CULTURE ASPECTS OF INFORACTION

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Abstract: The adequate attitude to the information models and information objects in the culture context is one of the main problems to be investigated on the threshold of information society. The goal of this paper is to outline some problems connected with the main styles of perceiving of the mental and artificially generated information models stored in the information objects and used in the processes of the Information Interaction or simply – in the Inforaction. The culture influence on inforaction is discussed.

Keywords: General Information Theory, Inforaction, Information Models, Artificial Information Models

ACM Keywords: A.1 Introductory and Survey

Introduction

The world common information bases make possible to exchange information of any kind. Some information could not be proved easy, some is assumed as "clear". In addition, now we have a new phenomenon – artificially created information objects which need to be treated in eligible way.

What is the proper approach to the perceiving of the ocean of information we exchange during the information interaction?

The adequate attitude to the information objects in the culture context is one of the main problems to be investigated on the threshold of information society. The information interaction is not isolated process. All culture phenomena influence to the styles of perceiving the information objects. The interrelations between two main opposite – scientific and non-scientific – styles of perceiving the information models need to be discussed.

The investigation in this paper is provided from point of view of the Theory of Inforaction (a part of the General Information Theory (GIT) [Markov et al, 2007]). The goal of this paper is to outline the main styles of perceiving of the mental and artificially generated information models stored in the information objects used in the processes of the Information Interaction or simply – the *Inforaction*.

Our further explanation needs of remembering some basics from the General Information Theory (GIT) [Markov et al, 2007].

The information models

The concept "model" has been used for denotation of the very large class of phenomena: mechanical, theoretical, linguistic, etc. constructions. Marx Wartofsky gave a good definition of the model relation and made clear the main characteristics of the model [Wartofsky, 1979]. This definition is as follow:

The model relation is triple M:

$$M: (S, x, y)$$

where "S" is subject for whom "x" represents "y". In other words only in this relation and only for the subject "S" the entity "x" is a model of the entity "y".

As we point in [Markov et al, 2007], the interaction between two entities is a specific theirs relationship. If there exist information witness (W) of the interaction between two entities as well as of the existence of the information about the first entity (A) in the second entity (B), W became as subject for whom the information in the second entity (B) represents the first one (A) (the information of A in B represents A). In other words, there exists relation

$$M: (W_{BA}, I_{BA}, A),$$

where "A" and "B" are entities, and the W_{BA} is the information witness, which proofs that the assertion "$I_{BA} \subset B$ is information in B for A" is true. In the relation (W_{BA}, I_{BA}, A) the information I_{BA} is a model of A.

The entities of the world interact continuously in the time. It is possible, after any interaction, the other one may be realized. In this case, the changes received by any entity, during the first interaction, may be reflected by the new entity. This means the *secondary (transitive, external) reflection* exists. The chain of the transitive reflections is not limited.

Let A, B and C are entities. Let A and B interact and after that B interacts with C.

Let there exist the relations:

- M_{BA}: (W_{BA}, I_{BA}, A), where W_{BA} is the information witness, which proofs that the assertion "$I_{BA} \subset$ B is information in B for A" is true; i.e. I_{BA} is information of A in B.
- M_{CB}: (W_{CB}, I_{CB}, B), where W_{CB} is the information witness, which proofs that the assertion "$I_{CB} \subset$ C is information in C for B" is true; i.e. I_{CB} is information of B in C.
- $M_{C(B)A}$: ($W_{C(B)A}$, $I_{C(B)A}$, A), where $W_{C(B)A}$ is the information witness, which proofs that the assertion "$I_{C(B)A} \subset$ C is information in C for information in B for A" is true; i.e. $I_{C(B)A}$ is transitive information of A in C.

In such case, from point of view of the $W_{C(B)A}$ the information $I_{C(B)A}$ is a model of A. In other hand, because of transitive reflection, $I_{C(B)A}$ is created as reflection of the sign I_{BA} but not directly of A. This means that $I_{C(B)A}$ is a model of the information in B for A, i.e. $I_{C(B)A}$ is an ***information model*** in C for A [Markov et al, 2001].

