

CV – DR. OLGA BOGATYREVA

Name: Dr Olga Bogatyreva
Position: *Subject Matter Expert*
Grade: Expert Consultant, University of Bath

Qualifications:

- Certificate on Inventive Problem Solving and Innovation Technology, Novosibirsk, Russia, 2001.
- Doctor of Science, Theory of Complex Systems: application to Social Psychology, Institute for Philosophy and Law, Department of Sociology, Russia, 2000.
- PhD in Biology, Novosibirsk State University, Institute for Systematics and Animal Ecology, Novosibirsk State University, Russia, 1986.
- Masters, Animal Ecology and Behaviour, Novosibirsk State University, Russia, 1980.
- Bachelor's degree in Animal Psychology and Behaviour, Novosibirsk State University, Russia, 1978.
- Course on psychiatry in Medical Academy, Novosibirsk, Russia, 1979.



Profile

Broadly qualified Scientist in the field of Social Behaviour and Complex Systems with 20 years experience in research and teaching; background in Animal Behaviour and Social Psychology, Theory of Inventive Problem Solving and bio-inspired design, Professor in System Theory (application to sociology and socio-psychology)

Key Skills & Experience

- Designed mathematic model of adaptive interaction, decision-making and cooperation in social groups to make collaboration measurable
- Developed a rapid quantitative diagnostic method to detect social instability, to measure teams coherence, control effectiveness and adaptability
- Designed autonomous and adaptive system control for robot swarms that can be used in long term missions of planet exploration
- Developed an algorithm for bioengineering: interaction of living and mechanical systems for bio-inspired robotics (PRIZM – a problem solving tool)
- Provided flexible imaginative approach for fluent interdisciplinary knowledge transfer
- Provided expertise in semantic web-search and engineering information management
- Developed a mathematical foundation for contextual search Engine in which user's request is based on problem definition algorithm of TRIZ
- Created and ran workshops for industry on bio-inspired innovation and problem solving technology – TRIZ

Relevant Experience

Innovation technologies and bio-inspired problem solving in engineering and information management

- Research Officer, Mechanical Engineering Department The University of Bath
 - Research on conjugating living systems (including humans – so – collaboration) with technological systems. Developing user-friendly engineering solutions taking into account human psychology and behaviour.

- Tailor designed workshops for resolving management crisis using Business-TRIZ techniques: Customers: East Point 11 and GladkovSoft.
- Consultancy to Lockheed Martin, “CTRIZ: feasibility study on using TRIZ and sabotage analysis in risk assessment and criminology.
- Conducting tutorials for students of Mechanical Engineering Department on Inventive Problem Solving in Engineering.
- Conducting workshops for industry on nature inspired innovation technologies and problem solving. Customers are: European Space Agency, ColepCCL (Germany), Koppert (The Netherlands), East Point 11 (Japan), GladkovSoft (Japan), Buro Happold (UK), IMI Vision (UK), Rolls Royce (UK), Vitacress Ltd (UK), Bulmers Cider (UK), Proctor and Gamble (UK), Flake & Acetyls (UK), Fielden-Clegg (UK).
- The method for sense capturing was developed by using quasi-semantic framework based on TRIZ algorithms for problem-solving.

Human Ethnology and Socio-psychology

- Non-verbal communication in groups
 - Studying none-verbal communication and the use of space in kindergartens by children during their interactions.
 - Consulting the kindergarten personnel on how to prevent stress and conflicts in the groups of children.
 - Studying the impact of economic crisis on science in Russia – sociological research for Siberian Branch of Russian Academy of Science
 - Conducted cross-disciplinary studies on System Theory application to social psychology.
 - Published a book “Social Synergetics”

Clinical Assessment and Counselling

- Clinical Psychologist at special kindergarten for disabled children and children with learning difficulties
 - Psychometric Assessment and for children ages between 3 and 6
 - Counselling children and their parents on educational/learning techniques
 - Working on legal rights to education of children with disability in Russia.

Social Biology and Ecology

- Researcher on social and individual behaviour of animals
 - Studying ecology and population dynamics
 - Experimental work and/or field expeditions, data collecting, processing and analysing).

