

SUMMARIES OF THE ARTICLES IN ENGLISH

PHILOLOGY

P. 7. *Dronova Lyubov P., Gotlan Yulia A.* Tomsk State University (Tomsk, Russia). **FEATURES OF CONCEPTUALISATION OF IDEA OF PURITY IN ENGLISH AND GERMAN LANGUAGES.** The language picture of the world, its separate fragments fix and keep chronologically different ideas of subjects, phenomena, which native speakers faced and continue to use. Conceptual analysis based on diachronic research of the facts of language can track evolution of formation of structure of a concept, explaining and describing the functional and semantic features of the language means expressing – first of all – the nuclear part of a concept. How can various ways of structuring concepts in closely related languages exist and what causes it? An attempt to answer this question is made on the material of analysis of words representing the nuclear part of the concept "purity" in English (clean) in comparison with the cognate German language. In German historically the main lexeme fixing the idea of purity is of Germanic origin – rein (h), which represents an empirical adjective whose original meaning is 'without dirt, spots', 'separated from dirt, impurity'. The other aspect of the concept "purity" was expressed by hlūtar (modern: lauter) with the nominative and non-productive meaning 'clear, light'. In the Old High German a Latin borrowing to denote the purity of soul, moral purity, came into German, sūbar (modern: sauber). Old English does not have the word (h)rein, the second adjective – hlūtor, – meaning 'light, clear' was lost during the Middle English period. A loan similar to German from Latin – sūfre – was also lost, and a later borrowing 'sober' did not develop the meaning 'clean'. In such a situation the adjective 'clean' was quite exclusively used, starting with early Old English texts, to express the idea of purity. The German 'klein' corresponding to the English 'clean' could express 'pure', but was also lost. Possibly, the generalization of the meaning that made 'pure' the basic meaning of 'clean' happened on the continent, before settling in Britain (this can explain the loss of Germanic words for 'pure'), and with a substratum influence that supported the process of generalization (cf. Irish 'glan' — 'clean', 'without impurity', 'bright, brilliant'). The carried-out historical and etymological analysis and interpretation of its results from the cognitive point of view allows us to believe that in the course of functioning of the empiric adjective 'clean' in the meaning 'light, clear; shining' (possibly, originally used to describe natural phenomena) actively expands its denotation sphere defining 'clean' as the result of activity of the person – 'clean' = 'cleaned' (in direct and figurative meanings). An important conclusion is that during the Old High German and Old English periods of history the ideas about purity of Germans and the British were structured by the same conceptual components – 'light, clear; shining' (about the natural) and 'cleared of dirt, impurity' (action of the person). The difference is that in early history of Germans this concept was expressed by the semantics of two lexemes – (h)rein and hlūtar (h), whose Germanic origin allows to assume a similar structure of the conceptual kernel of the concept 'purity'. In the English language the idea of it is expressed by a language unit of a later origin, but its semantics reflects the same cognitive model, the same image of 'clean' ('pure / light, bright' – about the natural, 'pure / cleared of dirt and impurity' – action of the person).

Key words: concept; etymology; West Germanic languages.

P. 11. *Kazarkin Alexandr P., Belousova Olesya O.* Tomsk State University (Tomsk, Russia), Anzhero-Sudzhensk Branch of Kemerovo State University (Anzhero-Sudzhensk, Russia). **STYLIZATION AND MYTH-MAKING: STAGES OF N. KLYUEV'S CREATIVE EVOLUTION.** In the article the question is raised about the world view evolution and the poet's style. In pre-revolutionary N. Klyuev's verses and poems created after the revolution, there are aspects of his God-seeking, passion in people's heresies: Khlystism and Skopchestvo. This was accompanied by Klyuev's searches in the folklore and in the Biblical stylization, in post-revolutionary period the searches waned because of the poet's return to the traditional Christianity, in-depth study of the Old Believers. He perceived absorption of folklore by literature as a threat of killing the word. In the genre preferences (the songs and eposes) was hidden the choice of destination (for farmers) and the choice of the symbol of creative behavior: "dedicated from the people", a passer-by in the alien world of "the city". In the first miscellany "The chime of Pines" were first folk stylizations. The second book "Brotherly Songs" is the stylization of the Khlysti chants. We can see the newest semantic layer: the secondary mythologizing of the type. The question of the artistic level of stylization in this miscellany remains debatable: Khlysti songs-orisons stylistics is poorly understood. In the 1910 "Khlysti discourse" was suddenly in high demand, as god-seeking aspirations of the pagan renaissance era. For early Klyuev usage of folklore song resources is an organic way, but from the first steps of the poet, he faced the choice of using the ethnographic reserve or following the Symbolists. The originality of Klyuev's style is the application of the principles of myth-making based on folklore. The beginning of "The Song of the Great Mother" is the style of *The Kalevala*. The ideal of the national poet was no longer connected with the idea of the aesthetic transformation of life. Rather, the poet was concerned with the persistence acquired by Russia, not a measureless expansion of spiritual wealth. Calling himself "Longfellow from Olonets" Klyuev denoted one more high sample, *The Song of Hiawatha*. It is known that Longfellow was inspired by the success of *The Kalevala* reconstructed as a whole out of disparate songs. However, "Kalevala's Castor Grandson" (Klyuev's self-determination) tested his own forces on the Indian, Iranian, and his native North-Russian epics, "I will tell an epos to the world ..." In Russian poetry Klyuev is one of the most skilled stylists, probably comparable only to Remizov in the artistic level. In N. Klyuev's poems created after the revolution, there were reflected moments of his God-seeking. In conditions of the post-revolutionary Russia Klyuev overcame the interest in heresies and in his later years he returned to traditional Christianity.

Key words: stylization; imitation; myth-making; heresy.

P. 16. *Lutfullina Gyulnara F.* Kazan State Energy University (Kazan, Russia). **REFERENCE STATUS OF SPATIAL AND TEMPORAL POLYSITUATION IN PRESENT TENSE FORMS IN FRENCH AND TATAR LANGUAGES.** Comparative analysis of the referential potential of polysituation in contexts on the basis of the French and the Tatar languages led to the following conclusions. Similarities of two languages in the implementation of referential status of polysituation is explained by its universal content. Differences of two languages are explained by their structural and typological characteristics. Predicate as a time expresser represents the temporal value of the single situation and the entire polysituation. The main unifying factor is the temporal-referential

meaning of situations distributed in space and time. Universal condition to realize referential status of polysituation is to have an interval, which can be recognized as referential. Syntagma in Present form defines the referential value of polysituation as tunc or nunc simultaneity or can determine its non-referential status. Due to nonverbally-expressed referential interval a series of diachronic situations can obtain the referential status on condition that it is included in the interval of one situation, depending on its duration. Due to nonverbally-expressed referential interval synchronous situations can obtain referential status if they match with it, which extent is determined by its duration. Diachronic situations are referential, but not a common interval of series is referential. The reference status depends on the inclusion of the referential point in the interval of one of the situations. Synchronous situations are referential, but not all block is referential. Each situation overlaps with the reference interval during its realization. A separate situation cannot be considered as referential. All depends on the inclusion of the referential point in the polysituation interval. Perfect semantics of verbs and functioning Present as a timeless tense expresses discrete time distribution of situations. The potential of present tenses to express polysituation is unlimited, any homogeneous diachronic or synchronic situations can be represented by a single series or by a block if they are situated in the present time. The meaning of the verb as perfect or imperfect dominates over the quantitative temporal-aspectual value of unlimited time duration of present tenses.

Key words: time reference; temporal context polisituation temporal; spatial polysituation.

P. 23. *Perevalova Darya A.* Tomsk State University (Tomsk, Russia). **PEDAGOGICAL DISCOURSE: DISCOURSE OF EARLY CHILDHOOD EDUCATION.** The main goal of this article is investigation of the model description of an early childhood education as a type of pedagogical discourse. We understand the term "discourse" as a common type of verbal behavior of the subject due to the socio-historical conditions, as well as stereotypes of interpreting the components of this type of verbal behavior. We researched pedagogical discourse as a type of verbal behavior directed on the socialization of new members of the society. Pedagogical discourse has different types: discourse of early childhood education (a kindergarten), discourse of secondary education (a school), higher education discourse, and so on. The main specific feature of the discourse of early childhood education (discourse of preschool education) is an initial degree of involvement of its members in the society. The description of the main parameters of the discourse is dependent on this particularly. In this article we rely on the description model of institutional discourse developed by V. Karasik. We consider a number of parameters, which determine the specificity of verbal behavior to primary socialization: the communicative purpose of the discourse, the speech strategies, the participants of the discourse, the values, the time and space of the discourse, the coding system of the discourse and the genre content. The communicative purpose of the discourse is the transfer of the basic concepts of the world and the society. The speech strategies of pedagogical discourse in general are typical for the discourse of early childhood education: informative, estimating, controlling, imperative strategies. Types of participants of the discourse of the early childhood education are institutionalized: it is the kindergarten teacher and children of the kindergarten. The kindergarten teacher is the agent of the discourse and the children are its client. The values of the discourse of the early childhood education are related to the basic value of pedagogical discourse – the ability to adapt, to accept the information society, which allows the child to become a full member of the society. The time and space features of the discourse depend on the leading communication channel, which at the initial stage of socialization is contact communication, that is, a natural type of oral communication. The coding system of the discourse is the verbal code of communication. The genre content of the discourse includes the nuclear discourse genre, preschool classes for children as an alternative lesson in general. Thus, the discourse of early childhood education is a type of pedagogical discourse, which is characterized by the initial degree of socialization of its members.

Keywords: pedagogical discourse; discursive model description; discourse of early childhood education; preschool discourse.

P. 27. *Skripnik Alyona V.* Tomsk Branch of Russian State Social University (Tomsk, Russia). **GENRE AND TYPE OF HERO IN DOSTOEVSKY'S NOVEL NOTES FROM UNDERGROUND.** The main idea of this work is research of the genre of "notes" and self-identity of the hero in Dostoevsky's novel *Notes from Underground*. This is a very difficult and significant novel which discusses the main problems of Dostoevsky's novels and which is connected with works of writers of the 19th century (Gogol, Goncharov, Chernyshevsky). The story is connected with philosophy of existentialism because the hero of the novel has a broken consciousness and he can understand the absurdity of the world. The novel has a complex genre characteristic. There are many different genres in this novel: fragments of confessional notes, a polemic with Rousseau and Chernyshevsky, features of philosophic and anti-scientific novels. Speaking about the specifics of consciousness of the hero it is necessary to note that the structure of his personality is formed by the following components: absence of personal characteristics, attempt of self-identity with the help of writing, Gogol's hints, partially perception of life as games and rebellious moods. It is possible to put Dostoevsky's hero in one row with "superfluous people" who having powerful internal potential could not find a worthy application to it. We can call the hero the forerunner of Dostoevsky's denying rebels: Raskolnikov, Ivan Karamazov, heroes of *Demons*. The idea of reasonable benefit in *Notes* is connected with the polemic with Chernyshevsky's novel and is denied by the hero and the author. Ideal society can be constructed not by means of rational researches, but only by faith in God. The second aspect of the hero is an attempt of self-identity with the help of writing. It is very important for the hero to understand the opinion of him by the other, since without any personal description and protesting against all completeness, he still tries to somehow identify himself. An important aspect of the analysis of consciousness of the hero is the game beginning in his behavior which was especially brightly shown in his relations with Liza. Conversation with her happened in a special, marginal and, in fact, game place where he established the rules. The game carried him away so that he gave Lisa his address, what made this game a real life. The last aspect of the hero is the philosophy of revolt considered through the prism of Camus's *The Rebel*. Besides, the specific of consciousness of Dostoevsky's hero allows considering him in the context of works of existential philosophy, in particular, Camus's *The Stranger*.

