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METHODOLOGICAL APROACH TO ANALYZING AND DIAGNOSING SOCIOLOGICAL KNOWLEDGE

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The problem of comparability of the sociological knowledge obtained from different sources, in different contexts by various methods demands special approaches. It is necessary to take into account the wide spectrum of theoretical approaches sometimes non-comparable with each other. In particular, the difference in methods of processing and diagnosing sociological knowledge, contradictions between qualitative and quantitative methods and the social-cultural conditionality of the obtained sociological information[1] may pose difficulty.

The contents of knowledge and the mechanism of its accumulation and legitimacy (of both scientific knowledge among scholars and ordinary knowledge among different population groups) essentially depend on a condition of society (in ideological, political, economic, religious aspects); hence, the analysis of sociological knowledge at a metasociological level is necessary.

The following factors have an essential influence on the structure and the contents of knowledge, so, it is necessary to take them into account.

- The social nature of knowledge (sociology of knowledge in a narrow sense);
- Thinking in its historical development (sociology of thinking);
- The conceptualization of cognitive systems in concrete social-cultural contexts and spheres of cognitive activity of a society (sociology of knowledge);
- The theoretical-methodological and epistemological bases of sociology and its opportunities and restrictions in social knowledge (sociology of sociology).

In modern approaches to the mentioned problems, the methodology of discourse-analysis plays a significant role as a methodology of the metasociological analysis of sociological knowledge[2].

The statement that the sociological scientific text is a certain discursive practice reflecting a social reality is taken as a basis of this methodology.

Today, there are a variety of approaches to the definition and the development of discourse-analysis, and there is no unified research methodology for such analysis. Approaches to the methodology of this analysis are mosaic and frequently inconsistent[3].

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[1] **Батыгин Г. С.** Лекции по методологии социологических исследований. М., 2001.
[2] **Маннгейм К.** Структурный анализ эпистемологии // Человек, наука, общество: комплексные исследования. М., 1992.
[3] **Макаров М. Л.** Основы теории дискурса. М., 2003.

Thus, it seems necessary to revise and specify discourse - analysis methodology. Thought discourse-analysis is traditionally considered a qualitative method of research; some modifications of discourse-analysis give the possibility to compare the knowledge received by means of both quantitative and qualitative methods.

For this purpose, we suggest applying concepts of fuzzy logic for the discourse-analysis of sociological knowledge. In this approach, the paradigms of both qualitative and quantitative structural analysis are incorporated[4].

Actually, fuzzy logic offers an opportunity to create formal models reflecting the fuzziness and uncertainty of the real world.

> *The facts were always fuzzy or vague or inexact... Science treated the gray or fuzzy facts as if they were the black-white facts of math. Yet no one had put forth a single fact about the world that was 100% true or 100% false."* Bart Kosko, Fuzzy Thinking, 1994

"The concept of "the indistinct phenomena" (i.e. such phenomena which can be outlined, but are impossible to be defined strictly), is, in effect, one of the rather important ideas with which the humanities enrich the exact sciences" - wrote Abraham Moll.

The fuzziness arises during the unification of the objects *x*, having the same degree of the property φ. Property *A* not always can lead us to an exact definition of this association because there can be objects for which it is not clear, whether they possess property φ or not (how to define, for example, a set of all democratic states!). On the other hand, it is possible to consider objects *typical* of the given property. Therefore, it is reasonable to use a certain scale of elements having various degrees of the validity of property *A*.
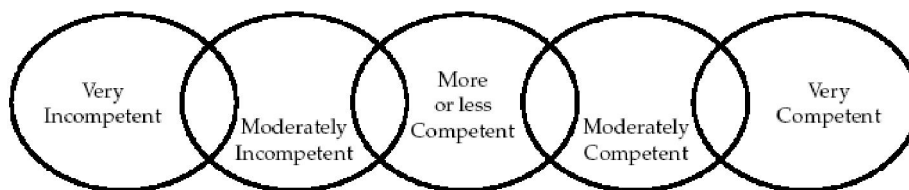

Figure: Semantic ambiguities between levels of competence
*Chahid Fourali "*Using Fuzzy Logic in Educational Measurement: The Case of Portfolio Assessment"

The fuzzy set is defined as a function $\mu(x)$, setting on the some universe U and describing a degree of possession of object x by the property A. $\mu(x)$ named as a characteristic function $\mu(x) \in [0, 1]$, thus $\mu(x) = 1$ if the object x possesses property A, and $\mu(x) = 0$ if the object x does not possess property A.

On the set of fuzzy sets, it is possible naturally to define logical operations of disjunction, negation, implication.

