

La Gran Historia

21st Century Challenges



International Big History Association



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La Gran Historia, el proyecto que busca la unión de todas las disciplinas científicas

Conferencia en la Universidad de Salamanca sobre una nueva aproximación al conocimiento apoyada por Bill Gates para entender todos los fenómenos Iga García Moreno, investigadora de la Universidad de Oviedo, ha presentado hoy en la Facultad de Ciencias de la Universidad de Salamanca el proyecto La Gran Historia, una nueva aproximación al conocimiento que trata de unificar todas las disciplinas desde un punto de vista interdisciplinar basado en las evidencias científicas.

"Nutriéndonos del conocimiento de todas las disciplinas ya establecidas, de ciencias y de humanidades, intentamos crear un nuevo mapa del conocimiento abarcando todo el tiempo, desde el Big Bang, la gran explosión que originó el Universo, hasta ahora", explica la científica en declaraciones a DiCYT. "La Gran Historia quiere estructurar la manera de integrar todos los datos que tenemos acerca del pasado", agrega.

De hecho, para entender algunos acontecimientos es imprescindible romper barreras entre distintas disciplinas científicas. Un buen ejemplo es que los dinosaurios y la mayoría de las especies de su época se extinguieron por el impacto de un meteorito. En este hecho, "el régimen del cosmos interacciona con el régimen de la vida y de la Tierra", comenta la investigadora.

Además, las interacciones también saltan a otras disciplinas del campo de las humanidades, como la historia. Olga García Moreno, que es geóloga, pone el ejemplo de la Revolución Francesa, que pudo estar influida en gran parte por un fenómeno volcánico ocurrido años antes. En 1783 la erupción del sistema volcánico islandés de Grímsvötn provocó unas emisiones de gases y partículas a la atmósfera tan fuertes que taparon los cielos europeos, acabando con las cosechas de aquel año. Como consecuencia, provocó una gran hambruna que precipitó en Francia el malestar social y la consiguiente revolución.

La Gran Historia trata de enlazar acontecimientos a través del concepto de complejidad y analiza cómo dicha complejidad ha ido aumentando desde las formas más sencillas que aparecieron tras el Big Bang hasta la actual sociedad humana.

Sin embargo, el intento de La Gran Historia de borrar las fronteras entre las especialidades no significa que renuncie a las mismas, sino que se nutre de ellas. "Han hecho que el avance científico y tecnológico haya llegado al punto en el que estamos en avances de la medicina y la exploración espacial, por ejemplo, pero es el momento de romper las barreras que separan las distintas disciplinas para seguir avanzando", comenta la investigadora. Dentro de este movimiento hay una rama más teórica, que trata de ver cómo construir este nuevo conocimiento. En cambio, otros "grandes historiadores" se dedican a su aplicación, sobre todo en el campo de la enseñanza, porque esta nueva aproximación al conocimiento constituye una gran herramienta pedagógica. "En la educación preuniversitaria los estudiantes pierden la noción de lo que estudian, porque lo hacen de manera aislada en asignaturas estanco. Sin embargo, en Estados Unidos y Australia ya se están llevando estas ideas a los institutos para que los alumnos encuentren una nueva motivación al poder interrelacionar todo el conocimiento que adquieren", comenta.

Asimismo, hay profesionales que se dedican a construir La Gran Historia desde su disciplina, por ejemplo, "los geólogos tratamos de ver cómo ciertos procesos geológicos pueden haber influido sobre la Humanidad".

El apoyo de Bill Gates

Los pioneros de esta iniciativa fueron David Christian, de la Universidad de Macquarie, en Sidney (Australia), que empleó el término Big History por primera vez, y Fred Spier, de la Universidad de Amsterdam, que comenzó a aunar las disciplinas en un solo curso interdisciplinar para explicar todo el pasado. Ahora, la colaboración con Bill Gates ha hecho posible el Big History Project, proyecto que trata de promover la idea que ofrece materiales online gratuitos para profesores y estudiantes. En España, la Universidad de Oviedo trata de divulgar la idea. "Uno de los objetivos de La Gran Historia es prepararnos para el futuro. Si queremos crear modelos para el porvenir, debemos entender bien el pasado teniendo en cuenta los procesos a escala global en el tiempo y el espacio, porque si no, habrá variables que se queden fuera de los análisis", señala la investigadora.

La clave para conseguirlo, en un mundo ya tan especializado, será la colaboración. "Cada vez son más necesarios los estudios interdisciplinares. Las publicaciones más relevantes ya son interdisciplinares, el futuro de la investigación está en ello. Deberíamos apostar por ello en la formación, tener un curso para formar a los estudiantes para que en un futuro se puedan dedicar a la investigación con más amplitud de miras", opina.

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Big History: the project that searches for the union

of all the scientific disciplines

A talk at the University of Salamanca about a new approximation of all knowledge supported by Bill Gates in order to understand all phenomena.

lga García Moreno, a researcher at the University of Oviedo, presented the project "La Gran Historia" (Big History), a new approach to knowledge based on scientific evidences that seeks to unify all disciplines in the Faculty of Sciences of the University of Salamanca.