Key words: genre of "notes"; self-identity; rebel; game; absurd.

PHILOSOPHY, SOCIAL AND POLITICAL SCIENCES

P. 34. *Arigunova Yekaterina V.* Tomsk State University. **POTENTIAL OF BOREDOM PHENOMENON.** The problem of boredom is studied by different sciences. In this article boredom is examined from psychological and philosophic views. In the first place boredom is a psychological essence because it is considered as emotion and mood. Philosophy analyses boredom as a fundamental

mood or existentialism. According to famous modern psychologist Paul Ekman, emotion is an intentional individual feeling while mood is a more extended idea as it is directed to all phenomena and objects in general. Emotion, as well as mood, could have constructive (not afflictive) and destructive (afflictive) nature. But that difference is relative because in some cases destructive emotions could be constructive ones. What concerns mood it has a clearer division. The essence of boredom is considered to be a negative phenomenon. What is more interesting psychology describes the existential as destructive feelings which lead to psychological diseases. From philosophical view fundamental boredom appears to be basic for philosophical reflection. Existential boredom appears suddenly, it is always within us. Thus, waking boredom or another fundamental mood, we do not miss the opportunities, the potential that can be realized. Everyday life does not give access to the basics of life, daily life is a permanent move away from this issue, a concern about how to get away from it. It is believed that negative mood promotes more appropriate and objective perception of reality. If the mood is the focus of looking at the world, how then does one see the world in the state of boredom? As was stated above, the expression of boredom includes a set of values, such as vacancies in time, lack of personal meaning, no purpose, dissatisfaction. Thus, boredom is a blank look at the world, so it is the condition for reflection. Nowadays, the number of people who undergo the existential condition is increasing. Possible reasons of such a situation are examined in this article, they are results of post traditional societies formation. People are losing existential aims having much free time. Besides, people are separating from the nature more and more, modern culture determines general behaviour patterns. In life there are two forces: constructive and destructive. Psychologists and philosophers of various schools reveal their understanding of the process and understand the different causes underlying them. According to psychology, particularly to Sigmund Freud, every living creature consists of contrary passions to life and death. So in any person's activity these two polar passions could be seen. That is why philosophy offers to overcome the negative mood of boredom by constructive endeavour (E. Fromm, L. Svendsen) and immersion (M. Heidegger, A. Camus, S. Kierkegaard). In the way of "immersion" emptiness arises, which in fact is a condition of self-reflection, a condition for the emergence of new meanings. Awareness is the most difficult path to walk along, it requires a certain level of spiritual development of the individual. Only by working on oneself, a creative personality with its qualities and abilities can become aware, this is the way of creation.

Key words: boredom; emotion; mood; existentialism.

P. 37. *Gavrilov Yevgeniy O.* Kuzbass Institute of Federal Penitentiary Service of Russia (Novokuznetsk, Russia). **RELIGIOUS SCIENTISM IN CONTEXT OF NEW FORMS OF SOCIAL LIFE CREATION.** The article is devoted to detection of features of the new religious associations using elements of scientific discourse in their doctrines. Factors of transformation of religion in modern society are modernization, formation of secular society and globalization strengthening. Their influence leads to more transparent borders of traditional ideas of religion, religion eliminates from the spheres of public life it traditionally occupied. These changes should be treated as the process of adaptation of religion to modern conditions. It is expressed in the search of a spiritual support which the religion finds, in particular, in science. Interaction of science and religion allows to explain the fact that religious creativity of modern society in a certain segment is focused on synthesis of sacral senses and phenomena of scientific creativity. This phenomenon can be referred to as the concept of religious scientism. The latter fixes the process of transformation of the scientific analysis of sacral senses in the religious creativity with results very different both from the traditional religion, and from the academic science. There is a formation of various religious quasiscientific doctrines. Their development is manifestation of aspiration to develop new ways of social communication of people. Communities that arise this way give the person a long-lost feeling of integrity where the religious feeling and the effective scientific knowledge form a consistent unity. By means of familiarizing with the activity of similar organizations people open a self-affirmation way in the society. Here programs of religious scientism turn into ways of increase of one's own forces. In other words, we see attempts of finding the effective tool in designing the reality of life and external social space at the same time. Finding a way to religious scientism is the idea of a visible embodiment of the personal utopia pursuing the aim to carry out such ideal images as an absolutely healthy person, successful person, the owner of one's life, etc. In post-industrial society the person who has lost communication with religious and cultural tradition finds new forms of self-identification within such religious doctrines. The new system of social communications moderates the conflict between what the person should know and what he should believe in. The new type of a community of people functions as a way of survival in the world of scientific and technical progress. It sets a certain scale of values and temporal coordinates within which the individual realizes the existence. At the level of social practice the person of this sort of associations finds means of interpretation of the phenomena of the reality, competitive advantage in the business sphere, technique of forming of the relations with society, circle of adherents, and, at last, leisure.

Key words: secularization; science; religious scientism; utopia.

P. 44. *Koroleva Tatiana A.* St. Petersburg State University of Film and Television (Saint-Petersburg, Russia). **WOMEN'S MOVEMENT: GENESIS AND EVOLUTION.** The article describes the general approaches to research of the political theory of feminism, the main scientific directions of researches of the phenomenon of gender and women's political movement. In modern use feminism is steadily connected with women's movement and attempt of change of the social role of women. In essence, feminism associates with two main beliefs: women are exposed to discrimination on the sexual basis, and this discrimination can and should be destroyed. Feminism does not represent a monolithic and universal theory, but has various ideological manifestations and a political strategy. Therefore, it is necessary to speak about feminism, its different – in time and space – discourses and politicians (liberal, Marxist, radical, post-modernist, ecological, psychoanalytic, anti-racist, etc. feminism). Depending on concrete historical conditions it can pursue various political aims: from achievement of the electoral right to vote for women, establishment of equal access to education and increase in number of women occupying top positions in public life, to legalization of abortions, prohibition of female trimming and cancellation of rules of carrying of clothes, which are limiting and humiliating for women. The "first wave" of feminism captured the period from the middle of the 19th century till the end of the 1920s. It is mainly connected with the requirement of women to have the same civil and political rights as men. The electoral right for women was the main goal of women's movement because they believed that if women could vote, all other types of sexual discrimination and prejudices would quickly disappear. It is paradoxical, but the gain of the right to vote weakened and undermined women's movement. Many activists fondly believed that having achieved the electoral right for women they achieved full emancipation. Only in the 1960s women's movement revived with the emergence of the "second wave" of feminism recognizing that achievement of the political and civil rights did not solve "women's issue". The purpose of the "second wave" feminism was political emancipation which could be reached not only via political reforms or legislation changes, but also demanded basic social changes. With the first blossoms of the radical feminist idea in the late 1960s and early 1970s feminism has further development as indisputable and authoritative ideology, whose ideas and values challenged the most fundamental representations

of the traditional political thought. Feminism succeeded in creation of gender researches and gender concepts as important subjects among academic disciplines and in the increase of understanding of problems of gender in public life as a whole. By the 1990s feminist organizations existed in all western countries and appeared in the majority of the developing ones.

Key words: feminism; women's socio-political movement; political rights.

P. 51. *Minchenko Tatyana P.* Tomsk Scientific Center SB RAS (Tomsk, Russia). **CRISIS OF IDEAS OF SECULARISM AND RELIGIOSITY IN POST-SECULAR SOCIETY.** The problems associated with the transformation of philosophical and methodological foundations of knowledge in post-secular society are examined. Axiomatic character of culture in the last two decades has changed dramatically since its sacred bases were actualized. Socio-cultural foundations of the society are analysed as a complex system considered in the coordinate system "traditional" – "industrial" – "post-industrial", complemented by the new coordinate system "religious" – "secular" – "post-secular". Thus, at present the problems are discussed in a greater shift from the position of spiritual states, not just the technology change, if we take the context of modernity and post-modernity. The epoch of post-secularity in social life begins in parallel with the post-modern era, one of the essential features of which was overcoming the Enlightenment attitude to religion associated with the idea of eliminating the latter as a competitor of secularism. However, for the modern "society of consumption" related to "anthropological disaster" (M. Mamardashvili) there is a total crisis of both the idea of secularism and religious ideas. In the article features of the post-secular world are examined. This world can be defined as a new space with no old rules of modernity, including the end of dominance of secular ideologies in the 20th century, with simplification of religion to way of life, with constructive secularity instead of anti-religious secularity. Approaches related to the study of the dynamics of the religious and the secular in the Western world and with the views of Western scholars of the reality that occur in non-Western societies among the variety of understandings of post-secularity are allocated. Distinctions of secularism formation in Western culture and in the countries of Eastern Europe and the USSR are differentiated: while in the West it was the evolutionary process of gradual loss of institutional Christianity and institutionalization of secular culture, in the Soviet Union and other socialist countries it was the establishment of the revolutionary processes of violent anti-religious secularism, the carrier of features of pseudo-religion. Conceptual foundations of legislation relating to the control of the world view in Russia in different historical stages are identified. Conceptual foundations of legislation concerning regulation of religious life in pre-revolutionary Russia were associated with Orthodox ideology, basic legislation for the first time legally enshrining religious freedom since 1905, associated with the liberal thought. In the Soviet period, philosophical grounds of freedom of conscience is a synthesis of contradictory ideas of Russian liberal democratic thinkers with the idea of militant atheism and secularism. In post-Soviet Russia the conceptual foundation of freedom of conscience and religion is a European concept of human rights with a prospect of a complex and controversial incorporation of the standpoint of Orthodox ideology into this concept of human rights. The features of post-secularity in Russian society are revealed and the problem of adequate means of understanding the new complex reality is raised.

Key words: secularism; religiosity; post-secular society.

P. 54. *Khitruk Yekaterina B.* Tomsk State University (Tomsk, Russia). **PHILOSOPHY PRECONDITIONS IN FORMATION OF "MISSING FATHER" PHENOMENON IN MODERN CULTURE.** Widespread attention of researches has been attracted by a number of transformations of modern family. Changes in progress are usually related with intensive women involvement in the market of labour, and also with the internal family gender allocation roles. Woman has begun to devote herself to career more. So, man going to compete with woman in the family and the career is being in crisis of self-identification in the framework of his traditional role as the family head. His role of the bread-winner, ensuring all family members, absolute moral authority, disciplining and organizing Father is simply seen doubtful. Loss of man's traditional identity in the family leads to plural marriage forms, increase of divorces and separations, when fathers leave their families. As a rule, the reason of the changes mentioned above is seen in distortion of the cultural base that was supposed to be operated by a precise and positive family view with clear and stable internal family functions, i.e., general family stability. The same point of view, however, misses an important circumstance: the image of a powerful father traditionally had several attributes of the "missing father". Example 1. A Model Father in traditional culture was not supposed to participate in bringing up children. Example 2. Relations among Traditional Father and children supposed the power, hierarchy and distance, not emotions and mutual understanding. Thus, it is sensible to suppose that the contemporary model of the "missing father" is a direct logical and cultural consequence of the thousands-year-long model of the Traditional Father. On the other hand, the Traditional Father model is strongly connected with the masculinity standard supposed and realised in classic philosophy discourse. Dualism of the traditional Western mind, perception of life attributes in the framework of binary opposition structure, category of formation and attack between man and woman in terms of "violent hierarchy" of the good despite the evil, mind and sensuality, heart and nature, may be and must be made a significant reason for formation of both the phenomenon of the Traditional Father in traditional culture, and the "missing father" in modern culture. All the philosophical preconditions should be analysed to clearly formulate the problem of fatherhood in modern culture and to find possible ways of its solution in the context of philosophy.

Key words: philosophy; fatherhood; masculinity; "real man".

