

“the author of the unique technology” of cognitive modeling” Vetrov Anatoly Nikolaevich  
www.vetrovan.(spb.)ru  
RF, Saint-Petersburg city

THE FUNDAMENTAL DEVELOPMENTS BRANCH  
“COGNITIVE MODELING IN THE INDUSTRY  
AND CHEMICAL SCIENCES” (“OHNM”)

OF “SRI "SFA CMT" OF "RA(N)S" N. A. VENIAMINOV V.N.”

The developed “The fundamental developments branch  
“Cognitive modeling in the industry  
and chemical sciences”” (“OHNM”)  
treats to the fundamental developments divisions  
of “The scientific-research institute “System and financial analysis based on  
cognitive modeling technology” of “RA(N)S” named after Veniaminov V.N.”  
 (“SRI “SFA CMT” of “RA(N)S” n. a. Veniaminov V.N.” – SRI) as the first SRI  
in the structure of “SIO “Academy of cognitive natural sciences”” (“SIO “ACNS””)  
and the add. component of the system of science and education of the modern country  
for the creation, distribution and use of the main and derivative  
scientific results of the cognitive modeling technology (CMT) (www.vetrovan.(spb.)ru)  
[see the fundamental developments branches and departments of SRI]:  
1) it is executed by the principle of “administrative-economy submission”;  
2) works in the several main directions, which allow to provide  
the development of the fundamental main and derivative scientific results  
(my second report on SRW from 2006-2008(9) y. was submitted  
to “SPbSETU “LETI”” and “The Government of RF”  
for the translation, carrying out of int. action and receiving of “The Nobel prize”);  
3) includes the several various main divisions:  
I. “The fundamental developments department  
“Theory of the easy, food, forestry and wood-processing industry,  
architecture and construction, the agriculture, forestry,  
water, fish economy and aqua-culture”” (“SNM”) (\*)  
[the fundamental developments in the area  
“Theoretical light industry” –  
theory of textile industry,  
theory of knitted industry, theory of clothing industry,  
theory of tanning industry, theory of fur industry,  
theory of the industry of artificial leather and film materials,  
theory of shoe industry, theory of leather-haberdashery industry,  
theory of bristle-brush manufacture, theory of the manufacture of furniture,  
theory of the cognitive modeling technology  
in the theoretical light industry;  
the fundamental developments in the area  
“Theoretical food-processing industry” –  
theory of food raw materials and auxiliary materials,  
theory of the processes and devices of food-processing manufactures,  
theory of (grain-)elevator and flour(-grinding)-sereals(croup) industry,  
theory of mixed-fodder industry,  
theory of baking of bread and macaroni industry,  
theory of confectionery industry, theory of sugar industry,  
theory of starched-treacle industry,  
theory of barmy industry, theory of brewing industry,  
theory of spirituous industry,  
theory of the industry of high-alcohol drinks,  
theory of wine-making (vinous) industry,  
theory of the industry of without-alcohol (soft) drinks,  
theory of canning, vegetable drying and food-concentrate industry,  
theory of food-gustatory industry, theory of tobacco industry,  
theory of meat and bird-fancier-processing industry,  
theory of the manufacture of eggs and egg products,  
theory of dairy (milk) industry, theory of butter-fatty (creamery) industry,  
theory of the cognitive modeling technology  
in the theoretical food-processing industry;

Page 1 from 3 pages

“The Nobel committee” (The Kingdom of Norway and The Kingdom of Sweden)  
(it was submitted to “SIO “ACNS”” on the int. conf. “APMS and T: CA” on the 01<sup>st</sup>-31<sup>st</sup> of March 2016 y.)

*the fundamental developments in the area “Theoretical forestry and wood-processing industry”* – theory of wood-science, theory of forestry-cutting works, theory of the transportation of wood, theory of forestry-timber works, theory of technology and equipment for the processing of wood, theory of forestry-sawmill manufacture, theory of the manufacture of joiner-building products, theory of the manufacture of plywood and plates, theory of the manufacture of furniture, theory of the manufacture of matches, theory of the manufacture of wooden container, theory of the special wood-processing manufactures, theory of pulp-paper industry, theory of the cognitive modeling technology in the theoretical wood-processing industry;  
*the fundamental developments in the area “Theoretical architecture and construction” (\*)* – the engineering-theoretical bases of construction, theory of architecture, theory of building materials and products, theory of building constructions, theory of the technology of construction-installation works, theory of the technology of production of the building materials and products, theory of machines and mechanisms, equipment and tools, used in the construction and the industry of building materials, theory of engineering researches in construction, theory of architectural-construction designing, theory of district lay-out, theory of town-planning, theory of the objects of construction, theory of the engineering support of the objects of construction, theory of tendencies, dependences and laws in architecture and construction, theory of the cognitive modeling technology with dynamic cloning, verification and subverification, theory of the iterative cycle and the technique of use of the cognitive modeling technology, theory of the parametrical cognitive models block for architecture and construction (the buildings and constructions based on the cognitive circle, cognitive disc, cognitive cylinder, cognitive cone and cognitive sphere), theory of the ways of representation of the structure of the cognitive models and problem environments: the formal classical of the 0<sup>th</sup> generation (the logical and production models), the nonformal classical of the 0<sup>th</sup> generation (the semantic network, the frame network and ontology), the formal new of the 0<sup>th</sup> generation (the calculus of theory of sets and corteges on domains and the innovative calculus of theory of sets and graphs), the nonformal new of the 0<sup>th</sup> generation (the multi-level structural scheme and the multi-level encapsulated pyramids combining theory of graphs and theory of sets), the flat of the 1<sup>st</sup> generation (the cognitive circle and the cognitive disc), the volumetric of the 1<sup>st</sup> generation (the cognitive cylinder, the cognitive cone and the cognitive sphere), the flat and volumetric of the 2<sup>nd</sup> generation (the one-, two-, three-, four-, five- and more cognitive circle, cognitive disc, cognitive cylinder, cognitive cone and cognitive sphere), the hybrid of the 3<sup>rd</sup> generation (the combinations of the existing cognitive models), theory of the algorithm of formation of the cognitive model structure, theory of the technique of research of the cognitive model parameters, theory of the algorithm of analysis of a posteriori results of research, theory of the adaptive automation means of architecture and construction (the automation means of formation and research of the cognitive circle, cognitive disc, cognitive cylinder, cognitive cone, cognitive sphere, one-, two-, three-, fore-, five- and more cognitive sphere and others), theory of the statistical substantiation of practical use of the received results, theory of the factors influencing to the efficiency of construction of the buildings and constructions, theory of organization and plan of carrying out of the experiment, theory of the research of parameters of the parametrical cognitive models block, theory of preliminary processing of a posteriori results of diagnostics, theory of choice of the statistical analysis methods of the generated data sets, theory of the analysis of dynamics of the resultativity of construction, theory of the dispersion, regression, discriminant, cluster analysis, multidimensional scaling, factor analysis and bibliographic lists;