"Relying on the knowledge of all the established disciplines, the sciences and the humanities, we try to create a new map of knowledge spanning all time, from the Big Bang, the great explosion that originated the Universe, until now", explains the scientist in Statements to www. dicyt.com. La Gran Historia wants to structure the way of integrating all the data we have about the past," she adds.

In fact, to understand some events, it is essential to break down barriers between different scientific disciplines. A good example is that dinosaurs and most of the species of their time were extinguished by the impact of a meteorite. In this fact, "the regime of the cosmos interacts with the regime of life and Earth", comments the researcher.

In addition, the interactions also jump to other disciplines in the field of the humanities, such as history. Olga García Moreno, who is a geologist, sets the example of the French Revolution, which may have been influenced in large part by a volcanic phenomenon occurred years before. In 1783 the eruption of Icelandic volcanic system of Grímsvötn caused emissions of gases and particles to the atmosphere so strong that they covered the European skies, ending the harvests of that year. As a consequence, it provoked a great famine that precipitated in France the social unrest and the consequent revolution.

La Gran Historia tries to link events through the concept of complexity and analyzes how this complexity has been increasing from the simpler forms that appeared after the Big Bang to the present human society.

However, that does not mean that one renounces specialties, but nourishes them. "They have made the scientific and technological advances to the point where we are, for example, in medicine and space exploration. It is time to break the barriers that separate the different disciplines in order to continue advancing," says the researcher.

Olga García Moreno

Within this movement there is a more theoretical branch, which tries to see how to construct this new knowledge. On the other hand, other "big historians" are dedicated to its application, especially in the field of education, because it is a great pedagogical tool. "In pre-university education students lose the notion of the subjects they study, because each is taught in isolation. However, in the United States and Australia, the synthesis of disciplines through big history is being taught in high schools so that the students find a new motivation because they can interlink all the knowledge they acquire," she says.

Also, there are professionals who are dedicated to building Big History from their discipline, for example, "geologists try to see how certain geological processes may have influenced humanity."

The support of Bill Gates

The pioneers of this initiative were David Christian of Macquarie University in Sydney, who used the term big history for the first time, and Fred Spier of the University of Amsterdam, who began to combine disciplines in a single course to explain all the past. Now, collaboration with Bill Gates has made possible the Big History Project, an initiative that seeks to promote the idea and offers free online materials for teachers and students. In Spain, the University of Oviedo tries to spread the idea.

"One of the goals of Big History is to prepare for the future. If we want to create models for the future, we must understand the past well taking into account the processes on a global scale in time and space, otherwise, there will be variables that are left out of the analyzes," García Moreno says.

The key to achieving this, in a world already so specialized, will be collaboration. "Interdisciplinary studies are increasingly needed. The most relevant publications are already interdisciplinary, the future of research lies in this. We should bet on this in training, have a course to train students so that in the future they can dedicate themselves to research with more broad-mindedness," she says.

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21st Century Challenges: On some forecasting inferences of big history

By Akop P. Nazaretyan Full Professor, Senior Researcher in the Institute of Oriental Studies (Russian Academy of Sciences), Director of the Center for Mega-history & System Forecasting, Editor-in Chief of the journal Historical Psychology & Sociology

Author's Note: This is a journal version of the analytic note for the Global Challenges Foundation.

In fact, the people living today are the most important ever to walk the surface of the planet, since they will determine whether we attain this goal or descend into chaos. *Mitio Kaku*

Introductory comments on methodology

<u>Generals are always prepared to fight the last war</u>. Winston Churchill

istorical experience in forecasting shows that the major cause of errors has been authors' propensity to *linear* extrapolations, which is consonant to hard determinism in classical science. Post-classic science has essentially changed attitudes to the concepts related to *chance* and *nonlinearity* and respectively, to the role of *mental* factors in the course of events. Modern methods are synthesized in synergetic (complexity theory) patterns, so far as they emphasize the instability phases and palliative scenarios and always mention the *price* for progress in any crisis solution; thus human thinking and will are involved in global causalities. Nevertheless, the scope of subjective influences is disputable, so that even though a model looks formally nonlinear (with exponential curves, etc.) the *nonlinearity gradient*, if underestimated, entails blunders.

The underestimated subsequent deflections from a linear model are in turn conditioned by two circumstances. First, by the short retrospective distance to be extrapolated, i.e. the most apparent current trend is transferred into an indefinite future. Second, by the insufficiently system oriented property of the analytic model: the extrapolation is inferred from separate fields like economy, power industry, demography, ecology and so on. This smoothes the "subjective" factors and causes inadequate appreciation of the actual opportunities and challenges. Meanwhile, comparative historical research shows that the specific weight of mental reality in the systemic causalities has been progressively growing and has achieved a very high magnitude.

Akop P. Nazaretyan

2017].

composed of three variables: *menace*, *danger* and *risk*. Menace is *any event that can damage the agent's interests*. A living organism, even more a human individual or a society, permanently exist in the condition of outer and inner menaces which don't produce dramatic effects until the agent successfully copes with them. Danger is a more delicate variable: it is described as a relation of the menace to the agent's readiness to withstand it. Finally, risk is *the probability of danger increasing in case of either certain activities or inaction*.