The collecting of information models for given entity in one resulting entity may exist as a result of the process of interaction between entities. Such process is in the base of the *Information modeling*.

The possibility of self-reflection may cause the generating the new information models in the memory without any external influence.

Information Objects and Processes

The entity, which has possibility for:

- *(primary) activity* for external interaction;
- *information reflection and information memory*, i.e. possibility for collecting the information;
- *information self-reflection*, i.e. possibility for generating "secondary information";
- *information expectation* i.e. the (secondary) information activity for internal or external contact;
- *information modeling and resolving the information expectation*

is called Information Subject or Infos [Markov et al, 2007].

An entity, in which one or more information models are reflected, is called ***"information object".***

The information objects are only tools for the information exchange in the space and time, i.e. for the realizing the information interaction.

The information objects can have different properties depending on:

- the kind of influence over the entities - by ordering in space and time, by modifying, etc.,
- the way of influence over the entities - by direct or by indirect influence of the Infos on the object,
- the way of development in time - static or dynamic,

etc.

It is clear, that the Infoses are information objects.

The information is kind of indirect reflection. The only way one to operate with information is to operate with the entity it contains. An action on the entity may cause any internal changes in it and this way may change the information already reflected. The influence over the information object, regarding the contained information, is called "*information operation*".

The information operations may be of two main types:

- the Infos internal operations with the sub-entities that contain information,
- external operations with the information objects that contain information.

The internal operations with the sub-entities closely depend of the Infos possibilities for self-reflection and internal interaction of its sub-entities. The self-reflection (self-change) of the Infos leads to the creating of new relationships (and corresponding entities) in it. These are subjectively defined relationships, or shortly – ***subjective relationships***. When they are reflected in the memory of the Infos they initiate ***subjective*** information model. These subjective information models may have not real relationships and real entities that correspond to them. The possibility for creating the relationships of similarity is a basis for realizing such very high level operations as "comparing elements or substructures of the information models", "searching given substructure or element pattern in the part or in the whole structure of the information model", etc.

The external operations with information objects may be differed in two main subtypes – basic and service operations.

There are two "*basic information operations*" which are called I-operations:

- I-reflection (reflecting the information object by the Infos, i.e. the origination of a relevant information model in the memory of the Infos).
- I-realization (creating the information object by the Infos);

In the process of its activity, the Infos reflects (perceives) information from the environment by proper sub-entities (sensitive to video, acoustic, tactile, etc. influences) called "*receptors*". Consequently, the Infos may receive some information models. This subjective reflection is called "*I-reflection*".

When necessary, the Infos can realize in its environment some of the information models, which are in his memory, using some sub-entities called "*effectors*". Consequently, new or modified already existing entities reflect information, relevant to these information models. This subjective realization is called *"I-realization"*.

There are several operations, which can be realized with the information objects: transfer in space and time, destroying, copying, composition, decomposition, etc. Because of the activity of the Infoses, these operations are different from other events in reality. In this case, the Infos determined operations with information objects are called "*service information operations*".

Let t_1, t_2,..,t_n are information operations. The consequence of information operations P, created using the composition, i.e.

$$P = t_1 \circ t_2 \circ \ldots \circ t_n$$

is called "*information process*". In particularly an information process can include only one operation.

The Information Societies

If an information model from an Infos is reflected in another entity, there exist possibility, during the "a posterior" interactions of the given entity with another Infos, to transfer this reflection in it. This way an information model may be transferred from one Infos to another.

Let S_1 and S_2 are Infoses and O is an arbitrary entity. The composition of two contacts

$$S_1 \xrightarrow{\Theta_{S_1O}} O \xrightarrow{\Theta_{OS_2}} S_2 \qquad (1)$$

is called "*information contact*" between Infos S_1 and Infos S_2 iff during the contacts any information model from S_1 is reflected in the Infos S_2 true the entity O. The Infos S_1 is called "*information donor*", the Infos S_2 is called "*information recipient*", and the entity O is called "*information object*".

