conscious or nonconscious drive to adapt the concepts behind the linguistic utterance to his/her feelings and also wishes, needs and interests. And this drive informs his/her communicative and social behaviour.

The above analysis proves that "(h)uman beings generate meaning while drawing upon experiences and exchanges, contexts and perceptions, feelings and affects, needs and intentions – through a dynamic being-in-the-world involving other subjects who are themselves sources of meaning" [Hardy 1998: 16].

The inter-subjective act, proposed here as a unit of cognitive analysis of verbal/co-verbal communication, seems capable of grasping all this complexity. It also proves relevant to analyse the process of the generation of meaning in communication in terms of inference which is both the natural emergent product of conscious / nonconscious interplay of volition, cognition, and affect, triggering a motivated communicative and social action, and also a tool of discovering this key structure of human physic experience in linguistic analysis.

4. Conclusion

This article is just an initial step in the direction of building the working inter-subjective model of language and testing the units and instruments of its cognitive-communicative analysis using empirical data of TV live shows, videos of psychoanalysis sessions, feature films, etc. Going further in this direction can hopefully open a new trend in the development of Cognitive Linguistics which will take the usage-based commitment seriously and will adequately account for the creation of the linguistic meaning in communication reaching beyond the abstract concepts to interweave them with bodily sensations, feelings, affects, free will, and motivated action of the subjects interacting in the meaningful socially and culturally constructed environment.

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