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REPRESENTATION OF OIL AND GAS SPECIALTY THROUGH FRAME STRUCTURE

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ABSTRACT: Cognitive linguistics is being developed in every aspect of life domain. Cognitive linguistics has its mechanisms, one of the semantically interpretative mechanism is Frame structure, which is able to represent all details of profession by subframe and slot structures. Semantic frame is pioneered by Charles Fillmore and its theory was also widely introduced to linguistics by Marvin Minsky. This paper highlights the importance of cognitive linguistics and its mechanism such as frame structure and frame analysis of oil and gas terminology in the English and Uzbek languages comparatively. Moreover, all hierarchically systemized and stereotyped information concerning oil and gas geological exploration was represented by frame modeling.

KEY WORDS: cognitive linguistics, frame structure, frame semantics, oil and gas terminology.

РЕПРЕЗЕНТАЦИЯ НЕФТЕГАЗОВОЙ СПЕЦИАЛЬНОСТИ ПОСРЕДСТВОМ ФРЕЙМОВОЙ СТРУКТУРЫ

АННОТАЦИЯ: Когнитивная лингвистика развивается в самых разных сферах жизни. В ее арсенале имеются различные механизмы; одним из механизмов семантической интерпретации является фреймовая структура, позволяющая детально представить профессиональную область посредством подфреймов и слотов. Основоположителем концепции семантического фрейма стал Чарльз Филлмор, а значительный вклад в ее внедрение в лингвистику внес Марвин Минский. В данной работе рассматривается значимость когнитивной лингвистики и таких ее инструментов, как фреймовая структура и фреймовый анализ, на примере сопоставления нефтегазовой терминологии в английском и узбекском языках. Более того, вся иерархически систематизированная и стандартизированная информация, касающаяся геологоразведочных работ на нефть и газ, была представлена посредством фреймового моделирования.

КЛЮЧЕВЫЕ СЛОВА: когнитивная лингвистика, фреймовая структура, фреймовая семантика, нефтегазовая терминология

NEFT VA GAZ MUTAXASSISLIGINING FREYM TUZILMASI ORQALI IFODALANISHI

ANNOTATSIYA: Kognitiv tilshunoslik jamiyatimizning turli sohalarida tobora rivojlanib bormoqda. Shu bilan birga, kognitiv lingvistikada bir qancha mental mexanizmlar mavjud, ulardan biri semantik jihatdan tahliliy struktura ega mexanizm – freym strukturasidir. Freym strukturasini iriarixi jihatdan tizimlashgan bir sohani o‘z ichida qamrab olgan, tahliliy yoritadigan subfreym va slotlardan iborat. Kognitiv tilshunoslikda semantik freym nazariyasi Charles Fillmore va Marvin Minsky tomonidan kognitiv tilshunoslikda tadbiq etilgan. Mazkur maqolada kognitiv tilshunoslik, freym strukturasini hamda ingliz va o‘zbek tillarida neft va gaz terminologiyasining chog‘ishtirma freym metodologiyasi yoritilgan. Undan tashqari, freym modeli geologik tadqiqot ishlarini iriarixi jihatdan tizimlashgan stereotip manbalarni namoyon etgan.

KALIT SO‘ZLAR: kognitiv tilshunoslik, freym strukturasini, freym semantikasi, neft va gaz terminologiya.