Membership

- BIRONET - Biologically Inspired Robotics Network
- BIONIS - The Biomimetics Network for Industrial Sustainability

Awards & Recognition

- European Space Agency, one year funding with SEA Ltd “Expert Tool to Support Crew Autonomous Operations in Complex Human Spacecraft”, 2008.
- European Space Agency, one year funding with SEA Ltd “Technologies/Techniques for Psychological Support (TPS) (providing innovative solution from nature), 2006-2007. First in UK research on human behaviour for manned space missions.

- Invited speaker to the symposium "Biomimetics and Biomechanics - Smart solutions from Nature", AGM Biomechanics of the SEB and the Competence Network BIODON in Glasgow, 3-4, April, 2007.
- Invited to Oxford University with lecture "Individuality in ants", 15 February, 2007.
- Invited to the University College London to give a lecture entitled "The Role of Individuals in Adaptive Swarm Behaviour".
- Invited speaker at BIRONET International Conference at the University of Bath, 2005
- Awarded a George Soros Grant for providing education of children with learning difficulties, 1997.
- Awarded a Grant of Russian Foundation for Fundamental Research: 1995 – 1998; 2000 – 2001 for the research on population ecology and social evolution.

Publications

Publications (60 in total) cover the following subjects: human sociology and social psychology (non-verbal behaviour in groups) and ethnology (social and individual behaviour), ecology, System Theory application to social psychology, Theory of inventive Problem Solving and bio-inspired engineering.

List of selected publications:

- Papers in reviewed journals and conference proceedings:
- Vincent J, Bogatyreva O, Bogatyrev N, Bowyer A, Pahl A. Biomimetics – its practice and theory. "Interface" Journal of Royal Society, 2006, v 3, N 9, p. 471-482
- Bogatyreva O, Shillerov A. Robot swarms in an uncertain world: controllable adaptability. International Journal of Advanced Robotic Systems, ISSN 1729-8806 –V.2, N 3, p.187-197, 2005.
- Vincent J, Bogatyreva O, Pahl A, Bogatyrev A, Bowyer A. Putting Biology in TRIZ: Biological effect database. The journal of 'Creativity and Innovation Management', Volume 4, N 1, March, 2005.
- Bogatyreva O, Pahl A, Bogatyrev N, Vincent J. The means, advantages and limits of merging biology with technology. The Journal of Bionic Engineering, N2, 2004 p. 121-132
- Bogatyreva O, McMahon C. Adaptable Language Understanding: Can Robots Understand Context Bypass Grammar Rules? In: AISB'06 Conference proc. Adaptation in Artificial and Biological Systems, V2, p. 106-111, University of Bristol, April 3-6, 2006.
- Bogatyreva O, Shillerov A. Fractals of Stability and Adaptability in Swarms: Thresholds for emergent effects. In: AISB'06 Conference proc. Adaptation in Artificial and Biological Systems, V2, p.99-106, University of Bristol, April 3-6, 2006.
- Vincent J, Bogatyreva O, Bogatyrev N. Biology doesn't waste energy – that's really smart. USA. Conference on Energy management. March, 2006.
- Bogatyreva O, Bogatyrev N. Complexity in living and non-living systems / Proc. Of international TRIZ conference, Philadelphia, USA, 16-18 March 2003, p. 16/1- 16/6 .
- Bogatyrev N, Bogatyreva O. TRIZ AND BIOLOGY: RULES AND RESTRICTIONS. Proceedings of TRIZCON 2003, Altshuller Institute, Philadelphia, USA, 16-18 March 2003, p. 19/1 -19/4
- Pahl A, Bogatyreva O. Nested, Chained and Intersecting or 'Complex' Contradictions, Proc. TRIZCon, Mass, USA, 16-18 March 2003
- Adrian Bowyer, Julian Vincent, Olga Bogatyreva, Anja-Karina Pahl. Data Gathering For Putting Biology in TRIZ. Proceedings of TRIZCON 2003, Altshuller Institute, USA, 16-18 March 2003,
- Olga Bogatyreva, Julian Vincent Is TRIZ Darwinian? Proceedings of TRIZCON2003, Altshuller Institute, USA , 16-18 March 2003.