P. 60. *Tsvetukhina Yekaterina A.* Omsk State Pedagogical University (Omsk, Russia). **PRINCIPLE OF INDIVIDUATION IN HISTORY OF PHILOSOPHICAL THOUGHT.** In Western philosophy the problem of individuation is formulated and developed in details and comprehensively. It appears twisted in a variety of major questions, which are the center of ontological problematics. So, in the article the long history of formation of concept "individuation" is traced. The conclusion is made that this difficult and undeveloped concept, on the one hand, designating logical-gnoseological process of differentiating between the special and the general, on the other hand, explaining the way an individual originality of the real is reached. As a result, it is obviously possible for the author to allocate three ontological principles of individuation: 1) the principle of creation introduced by F. Suarez, i.e., the position that God creates the real, whose life is defined and limited from within by its own nature; 2) the principle of isolation introduced by Th. Aquinas as a certain external material reason, by means of which the same kind of the real is different from the other real; 3) the principle of originality introduced by G. Leibniz, i.e., the possibility of infinity is in the monad of accidents that create individuality of the real. In the 19th century the concept of God and ontological problematics become object of curses and sneers. In philosophy there is a revision of the existing values, which, finally, degenerated in the concept of an "uncertain person". So, representation is formed about the person who is not an individuality, not a complete, inseparable real, but a "dividuality", an essentially divided, broken, distraught person deprived of

integrity. Thus, it seems possible to find the subject, to isolate it from totality. C.G. Jung carried out this attempt. Individuation in the theory of Jung was not so much an ontological necessity of explanation of a specific variety of the real, but an anthropological necessity of self-preservation in the face of totality. So, slightly concerned by individuation principles of creation, isolation and originality that Suarez, Aquinas and Leibniz confirmed accordingly, Jung deduces individuation as a principle of self-preservation of the individual, and it cannot be named an ontological principle of individuation any more as it solves the problem particularly at the anthropological level. We have seen that the Western philosophy, and all Western tradition in understanding of how things are individualized, addresses to God as a transcendental substance. However, the person appears powerless in life: from acceptance of the axiom of life of God, reasoning of the pass to the real world. So, all Western tradition tears off life from the real. And the final evidence of individuation connection with the most concrete concept real by nature is when the person is identified with an individual class, which occurs by P. Florensky in concentrating the general essence in an individual thing. Thus, a complete philosophic-methodological analysis of individuation is possible only when considering its ontological and anthropological specificity.

Key words: principle of individuation; creation; isolation; originality.

CULTUROLOGY

P. 64. *Zagoskin Denis V., Shyrko Konstantin N.* Tomsk State University (Tomsk, Russia), Tomsk Regional Museum (Tomsk, Russia). **INSTITUTIONAL CONDITIONS FOR FALSIFICATION OF HISTORY IN MUSEUM INSTITUTIONS.** The article discusses the meaning of "falsification" prevailing in various spheres of human activity (philosophy, law theory and practice, history), describes the brief history of the concept of existence of "falsification of history", the practice of resistance to detection of signs of history falsification in relation to the museum activities, which include: the availability of conscious intent (the subject of fraud should be aware of their actions), the presence in the actions of the subject of the pragmatic component (the subject of fraud makes meaningful action to extract clear benefits for themselves), targeted actions of the subject of fraud (such a person always acts targetedly and vaguely about the projected effects of their actions, expressed as a rule to bring the consciousness of the person exposed to the desired state of falsifiers, pecuniary interest in the form of theft of property or savings due to the deliberate reduction of the quality of produced representations by substitution and distortion), ill-treatment of primary empirical data (it can be implemented in the following varieties (together or separately): direct replacement of all types of primary data, a certainly incomplete picture of the available source data, the attribution of meaning and significance unusual for a specific group of data, building relationships between groups of data that do not exist in reality). The hypothesis being tested before the integration of the museum in the business interests of influential actors of its environment as an essential condition for the practice of falsification of history, on the historical and archival materials of the 1920s–1930s describes the possible tendencies of practices to falsify history in Soviet museums (in particular, Tomsk Regional Museum), fixed coincidence constraints intensify the museum to create misconceptions about the history and attention to the problems of resource support of its activities. Specific settings are identified in the management of the museum, which entail practices distorting history: control of acquisition and assertion of the right of the party body to determine the value of certain museum objects; the formation of regulations on subjects museum studies almost at the level of their final conclusions, and the expression of provisions on the structure of the exposition. The conditions that start the system of history falsification in museums are: assimilation of museums in the business interests of some external actors, the monopolization of financing the museum by these entities, the establishment of the actors' control over major products of the museum, especially acquisition and study of funds.

Key words: falsification of history; museum institutions; conditions of falsification.

P. 67. *Prikhodovskaya Yekaterina A.* Tomsk State University (Tomsk, Russia). **IMAGE AS VARYING-DYNAMIC MULTITUDE.** The author of the article sets the goal of proposing a hypothetical model of image as a varying-dynamic multitude and making a certain systematization of fixed regularities of organization and historical functioning of image. One of the key points of the suggested model is its interval character, or "zoneness" of image. In the framework of topical synergetic paradigm it can be seen as a general principle of life opposite to the discreteness and found in many spheres both connected with art or not. The property of "zoneness" is based on the presence of the following characteristics in a certain functioning system: 1) variety – a potential of changing in space (the potential of creating a multitude of variations, existing simultaneously and having common generic properties), 2) dynamics – potential of changes in time (potential of growth or deformations progressing sequentially and having no connection with the main generic properties). Image as a functioning system has the following properties, forming the property of "zoneness" (according to the given model): 1) variety revealing out of time as a multitude of authors' interpretations of image in different spheres of art; 2) dynamics deflecting the being of image in time, i.e., the set of interpretations of each existing author's treatment and accumulation (or deformation) of meanings that is determined by the changes in the perceiving person's outlook depending on the epoch. Variety and dynamics provide changeable constituents of image; the changeability admits variants of treatments and interpretations and is the initial condition of "zoneness" as the property of image. But the system possessing the changeable constituents must have a certain constant core, in which the actions of the variability take place still allowing to retain specific traits of the system. The author believes the constant components to be the phenomena of emotivity and an integral mental set: 1) emotivity. The category of emotivity is understood as a lingual incarnation of the psychological property of emotionality. Emotivity is needed in our model as an integral factor of uniting expressive means into an organic unity of image. 2) integral mental set. In our model the notion of the set plays the role of the integrative factor of various productive minds addressing to one and the same image (e.g., author of literary work- librettist – composer – director – singer – listener, etc.). Generally speaking, the article frames the hypothesis of the model of image as a varying-dynamic multitude determined by properties of "zoneness" and found in many spheres of art, creative activity and human life on the whole.

Key words: image; "zoneness"; variety; dynamics; constant "core".

HISTORY

P. 72. *Gumerova Zhanna A.* Tomsk State University (Tomsk, Russia). **G.P. FEDOTOV'S VIEWS ON CULTURE AND HISTORY.** G.P. Fedotov was a Russian religious thinker who belonged to the generation that suffered the social disasters of the 20th century. It

escalated interest in historiography issues. G.P. Fedotov's cognition of philosophy of history and culture was based on Christian historiography principles – history was thought as a tragic mystery with a person as a main hero. The tragedy is that we do not know the end of history because of human's freedom – a person can choose between the good and the evil. G.P. Fedotov comprehends freedom as the freedom of body and the freedom of spirit. He focuses on spiritual and moral content of freedom, which is reflected in his narration about the end of history. G.P. Fedotov's vision of history was eschatological – he believed in the fatal end of history and the coming of the Kingdom of God. He shares an opinion about tragic eschatology which is advantageous for cultural creation and which is possible because of resurgence of culture in glory in New Jerusalem that completed the sufferings of the world. Fedotov wrote about the possibility of an optimistic end which is opened by the eschatology of conditional prophecies. He sanctified the cultural-historical creation in the face of the apocalyptic expectations. G.P. Fedotov believed that culture included rational and irrational elements. He focused on the second element, on the spiritual culture which was important for understanding of individuality, world view, value system. He thought that a religion was in the culture foundation. So, Christianity was the foundation of the European culture. The problem of culture and Christianity connection also was the subject of Russian religious thinkers (A.A. Meyer, S.L. Frank, N.A. Berdyaev), as well as Catholic and Protestant thinkers (K. Dawson, P. Tillich). They reflected its urgency for the early 20th century. The cause of the culture crisis in the 20th century Fedotov saw in the breakup with Christianity. Fedotov's thoughts are compared with O. Spengler's and J. Huizinga's views. G.P. Fedotov contemplated contemporary events with optimism. An ability of changing the atmosphere in Europe was based on the belief that culture grew out of religious roots. Therefore the returning of culture to Christianity was considered to be the salvation for the European culture. In general, G.P. Fedotov's cultural and historical views reveal a great interest to find out peculiarities of Russian religious thought of the beginning of the 20th century, its links with European intellectual thought. Moreover, the problems studied in Fedotov's articles are urgent in the early 21st century.

Key words: culture; liberty; creation; eschatology; Christianity.

P. 76. *Zaytseva Tatyana I.* Tomsk State Pedagogical University (Tomsk, Russia). **LEGACY OF POWER-POLITICAL TRADITIONS OF MIDDLE AGES IN FRANCE AND GERMANY AT BEGINNING OF EARLY MODERN TIMES.** This publication attempts to consider, in a comparative way, the medieval origins of power-political practices of the era of the High Renaissance in two continental European countries, France and Germany. The paper is based on historiography. As a result of the analysis of the material available in the research literature the outline of the political and cultural heritage, which France of the 16th century had from the preceding period, was obtained. Among the most significant components of the political culture of this European region were marked such traits as succession rules dominion over the centuries, some independence from the Holy See and the sanctification of the royal figure, the ruling family as a whole, the expansionist aspirations of supreme power, followed by the personal courage of the French sovereigns, the trend to rationalism in the management and settings of monarchical political theory and practice. It has been shown that French King Francis I (1515-1547) who ruled at the beginning of the 16th century became the successor of these traditions of the preceding period. Under the rule of Francis there continued the emergence of autonomy of French monarchy of Rome, leading to the formation of a "royal gallicanism." Careful work was done on stressing the sacral character of the ruler's figure and the general ceremonial design of the power. In the history of the Italian wars the king took an active personal part in, the old-established trend of royal France world domination was clearly seen. Finally, in the political culture of the era a considerable importance was given to theoretical analysis of questions about the prerogatives of the monarch as an embodiment of the supreme authority. Considering power rhetoric in the medieval Empire the specificity of its expression was underlined in comparison with the French kingdom. The transformation of political practices from one emperor to another plus the total value decline of imperial power, with the classic medieval beginning, prevented the preservation of continuity of tradition in this area. Available in contemporary German studies data suggest that the issue of relations between power and church did not find here quite favourable resolution. Sacredness attributed to the figure of the supreme ruler of Germany, as practiced in the whole West, further reinforced by the imperial status, did not acquire the waste nature by the end of the Middle Ages, as in France. External ceremonial glitter around of the power of German Emperor during early medieval period forming the standard in the European region gave way to more modest forms in the late Middle Ages. Approved in the 15th century by the Board at the Imperial throne of Habsburg dynasty many medieval traditions of power, above all, the imperial ambitions and military-political activity, and the weakness of streamlined forms of governance associated with the dual level of administration and the sovereignty of the number of agents of the political field within the state preserved at the beginning of Early Modern time. This is demonstrated in the article as an example of a government of Maximilian I of Habsburg (1493–1519).

Key words: France and Germany; early 16th century; power-political traditions of the Middle Ages; Francis I (1515–1547); Maximilian I (1493–1519).