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[4] Yen J., Landary R. Fuzzy Logic. Intelligence, Control, and Information, Prentice Hall, NJ, 1999, p. 29-37.

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$$\mu_{A \cup B}(x) = \max(\mu_A(x), \mu_B(x));$$

$$\mu_{A \& B}(x) = \min(\mu_A(x), \mu_B(x));$$

$$\mu_{\neg A} = 1 - \mu_A(x);$$

$$\mu_{A \Rightarrow B} = \begin{cases} 1, \text{ if } \mu_A(x) \leq \mu_B(x); \\ \mu_B(x), \text{ in opposite case.} \end{cases}$$

The fundamental concept of fuzzy logic is the concept *of a linguistic variable*. It is five (*X, T (X), U, G, M)*, where

    X - name of a variable,

    T (X) - set of its values (term-set), being language expressions *(syntagmas)*;

    U - universe,

    G - syntactic rule by means of which we can form syntagmas,

    M - the semantic rule, using which to each syntagma *T* from *T (X)* is attributed its value *A*, being by fuzzy set from *U*.

Syntagma is any part of the statement making sense and formed in accordance with grammar rules.

The example of a typical linguistic variable can be *Speed*. Its term-set consists of such syntagmas as *fast, very slow, average, very fast*, etc. Universe can be some subset of the real numbers, for example [0, 1000]. Syntactic rule *G* can be formal grammar, semantic rule *M* - attributes to terms the values, which are various modifications of the fuzzy sets represented in the figure.
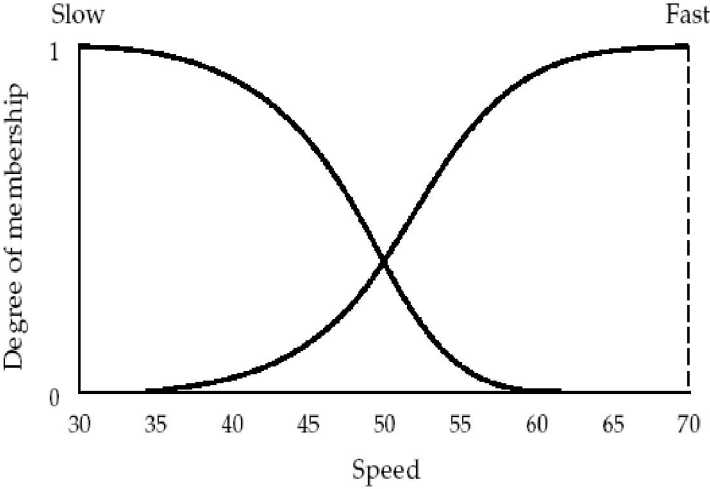

Figure 2: Perceptions of two categories of speed.
Chahid Fourali "Using Fuzzy Logic in Educational Measurement: The Case of Portfolio Assessment"

However, for adapting fuzzy logic ideas to the sociological discourse-analysis, it seems more expedient to use the so-called **symmetric fuzzy logic**.

The basic difference of symmetric fuzzy logic from traditional fuzzy logic is as follows. On each set *A* from given logic, the set of the objects possessing in some sense opposite properties of the objects belonging to *A* is also defined, i.e. with definition *A* it is necessary to set as well ¬*A*. Therefore, characteristic function μ (*x*) will accept its values from a segment [-1, 1] where «-1» symbolizes that object *x* obviously does not possess the property *A* (or *x* possesses the property ¬A), «+1» symbolizes that object *x* obviously possesses property *A,* and μ (*x*) = 0 if the we do not know object *x* possesses property *A* or not.

The basic operations here are as follows:

$$\mu_{A \cup B}(x) = \max(\mu_A(x), \mu_B(x));$$
$$\mu_{A \& B}(x) = \min(\mu_A(x), \mu_B(x));$$
$$\mu_{\neg A} = -\mu_A(x);$$
$$\mu_{A \Rightarrow B} = \begin{cases} 1, \text{ if } \mu_A(x) \leq \mu_B(x); \\ 1 - \mu_A(x) - \mu_B(x), \text{ in opposite case.} \end{cases}$$

The substantiation of the use of such analogue of fuzzy logic is based on the necessity of defining in the sociological text the criteria of sociological distinctions, which are the basic abstraction of sociological knowledge. Without understanding «not A», it is sometimes impossible to understand "A". According to B. F. Porshnev, "*any opposition unites, any association opposes, the measure of opposition is a measure of association*"[5].

The method suggested for analyzing sociological scientific knowledge is the so-called Fuzzy Discourse Analysis of Sociological Texts.