INTRODUCTION. In the recent years, the number of academic studies applying a cognitive approach to the analysis of linguistic and subject matter phenomena has increased. This approach proposes new methods for investigating and understanding how natural language structures conceptual content, how lexical units are represented in human consciousness and how the process of verbalisation functions. Frame analysis, also known as frame modeling, is a primary research method in cognitive linguistics used to analyse the interaction between conscious mental processes and language and speech (L.Zahorodnia. 2026:1). As a research tool, frame analysis allows scholars to uncover the mechanisms of categorisation and analyse conceptual structures, making it a powerful method for linguistic research (Davydiuk, 2019:9; Zan’kovs’ka, 2015:103). Scholars often draw an analogy between ‘frame’ and ‘concept’ as distinct ways of representing a fragment of the world. However, they also highlight key differences. A frame is linked to the process of categorisation, whereas a concept deals with the process of conceptualisation. While a frame typically consists of typified and dominant features, a concept, on the other hand, encompasses all features. Structurally, a frame is often depicted as a hierarchical scheme, while a concept is described as a semantic field with a central ‘core’ and a surrounding ‘periphery’ (Davydiuk, 2019:9). These unique characteristics of the frame, particularly its hierarchical and feature-based nature, make it a particularly relevant tool for representing syntactic concepts. The study aims to explore information of oil and gas industry representing by frame-subframe modeling. The frame analysis, which was introduced by Charles Fillmore and Marvin.Minsky, was followed to make frame-slot analysis of oil and gas geological exploration. The defined terminology of that field was put into detail to explain words associated to main frame. Frame semantics was taken as a tool to represent words into categories by subframe and slots. All the data mentally existed in human consciousness helped us to depict a full episode of geological exploration of oil and gas deposits, and providing terminology associated with objects such as places, engineers, methods, instruments & devices, formation.

LITERATURE REVIEW. The concept of a frame was introduced to the field of artificial intelligence by Marvin Minsky. He defined a frame as “a data-structure for representing a stereotyped situation, which characterize object, concept, event, and action. Marvin Minsky conceptualised a frame as a network of nodes and relations (Minsky, 1975:212). In linguistic and cognitive studies, the conceptualisation and categorisation of knowledge are understood to be performed through lexical units.

E.Aleshinskaya & A.Albatsha (2019:327) claimed that terminology is inextricably linked with thinking, which reflects the dynamic process of human perception of reality. Terms are special cognitive-informational structures, which accumulate the special knowledge gained by mankind and expressed in specific linguistic forms. Sauberer, G. (2011:56-6) stated that terminology acting as carriers of professional and scientific memory, may become an intermediary in the process of special communication, leading to the mastery of a specific situation. Terms reflect the results of people’s experience and practice; they record knowledge about the properties of objects and phenomena, and reveal their most significant features. Of great significance in developing professional competencies are ways of presenting the basic terms of a particular professional sphere and their relationships with each other. Cognitive modeling of terminology in a professional sphere consists of searching for cognitive foundations for the systematization of special knowledge fixed in terms, and serves to build an integrative model of knowledge reflecting the real situation in the professional field (E.Aleshinskaya & A.Albatsha. 2019:327).

The cognitive approach is widely being applied in the formation and description of terminological systems of professional fields (L.M.Alekseeva 1999; M.N.Volodina 2000; Y.I.Golovanova 2008; L.V.Ivina 2004; V.M.Leichik 2007; Y.S.Kubryakova 2008). Within this framework, both conceptual and frame analyses of terms are conducted, enabling the construction of a conceptual model of a given terminological system. R.Yu. Kobrin claimed that if a terminology is a real object that models the actual picture of a subject domain in its dynamic state, then a term system is always a formalized description of that terminology—a model of it. A term system can be defined as a cognitive model of terminology or as a metamodel of the subject domain (1979: 54-55). In cognitive linguistics, a frame is understood as the structural organization of a concept. When conveying a particular concept, a lexical unit activates the corresponding cognitive context—or frame—as a model of knowledge regarding fundamental concepts (S.N.Bekoveshiva, Y.M.Priorova, Y.P.Savchenko. 2017:208). Frame models are structured by semantic networks whose elements are represented by a complex configuration of slots and their contents. An object or event in such a network is described using frame notations. A frame is a named structure composed of a series of descriptions—slots—identifying the main structural elements of the frame. A slot is a construct consisting of two elements: a slot name and a slot value. Slot names are used to identify concepts that describe the main concept represented by the frame name, and as the names of other frames can be specified as slot values; that is, the advantage of frames lies in the fact that the elements constituting the description of an object or event are grouped into an independent structural unit and can therefore be retrieved and processed as a single whole (S.N.Bekoveshiva, Y.M.Priorova, Y.P.Savchenko. 2017:209).