P. 82. *Martynova Yelena S.* Higher School of Economics (Moscow, Russia). **JAPAN AND CHINA IN SOUTHEAST ASIA: POLITICAL DIMENSION.** The article focuses on the research of the policy of Japan and China in Southeast Asia at the present stage. The paper analyses the process of establishment and subsequent development of the "ASEAN Plus Three" (APT) framework, which includes ten countries of ASEAN and three Northeast Asian states of China, Japan and South Korea. "ASEAN Plus Three" might serve as catalyst for the processes of economic and political integration in East Asia. The rivalry of China and Japan is a major constraint to the development of integration structures. How can we characterize the existing relations between Japan and China? Who are they – partners or competitors? From the economic point of view the development of the economies of Japan and China in recent decades has been more complementary than competitive. As for political relations these largest Asian countries have always been and will likely be irreconcilable antagonists. Cooperation and competition of China and Japan have an increasing influence on world politics and economy. On the one hand, these countries are each other's important resource for economic growth, and steadily growing economic interdependence compels them to seek new ways of mutually beneficial cooperation. On the other hand, China and Japan are competing not only in the struggle for access to new sources of energy, but also for leadership in the geopolitical space of East Asia. In recent years the Chinese government has actively pursued a policy of strengthening cooperation with different regional integration structures. Cooperation between China and ASEAN, the leading organization in Southeast Asia, has intensified significantly. It is important to note that cooperation of China and ASEAN to some extent seems paradoxical, since their competition in export markets is much higher than the competition between Japanese and Chinese goods. The rapid growth of Chinese economy is perceived rather ambiguously. China's economic growth produces a double effect on its neighbours. It attracts them, potentially ensuring economic growth, but at the same time, is disturbing. It is clear that Chinese government would not miss an opportunity to press its geopolitical rivals in Southeast and

East Asia and finally consolidate the leading position in the region. Our analysis suggests that the regional leader in East and Southeast Asia at the moment is China.

Key words: ASEAN; China; Japan; "ASEAN +3"; regionalism; integration processes.

P. 87. *Morev Vladimir A.* Tomsk State University (Tomsk, Russia). **ON HISTORY OF FIRST LETTER BOXES: FROM EUROPE TO SIBERIA.** The letter box is one of the most important devices of postal equipment. One of the prototypes of the modern letter box was the tamburo of Florence, the box for anonymous denunciations. Perhaps, this device gave an idea to a Frenchman, Renoir de Villays, to receive private letters. In 1653 he invented the simplest letter box. In 1848 letter boxes appeared in St. Petersburg and Moscow. The first Russian letter boxes were bulky and inconvenient. Their construction gradually changed. In the second half of the 19th century double letter boxes began to be used instead of the letter boxes which were unlocked with a key. Then they were replaced by the more convenient Swedish letter box. The Swedish letter box has a device at their bottom, which allows collecting correspondence from the box straight into a bag without unlocking the box. In 1910 Russian designer P.N. Shabarov developed an iron letter box with a mechanically opening door at the bottom of the box. In Siberian towns letter boxes appeared in the second half of the 19th century. The first letter box was placed in Tomsk as long ago as on August 6, 1849, only a year later than in St. Petersburg and Moscow. In 1889 – 1890 there were nine letter boxes in Tomsk, the correspondence was taken out three times a day: at 8 a.m., at 12 p.m. and at 6 p.m. In 1890 letter boxes were put in Tobolsk in four places of the town. In 1896 there was one letter box in the settlement of Novonikolayevsk. In Irkutsk the first letter boxes appeared in 1889. It is notable that small parcels were dropped into the letter boxes along with letters and post cards. At the beginning of the 20th century private boxes appeared in Siberia. They were meant for receiving incoming correspondence. The postal telegraph office in Barnaul gave letter boxes to individual users. Thus, Siberia practically kept pace with the European part of Russia regarding the introduction of letter boxes. Their construction changed until the most simple and convenient variant was developed.

Key words: letter box; postal equipment; post; Siberia.

P. 89. *Mursalov Ruslan S.* Tomsk State University (Tomsk, Russia). **SOCIAL, POLITICAL AND ACADEMIC DISCUSSIONS IN USA OVER "SHARED SECURITY" CONCEPT (1993–1996).** This article analyses academic and social political discussions in the USA over world arena "humanitarian intervention" as the main component of foreign policy strategy building of Washington after the Cold War end. Anthony Lake, National Security Advisor, officially announced the integral foreign policy strategy of Clinton's administration on September 27, 1993. The then ruling Democratic Party, restoring neo-Grotian and neo-Wilsonist traditions, aimed the policy at cooperation with International community within UN. Thereupon during the first presidency of Bill Clinton a liberal-conservative consensus developed in the American society, which reflected in the works of representatives of the neo-liberal school in Groves of Academy around the ideas of "humanitarian intervention". The so-called "realists-pragmatists" and "neo-isolationists", mostly among republicans, resting on the neo-Kantian traditions, achieved "selective engagement" in international conflicts including the "humanitarian hawk" approach in the sphere of providing national security. In any case, before "separate management" establishment in the mid-term Congress elections in November 1994, the concept of "shared security" in the period under review served as a basis for bipartisan consensus in the American society as it is evidenced by Presidential Directives (PDD-13 and PDD-25), the discussions of Roth-Biden amendment in the USA power circles and the conclusions of the "Stimson working group". Some have called for the United States to abandon UN peacekeeping altogether and focus their efforts solely on unilateral US action. They believe that UN peacekeeping can serve US interests. However, recognizing the failures of the past and growing financial constraints, they also suppose that the United Nations needs a new approach to peacekeeping, with greater selectivity, tougher mandates, financial reforms, and better training, equipment, and support. Hoping to forge a consensus between parties and between branches of the federal government, the group warns: "As the world's predominant power, the United States cannot disconnect itself from the international environment. But the United States does not have to act alone. Effective United Nations peace operations offer an alternative for the United States to share the burden of world peace with like-minded nations". After establishing of the "separate management" in November 1994 the concept of "shared security" for "humanitarian interventions" for ensuring national security was being continuously forced by "selective engagement" policy and unilateral military activities of the USA on the world arena.

Key words: humanitarian intervention; concept of "shared security"; excepting "humanitarian hawk" approach; "selective engagement".

P. 92. *Nam Yelena V.* Tomsk Branch of Kuzbass Institute of Federal Penitentiary Service of Russia (Tomsk, Russia). **SHAMANISM: RELIGION OR COMPLEX OF PSYCHOTECHNIC EXPERIENCE? (SOME ASPECTS OF PROBLEM).** In the present paper I would like to offer a perspective on shamanism as a world view system based on mythological world perception. Development of different options of consciousness stratification is typical for transpersonal psychology. Russian scholars S.V. Dremov and I.R. Semin identify several levels of consciousness. These are 1) mythological consciousness; 2) vital (existential) level; 3) autopsychic level; 4) level of social role attachments. The levels of consciousness labeled mythological and existential are equivalent to totemistic perceptions. At the animistic stage of cultural evolution consciousness is already defined by the autopsychic level. Emergence of the social role level is associated with emergence of shamanist societies. During the ritual shaman goes beyond the vital-existential level of consciousness, which allows him to identify himself with different animals, who personified totemic ancestors and even to expand his consciousness to the cosmic scale. The motive of initiation expressed by shaman's body dismemberment with his subsequent revival in the new capacity may mean the acquisition of ability to disengage from the vital-existential level and transfer to the earlier level – that of mythological consciousness. Relying on the mythological world view, shamanism at the same time possesses all main features of religions. First of all, shamanist ideology relies on acknowledging the ambiguity of being, consecrated myth and desire to develop one's life in accordance with mythological patterns. In order to compare one's life with consecrated reality, man needs some kind of religious experience that is embodied in shamanism in transpersonal experience. Owing to this experience, shaman maintains the connection of the whole group with the world of nature alienated from people, but containing patterns and roots of the human life. And the most important feature of shamanism is individualization of religious experience and hence transition from collective mythological perceptions to religious ones. Taking the above-mentioned into account, I believe that one can claim that shamanism is a religion in the full sense of the word. It may have been, as E.A. Torchinov believed, the earliest example of religion, "anthropological and existential phenomenon of religious nature". Shamanism offers a certain type of religious experience, transpersonal experience of return to the myth. That is why the myth is always relevant as an integral part of human nature. That is why shamanism as a special tradition of

mental life, as a crucial element of spiritual history does not become a thing of the past and again and again manifests itself in various areas of contemporary culture. The special state of shaman during the ritual, represented in cultural interpretation as shaman's trip to the heavenly or underground world or as embodiment of spirits, is a creative reprocessing of early collective perceptions alienated by the group, formed during the domination of mythological consciousness and transpersonal area of human psyche.

Key words: shamanism; mythological consciousness; religion; transpersonal experience.

P. 99. *Nekrasov Vyacheslav L.* Surgut State Pedagogical University (Surgut, Russia). **1955 GOSPLAN REFORM: DEVELOPING NEW MODEL OF ECONOMIC PLANNING.** Reform of the State Planning Committee of the Council of Ministers of the USSR (Gosplan) in 1955 was the first reform of the planning in the post-Stalin period. In the mid-1950s. was a transition from the traditional, "monostructural" planning model to a new model based on the distribution of functions of prospective and current planning, operational management of economy between different authorities. The Soviet theory of planning of the Gosplan reform in 1955 determined the start of the sixth stage of development of planning in the USSR (May 1955 – March 1965). In historiography there is only a general idea of the State Planning Reform in 1955. In Soviet and Russian history books the Gosplan reform in 1955 did not become the subject of a special comprehensive study. In foreign historiography prevalent are general remarks on the nature of the reorganization of the State Planning Commission in 1955. The study of the reform includes both administrative economic and political aspects. Reform of Gosplan acted in response to the systemic crisis of the Soviet economy in 1955–1956. the reform became the first institutional reform initiated by N.S. Khrushchev, during his "emergence as a key figure in the collective leadership" (February 1955 - May 1957). The sources for study were archival documents from the Council of Ministers of the USSR and the USSR State Planning Committee on the development of the reform of Gosplan in the first half of 1955. A valuable source for understanding the mechanism of the development of a new planning model for the first half of 1955 is a document by Chairman of the Council of Ministers of the USSR N.A. Bulganin and Head of the Council of Ministers of the USSR A.V. Korobov, "Comments on the draft Resolution "On Restructuring of the USSR State Planning Committee and Measures to Improve State Planning". The reform of Gosplan in 1955 was objective, and was a response to the crisis of the Soviet economy and the need to "find" new planning practices. New archival documents show that the decision to divide the State Planning Committee of the USSR into two planning authorities was not inherent and took shape gradually. But the reform was not a strictly controlled process in line with the scientific strategy of the CPSU, and had an imprint of the struggle in the political leadership, and therefore accumulated spontaneous and chaotic processes in the social and economic policy of 1955–1956. Evaluating the effectiveness of the State Planning Commission reform in 1955 requires further research based on archival documents.

Key words: Reform; planning; Gosplan USSR; State Economy Commission of USSR; N.S. Khrushchev.