The methodological model of the suggested method of analyzing sociological knowledge involves the following conceptual positions:

- The sociological scientific text is an expression of concrete sociological scientific knowledge;

- The sociological scientific text is a certain discursive practice reflecting a social reality.

At the first stage of realization of the model, there is a strategic designing of syntagmas. Lexical values of syntagmas correspond to the so-called elementary *atomic propositions.* On the allocated atomic propositions are defined *linguistic variables,* which join in *a fuzzy configuration of the text.* Atomic propositions will be organized in *propositional schemes* through the syntactic rules expressed in structural relations.

The analysis of the text assumes three levels of complexity: the first level of the analysis is the micro-analysis of the text, the second level of the analysis is the meso-analysis of the text; the third level of the analysis is the macro-analysis of the text[6].

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[5] **Поршнев Б. Ф.** Социальная психология и история. М. 1966, с. 68.
[6] **Заславская М. И.** О методологии анализа социологического знания. "Вестник ЕГУ", 2007, № 3 (123), с. 57 – 65.

On each level, the fuzzy configuration of the text is achieved through gradual complication of the syntagmas changing from atomic propositions to a text macro-structure. Each of the considered syntagmas forms a fuzzy configuration through a set of linguistic variables, characteristic of the given text and by means of the basic operations of a fuzzy conclusion. At each stage, the accuracy of a conclusion on each of the isolated linguistic variables is checked.

This method assumes presence of a certain sociological text, definition of its context, allocation of a macrostructure, definition of referential units, calculation of distance between them, description of mesostructure, namely affective, cognitive, conative frames among which argumentative and polemic schemes are allocated. Besides, the analysis of a microstructure implies allocating discursive markers and lexical forms with certain connotation which then correspond to the concrete frame. Frames are allocated by hierarchical cluster analyses and latent-structural analyses. The estimation of independence of the text from subjective installations of the re-searcher is made through calculation of a specific share of affective frames in rela-tion to argumentative schemes. The availability of the document, as an information source, and the formalized scheme of the analysis can certify the objectivity of re-ceived metaknowledge.

One of the results of application of this method to some sociological Russian-speaking texts was the allocation of a concrete political discourse with all known attributes[7], among which:

- Opposition "we" - "they";
- The positive characteristic of in-groups, negative - outgroups and others.

Furthermore, practically in all considered texts, it is necessary to note the presence of features of the Soviet political discourse (or a totalitarian discourse). The peculiarity of the allocated features of the totalitarian discourse was the pres-ence of a strongly pronounced western liberally democratic content.

On the other hand, the function of a sociologist as a compiler of political ide-ology descends from the Soviet sociological school and is actual until now when there is a replacement of communistic ideology by a liberally democratic one.

Thus, through the fuzzy discourse-analysis of sociological texts, it is possible to track tendencies reflected in sociological knowledge in public opinion, mental schemes, mechanisms, and features of perception of a situation, features of social consciousness and possible borders of scientific knowledge. Besides, this analysis affords an opportunity to compare the sociological knowledge that sometimes seems incomparable and inconsistent.

ՄԱՐԻԱ ՁԱՍԼԱՎՍԿԱՅԱ – *Մեթոդաբանական մոտեցում սոցիոլոգիա-կան գիտելիքի վերլուծությանն ու ախտորոշմանը* – Հոդվածում ներկա-յացված է անորոշ տրամաբանության վրա հիմնված սոցիոլոգիական տեքս-տերի դիսկուրս-վերլուծության նոր կոնցեպտուալ մոդել։ Հոդվածում ուսում-նասիրվող հիմնախնդիրները վերաբերում են տարբեր աղբյուրներից ստաց-ված սոցիոլոգիական տեղեկատվության գնահատմանը, մեկնաբանմանը և

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[7] Van Dijk, T. A. Ideology: A multidisciplinary approach. London: Sage Publications Ltd. 1998, p. 125.

ախտորոշմանը, ինչպես նաև նման տեղեկատվության վերլուծության առանձնահատուկ մեթոդների կիրառման հնարավորությունների բացահայտմանն ու հիմնավորմանը:

МАРИЯ ЗАСЛАВСКАЯ – *Методологический подход к анализу и диагностике социологического знания.* – В статье представлена новая концептуальная модель дискурс-анализа, основанная на применении нечеткой логики. Проблемы, рассматриваемые в работе, касаются оценки, интерпретации и диагностики социологической информации, полученной из различных источников и в различных контекстах, методов извлечения верифицированных компонент из нее, а также некоторых специфических методов анализа подобной информации, когда на ее достоверность влияет целый комплекс факторов, связанных с конкретным общественно-политическим контекстом.