Lowered menaces can provoke growing dangers in certain situations and viceversa. A textbook example: whereas there are considerably more menaces outside one's place of residence, accidents and injuries (up to sudden deaths and killings) are more frequent at home. Having left the dwelling, one remembers about probable menaces, is more concentrated and ready to face them, while back at home, he/she relaxes and thus runs into unexpected troubles. Danger essentially increases in two cases: if one ignores, underestimates or neglects the menace and, on the contrary, if "the rabbit's attitude" entails the feeling of doom and one's own helplessness.

These definitions especially matter when we discuss the planetary outlook. With that, a predicting value essentially depends on how much the trends picked for extrapolation correspond to the prognostication scale and tasks. The actual



Fig.1. The Stages of Cosmic Evolution (by Eric Chaisson)

historical situation is such that effective patterns of the future require a maximal retrospective distance and the systematic involvement of disciplinary fields from cosmology to psychology. This is now available in view of the fundamental scientific discoveries of the latest decades, which give us a new background to estimate the planet's observable futures. For detailed illustrations and bibliography for the following presentation see the author's publications [Nazaretyan 2015, 2016,

> ... By now, this is the most complete knowledge about you and me, about why we do exist and why we are so as we are, about what might follow us and to what extent this depends on each one. Yakiy Osvitleny

An empirical data array had been accumulated by the 1980s to argue that social history, prehistory and the histories of biosphere, Earth's crust and cosmos were a single process. We could distinctly trace back common vectors of the consecutive transformations over a period of almost 14 billion years, to the very horizon of actually available retrospection, the "Big Bang". The Metagalaxy has been successively evolving towards more and more complex and sustainable far-from-equilibrium conditions. Scientists from various countries and fields began to speak about a universal evolution, and a research project appeared aimed at an integrated image of the past, variously called *Mega-History*, *Big history* or *Weltallgeschichte*. The mega-trend of increasing complexity apparently contradicts the suggestions inferred from the classical natural history (time as growing entropy; heat death theory), but it is reliably corroborated by the empirical data in modern sciences and humanities; therefore, astrophysicists have to distinguish between the *thermodynamic arrow of time* and the *cosmological arrow of time* (see Fig.1) leaving under issue their causal relations.

The arrow looks rectilinear on Fig.1 yet the cumulative changes have not, in fact, been uniform. The first billions of years after the Big Bang, evolution had been slowing down until heavy elements were synthesized in the depths of first generation stars and ejected into the cosmic space by supernova explosions. This initiated an additional self-organization mechanism with competition for free



Fig.2. The two hoses of universal evolution (by Alex Pinkin)

energy (heavy elements unlike light ones need energy from outside). Thus about 10 billion years ago, as evolution went on its way towards organic molecules and living

matter, the slowdown changed into acceleration: "the two hoses" of the universal evolution (see Fig.2).

The Solar system emerged nearly 4.6 billion years ago, and the first signs of living organisms on Earth are recorded since about 4 billion years ago. Recent discoveries in paleontology, biophysics and cosmology have reinforced the hypothesis of life's cosmic origin: the first organisms supposedly emerged somewhere in the Milky Way Galaxy, were carried by meteorites and nestled on all of the suitable planets during 215 million years (one Galactic year). In particular, their first signs on Earth precede the appearance of the oceans. Thus, our planet was likely one of multiple points on which further cosmic evolution was localized.

The important thing here is that the acceleration continued and followed an astonishingly regular regime. A series of independent calculations done by Australian, Russian and American scientists, who used different sources and even different mathematical instruments, show that the time periods between phase transitions in biospheric, pre-social and social evolution have been shortening in a simple logarithmic fashion for 4 billion years (see Fig.3).



Fig.3. Scaling law in the phase transitions (by Alexander Panov).

These calculations disavowed the "exogenous" approach to explain the catastrophes and crucial episodes in both social and biospheric histories, in which analysts search for external causes like geologic, climatic or cosmic cataclysms, although this each time required artificial assumptions. In the new version, the story looks different. Continents have been drifting, magnetic poles shifting, big meteorites falling down, powerful volcanoes erupting and climate repeatedly changing during the 4 billion years; later on, the wayward *Homo sapiens* intervened with their free will and never-ending extravagances, and about 10 thousand years ago (the Neolithic) the anthroposphere started to arise; nonetheless, the global transitions each time preceded by crises and catastrophes followed the logarithmic succession.

This paradoxical fact turns us to the synergetic pattern of *delayed dysfunction*. The accumulation of negative effects of a sustainable non-equilibrium system's (biosphere and, later, society) anti-entropy activity entails, over time, environmental degradations which devalue the old mechanisms of sustainability and extensive development. Thus the outdated mechanisms provoke a catastrophic entropy growth, so that the system's subsequent viability requires more delicate mechanisms and advanced "intelligence". The global crises caused by the biosphere's or society's own activities have been each time solved by means of deep reconstructions and archaic subsystems' cutoff, like extinction of species and the destruction of social-natural entities.

Careful analysis of the crucial episodes shows that, over and over again, the events could have developed otherwise. The evolution of biosphere and later anthroposphere could have collapsed in a global catastrophe (the *simple attractor*, in synergetic terms) or have been suspended (the *horizontal attractor*) and slowly degraded with time. Yet, we live on this planet thanks to the fact that evolution has moved towards the *vertical attractors* in each turning point, that is, global sustainability has been each time reestablished by means of the explosive growth in the global system's complexity and its aggregate intellectual quality; this cost catastrophes of many separate subsystems, but it ensured new global sustainability on a higher and higher level of non-equilibrium. One more consideration originates from the General System Theory's *implementation principle: all* possible events *do* happen. From that, we must assume that alternative scenarios are performed in multiple points of the Universe and very few of the evolving planets achieve a level comparable to the one we find on Earth.