ECONOMICS

P. 104. *Makoveeva Victoria V.* Tomsk State University (Tomsk, Russia). **MODERN TRENDS OF HIGHER SCHOOL DEVELOPMENT IN RUSSIA.** The status, dynamics and specifics of the higher education development are significantly impacted by the social and economic context. The ongoing changes in the Russian economy are determined by the transition to the economy where information and knowledge play a decisive role and new knowledge generation serves as a source for the economic growth, basis for innovations and talent promotion that meet dynamically changing market needs. It is identified that in the knowledge economy universities take a fundamental position that turns them into basic elements of the National Innovation System enabling multiplicative knowledge augmentation and aligning with the education continuity and personalization along with commercialization of the intellectual activity results. The analysis of the foreign and domestic researches by D. Bell, M. Castells, A. Toffler, V.A. Inozemtsev, and B.Z. Milner allowed the author to identify modern economy features that provide solid grounds for the creation of a new higher education development paradigm determined by the growing integration processes in the "Education-Science-Production" system. The new education paradigm formation should aim to promote personnel training with specific attention to fundamental knowledge and its interdisciplinarity; attain high level of the professional training in the light of the transition from "Education for a lifetime" to "Education throughout life" concept; enable policy of the proactive talent development that will reduce interest disbalance in the labour market, disparity between specialist knowledge level and employer requirements and meet long-term talent needs of the real sector enterprises. The author highlights that talent training system development for the knowledge economy, from the content-oriented point of view, should be approached in two ways. First, higher school should train and retrain personnel for the specific employer actively engaging it into education process. Second, the higher school objective is to develop specialists who can initiate creation of new innovation products and technologies based on the enterprises established by them. The conducted researches enable the author to conclude that the level and scale of the raised social and economic transformation objectives, along with the objectives of the new education paradigm formation in particular, require more intensive integration processes in the "Education-Science-Production" system. Such system development should include market mechanism for the participants' mutual adaptation, create area of their interest intersection, meet all their needs to the maximum extent and promote synergetic effect of the collaboration.

Key words: knowledge economy; higher education; education paradigm; personnel training; integration.

P. 108. *Manankov Anatolij V., Rakhmanova Irina A.* Tomsk State University of Architecture and Building (Tomsk, Russia). **CONCEPTUAL PHASE OF LIFE CYCLE OF INNOVATION MATERIAL – SYNTHETIC WOLLASTONITE.** For achievement of modern technological level of economy development in our country the priority has to be given to development on the basis of innovations. This strategy results from the analysis of the long waves theory in national economy. At this stage development and realization of mechanisms of new knowledge transformation in high technologies and further to mass production is being predicted. According to it, modern postindustrial stage differs from the previous one by base creation for national innovative system (NIS) development, and according to the logic it is necessary to call it "innovative economy". For different innovations the structure of the first phase of the life cycle of an innovation varies due to the stages number necessary for determination of innovation advantages. For the innovation characteristic economists identify the first phase of the life cycle as a stage of strategic marketing, which is important for a more exact determination of market demand for these goods. However, many aspects of innovative management at this stage remain variable. Considering the strategic concepts of management and proceeding from our experience, we suggest a new phase to be called the conceptual phase of the life cycle of knowledge-intensive materials with allocation of four logically connected stages: 1) strategic

marketing of an innovation, 2) basic researches, 3) scientifically-applied researches, 4) developmental projects. In the concept realization of sustainable development problems of complex waste-free use of natural resources and involvement of industrial wastes in environmentally friendly innovative technologies become topical. The amount of technogenic industrial wastes has been growing for the last hundred years. Annually the world forms over 25 billion tons of solid technogenic waste solely. About a third part of it – more than 7 billion tons – is produced in Russia. One of the perspective directions of innovative process is the full processing of industrial wastes including extraction from them of non-ferrous, rare and other metals, and creation of construction and constructional materials with high operational properties instead of natural, traditional materials and metals. Realization of this strategy will allow to reduce the consumption of primary natural resources significantly. Development of new high technology production of a number of important minerals in the practical relation and materials is an original revolution in mineralogy and materials science. Wollastonite is a mineral of high demand in leading industries. The British society on studying ceramics declared that "if cheap synthetic wollastonite appears in the near future "wollastonite era" will come". Research Laboratory of Cybernetics and Mineral Formation and Crystal Physics of Tomsk State University has offered a new approach to studying the problems of structuring a substance-holographic model, which allowed us to propose a number of forecasting schemes revealing the mechanisms of natural and technical mineral genesis, including in relation to new methods and technologies for the production of wollastonite and other silicates with promising properties. Competitiveness of synthetic wollastonite, expanding the scope in the local market through a number of advantages over the natural wollastonite and other materials used in the construction industry has been shown (asbestos, talc).

Key words: innovation; stages of innovation life cycle; synthetic wollastonite; industrial wastes.

P. 115. *Tazhitdinov Ilshat A.* Government of Republic of Bashkortostan (Ufa, Russia). **PROBLEM OF RESOURCE RELATIONS BETWEEN REGIONS, SUBREGIONS, AND MUNICIPALITIES.** Development of methods of localization of economic zones in the region should be based on an approach that allows to consolidate efforts and resources for integrated socio-economic problems of the region. This integrates different approaches that balance the interests of economic agents of the territory and create conditions for the preservation of cultural and historical features. Based on this, the author suggests using a sub-regional approach to territorial development as a wider variety of inter-regional clusters in priority economic activities. The essence of this approach lies in the fact that municipalities, as well as the subjects of the Russian Federation, can also be integrated into economic areas within the sub-regional level strategic inter-territorial cooperation. Distinctive features of the sub-region as a territorial social and economic system are: relative mobility of the boundaries, variety of purposes of forming the sub-region, spontaneous nature of economic relations, program control, lack of signs of an administrative unit (authorities, budget, current liabilities), presence of vertical (between the authorities in the region and municipalities) and horizontal (between government, businesses and the public) bonds with the prevailing role of the latter links. In these new methods of spatial localization it is especially important to identify the sources of resource support of the sub-regions. The problem arises of determining the place of the subregion in the "region - municipality" as an intermediary distribution of tasks and resources (including financial) based on the optimal combination of the interests of regional and municipal budgets and investment businesses. Such a problem can be solved by considering the sub-region as a special form of focused targeted financial equalization in the "region – municipality." Financial equalization mechanism itself suggests the following steps: 1) equalization of powers – distribution of power on the principle of subsidiarity, 2) equalization of incomes – distribution of tax revenues based on the principle of sufficiency, 3) equalization of burdens – redistribution of financial resources on the basis of the principle of distribution of burdens. Using the principles of financial equalization would enhance the functioning and development of financial and fiscal relations in the region in terms of the formation of sub-regional socio-economic systems.

Keywords: subregions; municipalities; subsidiarity; financial equalization; fiscal federalism; fiscal capacity.

PSYCHOLOGY AND PEDAGOGICS

P. 119. *Zagrevskaya Alexandra I., Sosunovsky Vadim S.* Tomsk State University (Tomsk, Russia). **VALUE ORIENTATION AS BASIS FOR STUDENTS' SPORTS CULTURE FORMATION IN PHYSICAL CULTURE AND SPORTS EDUCATION.** The article considers the results of the survey of students of the Faculty of Physical Culture on attitudes to life and sports values, as well as to the principles of fair play in sport. It shows the significance of the value orientations of students in the formation of their sports culture in the process of physical culture and sports education. Sports culture as a social phenomenon of the company is a part of culture, a system-forming factor of which is the values of sport and personal attitude to physical culture and sports activities. Sports culture of the person is formed in the process of person's internalization of the cultural and educational potential, values and technologies of sports, as well as in the result of accumulation of experience of physical culture and sports activities and finding personal sense in it. The problem of forming attitudes, value orientations as the basis of sports, cultural identity, is particularly relevant for higher educational institutions that prepare specialists for work in the field of education, including physical fitness and sports. In the professional-pedagogical activity the trainer needs to follow the principles of humanism and control of complex moral qualities: honesty, insistence, optimism, etc., for moral upbringing should be based not only on the verbal form of influence, but also, and first of all, on personal example. The majority of students of the Faculty of Physical Culture believe in such values as tolerance, positive attitude towards the opponent, beauty of actions and acts, culture of behaviour, care and attention to others. Approval of moral-ethical norms and principles in the modern sport is one of the most urgent problems of this cultural phenomenon. This is due to the increasing contradiction between, on the one hand, the orientation of young sportsmen and participants of the Olympic movement on pragmatic values, and, on the other, the ideals and principles, which the Olympic philosophy proclaims. As a result, the study revealed a positive attitude of students of the Faculty of Physical Culture to the most vital physical culture and sports values. At the same time, in case of general positive attitude of students to the principles of fair play in sport, in reality the students-sportsmen can sometimes allow breaking them and do not worry about it. Therefore, in the process of professional-pedagogical training of students of the Faculty of Physical Culture it is necessary to carry out purposeful Olympic education, based on the ideas and principles of Olympism.

Key words: value orientations; sport; sports culture; physical culture and sports education.

P. 123. *Kalinnikova Yulia G., Inozemtseva Yelena S., Kapilevich Leonid V.* Tomsk State University (Tomsk, Russia). **ASSESSMENT OF FUNCTIONAL RESERVES OF GIRLS ENGAGED IN AEROBICS OF VARIOUS RHYTHM-TEMPO STRUCTURE BY**

CARDIOINTERVALOGRAPHY AND ELECTRONEUROMYOGRAPHY DATA. The construction activities with the rhythm-tempo structure is an essential feature of aerobics as a form of mass physical culture. Motor actions in the aerobic part of the lesson have a particular rhythm, reflecting the accompanying muscular effort of varying intensity. Knowing the principles of functioning of the physiological systems of the body of students, one can use different tools to control their motor activity in the adaptation process and the state of functional reserves. In the training process the auditory response generates hormonal and biochemical changes in the body involved in affecting the cardiovascular and nervous-muscular systems. Physiological adaptation to muscular activity is a systemic response of the body designed to achieve high fitness and minimize energy costs. From this perspective, adaptation to physical activity should be considered as a dynamic process, which is based on the formation of a new program to respond, and the adaptive process, its dynamics and physiological mechanisms are determined by the state and the ratio of internal and external environment. In this connection it is important to study the influence of rhythm-tempo structure aerobics levels on heart rate regulation, neuromuscular activity and the state of functional reserves of female students. The study involved female students aged 17 to 20 majoring in "Aerobics" at the Faculty of Physical Culture of Tomsk State University. They were divided into three groups depending on the rhythm-tempo accompaniment of the training sessions: percussion accompaniment in the first group was 115–125 beats/min, the second group – 135–140 beats/min, and in the third group – 145–160 beats/min. Cardiointervalography was used to study the adaptation of the cardiovascular systems of the girls to different rhythm-tempo structures. The electromyographic method was used to assess the state of the neuromuscular systems. Clinostatic cardiointervalography tests were used to measure the functional reserves of the bodies. We found that rhythm-tempo structure classes of 115–125 beats/min facilitate effective relaxation of the gluteus maximus and quadriceps muscles, i.e., the motor activity of students in the process of adapting to the load becomes more effective and efficient, which allows the body to maintain optimal functionality. When the structure of the rhythm-tempo training with 115–125 beats / min changes to 135–140 beats/min there is a reduction in the level of reserves as a function of the cardiovascular and neuromuscular systems, increasing the rate of more than 140 beats/min does not result in further reduction of functional reserves

Key words: aerobics; functional reserves; rhythm-tempo structure; cardiointervalography; electroneuromyography.

