RELATING TO ARTIFICIAL COMMUNICATION

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Abstract: The semantics of a text depends less on the meaning of a word in particularly and more on their combinations. In the natural language the abstraction of the syntactic forms has evolved so much that the same meaning can be conveyed by several structures and vice-versa - by only one structure there could be rendered more meanings. Therefore the major problem in the searches within the meaning formalization is created by the bondage between syntax and semantics. More complicated for the natural language processing programs is the pragmatic issue. In this context, the elaboration of an ontology that would comprise the description of more possible linguistic aspects is more than just helpful. In this article an ontology pattern is being proposed where there will be processed information about the participants in the communication process, the message, the code used in communication and about the context in which the communication is being produced. The causal relations assure the formalization. The combinations between the Agent, the Patient, the Beneficiary, the Instrument, the Locative, etc., will render a formula to the signification.

Key words: Ontology, artificial communication, natural (authentic) language, and artificial (computer) language

INTRODUCTION

The interest for natural language processing has drawn after itself waves of searches in the linguistics field as well as in the computer science. Still the cooperation between these domains is yet very weak. The logic of programming remains unknown to the linguists and the linguistic facts and their connections face the programmers with great difficulties of interpretation. Hence, one of the most interesting and vast projects of the natural language automat processing field, namely the realization of an artificial communication similar the natural communication, remains unfeasible. The present investigations have reached the point of translating the linguistic labels in codes suggested by the IT specialists. The syntactic representation is far from rendering as well the semantic relations, and the pragmatic features of the message are unreachable in the computer programmes. And these are the aspects that are critical for the success of a correct and logical communication.

In this context the exposed facts in the present article have the aim to sensibilize the communication man-computer problems and those of reflection of the semantic content in an artificial language.

THE ROLE OF LINGUISTICS IN ONTOLOGY

The communication is a very complex process. There are several factors involved in this transmission process of a message from the source to its destination using the authentic languages. Except issuer, recipient, message, context, code, contact and the encoding and decoding the information activities, the communication presumes also the intervention of some disturbing factors of which there is a need to be aware. For example the decoding of the information is complicated by the fact that every content part is being associated with the transmission of a certain intention that not always renders direct forms of expression. In addition the verbal communication is dependent on the situation due to which it has been produced; where its diverse data find a specific reflection in the communicative process structure. Therefore, the communication by using a language presents a series of peculiarities that reflect a high level of complexity.

The linguistic study describes in the most adequate way the functionality of the natural language and offers the most information about the linguistic mechanism insights. The primary idea of linguistics is that there are no differences of nature between languages but only differences regarding the linguistic specificity. So there are general definitions which linguistics defines and describes, and which combining form the message body, the general meaning which furthermore is represented depending on the rules of one or another language.

The idea further expressed is that all general linguistic definitions for any language can be represented in an ontology that will serve as a basic source for an intermediate language. Therefore, these concepts being set up in an ontology relation would enrich the expressing and artificial communication possibilities.

For example Finin and Labroux [1] have applied the Speech Acts Theory in the midst of the Multi-Agent Systems to sensibilize the communication among the agents. Agents, in the Multi-Agent Systems, are programmes, autonomic entities capable of communicating between themselves. The scheme proposed by Finin and Labroux for the implementation of communication between the agents is as follows: ISSUER – RECIPIENT – LANGUAGE ACT – MESSAGE (MESSAGE BODY) – ONTOLOGY

Though this theory has known a certain failure, the principles proposed by Finin and Labrou are renovating in this domain.

THE IMPACT OF ONTOLOGY ON SEMANTIC CONTENTS RENDERING INTO A COMPUTER LANGUAGE

In computer science an ontology is the product of an attempt to formulate an exhaustive and rigorous conceptual schema about a domain. An ontology is typically a hierarchical data structure containing all the relevant entities and their relationships and rules within that domain (eg. a domain

ontology). The computer science usage of the term ontology is derived from the much older usage of the term ontology in philosophy.

An ontology that is not tied to a particular problem domain but attempts to describe general entities is known as a foundation ontology or upper ontology. Typically, more specialized domain specific schema must be created to make the data useful for real world decisions.