For the realization of one information contact at least one information object is necessary. This way the elementary communicative action will be provided. In general, every information process "k", having as a start domain the set S_d (of information models) and as a final domain the set S_r (again of information models), which may be coincidental, we call "information contact": k: $S_d \rightarrow S_r$. S_d is called "Infos-donor" and S_r - "Infos-recipient".

The set "R" of all information contacts between two Infoses S_a and S_b : R= $\{k_i \mid i=1,2..; k_i:S_a \rightarrow S_b\}$ is called "*information interaction*" or simply "*inforaction*".

When S_a and S_b are coincident, we call it Information interaction with itself (in space and time). The set "B" of all information objects, used in the information interaction between given Infoses is called "*information base*".

A set of Infoses is called "Society", iff there exists agreement for information interaction between them, by means of which they could communicate. An important element of this agreement is the availability of a common information base. In other words, every group of information subjects, people in particular, is a society if any agreement for information interaction between them exists.

This definition is in accordance with usual understanding of the concept "society". The sociologist Richard Jenkins remarked that the term addresses a number of important existential issues facing people [Jenkins, 2002]:

> 1. How humans think and exchange information – the sensory world makes up only a fraction of human experience. In order to understand the world, we have to conceive of human interaction in the abstract (i.e., society).

2. Many phenomena cannot be reduced to individual behavior – to explain certain conditions, a view of something "greater than the sum of its parts" is needed.

3. Collectives often endure beyond the lifespan of individual members.

4. The human condition has always meant going beyond the evidence of our senses; every aspect of our lives is tied to the collective.

We shouldn't picture the information base like a number of drives with a certain data recorded, although it's the way it's been since the beginning – it was recorded on clay plates, papyrus, paper. The ability for digital storage of the data lays the beginnings of the genesis of the "Information Societies".

It's obvious that, there are many societies with correspondent information bases, and a person could belong to more than one society. Thus we could talk about "information societies" which exist in a certain way with or without a particular correlation between them. And it's not very likely for the humanity to reach such state of integrity so we could use this term in singular when speaking about the population of the whole planet. Nevertheless the concept "global information society" is very popular. This is a general concept which means the hypotetic digitally based integrated humanity.

The Culture Environment

The concept "Culture" means "every aspect of life: know-how, technical knowledge, customs of food and dress, religion, mentality, values, language, symbols, socio-political and economic behavior, indigenous methods of taking decisions and exercising power, methods of production and economic relations, and so on" [Verhelst, 1990].

The culture permeates and influences every aspect of life, but it is not static however, rather it is a process in a constant state of flux and adaptation to new contexts, demands, and needs. Culture is not a deterministic force but rather a subtle and often subliminal pattern of thinking that describes the "organization of values, norms, and symbols which guide the choices made by actors, limit the types of interaction and may occur between individuals" [Parsons et al, 1990].

Culture is "learned, and shared. In addition, culture is adaptive. Human beings cope with their natural and social environment by means of their traditional knowledge". In other words, as something inherited, 'traditional' cultural knowledge developed within a particular spatial and temporal "context" or "environment". But as a dynamic process culture continues to change as people cope with new challenges and adapt to changing conditions. Underlying values and expectations are arbitrary conceptions "of what is desirable in human experience, ... (and) these concepts of what is desirable combine cognitive and affective meanings ... they provide security and contribute to a sense of personal and social identity. For this reason, individuals in every society cling tenaciously to the values they have acquired and feel threatened when confronted with others who live according to different conceptions of what is desirable". Thus culture is like a "security blanket" which "has great meaning to its owner" [Spradley, McCurdy, 1987].