P. 126. *Nekhaev Andrey V.* Omsk State Technical University (Omsk, Russia). **EDUCATIONAL PROJECT: MICROSOCIOLOGICAL ANALYSIS OF THREE STRATEGIES OF ITS REALIZATION.** The article considers the microsociological analysis conditions of realization of the educational project according to three strategies: acroamatical, erotemactical and dialogical. In modern conditions of growing interest in the competence approach in the Russian educational practices, the analysis suggested in the article would identify areas to search for optimal solutions of the fundamental didactic problems – learning efficiency. In addition, this analysis seeks to identify the conditions and causes that lead to the emergence of trainees difficulty in learning the content of the educational project, thus, significantly affecting its efficiency. Acroamatical and erotemactical types of realization of the educational project are considered as standard strategies generally accepted in the classical system of higher education for lectures and courses. Its active use in modern educational practices is associated with certain difficulties in the development of the content of the educational project by the trainees. These difficulties arise as unplanned (by the person who realizes the educational project) implications of too much emphasis on the reliability and thoroughness of monitoring the effectiveness of mastering by trainees of the content of the educational project. Dialogical type of realization of the educational project adopted as the standard for modern competence-oriented education system and suggesting a number of delegation of authority from the trainer to the trainees is also able to give rise to dysfunction in learning. These dysfunctions are the result of diversification and internalization of its own trained teaching interests, which creates the conditions for the gradual substitution of the objectives and content of the educational project. Thus, when solving the essential didactic problems of the effectiveness of teaching methods one should consider the fact that each of the analyzed ways to implement an educational project – acroamatical, erotemactical, dialogical – have their strengths and weaknesses, and, in accordance with this, the choice of a particular method must be justified by the current state of the educational process, as well as the nature and content of the goals of the educational project.

Key words: educational project; microsociological model of educational environment; didactics; acroamatical; erotemactical; dialogical.

P. 133. *Savostyanov Aleksandr N., Palchunov Dmitriy Ye.* Novosibirsk State University (Novosibirsk, Russia). **COGNITIVE STUDIES AND NEUROLINGUISTICS: MODERN STATE AND PERSPECTIVES OF FUTURE STUDIES.** The main approaches of cognitive neurolinguistics were reviewed in the paper. Cognitive linguistics studies brain mechanisms of speech processing and speech generation in their interrelation with human cognition. Fundamental neurolinguistic ideas were formulated within philosophy of language. However, philosophy of language is not uniform. There are several different methodological approaches. In particular, such directions as structuralism, formalism and philosophy of activity could be differentiated from each other. Each of these approaches of philosophy of language was applied in empirical neurolinguistics. Structuralism concentrates on studies of the phonologic, syntactic and semantic relations in speech stimuli. Besides, structuralism is focused on researching the communicative function of speech. Within neurolinguistics it conducts research of brain processes connected with recognition of speech structures in various languages. The main attention of researchers is focused on the analysis of relationships between the language structure and structure of brain connections. Also, features of speech structure under conditions of brain pathologies are studied in this approach. The disorder of brain structure is considered as a reason of structural disorder in speech. Formalism sets the purpose of creating an "ideal" language and comparing it with a natural language. This philosophical direction is aimed at elaboration of special artificial languages with fixed syntactical rules. In neurolinguistics it leads to comparison of brain processes during natural languages and quasi-language symbols (mathematics, music, programming languages) perception. Activity approach is aimed at researching language pragmatics, i.e. language role in real human life. In this approach distinction between communicative and cognitive speech functions is postulated. In neurolinguistics this direction led to the study of the role of extra-language context in formation and realization of brain mechanisms of speech activity. In particular, the influence of social-cultural context on development and compensation of speech-related pathologies at neurologic disorders is studied in this approach. A special problem of activity approach is in study of speech function in regulation of behavior. Thus, basic distinctions in philosophical understanding of language lead to emergence of several independent directions of empirical researches.

Key words: neurolinguistics; cognitive studies; philosophy of language; activity approach.

P. 141. *Sidorenko Tatyana V., Zamyatina Oxana M.* Tomsk Polytechnic University (Tomsk, Russia). **PROFESSIONAL COMPETENCES OF IT-STUDENTS AND THEIR DEVELOPMENT IN TEACHING FOREIGN LANGUAGE.** An onrush of

social, economic and political development and expansion of international relations have caused the changes in the higher engineering education system. To fit the times in training highly qualified engineers, the universities shall develop and introduce such courses and teaching technologies which would promote development of professional-oriented abilities of the students. Among these abilities can be knowledge, practical skills and social experience that form firm ground for professional and cultural competences development, set as the result of education in the State Educational Standards. In the article foreign language teaching is considered as a process able to influence the effective development of IT-students' competences. The significance of knowing a foreign language, particularly English, is beyond any doubt, especially for IT-students. The development of professional competences determines, as a rule, the profession content and its needs. We singled out some professional activities that require good command in English. It allowed to define some preferable learning activities based on modeling or simulation of real situations of professional communication, which facilitates the process of students' competence development. The key competences are as follows: ability to express ideas logically and clearly in oral and written form of professional communication, good command in English, ability to collect, process and sort out scientific and technical information, ability of critical or lateral thinking, self-education, ability to solve communicative tasks, and others. The analysis of IT-industry needs, specialists' key competences and content of English teaching resulted in designing a matrix of relation. Visualized data allowed to define the special teaching (didactic) conditions that would provide the process of competences development in learning English more effectively. These conditions can be, for example: 1) syllabus development based on the integration of general and special disciplines; 2) course content focused on the education result, expressed in the State Educational Standards; 3) information technologies used in teaching as a tool of collecting, processing and presenting information; 4) educational technologies that are variable and diverse based on the interaction and flexibility principles, on modeling or simulation of situations of real professional communication, on individual and differentiate approach to teaching.

Key words: foreign language teaching, IT-students, professional competence.

P. 148. *Shahdadi Ahmad N., Zagrevsky Oleg I., Zagrevsky Valeriy I.* University of Sistan and Baluchestan (Zahedan, Iran), Tomsk State University (Tomsk, Russia), Mogilev State University (Mogilev, Belarus). **COMPARATIVE BIOMECHANICAL ANALYSIS OF HAMMER THROWING ATHLETES OF DIFFERENT QUALIFICATIONS.** Technical training of athletes is one of the most significant aspects of sports training. Its effectiveness is due to many factors, among which, in particular, is operational biomechanical control of technical actions of the athlete. Currently, the operational biomechanical control technique has not yet found proper use in the training process of athletes due to the lack of preparedness and the need for special recording equipment, which can be used almost exclusively in the laboratory. In this context, considering the biomechanical aspects of the spatial and rhythmic structure of hammer throwing athletes of different skills is relevant and timely. We described in detail the differences in the biomechanical parameters of the space-time organization of the structural components of hammer throwing athletes of different skills. We analyzed the correlation between the range of hammer and run time parameters of structural elements of throwing, statistical parameters of the space-time structure of single support, two-bearing phases of the hammer throw. To obtain experimental data hammer throwers were divided into two groups: with high and medium technical competencies. The group of highly skilled athletes included athletes with athletic skills of at least the Master of Sports of the Republic of Belarus. Athletes with lower technical competencies, Candidates of Master of Sports and I Sports Category, were classified as semi-skilled. Videos were used to obtain accurate and objective information about the quantitative kinematic structure of hammer throwing, which allowed the authors to develop the model of long-term performance of the double-seat and single support phases turns of the thrower. The developed models are set not only as a rational technique researched for competitive exercises, but also determine the range of variation of technical actions in the area of the athlete whose hammer throwing performance has no significant movement errors. This approach enables us to compare the registered hammer throwing by the athlete with specific reference samples, and, subsequently, give some pedagogical recommendations for its correction. The practical significance of the study consists in the possibility of using the developed methodology for assessing the biomechanical condition of the athlete in the training process for providing better results in the hammer throw. There is no doubt that such an approach in the technical training of athletes can be extended to other types of throwing in athletics.

Key words: biomechanical regularities; model; throwing; hammer.

SCIENCES ABOUT EARTH

P. 152. *Abakumova Vera Yu.* Institute of Nature Resources, Ecology and Cryology, SB RAS (Chita, Russia). **RESEARCH OF STREAM FLOW INITIATION CONDITIONS ALLOCATION WITHIN CHITA RIVER BASIN (TRANSBAIKALIA).** For the purpose of stream network spatial features detection the head of the first order stream in the Chita River basin (Transbaikalia) was considered. Shuttle Radar Topography Mission (SRTM 4.1) digital terrain model (DEM) and topographic map on a scale of 1:100000 were used as the necessary input data. The stream network delineation was made using the internal Adjustable Dispersion Routing Algorithm (ADRA) Terrain Analysis System Geographic Information System software (TAS GIS by Dr. John Lindsay). The ADRA was run with several *C* parameter values assignments. The *C* parameter is equal to the specific catchment area multiplied by a squared local slope and its influence on head streams location. The ADRA stream networks were compared with the topographic map stream network. Only perennial streams were taken into account. The analysis of stream networks delineated by ADRA with several value of *C* parameter revealed the basin division into parts with similar conditions of river flow generation. The drainage divides placement, geographical location, elevation, annual amount of precipitation, within-year variability of precipitation influence on spatial differentiation of these conditions. In general, the increasing of specific catchment area from north to south, from east to west, from higher places to lower ones takes place. In addition to whole basin patterns of relationship there are local ones, which are under the influence of the landscape, hydrogeological, cryological, anthropogenic conditions of locality. They detect on places TAS stream network and topographic map stream network noncoincidence. It is necessary to take into consideration some ADRA errors. They happen when there is a very big slope and a very small catchment area or a very small slope and a very big catchment area. In these conditions many short streams appear, which are not reflected in the topographic map. There are spatial differences in the changes of stream networks delineated by ADRA with various value of *C* parameter. It is because of spatial differences in the catchment area expansion, basins shape, and slope changes. By the various value of *C* parameter assignment we can receive various stream networks corresponding to various humidification and hydrological regimes. The less value of *C* parameter, the more humidification, more

portion of overland flow, and more drainage density. If the value of C parameter is increasing the precipitation is decreasing and water exchange between the overland flow and underground flows becomes more significant.

Key words: streams; catchment area; overland flow.

P. 159. *Zhuravlev Georgiy G., Romanyuk Valeriy A.* Tomsk State University (Tomsk, Russia), Sakhalin State University (Yuzhno-Sakhalinsk, Russia). **ESTIMATION OF OKHOTSK AND JAPAN SEAS ICE COVERAGE CALCULATION ACCURACY BY EARTH REMOTE SENSING AND AVIATION OBSERVATION.** The development of the Sakhalin Shelf is complicated by the influence of various weather factors. The information on the ice situation (the aquatorium ice coverage) is the most important of them. Information source is the data of the remote sensing whose role has essentially increased with the reduction of the on-land network of hydrometeorological stations and amount of aviation observation. For the analysis of this information various technologies of processing of long-term numbers of satellite, aerovisual and land observation are used, allowing to reveal features of dynamics of the considered parameter in the territory. First of all, it is possible to develop the technology of operative analysis to decipher space images. Decoding of pictures represents one of the most important and difficult processes of creation of thematic maps which are the basic means of organisation and interpretation of the data of remote sensing. This process provides data representation in a uniform cartographic projection, allows to combine the data received in various spectral ranges (space images of artificial satellite Meteor-3M, TERRA, AQUA, NOAA, ERS-2, Envisat, IRS, QuikSCAT and TOPEX/Poseidon and others). Since 1970 to locate the edges of an ice file and borders of zones of various unity Japanese researchers use the technique of data handling of the radar-tracking sensing, based on the pattern recognition principle. The received results in the form of maps-schemes (with shading for black-and-white images or colour scale zones of various unity of ice) with frequency from twice a week to twice a month are exposed by the National centres of processing of hydrometeorological information of Japan (Japan Meteorological Agency) and the USA (National/Naval Ice Center) on the Internet. The data has been included in the initial number with the monthly step-type behaviour, calculated as an average arithmetic by results of all shootings executed in the second decade of each calendar month of the ice season only. The present paper deals with the precision estimation of computations for the sea ice extent of the Okhotsk and Japan seas with the use of the joint data of the Earth remote sensing and aero-visual observations for 1970-1991 winter seasons. The analysis has revealed that the mean difference in the data on the Japan Sea obtained with the use of these two observational methods during the 1970-1991 span makes up 12.4 thousand km² (11.6 % of the total area), and this difference for the Okhotsk Sea is 121 thousand km² (8% of the total area). The correlation analysis of the remote sensing and aerovisual series of the ice data in the Japan and Okhotsk seas demonstrated that the Japan Sea data series are of moderate correlation; the correlation coefficient changed in the range from 0.16 (December) to 0.39 (January). The Okhotsk Sea data series are correlated to a greater extent: the correlation coefficient changed in the range from 0.72 to 0.96.