In the present analysis, the ontology is a vocabulary of organized concepts where from a certain semantic content can be selected depending on the relations among these concepts. Hence, the ontology will form a graph with the knots representing the concepts and the arks – the relations. Depending on the types of relations the combinations of the concepts one with another will presume the selected context in ontology that is reflecting as well its semantic content.

The ontology is a categorisation of the most diverse information. Thus it is necessary that it contains more detailed and complete data on a hand and described data in a more formal manner on the other hand. The described definitions and relations in ontology should reflect information about the given message in ontology, taking into account every linguistic aspect.

PRESENTATION OF THE PATTERN

In the semantic content of text formalization it is necessary to take into account the role of all linguistic factors that participate to its completion. In such case the meaning will be rendered from several points of view. In a first phase, we will describe in ontology the meaning as the semantics' object, as a prescribed group of meaningful units, and as a summing of distinctive features. In a second phase we will obtain the meaning from the interpretation of the syntactic structures. And in the third phase we will consider the meaning as a signification.

The signification is a term quasi-synonym to meaning but which excels the framework of the linguistic sign. The signification is an ensemble of semantic variables, which is being produced only in the speech process by using enunciations, and is specific to the units superior to the syntagma. On the other hand, the signification is conveyed within and by context, placing itself between semantics and pragmatism. Hence, the following ontology graph will form the majority of the features that the linguistic system proposes in the communication process.

In ontology there will be processed information about the participants in the communication process, the message, the code used in communication and the context in which the communication is being produced. The causal relations will assure the formalization. We have the conviction that at this level there can be expressed any type of action in case-relations [2]. The combinations between the Agent, the Patient, the Beneficiary, the Instrument, the Locative, etc., will render a formula to

the signification. For exemplification, we present the following pattern of text description in ontology:

"A fost odată ca-n poveşti, / A fost ca niciodată, / Din rude mari împărăteşti, / O prea frumoasă fată…"

0.0. ↔ (1. ((Fată → [+ Agent, [+ Human, [+ Feminine], [+ Youngster]]])

    1.1. ↔ (prea frumoasă → [+ Attributive], [+ Quality], [+ Perception, [+ Visual]], [+Appreciation, [+Superlative], [+ Positive]]))

2. ↔ (a fost→ [+ Locative], [+ Absolute], [+ State, [+ Existential]], [+ Accomplished])

    2.1. ↔ (odată → [+ Essif], [+ Temporal], [- Definite], [+ Past], [+ Distance])

        2.1.1. ↔ (ca-n poveşti → [+ Comparative], [+ Essive, [+ State]], [- Real], [+Imaginary [+ Superlative], [+ Positive]]

        2.1.2. ↔ (ca niciodată → [+ Comparative], [+ Temporal], [+ Definite], [+ Absolute], [+ Negative])

    2.2. ↔ (Din rude → [+ Elative [+ Relation [+Proche [+Genetic]]]], [+Human], [+ Plural])

        2.2.1 ↔ (mari → [+Comparative],[+Positive], [+Volume, [+Importance]])

        2.2.1 ↔ (împărăteşti → [+ Comparative], [+ Noble [+Absolute]))

0.1. (Message → [- Instantaneous], [+Unidirectional], [-Interpersonal],)

    0.1.1 (Form → [+ Verse], [+Quatrain], [+ Rhyme])

0.2. (Intention →[+Expressive], [+Poetic], [+ Intentional])

0.3 (Issuer → Mihai Eminescu → [+Human], [-Life], [+ Creator [+Celebrity [+ Literature]]])

CONCLUSION

The advantage of a description in ontology is, on a hand, reaching to syntax formalization of the elements within the statement itself, and on the other hand, is that the semantics of the description in ontology doesn't depend or depends less on the syntax of its elements within. The framing in the same ontology of the information of diverse linguistic aspects, information not only about the relations between the participants of the enunciation but those between the issuer, will certainly contribute to a formal representation of the signification, being more precise and more correct.

REFERENCES:

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