The Singularity puzzle

The ever-accelerating progress of technology and changes in mode of human life... give an appearance of approaching some essential singularity in the history of the race beyond which human affairs, as we know them, could not continue. John von Neumann

Having extrapolated the hyperbolic curve into the future, the researchers have come to a nearly unanimous (ignoring the individual interpretations) and still more striking result: around the mid 21st century, the hyperbole turns into a vertical. That is, the speed of the evolutionary processes tends to infinity, and the time intervals between new phase transitions vanish. The point on which the value of a function becomes infinite is called the singularity; therefore, the mentioned mathematical inference has been designated by the authors' names as *Snooks – Panov's Vertical* or *Kurzweil's Singularity*.

The Mega-history inferences are corroborated by the calculations based on more particular parameters, like the accumulation of the genetic burden because of falling children's mortality and growing longevities, etc. Indeed, our civilization seems to be approaching at a growing rate the polyfurcation point whose planetary (and cosmic?) significance exceeds all the foregoing phase transitions. Thus, the four-billion-year-long evolution intrigue will be solved somehow or other during the current century. Cross-disciplinary investigations applying a synergetic pattern help discern three attractors beyond the mathematical Singularity, with a set of scenarios within each one.

Transition to history's "descending branch". European philosophers wrote a lot about this perspective in the 18th-19th centuries; yet they saw external reasons (like Earth aging or the Sun blowing out) and used to put this transition off many thousands, millions or hundreds of millions years in future. Now we see that the cause of history exhaustion can be exclusively humans' own activity and that the timetable amounts to decades. As we trace onward various anthroposphere and biosphere degradation scenarios we find that the process can continue from several days to millennia; anyhow, the *simple attractor* is that Earth will become a "normal" cosmic body like the Moon or Mars free from *res cogitans* and living matter at all. Evolution's suspension guaranteed by a shift of core social activity to virtual reality *– horizontal attractor*. The "hang-up" may be long-term, but sooner or later, the escapist civilization will be absorbed by the growing universal entropy.

Transition from evolution's planetary phase to the cosmic one. This doesn't look idyllic either, since the cosmically relevant phase implies radical transformations in the mind's conditions, qualities and substrates (like man-machine structures and so on) as a premise for subsequent development: progress has never been the way "from the worse to the better" but just an alternative to the system's destruction.

Is a cosmic perspective possible?

Probably, the "Silence of Cosmos" simply means that not a single planetary evolution has so far given birth to intelligence commensurate to its cosmic destination. Vazgen Garun

Up to the end of the 20th century, most of respectable astrophysicists shared the belief that life, society, culture and mind were nothing but epiphenomena (side products) of material structures' blind game, without any potential influence on cosmic developments and doomed to dissolve in the ruthless universal entropy. The Nobel Prize winner, Steven Weinberg, expressed this common belief by noting that only the awareness of the unavoidable end imparts a color of a "high tragedy" to the "farce" of human existence. Moreover, according to the extreme version, what we call evolution is in fact an irreversible entropy growth in the Universe and humankind with its crazy ambitions is the "cosmic trash". Some Soviet astrophysicists or descendents from the USSR influenced by the "Russian Cosmic Philosophy" ventured to assume humans' potential intervention in the cosmic-scale processes and strategic perspectives; yet this was rather an exotic position in the 20th century science.

Following relevant papers from the late 1990s on, we can see that the conceptual mainstream has considerably changed. Abundant arguments for the assertion that consciousness is not a side product, but a "cosmologically fundamental fact" and it can conclusively influence subsequent evolution of the Metagalaxy, are widespread in recent astrophysical books and articles outside Russia (like the ones by David Deutsch, Martin Rees, Paul Davies, Lee Smolin and others). The authors argue that no "physical laws" impose an absolute ban on creative engineering. Simultaneously, studies in gestalt-psychology and heuristics have demonstrated that any boundaries are creatively surmountable by a change of the cognitive meta-system. Specifically, those parameters of the problem situation that are uncontrollable constants inside a certain model become manageable variables within a more complex meta-model; this implies that both the range and scale of purposeful control of mass-energy flows are potentially unlimited.

Yet, if this is so, cosmos should be full of powerful civilizations! With up-todate high tech, astronomers discover on average weekly a couple of new planets outside Solar system and several ones rather similar to Earth by their parameters have been lately found. However, all efforts to register the slightest intelligent activity sign remain fruitless. Thus the so-called *Fermi Paradox* ("Where are they?"), which was worded by the Italian physicist in the early 1950s sounds more and more actual.

Technology, psychology and social viability: The law of techno-humanitarian balance

We have created a Star Wars civilization, with Stone Age emotions, medieval institutions, and godlike technology. Edward Wilson

To explain the paradox, the scientists referred to technical and conceptual troubles, but lately "humanitarian" side has gotten growing attention. Summarizing diverse data from cultural anthropology, history, historical sociology and psychology concerning anthropogenic catastrophes, researchers have found a regular relation among three variables: technological potential, quality of cultural control (actual values and norms) and social sustainability: *the law of techno-humanitarian balance*. Namely, the higher is the power of production and war technologies, the more advanced behavior-regulation is required to enable self-preservation of the society.