"Culture is at once socially constituted (it is a product of present and past activity) and socially constitutive (it is part of the meaningful context in which activity takes place)" [Roseberry, 1989].

A diversity of specific culture concepts was grouped into different categories and shown in table 1 as follows.

Table 1: Different definitions of culture ([Cultural Capital, 2003])

Definitions	
Topical	: Culture consists of everything on a list of topics, or categories, such as social organization, religion, or economy
Historical	: Culture is social heritage, or tradition, that is passed on to future generations
Behavioral	: Culture is shared, learned human behavior, a way of life
Normative	: Culture is ideals, values, or rules for living
Functional	: Culture is the way humans solve problems of adapting to the environment or living together
Mental	: Culture is a complex of ideas, or learned habits, that inhibit impulses and distinguish people from animals
Structural	: Culture consists of patterned and interrelated ideas, symbols, or behaviors
Symbolic	: Culture is based on arbitrarily assigned meanings that are shared by a society

The anthropologist Leslie White (1900-1975) suggested that for analytical purposes, a culture could be viewed as a three-part structure composed of subsystems that he termed ideological, technological, and sociological. In a similar classification, the biologist Julian Huxley (1887-1975) identified three components of culture: mentifacts, artifacts, and sociofacts. Together, according to these interpretations, the subsystems comprise the system of culture as a whole. But they are integrated; each reacts on the others and is affected by them in turn [Fellmann et al, 2007].

- *Mentifacts*: The ideological subsystem consists of ideas, beliefs, and knowledge of a culture and of the ways in which these things are expressed in speech or other forms of communication. Mythologies and theologies, legend, literature, philosophy, and folk wisdom make up this category. Passed on from generation to generation, these abstract belief systems, or mentifacts, tell us what we ought to believe, what we should value, and how we ought to act. Beliefs form the basis of the socialization process. Often we know (or think we know) what the beliefs of a group are from their oral or written statements. Sometimes, however, we must depend on the actions or objectives of a group to tell us what its true ideas and values are. "Actions speak louder than words" and "Do as I say not as I do" are commonplace recognitions of the fact that actions, values, and words do not always coincide.
- *Artifacts*: The technological subsystem is composed of the material objects, together with the techniques of their use, by means of which people are able to live. Such objects are the tools and other instruments that enable us to feed, clothe, house, defend, transport, and amuse ourselves. We must have food, we must be protected from the elements, and we must be able to defend ourselves. Huxley termed the material objects we use to fill these basic needs artifacts.
- *Sociofacts*: The sociological subsystem of a culture is the sum of the expected and accepted patterns of interpersonal relations that find their outlet in economic, political, military, religious, kinship: and other associations. These sociofacts define the social organization of a culture. They regulate how the individual functions relative to the group, whether it be family, church, or state. There are no "givens" as far as the patterns of interaction in any of these associations are concerned, except that most cultures possess a variety of formal and informal ways of structuring behavior. Differing patterns of behavior are learned and transmitted from one generation to the next [Fellmann et al, 2007].

It is clear that the sociofacts are variety of information models whith different importance and actuality.

Let remark that the main and most important part of artifacts is formed by the techniques, i.e. the information models of using the material objects. Without this information the material objects are unusable. In addition, without knowledge, without the information models to build material objects they could not became reality. So, we may conclude, that the information models are in the base of artifacts.

The mentifacts, in particulary the esoteric and religious information objects, are important parts of the culture environment. Theirs main characteristic is that they explicitly or implicitly lead to any supernatural phenomena. The exoterics and religions correspond to thousands-years old concepts. Because of this, the discussion is more complicated and needs an example. We may ask ourselves “What is Santa Claus”. From the point of view of our paradigm we could answer: Santa Claus is an information model, which, if followed could achieve very delightful results. That’s why he doesn’t die, as long as there are people who follow the model. It’s not simple but rather a subject with a great variety of personifications – from the jolly old man, who the Coca-Cola Company dressed in red, and the Pepsi Company – in blue, to the vivid character of the Russian Ded Moroz who’s wearing a huge fur-coat, a boyar hat and has a down-to-the-waist beard. Believing in Santa Claus is actually accepting and following of one of the variations of his information model. Every religion is a totality of information models, which are assumed and followed. Many of them are very important for human been and for stability of the social systems.

