

## Contributors

**Valery A. Anisimov** received his PhD from the St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences. He now works at A2iA SA. His research interests include patterns recognition, image analysis, artificial intelligence, molecular biology, macroevolution and abiogenesis. He is the co-author of several articles and one book.

**David C. Baker**, Macquarie University, Sydney, Australia, Researcher and Tutor. PhD in Big History at Macquarie University in Sydney under David Christian. He now teaches Big History at the universities of Amsterdam, Eindhoven, and Rotterdam alongside Fred Spier and Esther Quaedackers. His research interests include Universal Darwinism, collective learning, the rise of complexity, and demographic-structural theory. He is also engaged with the IBHA Publications Committee in setting up a Big History academic journal.

**Eric J. Chaisson** is Director of the Wright Center for Innovative Science Education at Tufts University, where he is also Research Professor of Physics and Astronomy and Research Professor of Education. He is also an Associate of the Harvard College Observatory and serves with the Faculty of Arts and Sciences at Harvard University. Trained initially in atomic physics, Chaisson obtained his doctorate in astrophysics from Harvard University. During his tenure as Associate Professor at the Harvard-Smithsonian Center for Astrophysics, his research focused largely on the radio astronomical study of interstellar gas clouds. This work won him fellowships from the National Academy of Sciences and the Sloan Foundation, as well as Harvard's B. J. Bok Prize for original contributions to astrophysics and Harvard's Smith-Weld Prize for literary merit. Previous to his current positions, he spent several years at the (Hubble) Space Telescope Science Institute at Johns Hopkins University. He has written nearly 200 publications, most of them in the professional journals, and has authored or coauthored 12 books. Chaisson's major research interests are currently twofold: His scientific research addresses an interdisciplinary, thermodynamic study of physical and biological phenomena, thereby seeking the origin, evolution, and unification of galaxies, stars, planets, and life in the Universe. His educational research engages experienced teachers and computer animators to create better methods, technological aids, and novel curricula to enthuse teachers and instruct students in all aspects of natural science. He teaches an annual undergraduate course at Harvard University on the subject of cosmic evolution, which combines both of these research and educational goals. Chaisson holds membership in many American and international scientific organizations, several honor societies, and dozens of academic, public, and federal advisory committees.

**Sergey V. Dobrolyubov** graduated from Moscow Technical Institute (MADI) and began his professional career as an engineer investigating the causes of failures of complex equipment. After unexpected collapse of the Soviet Union, he began to wonder about the reasons for stability and dynamics of social structures. Due to his engineering past, he seeks more substantive descriptions of social phenomena and

vague social categories. He is an independent scholar whose research interests include social evolution, theory of society, sociology, values, Marxism. His main theme is the cyclical genesis of societies and civilizations. He is a frequent author of the leading Russian sociological journals.

**Tom Gehrels** is Professor of Planetary Sciences and an astronomer at the University of Arizona in Tucson (USA). During World War II, he was active in the Dutch Resistance and an organizer for the Special Operations Executive (SOE). He pioneered the first photometric system for asteroids in the 1950s, as well as a system of analyzing wavelength dependence for polarization of stars and planets in the 1960s. He was also the Principal Investigator for the Imaging Photopolarimeter experiment on the Pioneer 10 and Pioneer 11 first flybys of Jupiter and Saturn in the 1970s. Dr. Gehrels initiated the Space Science Series of textbooks, for which he was general editor. He also initiated the Spacewatch Program and, until 1997, was its Principal Investigator (PI) for electronic surveying; their goal was to obtain statistics about asteroids and comets, including near-Earth asteroids. He has participated in the discovery of over 4,000 asteroids, as well as a number of comets. Besides teaching at the University of Arizona, Dr. Gehrels also lectures at the Physical Research Laboratory in Ahmedabad (India), where he is a Lifetime Fellow. This is a United Nations program for graduate students from a variety of countries, from Uzbekistan to North Korea. Presently, his research focuses on universal evolution. He was a winner of the 2007 Harold Marsury Award for his outstanding service to planetary science.

**Anton L. Grinin**, PhD in Biological Sciences, Leading Research Fellow of Volgograd Centre for Social Research. His main research interests include biotechnologies, global technological transformations and forecasts. He is the co-author of the monographs *From Biface to Nanorobots: The World on the Way to the Epoch of Self-Regulating Systems* (2015; 'Uchitel' Publishing House, in Russian), *The Cybernetic Revolution and the Forthcoming Epoch of Self-Regulating Systems* (2016; 'Uchitel' Publishing House, in English) and a number of articles including 'Macroevolution of Technology' and 'Global Technological Transformations'.