Each new technology (not only military) carries new *menaces* that entail catastrophes; their *danger* declines after social psychology and culture have adjusted to them. As special investigations show, many flourishing societies' tragic destiny was due to the unreadiness to cope with their own increased power, so that the natural or geopolitical backgrounds of their existence were subverted. History was continued by those who managed to balance their values and norms of activity with the new technologies within the proper time, and the selection of viable social organisms was intensified by global anthropogenic crises. The dramatic "scrapping" of imbalanced societies has entailed important positive consequences as well: while both the destructive power of technologies and the demographic densities have been increasing, the societies' *Bloodshed Ratio* (the ratio of the average number of killings per unit of time to a population size) has been nonlinearly but successively falling down.

Thanks to that, humanity in a whole, unlike many regional communities, has so far managed to rain in the increasing power of its tools. Yet, having accepted potentially unlimited capabilities of the technological intelligence, we are not ready to estimate confidently the perspective of its humanitarian constituent. What can play a fatal role in the destiny Earth or any other planetary civilization are the incommensurable ranges of self-control – aggression-restraint and sublimation – and the natural power manipulation. Finally, any intelligence originated in a planetary evolution fails to restore its inner balances and destroys itself before it achieves the cosmically relevant stage. At best, we can suggest that very few technologically developed civilizations (perhaps, a single one) prove able to overcome the borderline between planetary and cosmic stages. The rest, as well as the biospheres that interrupt their evolution at earlier stages, remain universal evolution's waste products by implementing all of the deadlock strategies in universal natural selection. Will Earth civilization be among them?

Peace and war: The diffusing criteria

This is the way the world ends, Not with a bang but a whimper. Thomas Stearns Eliot

The "global crises" concept dates back to the 1950s; humanity was then on the brink of a nuclear war. Thanks to a series of unprecedented international compromises in the 1960s, a brittle military and political equilibrium was settled; psychological adjustment to the nuclear *menace* restricted the *danger* of a total catastrophe. Yet the shock experience which supplemented the tragedies of the two world wars increased awareness of planetary interdependencies, on the one hand, and anxiety about the future, on the other. Since the early 1970s, the attention of scientists and the public was reoriented on *expected* global risks. The unparalleled and geographically unequal demographic growth, the coming exhaustion of energy, sweet water and atmospheric oxygen and the other causes of apprehension became issues for passionate discussions.

The debates concerning current and predicted menaces essentially influenced politicians and the public and favored the satisfactory completion of the 20th century. Panhuman success was due to the fact that the main menaces had been discovered and overcome in proper time. New generations have not yet fully appreciated the greatest achievements like the mutual non-use of nuclear weapon, the ban on nuclear tests in atmosphere, hydrosphere and cosmos, and the global ecological measures. These were unprecedented breakthroughs, which have made possible our current existence. For the first time in human history, a new kind of non-confrontational political coalitions emerged, which were *not aimed against an enemy agent*, but cemented by a faceless (free from a subject for common hatred) threat of total collapse. This was the way human culture and psychology were adjusting to nuclear technologies, like long before they had adjusted to firearms, iron weapons, and so on back to the primary choppers by which *Homo habilis* used to crush one another's skulls 2.5 million years ago.

Nowadays, most papers on global forecasting either design an unconditioned and cloudless progress or turn us back to the late century conflicts. A recent brilliant example is the discussion at the Nobel Symposium in 2016 about whether or not a new world war will happen. Many polemists insisted on the pessimist prognosis because of the growing international contradictions, and the concept of the future war reproduced the familiar classic images. In February 2017, newspapers informed that Swedish government re-introduced the army draft which had been canceled seven years before (the effect of self-fulfilling prophecy?).

Meanwhile, as we compare up-to-date global problems to large-scale historical precedents and analyze advanced scientific projects, we find reason to suggest that most of expected threats are potentially surmountable by means of "exponential technologies". This refers both to demographic growth, energy and other resources

exhaustion (7.5 million hunters-gatherers were enough to cause ecosystem destructions and the biggest part of mega-fauna extinctions all over the Earth at the height of the Upper Paleolithic) and genetic burden accumulation, etc. However, each technology implies new *menaces* and respective *dangers* and *risks* caused by belated understanding. Their substance as a whole is not reducible to what humanity faced in the 20th century.

Thus, nuclear war risks have overshadowed a new unexpected menace that scarcely loomed up more than half a century ago: the lines between the conditions of peace and war started to blur. In our calculation, up to 25 million people died in the so-called "Cold" War, although we could register no more than four *officially* declared wars after 1945 and these were not the most large-scale or sanguinary ones (like the Honduras – Salvador "Football War" in 1969). Since the Nuremberg Trial condemned "war" as an outrage on humanity, most armed conflicts were accompanied by the inexhaustible euphemisms, sometimes rather absurd ones, like the "humanitarian bombardment" in Yugoslavia, 1999.