At the end we need to ask "Where is the difference between the religion and the science, which is also a combination of important information models to be followed?" It is clear – at the first place the difference is the believing in the supernatural phenomena. This leads to the way we create and perceive the information models and the attitude to them. There are two main ways:

– ***The first*** is wonderfully described by the motto of the medieval theologian Anselm of Canterbury, lately canonized as St. Anselm (1033-1109): ***"Credo, ut intelligam!"*** (I believe in order to understand) [St.Anselm]. You have to believe in the information model, so you could understand and follow it. This is the non-scientific

approach – every subjective notion can turn into a commonly accepted model or dogma, as long as there's someone to believe in it and follow it implicitly.

– *The second* is described with the phrase ***"Intelligo, ut credam !"*** (I understand in order to believe), used by the German reformer Thomas Muentzer (~1490-1525) [Muentzer]. You have to understand the information model and only after then to trust it if possible. This is the scientific approach – every science builds information models – hypothesizes, which are repeatedly tested before assumed to be true. The scientific approach includes a permanent improvement and revolutions of the existing models [Kuhn, 1966].

The culture aspects of the inforaction

From the point of view of the Theory of Inforaction the cultural environment is the set of all information bases (in the sence given above) which are available in the society. These bases grow permanently because building and exchanging of information models are basic activities for every society. Whether they are perceived with the scientific or non-scientific approach is a question only of the circumstances, executors and users.

In the information contact (1) the Infos S_2 reflects only the information object O, but not the whole process of its genesis. This means that S_2 need to reconstruct in his mind the missing part of the sheme and to make decision what to do with the incoming information model – to accept or not. In this case the important role plays the culture environvent – it may obligate the S_2 to accept O as a dogma or to fill free to make his own decision.

In addition, the information models and objects generated by any artificial systems (Infortrons [Markov et al, 2007]), i.e. so called "***artificial information models and objects***" became one of the main tools for information interaction.

What is the purpose of artificial systems?

– to be a substitute of any of the Information Subjects (Infoses);

– to extent its possibilities to create the information models.

In both cases if an artificial information model is used in the process of information interaction, the perceiver need to decide what attitude he or she needs to assume. The artificially generated information objects may be of any kind and some times it is impossible to make diference between human and artificially generated information object. In addition, in the information processes any information operations may be provided by any artificial systems and the final result may be an information object with mixed genesis.

The receiver's "information immune system" needs to select what from incoming information objects to be verified and what not. Usualy, the scientific oriented subjects do not accept information models which lead to supernatural origins. For every adult person it is clear that Santa Claus does not exist. But the information objects created from other scientists usually are acceped as already verified. The result may be unpredictable. The main peril is the exchange of scientific approach for non-scientific. The scientific information models may be perceived in non-scientific maner. For instance we may point the myth about spinach.

The myth about spinach and its high iron content may have first been propagated by Dr. E. von Wolf in 1870, because a misplaced decimal point in his publication led to an iron-content figure that was ten times bigger than the real. In 1937, German chemists reinvestigated this "miracle vegetable" and corrected the mistake. It was described by T.J. Hamblin in British Medical Journal, December 1981.

The case with the spinach is an example of the unintentional error. But more dangerous are the aforethought actions which may cause damages in the global range. One very significant example in this area is the myth about the fluoride [EWG, 2006].

Fluoride exposure has created controversial health concerns in the United States. For years, doctors and dentists have alleged that fluoride was actually a benefit to health, promoting strong, cavity free teeth. However, studies have suggested that the health risks associated with fluoride exposure may in fact outweigh the benefits. Fluoride exposure has been linked to the development of bone cancer - including osteosarcoma in children - among other serious health complications.