Key words: area of ice cover; remote sensing; processing of pictures; shelf.

P. 166. *Skorokhodova Anastasiya A., Savichev Oleg G.* Tomsk Polytechnic University (Tomsk, Russia). **CONTENT AND FORMS OF COPPER AND ZINC MIGRATION IN NATURAL WATERS OF VASYUGAN SWAMP.** The paper presents a summary of results of the authors' own research and stock materials of TPU and "Tomskgeomonitoring" company on chemical composition and micro-components of natural waters of Western Siberia. The average level of heavy metals in natural waters of the Vasyugan Swamp, located in the taiga zone of Western Siberia, was determined. Special attention is paid to the forms of migration of zinc and copper in the swamp waters. In the process of studying the forms of zinc and copper we have estimated the percentage of suspended, colloidal and truly dissolved forms of these metals in the water. For the separation of the amount of suspended and colloidal forms from the dissolved ones, immediately upon the delivery of the samples to the laboratory we conducted filtering tests (without preservative) with the help of a membrane filter with pore diameter of 0.45 micron under the pressure of inert gas. The parts of particles with a size less than 0.45 that passed through the membrane filter attributed to the truly dissolved form. The total deviation method for determining the gross content and forms of migration of Cu and Zn did not exceed 40%. It is shown that in the mean annual cut on the background of increasing concentrations of Fe, Zn, Mn with increasing water disposal, the organic component and the proportion of fulvic acid could experience different trends in the concentrations of heavy metals in the waters of wetlands and watercourses. The same mechanism, presumably, has an impact on the migration of metals in the aquatic environment. We found that the migration of zinc in surface water in 55% is of colloidal and suspended forms, in 45% – in dissolved. For copper reverse distribution of dissolved and colloid-balanced forms (54 and 46%, respectively) is typical. In the dissolved form a large part of zinc is in the form of zinc ions Zn^{2+} , ZnFK and copper – in the form $CuFK_2$ – and CuFK. It should be noted that in the context of the average ratio of the proportion of soluble forms of river and swamp waters may actually be quite different. It is shown that the statistics of violations of the maximum permissible concentrations for water objects of fishery limits set for dissolved forms of Cu and Zn, is excessive by 1.7 and 2.4 times respectively.

Key words: heavy metals; forms of migration; marsh ecosystems; Vasyugan Swamp; Western Siberia.

P. 173. *Stepanko Nataliya G.* Pacific Institute of Geography, FEB RAS (Vladivostok, Russia). **RATIONAL NATURE USE AND ECOLOGICAL STABILITY.** Underestimation of the priority of the ecological factor and the public value of natural riches leads to a mistaken notion that it is necessary at first to solve economic and social problems and then to fix ecological ones. Finally, it results in the decrease of government's efforts to withdraw incomes paid by nature users to the federal and regional budgets, to increase their tax potential and to reduce expenses on environment conservation. Therefore, mechanism of regulation of nature management should contain elements expressing the features of its functioning in various regions because they have unique environment and potentials, specific history of development, settling, management and different levels of social and economic development. Ecological condition of the regions of the Russian Far East (RFE) as a result of existing industrial-natural relations is considered on the basis of methodological notions about nature management, regional nature management, sustainable development, ecological stability and offered indices. Environment condition in the Far East is characterized by imbalance of industrial-natural relations practically in all regions, i.e. infringement of conformity between development and distribution of manufacture, population distribution and ecological capacity of territories. Unique spatial-temporal variability of environment, wide development of a seasonal and multi-year permafrost determine smaller stability of the Far Eastern ecosystems relatively to the western areas of Russia. The basic types of resources of the RFE regions are used in agreement with importance of their nature-resource potential. Hence, the basic share in created ecological environment in the RFE regions is made up by the anthropogenic influence of industrial production, which in combination with active involving of various natural resources of the region in economic circulation leads to aggravation of environmental problems. Without decrease in the ecological damage resulted

from large-scale influence of economic activities on environment, effective nature management and sustainable development of the Russian Far East will be complicated. The carried out researches and calculations showed that among regions there are distinctions both by separate components of total pollution and by the indicator of ecological condition, but for all territory of the RFE it is defined by water and air pollution. As the industrial structure in the considered regions will not change essentially in near future (there is a sufficient nature-resource potential in the regions of the RFE), the ecological condition as a result of the existing economic activity within most of the territories is unsatisfactory. Since achievement of an ecological optimum is impossible (there should be enough expenses for nature protection activity to prevent it from damage), the corresponding financing of nature protection actions, the structure of investments into environment protection necessary for the investigated period, and modern system of technological processes of manufacture, treatment and recycling of wastes should be the basic direction in optimization of industrial-natural relations. Regulation of complex rational nature management in regions should arise from the concept, principles and methods of its realization from the positions of the new knowledge of ecology, another model of the very process of nature management, reflecting changes in views on the nature of riches, values, on the images about the place and the role of nature management in social and economic development of the regions and people's life activity.

Key words: resource-using; nature management; ecological stability; economic structure; Russian Far East.

BIOLOGY

P. 177. *Belov Mikhail A., Zadelyonov Vladimir A.* Scientific Research Institute on the Ecology of Fisheries (Krasnoyarsk, Russia). **CONDITION OF SPAWNING OF PART OF STENODUS LEUCICHTHYS (GÜLDENSTÄDT, 1772) POPULATION IN RIVER YENISEI.** As a result of extensive and irrational fishing the resources of the nelma of the Yenisei – *Stenodus leucichthys* (Güldenstädt, 1772) are almost depleted nowadays. Destructive impact on this species of whitefish was made not only by irrational fishing but also by river flow regulation in the result of water engineering, as well as by wastewater pollution. The purpose of the given work is to analyse the main characteristics of the spawning population and to describe the factors, influencing the abundance of the valuable anadrom species – the nelma of the Yenisei in a negative way. In this work there were used the materials of field studies of nelma on the territory of Sumarokovo conducted in 1978–1982, 1994, 1996 and 2006–2009. Data processing was performed by means of Microsoft Office Excel. Fishing was carried out in standard conditions. A total of 11047 nelma specimens were assessed. According to the materials of our studies, during the last three decades, on the spawning grounds of the Turukhansky region (Sumarokovo) there has been noted a constant decrease in the quantity of nelma spawners. While comparing the total number of caught spawners, one can observe the reduction of spawners catch each decade that follows. To assess the level of nelma population reproduction in different years there were made calculations of the number of spawners on spawning grounds situated higher than the village of Sumorokovo, as well as of the total spawn fund. The received data showed a stable level of reproduction in the 1970-90s. The characteristics of the spawning part of the Yenisei nelma population: growth, age, fecundity and the quantity of spawners while spawning are given. The dynamics of nelma catch on spawning grounds for the last 30 years is shown: since 1994 there has been a decrease in nelma spawner number on spawning grounds. The factors of economic activity which have led to reducing nelma spawning potential are considered: in comparison with the end of the 20th century, in the beginning of the 21st century there was a sharp decrease in nelma spawn on spawning grounds. It is established that the basic anthropogenic factors influencing nelma resources are illegal and irrational fishing, flow regulation and the Yenisei river pollution.

Key words: Yenisei River; spawner; inconnu; regulation drain; irrational craft; pollution; catch.

P. 180. *Gross Yegor Ye., Kokoreva Anna A., Kulizhskiy Sergey P., Nikolaeva Yevgeniya I., Solovyeva Tatyana P.* Lomonosov Moscow State University (Moscow, Russia), Tomsk State University (Tomsk, Russia). **RESEARCH OF SOIL UNITS DURABILITY CHANGE AT VARIOUS AGRICULTURAL LOADS.** Relevance of knowledge of the nature of stability of soils to degradation processes is defined by changes of physical condition, which is one of the main and most widespread types of transformation of soils and soil cover. Thus, degradation of physical condition of soils is understood as a steady change of their physical properties, first of all, structural condition leading to deterioration of water, air, nutritious, and other modes. It can be tracked when comparing the chernozems formed under the forest belt with the soils which are using under crops of corn and couples. Changes of their physic-mechanical properties being characterized are observed by water proofness, mechanical stability of units and mechanical durability of soil pastes. Considering that the majority of physical properties of soils are not independent values, and are functions from several arguments, such as shrinkage, swelling, penetration resistance, etc., the mean existence of dependence of these properties from humidity, i.e. they represent soil and physical dependences. Quantitatively it is difficult to analyze and compare such dependences. If experimental procedure of their definition leads to a variation (dispersion) of values, for such an assessment and comparison there is a possibility of use of parameters of approximation of experimental dependences. However, conditions of correct application of such an approach, limit of applicability, scientific and reasonable use of parameters of approximations represent an urgent scientific problem. In this article questions of change of strength properties of soil structure, namely, the soil units of 3–5 mm and 5–7 mm in size making agronomically valuable part of soil structure are considered. For research three options of soils under different agricultural loading are chosen. On the basis of the received results on studying of durability and basic physical properties of soils search of correlation of strength characteristics of units and the corresponding physical and chemical properties of soils is executed. The comparative characteristic of the declared properties of soils depending on intensity of loading is carried out.

Key words: chernozems; physical properties; mechanical durability of units.

P. 186. *Kolesnik Yevgeniy A., Derkho Marina A.* Ural State Academy of Veterinary Medicine (Troitsk, Russia). **SEASONAL DYNAMICS OF PHYSIOLOGICAL PARAMETERS OF BLOOD AND THEIR CONNECTION WITH BROILER LIVABILITY LEVEL.** Assessment of the health of birds in an industrial environment is possible by considering livability of chickens. Seasonal monitoring of the dynamics of a number of blood components in relation to the livability of livestock provides an opportunity to track significant changes of the parameters of the physiological status of broilers in time in the production cycle. This allows to predict the livability of livestock, evaluate industrial poultry production complex conditions that directly affect the livability of the birds, the seasonal correlation of livability and clinical parameters in broilers cross ISA-15. Hematological parameters characterize the state of the vital systems of the body, give an idea of the relative dynamic equilibrium. That allows to track changes in the body occurring

during metabolism in a single metabolism, which in turn is important in determining the physiological status and characteristics of the viability of the animal organism reflected in keeping birds. Today the questions of viability of poultry in production remain relevant. The authors have analyzed the data on the seasonal correlation of livability and physiological blood parameters in broilers cross ISA-15. The paper shows the results of analysis of connection of preservation with enzymes transamination in poultry. Studies on enzymes aminotransferase transamination (AST, ALT) confirm the coincidence of authentic dynamics of AST and ALT in the fall with the summer test period. These data stagger correlation concentrations of alanine aminotransferase with safety stock broilers, where the relationship as expressed in the earlier periods of growth and development of broilers ($r=0.84$, $m_r=0.19$), while the minimum was fixed at the twenty-third day of ontogeny ($r=0.65$, $m_r=0.27$) in the summer and ($r=0.99$, $m_r=0.06$) – ($r=0.85$, $m_r=0.18$) in the autumn, respectively. Reducing the correlation between safety and the level of lymphocytes and gamma-globulin in the fall $r=0.97$, $m_r=0.09$ – $r=0.94$, $m_r=0.12$ – $r=0.93$, $m_r=0.14$ – $r=0.89$, $m_r=0.16$ and $r=0.97$, $m_r=0.09$ – $r=0.94$, $m_r=0.12$ – $r=0.93$, $m_r=0.14$ – $r=0.87$, $m_r=0.17$ (first, seventh, twenty-third and forty-second day, lymphocytes and gamma-globulins) in contrast to the summer period, where a significant correlation between the fluctuations in the preservation of lymphocytes and gamma-globulins indicates a more stable physiological status of broilers in the mature stages of ontogeny. Authors have set the "critical" age of broiler chickens in a certain period of experimental tests corresponding to the technological cycle. The "critical" age for broiler cross ISA-15 in terms of industrial growth process for meat will be the second decade of ontogeny, which changes the functional activity of the genesis of red blood cells and white blood cells and protein metabolism.