Since then, it has been more and more difficult to distinguish between war and peace, which was completed by the blurring lines between war and non-war techniques. The computer engineer, Bill Joy, noticed in 2000 that the weapon of mass destruction century was giving place to the century of *knowledge-enabled destruction*. Unlike the ballistic rockets and nuclear warheads, the newly developing technologies, every day cheaper and more available, are slipping out of governmental control and falling into the hands of irresponsible fanatics or of simply oafs.

Besides, after the bipolar world was destroyed in the 1990s, the state leaders' political thinking has been losing its quality as well. The grand masters of the 1950-80s have been replaced by lower-grade players without their predecessors' habit of estimating several moves ahead. The new leaders, therefore, are facing one boomerang effect after another on the international scene. Since the bipolar worldview conserved its dominance, this turned by a *pathology of poles* in the global geopolitics by the beginning of the new century. On one pole, we found the American elite, still infected by the euphoria of "Cold War" victory and an

irrational craving for new and new "small victorious wars" under the pretext of forced democracy spreading. The other pole, emptied after the USSR defeat, was filled by terrorist groups and gangs, the ones that had been cherished by the opposing military blocks in their time and then left alone by the bosses and thus grew wild. (Similar situations are well-known in ecology: for instance, after wolves are shot out, their niche is occupied by the feral dogs.)

The historical situation on the whole remains highly ambiguous. In 2003, the Royal astronomer of Great Britain Sir Martin Rees appraised Earth civilization's chances to survive the 21st century as 50:50, which corresponded to our own scenarios at that time. Indeed, the 2000s were marked by the historical record of nonviolence: the UN and the WHO data reflected an unprecedentedly low Bloodshed Ratio, so that the overall violent deaths in international, everyday conflicts and political repressions during the decade were yearly less than the number of suicides. Yet, since 2011, further developments haven't followed the optimal scripts. A nuclear war is actually considerably less probable than it was in the 1950-60s, as far as humanity has adjusted to this menace. Yet in the developing technological and geopolitical situation, a global catastrophe can happen without a "world war" in its 20th century readings (which were essentially different in its first and second halves). Following T.S. Eliot's prophesy, we may grotesquely remark that the 20th century world could have ended with a "bang", while the 21st century can end with a "whimper". Most people will hardly realize the transition to history's "descending branch" in any of the imaginable scenarios, like a sliding down to the medieval condition and further back.

Today even more than ever before, the principal menaces are rooted in human minds. What we are facing now is not a "clash of civilizations' but rather a *clash of the historical époques* concentrated in the planet civilization's unique spacetime. The past is often taking revenge (a hundred years ago Walther Rathenau called it "vertical intervention of barbarism"), which now shows the appearance of the symptoms of the approaching history's "descending branch". Religions and confessional distinctions cause confrontations, and the political vocabulary is overfilled with anachronistic schemas like "national interests" or "national future". between concepts like "interest", "ambition", "caprice" and "profit" nor define "nation" amidst the growing interfusion of races, languages and religions. Consequently, the ambition of a powerful political leader, a dominant mass emotion or an influential corporation's profit is marked as the national interest. In fact, the excess of emotionally overloaded words with empty contents devalues the "patriotic" rhetoric and makes the quality of political discourse dangerously out of tune with the developing technologies. According to our observations, most politicians and their counselors aren't aware of how absurd a "national destiny" beyond the world civilization's perspective is. Content-analysis of the leading statesmen's speeches shows an obsessive link between words like "union" or "consolidation" and the word *against*. The enemies' crafty designs are central in the political argumentation again as a reaction to the side effects of the rectilinear "globalization" utopia.

The menaces in this century are related to the inertia of *ideological* thinking, which is traditionally based on the "them-us" matrix. From time immemorial, the *image of common enemy* has been a significant factor in social worldview and solidarity. It relatively restricted violence inside a tribe, chiefdom, state, confession or class by transferring aggression outside; at once, it served as the meaning-formation guideline. Meanwhile, the ideologies that agitated peoples in the 20th century have lost their motivation; this also includes liberal democracy stripped of its Protestant background. As far as many people feel uncomfortable beyond the "them-us" mental pattern, a search for strategic meanings is reanimating religious and/or national fundamentalism.

Life's meaning: The nucleus of 21st century global problems

The new paradigm is the incarnation of a more optimistic view for the ones who are searching for life's meanings. Paul Davies

Social-psychological experiments have demonstrated that there is at least one alternative mechanism for both consolidation and meaning-formation: the *image of common cause*. This image doesn't assume an ill-intentioned enemy agent but rather

aims at a joint work to overcome the natural chaos or the effects of humans' own thoughtlessness. We find it in the political experience as well: here, the grandiose compromises half a century ago should be remembered again.

The great thinkers since the early Axial époque (about 2.5 thousand years ago) have been looking for the non-confrontational solidarity concept, so that cultural history brings us high standards of panhuman meanings beyond religious or quasi-religious ideologies. However, the masses' readiness to adopt such mental constructions has always been limited. Contrariwise, historical evidence is abundant that after a long period without real or potential wars, life's meanings dilute and the masses feel nostalgia for new demons and idols.