*the fundamental developments in the area*  
**"Theoretical agriculture and forestry"** –  
 theory of agricultural biology, theory of soil-science,  
 theory of agriculture, theory of agricultural melioration,  
 theory of agro-chemistry, theory of plant-growing-science,  
 theory of the protection of agricultural plants, theory of live-stock-farming (animal-industry),  
 theory of veterinary-science, theory of the preparation of agricultural production,  
 theory of hunting and hunting economy, theory of forestry,  
 theory of economics and organization of agriculture,  
 theory of the mechanization and electrification of agriculture,  
 theory of the cognitive modeling technology  
 in the theoretical agriculture and forestry;  
*the fundamental developments in the area*  
**"Theoretical water economy"** –  
 the theoretical scientific bases of water economy,  
 theory of water economy, theory of water-economy construction,  
 theory of hydro-technical and hydro-ameliorative constructions,  
 theory of irrigation and water-supply, theory of irrigating systems,  
 theory of drying systems, theory of sewage waters, their clearing and use,  
 theory of the quality of water, theory of tests, measurements, control in the water economy,  
 theory of mechanization and automation in the water economy,  
 theory of complex use of water resources,  
 theory of the cognitive modeling technology  
 in the theoretical water economy;  
*the fundamental developments in the area*  
**"Theoretical fish economy and aqua-culture"** –  
 theory of the biological resources of The World ocean and internal reservoirs,  
 theory of aqua-culture, theory of fish-breeding (culture), theory of industrial fishery,  
 theory of the technical operation of the fleet of fishing industry,  
 theory of the technical operation of fish seaports,  
 theory of the technology of processing of the raw materials of water origin,  
 theory of the equipment for the fish-processing industry,  
 theory of the cognitive modeling technology  
 in the theoretical fish economy and aqua-culture].  
 11. "The fundamental developments department  
 "Theory of chemistry, chemical technology and chemical industry" ("SCHN")  
*the fundamental developments in the area*  
**"Theoretical chemistry"** (\*) –  
 theory of the general-laboratory chemical equipment,  
 theory of equipment, theory of physical chemistry, theory of nonorganic chemistry,  
 theory of complex compounds, theory of analytical chemistry,  
 theory of organic chemistry, theory of bio-organic chemistry,  
 theory of the natural organic compounds and their synthetic analogues,  
 theory of chemistry of high-molecular compounds, theory of biological chemistry,  
 theory of the cognitive modeling technology  
 in the theoretical chemistry;  
 theory of modeling of the structure of the (non)organic chemical elements  
 and the chemical elements with 1, 2, 3, 4, 5 and more nucleuses;  
*the fundamental developments in the area*  
**"Theoretical chemical technology and chemical industry"** –  
 theory of the processes and devices of chemical technology, theory of chemical raw materials,  
 theory of production of the nonorganic substances and products, theory of production of the fertilizers,  
 theory of production of the silicate and refractory nonmetallic materials,  
 theory of industrial organic synthesis,  
 theory of the industrial synthesis of organic dyes and pigments,  
 theory of the technology of production of the photographic materials,  
 theory of the technology of production of the explosive substances and chemical protection means,  
 theory of the technology of storage and destruction of the chemical weapon,  
 theory of the technology of production of the chemical-pharmaceutical means,  
 theory of the technology of production of the fragrant substances,  
 theory of the technology of production of the pesticides and disinfectant substances,  
 theory of the technology of processing of the natural gases, oil, gas condensate,  
 their products and analogues, motor fuel and lubricant materials,  
 theory of the technology of processing of the firm combustible minerals,  
 theory of timber-chemical productions,  
 theory of the technology of production of the natural high-molecular compounds,  
 theory of the technology of production of the synthetic high-molecular compounds,  
 theory of the technology of production of the plastics,  
 theory of the technology of production of the rubbers and products from them,  
 theory of the technology of production of the varnish-paint materials and organic coverings,  
 theory of the technology of production of the chemical fibers and strings,  
 theory of the technology of production of the chemical reactants and especially clean substances,  
 theory of the technology of production of the household chemical (goods) products,  
 theory of the technology of production of the auxiliary materials,  
 theory of the cognitive modeling technology  
 in the theoretical chemical technology and chemical industry].  
 The fundamental developments branches and departments of SRI  
 allow to develop the main and derivative scientific results of CMT.