**Leonid E. Grinin** is Senior Research Professor at the Institute for Oriental Studies of the Russian Academy of Sciences in Moscow and Senior Research Professor at the Laboratory for Destabilization Risk Monitoring at the National Research University Higher School of Economics. He is the Editor-in-Chief of the journal *Age of Globalization* (in Russian), as well as a co-editor of the international journals *Social Evolution & History* and the *Journal of Globalization Studies*. Dr. Grinin is the author of over 500 scholarly publications in Russian and English, including 31 monographs. These monographs include *Philosophy, Sociology, and the Theory of History* (2007; in Russian); *Productive Forces and Historical Process* (2006, in Russian); *State and Historical Process* (3 vols, 2009–2010, in Russian); *Social Macroevolution: World System Transformations* (2009; in Russian, with A. Korotayev); *Macroevolution in Biological and Social Systems* (2008; in Russian, with A. Markov and A. Korotayev); *Global Crisis in Retrospective: A Brief History of Upswings and Crises* (2010; in Russian, with A. Korotayev); *The Evolution of Statehood: From Early State to Global Society* (2011); *The Cycles of Development of Modern World System* (2011; in Russian, with A. Korotayev and S. Tsirel); *From Confucius to Comte: The Formation of the Theory, Methodology and Philosophy of History* (2012; in Russian);

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**Antony Harper**, a researcher in the general area of applied mathematics to human historical processes, also understood as quantitative history and more appropriately, using Peter Turchin's term, as cliodynamics. He is currently associated with both New Trier College and Benedictine University. His primary research interests are modelling the pattern of urbanization over recorded history, *i.e.*, from approximately 3000 BCE to the present. More currently these interests include understanding the consequences of this urbanization pattern, applying the model of punctuated equilibrium, originally propounded by Eldridge and Gould, to the pattern of urbanization, understanding why complex systems in general should exhibit the PE pattern of growth, and within the constraints of punctuated equilibrium beginning to understand the context and mechanisms that bring about punctuated change, *i.e.*, quite frankly, understanding what causes historic tipping points.

**Andrey V. Korotayev** is Senior Research Professor at the International Laboratory for Political Demography and Social Macrodynamics at the Russian Presidential Academy of National Economy and Public Administration, Head of the Laboratory for Destabilization Risk Monitoring at the National Research University Higher School of Economics, Senior Research Professor of the Oriental Institute and Institute for African Studies, Russian Academy of Sciences, as well as a Professor at the Faculty of Global Studies of the Moscow State University. He is the author of over 600 scholarly publications, including such monographs as *Ancient Yemen* (1995), *World Religions and Social Evolution of the Old World Oikumene Civilizations: A Cross-Cultural Perspective* (2004), *Introduction to Social Macrodynamics: Compact Macromodels of the World System Growth* (2006), *Introduction to Social Macrodynamics: Secular Cycles and Millennial Trends* (2006), *Great Divergence and Great Convergence* (2015, with Leonid Grinin), and *Economic Cycles, Crises, and the Global Periphery* (2016, with Arno Tausch and Leonid Grinin). At present, together with Askar Akaev and Sergey Malkov, he coordinates the Russian Academy of Sciences Presidium Project 'Complex System Analysis and Mathematical Modeling of Global Dynamics'. He is a laureate of the Russian Science Support Foundation in 'The Best Economists of the Russian Academy of Sciences' Nomination (2006).

**David LePoire** has a PhD in Computer Science from DePaul University and BS in physics from CalTech. He has worked in environmental and energy areas for many governmental agencies over the past 25 years. Topics include uncertainty techniques, pathway analysis, particle detection tools, and physics-based modeling. He has also explored historical trends in energy, science, and environmental transitions. His research interests include complex adaptive systems, logistical transitions, the role of energy and environment in history, and the application of new technologies to solve current energy and environmental issues.

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**William R. Thompson** is Distinguished Professor and the Donald A. Rogers Professor of Political Science at Indiana University, Bloomington. He is also currently the editor-in-chief of the Oxford University Press's *Oxford Research Encyclopedia in Politics*. He is a former president of the International Studies Association (2005–2006), editor-in-chief of *International Studies Quarterly* (1994–1998 and 2009–2013), and has been on the editorial boards of numerous journals. He has published a number of articles in leading political journals and is the author, coauthor, or editor of such books as *The Arc of War: Origins, Escalation and Transformation* (2011, with Jack S. Levy) and *Transition Scenarios: China and the United States in the Twenty-First Century* (2013; with David P. Rapkin) (both published by University of Chicago Press), *How Rivalries End* (2013; University of Pennsylvania Press), *Asian Rivalries: Conflict, Escalation, and Limitations on Two-Level Games* (2011; Stanford University Press), *Globalization and Global History* (2006; Routledge), *Strategic Rivalry: Space, Position, and Conflict Escalation in World Politics* (2008; Cambridge University Press), and *Puzzles of the Democratic Peace: Theory, Geopolitics and the Transformation of World Politics* (2005; Palgrave-Macmillan). He has also received the World Society Foundation's Award of Excellence in World Society Research, the International Global Research Association and Moscow State University's V. I. Vernadsky Gold Medal of Honor (for contribution to global studies), and the International N. D. Kondratieff Foundation and Russian Academy of Natural Sciences' Silver Kondratieff Medal (for contribution to the social sciences).