So far, besides being a resource for meaning-formation, intergroup conflicts have been social development factors as well, including the advance in humanitarian values. Yet, given the pattern of *delayed dysfunction* (see above), present-day technologies make this historical inertia fraught with a possible planetary collapse. Thus, *life's meanings have become the nucleus of the 21st century global agenda*. More specifically, the issue is about whether or not our minds prove ready to construct strategic meanings beyond ideologies and intergroup confrontations. The development of genetic engineering (versus the exponential genetic burden accumulation) and symbiotic man-machine substrates might make traditional group-versus-group attachments and prejudices senseless. Yet, before new reproductive technologies can play a global role, the "ideological renaissance" can cause catastrophic effects; besides, new technologies themselves are fraught with fatal misuse, as they have been since long before. To minimize the negative probabilities, urgent measures promoting secular education and scientific worldviews are necessary.

Although classical science was in its essence indifferent to human aims, values, meanings or destinies, these categories are essential in modern cross-disciplinary knowledge. Therefore, systematic outreach and awareness-raising may help develop planetary and cosmopolitan consciousness among both civil society and political leaders (by considering their professional properties).

"21st Century Challenges: On some forecasting inferences of big history"

This is the background for my practical recommendations.

Recommendations

While considering any event, let us ask ourselves how it might be useful in the following order: 1 for humankind, 2 for the motherland, 3 for one's friends and family, 4 for oneself. The origin of all of the evils that surround us from the cradle is our manner to turn this progression backward. Vladimir Odoyevsky

Scientists in various countries have lately been discussing calculations and respective hypotheses of the planetary Singularity. International meetings have been held and monographs and collections of papers published. The *Singularity University (SU)* started to function in the Silicon Valley in 2009 under the aegis of *NASA* and other organizations. The *Center for Mega-History and System Forecasting (CMHSF)* was founded in 2010 in the Institute of Oriental Studies, Russian Academy of Sciences. Similar institutions have been later formed in Japan and in some post-Soviet countries.

In 2010 the *International Big History Association (IBHA)* was established from networking in the *World History Association (WHA)*. Even earlier, since the early 2000s, respective cross-faculty courses have been taught in the universities of Europe, America, Asia and Australia, which gather hundreds of students in the lecture halls.

Unfortunately, the two research lines – the one studying more the future and the other mostly turned to the past – are so far faintly connected. Still more lamentable is the fact that the relevant scientific discoveries have not yet attracted attention of either professional politicians or politically active citizens, though competently organized presentation might considerably influence many people's thinking and activities.

My basic suggestion is to launch an international program for extending the web of clubs and public universities in order to discuss popularly global scenarios and to demonstrate humanity's inseparable destiny in the observable future. The job might be done under the aegis of the *Global Challenges Foundation* and other humanitarian institutions, including UNESCO. If the suggestion excites the experts' interest, the *CMHSF* in contact with *IBHA* and *SU* might gather an international cross-disciplinary professional group to prepare particular syllabi, learner's guides, audio-visual and other aids for popular cosmopolitan education. A relevant set of films, gaming and other artworks has been accumulated by the professional communities for more than fifteen years. Mass media, Internet-resources and opinion leaders in the informal webs and the mass and network communication psychological technologies are to be involved as well.

The experience of teaching Mega-history (Big history), global forecasting and psychology of social security in various universities are to be synthesized at the preparatory stage. It goes without saying that the syllabi, didactic aids and methodic are supposed to be adapted to the audiences' cultural and religious traditions, educational attainments and professional interests. The standard syllabus might include the following subject directory.

1

The first subject scope gives elementary information about Mega-history. The teacher is to show graphically how the continual evolution of cosmos, Earthly nature and humankind has been lined up in a single, actually and potentially interdependent process. It is useful to demonstrate to what extent human body and mind, from the elementary reactions up to the most complex conceptual constructs, are related to our cosmic origin and to the evolution of life and culture.

2

The second subject scope includes a review of human history and prehistory emphasizing the dramatic relationship between the developments in technological and humanitarian culture. It should be shown how any new military or production technology entailed both privileges and menaces, what kind of catastrophes the misbalances between technological powers, on the one hand, and cultural and psychological self-control on the other, entailed, and how the advances in values and norms have provided societies' sustainability in spite of the growing destructive power of their technologies. Here, the story of the birth, evolutions, inner splits and compromises of the world religions, nations, and classes would be appropriate. Great thinkers' and prophets' insights should be recounted, those that refer to the panhuman solidarity without group-versus-group confrontation, like the one by the 19th century Russian "Cosmist" philosopher in the epigraph; there are similar examples in many cultural traditions. Besides, it is high time to demonstrate to students and the general public why and how the role of individual decisions and actions in world causalities has been growing with the technological power. To develop this subject scope, we suggest using the conception of anthroposphere as an antithesis to the bio-centric philosophy ("humans are an element of the biosphere"), which was very popular in the second half of the 20th century. That philosophy essentially promoted ecological consciousness, but later on it led its adherents into the deadlock of misanthropy. Anthroposphere is the background of the ecological philosophy in the 21st century. It is seen as a radically more complex system (compared to the pre-human biosphere) in which biota constitute the bearing substructure, and its control unit is human mind. Social-natural system's sustainability depends more and more on the conditions of the public consciousness, and the internal contradictions and disparities in its development are the chief reasons for natural and social calamities, which now threaten with the Earth evolution's breakup.