RESEARCH METHODS. The theory of Frame Semantics elaborated by Ch. Fillmore (1982) presents one of the most influential theories of cognitive linguistics. According to Fillmore frame is a schematization of experience. In other words, frames represent a complex knowledge structure including a group of related words and concepts. Frame analysis, also known as frame modeling, is a primary research method in cognitive linguistics used to analyse the interaction between conscious mental processes and language and speech. This study is devoted to frame modeling terminology of oil and gas as a way of representing and systematizing special knowledge in this sphere. It aims to identify and classify the system relations of terminological units as well as frame model a multilevel terminological field of the subject area under cognitive analysis. The paper highlights the complicated hierarchical structure of the oil and gas terminological system and presents a thesaurus that is designed to reflect established professional knowledge and facilitate the detailed description and effective arrangement of the terms belonging to the given area. This study also focuses on semantic relations of oil and gas terminology in terms of ontological and epistemological features.

RESULTS AND DISCUSSIONS. As a research tool, frame analysis allows scholars to uncover the mechanisms of categorisation and analyse conceptual structures, making it a powerful method for linguistic research (Davydiuk, 2019, p. 9; Zan'kovs'ka, 2015, p. 103), for example, oil and gas industry is not simply a chemical plant; it is associated with a number of concepts such as: *geological exploration of hydrocarbons, drilling hydrocarbons, pumping hydrocarbons, refining hydrocarbons, drillers, engineers, drilling bits can cover all technical process of oil and gas industry.*

The frame of the word Drilling in the oil and gas includes a range of event sequences: 1. preparation for drilling (*drilling tower, rotor table, drill string*); 2. The workers (*driller, roughneck, roustabout, toolpusher*); 3. concomitant events (*talks, discussions of technical devices*); 4. feeling, emotions, evaluations associated with the process of drilling (*excitement, noise*).

Fillmore views frames as the structure of understanding any speciality. He states that frame reveals all meaning of the whole episode of the specialty and its branches semantically, representing a complex knowledge structure, which enable readers to perceive the meaning, providing background knowledge. From the linguistic point of view, frame is a hierarchical structure of linguistic and subject matter data may represent a stereotyped situation. The frame semantics consists of two levels: the upper level is the name of frame; the lower level consists of subframes, slots (terminals), and subslots, which contain concrete information about the situation in question. Subframes, slots and subslots are characterized by the relations of inclusion and subordination. The frame *Geological exploration in fining oil and gas deposits*, for example, consists of the following subframes: *geological mapping and geology of oil deposits*. Geological mapping subframe includes following slots:

Place: *sedimentary rocks-cho 'kindi tog' jinsi, igneous rocks-kristallangan jins, metaphoric rocks-metaforik tog' jinsi, bedded rock-qatlam* etc.