Fluoride is commonly found in or added to numerous consumer products, including tap water, toothpaste, juices, teas, wines, beers, infant formula, sodas, seafood, processed chicken, cigarettes, cereal, anesthetics and Teflon pans. Doctors and dentists have long recommended fluoride exposure for the prevention of tooth caries such as cavities and decay. Accordingly, many municipalities artificially fluoridate their public water supply. Fluoridated water is the greatest source of exposure to fluoride for children.

The federal government first set limits on the amount of fluoride in tap water in 1945. The recommended or optimum level for artificial fluoridation of drinking water was then set at 1 ppm or 1mg/L and remains at that level today. In the 1980s, the United States Environmental Protection Agency revisited the recommendations and raised the maximum contaminant level (or maximum amount of fluoride allowed in water and still considered safe) to 4ppm. Municipalities can independently determine whether to fluoridate their water supplies but cannot exceed the levels set by the federal government. Approximately 60% of all public water is or has been fluoridated.

Recent studies suggest a strong correlation between childhood fluoride exposure and the development of osteosarcoma in young boys. Studies performed by the United States National Toxicology Program and Harvard University have determined that there is biological and physical evidence relating the development of osteosarcoma cancer to children experiencing fluoride exposure in the bone formative years.

Fluoride is a known mutagen, particularly where it is found in concentrated amounts. In the body, fluoride accumulation occurs primarily in the bones, particularly during the developmental years. There, fluoride artificially stimulates bone cell growth, generally in long bones such as the legs and arms, leading to cancerous growths. Osteosarcoma in children, particularly young boys exposed during the bone growth spurt years of five to ten, has been specifically associated with the effects of fluoride exposure.

Osteosarcoma cancer is characterized by the growth of a cancerous tumor in the bone. The cancer generally occurs in the legs or arms and may cause pain and swelling, broken bones, or a visible lump. Treatment of osteosarcoma, like other cancers, may include a course of chemotherapy and radiation but osteosarcoma is not particularly responsive to radiation. Surgery, and sometimes amputation, is frequently required to treat a patient with osteosarcoma.

Osteosarcoma is not the only serious side effect of fluoride. Bone cancer, bone pain and swelling, and fluorosis have all been associated with excessive fluoride exposure. The effects of fluoride can cause long term and irreversible health effects. Treatment for osteosarcoma and other fluoride induced health problems can be a long and expensive process resulting in physical, emotional and financial stress on the victim and the victim's family.

In spite of this very dangerous data how many persons, asked on the street, will ansver that the fluoride is not useful for the teeth?

The artificially generated information objects are assumed as scientifically generated and as result they are in the same category of "verified in advace" information models. Again, the resul may be unpredictable. Very important examples are the "e-government" information objects. The inaccuracies of the governvent administrators and of the information systems are assumed as it need to be and the result is a great chaos in the business and social activities. Now, in many of the East European countries and especially in Bulgaria this is an every day situation. The culture environment is very susceptible especially in this case and the cultural changes to the worst may be easily recognized in these countries.

Instead of supporting human acivities the e-systems are taken as control and supervising social elements. In the same time, the government officials are assumed as service attendants of the e-systems which are not responsible for theirs activities. The usual saying is not "the law demands …" but the "system demands …".

At the end, the S_2 may be an Infotron. What do we need to take in account in such case? For many years the Infotrons have simple formal reflection (input) and the cultural environment was undefined concept. But the importance of culture environment is obvious. The Infotrons' decisions closely depend on it especially in the cases when they will live in the same information societies with mankind.

Conclusion

The Artificial Intelligence (AI) needs to pay attention to all available information bases, i.e. the culture environment, during modeling the brain activities. We expect the investigations on the boundary of the individual and social intelligence to become in the focus of the AI scientists. The AI models and realizations will take in account the existence of the culture environment. At the first place, the same AI system may give different results in different culture environments.