Olga Bogatyreva, Julian Vincent , Anja-Karina Pahl Nested, chained and intersected or “Complex” contradictions. Proceedings of TRIZCON2003, Altshuller Institute, Philadelphia, USA , 16-18 March 2003

Bogatyreva O.A., Pahl A-K and. Vincent J.F.V Enriching TRIZ with Biology: The Biological Effects database and implications for Teleology and Epistemology. ETRIA WORLD CONFERENCE-2002, Strasbourg, 6-8 November, p.3-1-307

Bogatyreva, O.A Management in ant colonies: Natural analogue of the resolution of social contradictions using TRIZ tools. ETRIA Conference Proceedings, Strasbourg, Nov 6-9. 2002.

➤ Papers in non-reviewed journals and conference proceedings, books:

Bogatyreva O, Shillerov A, Bogatyrev N. Patterns in TRIZ CONTRADICTION MATRIX: integrated and distributed systems. 4 ETRIA Conference, November 3-5, 2004, Florence, p. 305-313.

J. F.V. Vincent, A-K Pahl, O. Bogatyreva, N. Bogatyrev. Biomimetics: introducing a biological direction for Innovation. IV WOIS Innovation Symposium. Professional Strategic Innovation, 23, 24 October, 2003, University of Applied Science Coburg.

Bogatyreva O, Shillerov A, Entropy in statistics: Risk estimation in decision-making. International Conference on “Statistics in Philosophy”, Institute for Philosophy and Law, Novosibirsk, Russia, 2003

Bogatyreva O.A., Bogatyrev N.R. General regularities in social and ecological transformations. In "Human ecology: Interaction of culture and education under the contemporary conditions". -- Novosibirsk, 1998, vol.2, p.31-51.

Bogatyreva O.A., Shilleroff A.E. Entropy and dynamic chaos in a society: the way to formalization of social system functioning investigations. Order and chaos in social systems development: Self-organization and sustainability of social and natural systems, Tomsk, 1998. - P.43-47.

Bogatyreva O.A., Shillerov A.E. Social Synergetics. –Novosibirsk, 1998. – 292p.

O.A. Bogatyreva A New Methodological Approach To The Problem Of Societies Development. XXIII International Ethological Conference, 1-9 September, 1993, Torremolinos, Spain, p.305.

O.A. Bogatyreva. The Hypothesis Of Functional Position Balance. XXV International Psychological Congress, Brussels, Belgium, July, 1993, 1p.

O.A. Bogatyreva , N.R. Bogatyrev. The Man And Other Animals: Searching The Criteria Of Difference. “Language In The Ocean Of Languages”, Novosibirsk, “Siberian Chronograph”, 1993, p.173-183.

Y.M.Plusnin, O.A.Bogatyreva, O.E.Bichenkova. Spatial behaviour and social rank in the group of children. Problems of Psychology, № 2, Moscow, 1993, p.106-116.

O.A.Bogatyreva. The Concept of social succession. Novosibirsk, Inst. Of Philosophy And Law, 1991, 44pp.

O.A.Bogatyreva. Discussion On The “Social Archaeotype” Concept Of Dr. U.M.Plusnin. “The Concept Of Social Archaeotype”, Novosibirsk, Inst. of philosophy and law, 1991, p.20-21.

Bogatyrev N.R., Bogatyreva O.A. Optimization Of The Development Strategy And The Problem Of The Adequate Retrospective Evaluation Of The Results. “Problems Of The Effectiveness, Rationalization And Optimization Of The Human Activity”, Part 2, Philosoph. Soc. of the USSR, Novosibirsk, 1991, p.30-34.

Y.M. Plusnin, O.A.Bogatyreva, O.E. Bichenkova. The Observation in the Kindergarten: Temperament and Game Space Behaviour. European Meeting of the Psychometric Society, Trier, July 29-31, 1991, p.114.

Bogatyreva O.A., Bogatyrev N.R. The Distinction Between Man And Other Animals And The Problem Of Suicide. “Problems Of Medical Anthropology”, Tjumen, 1990, p.67-68.