Key words: seasonal correlation; livability of broilers; physiological parameters of blood; "critical" age; ontogeny.

P. 189. *Larionov Maksim V.* Balashov Institute (Branch) of Saratov State University n.a. N.G. Chernyshevsky (Balashov, Russia). **FEATURES OF TECHNOGENIC HEAVY METALS ACCUMULATION IN SOILS OF CITIES IN MIDDLE AND LOWER VOLGA REGION.** Priority pollutants in the cities of the Middle and Lower Volga region are the elements of the group of heavy metals. They are found in the atmosphere as a result of increased motor transport units, reconstruction of production facilities, expansion of the city transport infrastructure as a whole, and cluttering of the territory. Soils are one of the most important accumulators of technogenic heavy metals from the environment in the context of urbanization. The content of heavy metals in soils reflects the potential danger of technogenic pollution of the soil and the environment as a whole, which causes irreversible changes in the structure and ecological properties of urban soils. Environmental analysis of the level of ecological danger of urban soils pollution in the Middle and Lower Volga region with heavy metals was carried out in the calculated values of the total chemical contamination. The most dangerous pollutants of urban soils of the Middle and Lower Volga region are lead, copper and zinc. The maximum concentrations of the pollutants were identified in cities with a developed industrial and transport infrastructure: Saratov, Volzhsky (Volgograd Region), Dimitrovgrad (Ulyanovsk region). The lowest concentrations of lead, copper and zinc were identified in Balashov (Saratov Region), Serdobsk and Kuznetsk (Penza Region). The permissible level of pollution of anthropogenically modified soil is typical of the cities Serdobsk, Balashov, Inza, Kamyshin. In the city of Kuznetsk soils are characterized by a moderately dangerous level of pollution. In the largest cities of the study area – Saratov, Volzhsky, Dimitrovgrad – technogenic soils are significantly contaminated and are characterized by a dangerous level of chemical pollution. As a result of soil monitoring in the area of research the overall pattern of accumulation of technogenic heavy metals was made: data on elements are collected not for the entire depth of the soil profile, but only for the upper, organogenous horizons. The main factor of their accumulation in the soils is clay minerals and organic matter. This fact is typical of all the cities in the study area. Further there is a gradual decrease of the content of heavy metals in the deeper layers of the urban soils. To a greater extent the soil cover of the studied functional zones (industrial, residential, recreational) is exposed to technogenic pollution of heavy metals in the cities with developed industry and a powerful transport load – in Saratov, Volzhsky, Dimitrovgrad, Kuznetsk; to a lesser extent – in Kamyshin, Serdobsk, Balashov, Inza.

Key words: anthropogenic pollution; heavy metals; soils.

P. 195. *Sobchak Raisa O., Aphanasyeva Tatyana G., Kopylov Maksim A.* Gorno-Altai State University (Gorno-Altai, Russia). **EVALUATION OF RECREATION AREAS ECOLOGICAL STATE BY METHOD OF *Betula pendula* Roth. LEAVES FLUCTUATING ASYMMETRY.** The given article contains the results of *Betula pendula* Roth. sustainability evaluation implemented using the method of leaf fluctuating asymmetry under the conditions of recreation of high-altitude Ust-Koksinskiy Administrative District of the Altai Republic, which is suffering from a real tourist boom. Ecosystems existing in mountain environments are known to be the most vulnerable ones. Recreational load of Ust-Koksinskiy district is distributed unevenly: there are areas with weak load (conservation area), middle load (controlled tourism area), and strong load (servicing zone). To form a more integral conception of interpopulational distances nature and *B. pendula* leaf asymmetry level, the model samplings were examined in the sphere of principal components. Our research indicated that all the original features make a positive contribution to the first principal component, thus, it can be considered as a variable which reflects differences between linear (absolute) sizes of the leaf. In this case, the first component takes off 39.38% of dispersion. Differences between the conservation area and controlled tourism area samplings and the sampling taken from the servicing zone can be clearly observed along the axis of the first component. It should be noted that certain asymmetry is inherent to *B. pendula* leaves. It is manifested in the fact that the right half of the leaf is slightly bigger than the left half in all the researched cases. Apparently, this is one of the biological features of the given model species. Another conspicuous fact is that leaf asymmetry increases pointedly depending on the anthropogenic load increase rate. This observation is supported by the trend towards the increase of the distance between the appropriate sampling centroids. The second principal component describes 25.5% of the total dispersion, and distinct differences between the given samplings are observed along the vector of its values. Veins on the leaves taken from the conservation area are slightly distant from each other in comparison with samples from the other populations. Plants taken from the controlled tourism area have wider angle between the main axis and the first vein from the base of the leaf. Along with distinct differences between the samplings, the component analysis revealed the pointed increase of *B. pendula* leaf asymmetry depending on the anthropogenic load increase. We ascertained that the main contribution into *B. pendula* leaf asymmetry is made by the element "interveinal distance", which is the most informative one for recreation area bio-indication. Numerical score of the environmental qualification of recreation areas of Ust-Koksinskiy district demonstrated that the value of *B. pendula* leaf asymmetry increase is dependent on the level of recreational load.

Key words: sustainability evaluation; fluctuating leaves asymmetry; *Betula pendula*; Altai Republic; recreational load.

CHEMISTRY

P. 200. *Alekseenko Kira V., Babkina Olga V., Svetlichny Valeriy A., Izaak Tatyana I., Novikov Dmitriy V., Novikov Viktor T.* Tomsk State University (Tomsk, Russia). **DEVELOPMENT OF METHODS TO STUDY FEATURES OF INTERMEDIATES AND FINAL PRODUCTS IN SYNTHESIS OF LACTIDES AND GLYCOLIDES.** Copolymers of lactide and glycolide (PGLA) are widely used in medicine: surgery, orthopedics, oncology, etc. These polymers can be used to produce surgical sutures, orthopedic implants, thermoplastics, plates, screws, pins, etc. The given paper represents the results of the development of measurement techniques to monitor the quality of glycolides and lactides, starting materials for the synthesis of biodegradable polymers. The main controlled parameters of the monomer, lactide and glycolide affecting the process of PGLA copolymer polymerization, are the presence of carboxyl groups in monomers, the ratio between L and D isomers in lactide, and oligomer presence of glycolide. It was stated that the presence of carboxyl group in monomers influences negatively on the process of lactide and glycolide polymerization. To produce highly molecular polymer the residual concentration of carboxyl group should not exceed 10^{-6} mol/g. In case the monomer does not comply with this requirement, the recrystallization from hot solution is used to purify the monomer. Ethyl acetate is usually used. If the conditions are correct, the purity of monomer after single recrystallization is improved by one order of magnitude. We developed a measurement technique based on potentiometric method of determination of pH of glycolide or lactide solutions after dissolving in methanol and recalculation of the obtained value into mass fraction of impurities containing carboxyl group. To polymerize the PGLA copolymer it is necessary to have the L/D isomer ratio in lactide of 50/50. If L isomer is predominant the polymer receives the crystalline structure. If D isomer prevails the polymer receives amorphous properties. We have developed a measurement technique to control the ratio between mass fractions of isomers in lactide based on optical rotation. The direction and angle of rotation of initial linearly-polarized emission depend on the nature and concentration of active component in the medium. It was shown that L and D lactides have opposite directions of optical rotation. During the work-out of the glycolide synthesis it was stated that the obtained glycolide contains the residual amounts of glycolic acid and oligomers adulterating the properties of the received polymers and copolymers. The determination of the presence/absence of oligomers in monomers was carried out on the basis of changing of dissipation in the solution. Visual observation of glycolide/lactide solution opalescence was carried out in ethyl acetate. Automatic comparison of transmission spectra was also carried out prior to and after the centrifuge processing of the solution. The molecular-mass features of the PGLA copolymer, produced from glycolide and lactide, influencing the mechanical properties and time of decomposition of the polymer. If the molecular mass of the copolymer is less than 60,000 a.m.u. it will not be suitable to produce monofilament thread, will be crispy and unductile. The time of copolymer resorption will also shorten. The molecular mass distribution of copolymer was determined using liquid chromatography according to the developed measurement technique based on the difference between the time of elution of polymers with different molecular mass from chromatographic column with subsequent calculation of molecular mass distribution according to the method of absolute standardization. A mixture of acetonitrile and water was used as an eluent.

Key words: biodegradable polymers; lactide; glycolide; monomers; measurement technique.

P. 204. *Shelkovnikov Vladimir V., Anishchenko Mikhail V., Shulga Anna K., Minaev Konstantin M.* Tomsk State University (Tomsk, Russia). **GRAPHITE ELECTRODES MODIFIED WITH GOLD-POLYMER COMPOUND FOR MERCURY DETERMINATION BY STRIPPING VOLTAMMETRY.** The method of stripping voltammetry has high sensitivity, accuracy and low limits of detection. But metrological characteristics of analysis methods are mostly determined by the type of electrode systems, which are used in them. One of the main trends of modern electrochemical analysis is modification of electrodes with different components which could increase sensitivity of detection and reduce interference. The usage of polymers composition is a perspective direction in creating of new electrodes. This composition consists of polymer matrix with a modifier, which mediates electrode processes. Thus, in mercury analysis chemists often use gold which decreases the energy of a new phase generation and helps to decrease the limit of detection. We offer to form gold nanoparticles in polymer film, which is applied to the surface of graphite substrate. Polymer stabilizes the system and allows uniform distribution of particles in polymer matrix. Composite materials based on acrylic copolymer were investigated in current work. These polymers contain carboxyl groups of methacrylic acid, which provide ion transport, and methyl methacrylate, acting as a builder. During electrolysis of AuCl_4^- ions that are embedded in a polymer matrix are reduced to elemental gold, forming metallic gold clusters on the surface of graphite. These clusters are isolated one from another by polymer composition. In order to increase electrical conductivity of composition and to improve ion transport we suggested to form gold-polymer film with polyethylene glycol addition. When this electrode is immersed in an aqueous solution, polyethylene glycol is washed away, resulting in formation of pores through which ions diffuse defined by the centers of metallic gold. Influence of the polymer solution composition and method of graphite electrode modification on mercury recovery were estimated. Optimal ratio for the formation of Au-polymer electrode "methacrylate: methacrylic acid : polyethylene glycol" is equal to 6:1:2, the gold content is 0.025 mM/kg of the polymer. The ratio of the copolymer (ul) to the electrode surface (mm^2) is 2:1, potential of pre-electrolysis is -0.7 V. Comparative surface analysis of Au-carbon polymer electrode (Au-CPE) and Au-carbon electrode (Au-CE) were conducted using by electron microscopy. It can be concluded that Au-carbon polymer electrode (Au-CPE) provides equal to Au-CE sensitivity in mercury detection at ten times less number of active sites on the surface. Tests of the developed electrode were carried out on the samples of natural water, biological objects and food. Analysis results are in good agreement with those obtained by atomic absorption spectrophotometry (AAS).

Key words: modification of electrodes; gold nanoparticles; stripping voltammetry; determination of mercury.