In abstract theories it is simple to make classifications like – "natural-artificial", but in the real human activities it is important to clear who owns the responsibility. This closely depends on the culture environment. The role and the importance of a particular exoterics and religions in a certain society are determined by the influence of the people ready to doubt the information models, on the others who easily and “blindly” follow the dogmas.

Keeping in mind the limited abilities of the human mind, we can presume that the non-scientific approach would probably dominate. Just a small part of the humanity would be able to build and understand the difficult scientific information models.

The problem is that the artificial information objects may be considered as "dogmas" because the user will perceive it “blindly” without any additional information about its genesis.

That’s why it’s crucial to keep the harmony and dialectical unity of the scientific and non-scientific approaches, following the wisdom of St. Augustine: ***"Intelligo ut credam, credo ut intelligam!"*** [St. Agustine].

Bibliography

[Cultural Capital, 2003] *Youth in Hong Kong. A Statistical Profile 2002*. Report Submitted to Commision on Youth. Social Sciences Research Centre. The University of Hong Kong. March 2003 http://www.info.gov.hk/coy/eng/report/doc/Youth_Statistical/2002/app/Chp6_Cultural_Capital.pdf

[EWG, 2006] Harvard Study: *Strong Link between Fluoridated Water and Bone Cancer in Boys*. Environmental Working Group. April 5, 2006. http://www.ewg.org/issues/fluoride/20060405/index.php (Access 29.05.2007).

[Fellmann et al, 2007] D.Fellmann, A.Getis, J.Getis. *Human Geography: Landscapes of Human Activities*. McGraw-Hill College, 2007. ISBN-13: 9780072827651

[Jenkins, 2002] R.Jenkins. *Foundations of Sociology.* London: Palgrave MacMillan, 2002.ISBN 0-333-96050-5.

[Kuhn, 1966] T.S.Kuhn. *The Structure of the Scientific Revolutions*. Chicago: University of Chicago Press. 1996.

[Markov et al, 2001] K.Markov, P.Mateev, K.Ivanova, I.Mitov, S.Poryazov. *The Information Model*. In: Proceedings of the International Conference KDS-2001 - Sankt-Petersburg, Russia, 2001 - pp. 468-475; International Journal Information Theories & Applications - Sofia, 2001 - V. 8, No 2 - pp. 59 -69.

[Markov et al, 2007] Kr.Markov, Kr.Ivanova, I.Mitov. *Basic Structure of the General Information Theory*. Int. Journal “Information Theories and Applications”, 2007, Vol.14, No.1, pp.5-19.

[Muentzer] http://www.thomas-muentzer.de/ , http://www.answers.com/topic/thomas-muentzer

[Parsons et al, 1990] T.Parsons, E. Shils. *Values and Social Systems*. In J.Alexander, S.Seidman (ed.), Culture and Society, Contemporary Debates. Cambridge Univ Press, New York 1990. pp.39-40.

[Roseberry, 1989] W.Roseberry, *Anthropologies and Histories.* Rutgers University Press, New Brunswick 1989. p.42.

[Spradley, McCurdy, 1987] P. Spradley, D.W. McCurdy. *Conformity and Conflict: Readings in Cultural Anthropology.* Little Brown and Company, Boston 1987. pp.4-6.

[St.Agustíne] http://www.sant-agostino.it/links/inglese/index.htm, http://www.conoze.com/doc.php?doc=157

[St.Anselm] http://webspace.ship.edu/cgboer/middleages.html , http://maritain.nd.edu/jmc/etext/hop30.htm

[Verhelst, 1990] T.Verhelst. *No Life without Roots.* London: Zed Books 1990 p.17

[Wartofsky, 1979] M.W.Wartofsky. *Models*. Representation and the Scientific Understanding. D.Reidel Publishing Company, Dordrecht: Holland /Boston: USA, London: England/, 1979.

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