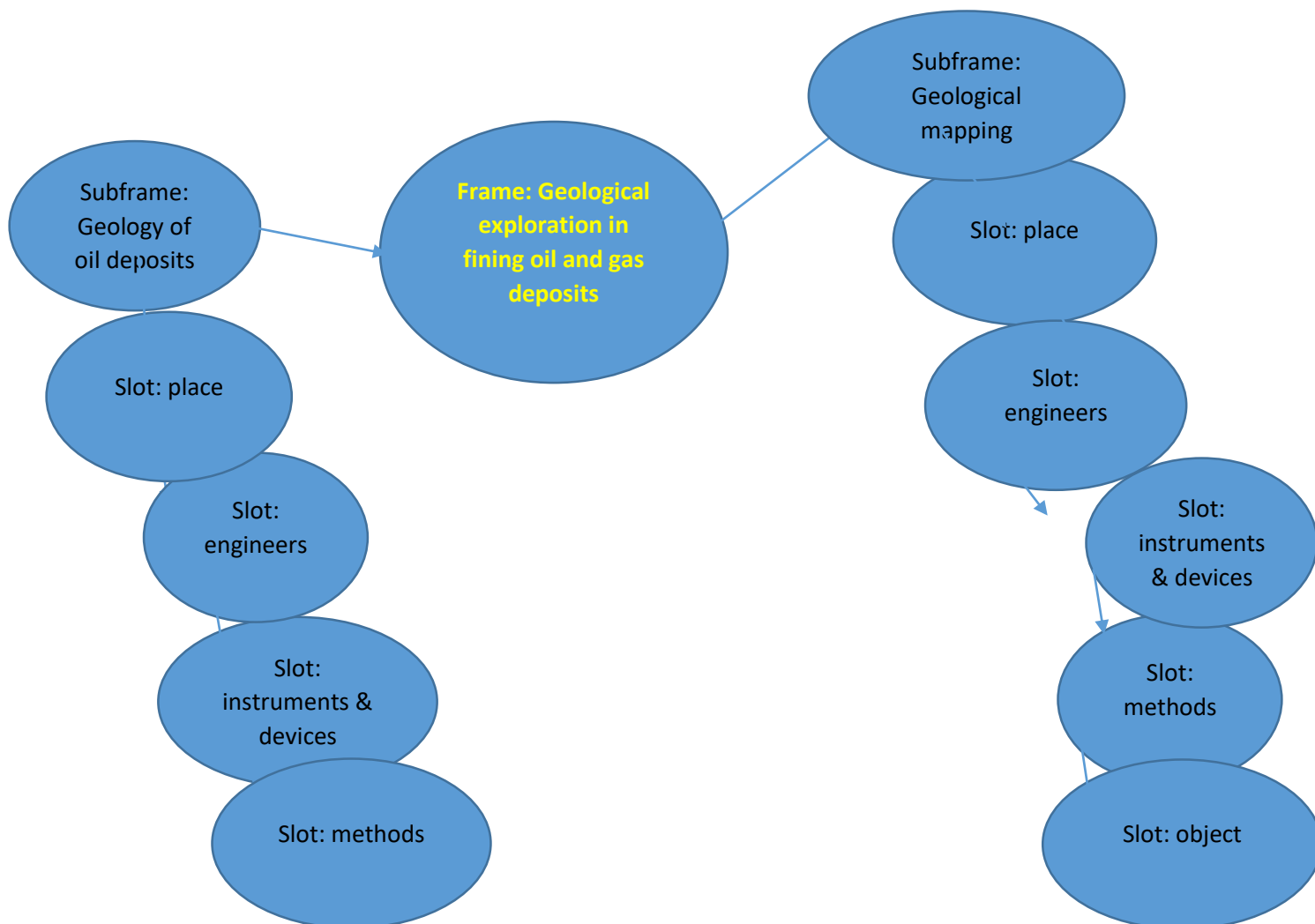
Engineers: *geologists-geologlar, geotechnician-geotexniklar, inspector-tekshiruvchi, geoscientist yerni o'rganuvchi olim, etc.*

Instruments & devices: *kwikdraw gas detector tubes-kvikad gazni aniqlaydigan apparat, aerometer-airometr, microscope-mikroskop, hammer-bolg’a*, etc.

Methods: *aerial survey-fazoviy tadqiqot, geological reasoning-geologik izlov, investigate-izlash, geochronology geoxronologiya*, etc.

Possibility of existence: *estimate of petroleum reserves naft zahirasining hisobi estimating of crude oil xom neftning taxmini hisobi*, etc.

Formation: *diastrophism dislokatsiya, buzilis, diagenesis-diageniz, catagenesis-kataginez*, etc.



Frames are characterized by profile/base organization. The terms were introduced by Langacker, who explained the profile as the entity designated by the name of the frame or its subframe, the base is background information necessary for understanding the profile. According to Langacker (1991) the semantic value of linguistic units lies in neither the base nor the profile alone, but only in their combination.

CONCLUSION. Frame structure is the one of the semantic mechanism of cognitive linguistics, providing concepts, events, actions. Frame is a schematisation of experience, a complex knowledge structure represented at the conceptual level and encoded in language. Besides, frame analysis is devoted to representing concrete meaning of the terminology of one’s field by hierarchically structured data. The current study aims to reveal frame semantic theory and its relation with subframe and slots. The terminological system of oil and gas industry is the

frame model and terms of branches of oil and gas are represented by subframe and slots, which conceptualize meanings and uncover new conceptual senses in the paper. The frame semantic analysis also revealed a mental phenomenon by the human consciousness.

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