3

The third subject scope refers to the prognostic tree. Here, it is particularly important to take into account the disputants' educational attainment, qualification and prevailing values. Subject to these qualities, up-to-date calculations and data from the sciences and the humanities should be presented to demonstrate how absurd and utopian are the "separate" futures for the national or confessional communities.

Specific experiments and trainings will demonstrate how both human solidarity and strategic life's meanings are possible based on a cosmic perspective of the intelligence that has originated from Earthly humans development, without either the "them-us" contrapositions or the appeals to a Heavenly Lord. While working with mature and especially young politicians, it is worth appealing to their professional ambitions. The trainer needs to show them how those who first exploit the evidences of the next decades' crucial moment for world history in their programs and arguments beyond "national interests" and similar archaic stereotypes can gain determinant advantage and international public support.

The crisis of the simplified versions of "Globalization" requires particular discussion. The interventions of "advanced" states and governments in the "behindhand" peoples' life, on the one hand, and mass migrations into the richer regions, on the other hand, call forth growing protests both from the "left" and the "right". It seems important to show that what provoke uncontrolled mass migrations and sudden collisions among different historical époques with resulting cultural shock are, in most cases, just poorly thought-out interventions, including the military ones. Taking into account that globalization is the imperative for the modern world's survival, collective compromise programs are necessary; otherwise, the conflicts will most probably multiply.

Advisory support should be presented for Western politicians to form electoral programs and technologies that might be attractive for civil society and essentially increase their political effect. Work with "non-Western" politicians will require still more careful aid of competent analysts and opinion leaders. In my tentative estimates, in case of the intensive involvement, the first organizational stage would take near half a year. Taking into account further approbation and corrections, the systematic campaign of full value might start a year later.

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IBHA conference July 26 - 29, 2018

Please plan on participating in the 2018 IBHA conference from July 26 - 29 at Villanova University, near Philadelphia, Pennsylvania, USA. Here are <u>directions to Villanova</u>, which is a half hour train ride from Philadelphia on the "Main Line." Take a <u>virtual tour</u> of Villanova here. Panels and plenary sessions will be in the Connelly Center. You may reserve an attractive room on west campus or stay at nearby hotels.

Before or after the conference, you will enjoy the <u>Philadelphia area</u>. <u>Independance Hall</u> is the birthplace of America; it is where the Declaration of Independence and later the US Constitution were signed. Great museums include the Philadelphia Museum of Art, The Barnes Foundation, Rodin Museum, The Academy of Natural Sciences, and the Museum of Archaeology and Anthropology. The Liberty Bell has inspired many in the struggle for freedom. Among Eastern State Penitentiary's celebrated prisoners were Al Capone. A few ideas for restaurants are here, another one is here, and here.

A Review of **Dava Sobel,** *The Glass Universe* by David Chuss

THE

GLASS

UNIVERSE

HOW THE LADIES of the

HARVARD OBSERVATORY TOOK

the MEASURE of the STARS

Department of Physics, Villanova University

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n her prior works, *Longitude* and *Galileo's Daughter*, Dava Sobel has established a narrative style in which she skillfully weaves tales of major scientific breakthroughs with the human stories and the historical context in which they occurred. This is especially true for her latest work, *The Glass Universe*, in which she details the stunning contributions of women to the development of modern astronomy.

In *The Glass Universe*, Sobel chronicles the storied Harvard Observatory from its early days in the late nineteenth century under the directorship of Edward Pickering. During this period, photography was starting to play a central role in astronomy, enabling a precise and permanent record of the heavens to be captured for the first time. This, along with the advent of stellar spectroscopy, a technique for measuring the distribution of colors present in starlight, revolutionized astronomy into its modern incarnation as a multi-tooled science capable of probing beyond the phenomenology of the heavens to a more comprehensive physical understanding.

The title of the book refers to the approximately 500,000 glass plates that contain the photographs and spectra of the sky observed by the telescopes of the Harvard Observatory from 1885 to 1992. These plates, still in use today, provide a symbol for the historical advancement of astrophysics over this century. From the perspective of the Harvard Observatory, Sobel elucidates the development of the modern field of astronomy from a cultural standpoint. The creation of modern institutions that are central to the field, such as the American Astronomical Society and The Astrophysical Journal, are woven into the narrative, connecting these events and people to the modern astronomical community. The role of the Harvard Observatory as a leader in the global astronomical community is also explored, as it evolved into its current incarnation, the Harvard-Smithsonian Center for Astrophysics.

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DAVA SOBEL

ET NEW YORK TIMES BESTSELLING AUTHOR OF Longitude and Galileo's Daughter The glass plates double as a metaphor for the central theme of the book, which is the struggle of the women of Harvard Observatory to be afforded the opportunity to contribute to this revolution to which they eventually would become an essential part. The narrative begins with Anna Palmer Draper, widow of astronomer Dr. Henry Draper, funding Pickering's efforts in memory of her late husband. Key to this effort were a group of women that were hired by Pickering as "computers" to analyze the early plates and to perform the tedious measurements and calculations necessary to extract quantitative information from these observations. As time progressed, many of these women, through perseverance, intellectual creativity, and passion, made revolutionary contributions to astronomy and earned the respect of their male counterparts.

Sobel's book provides important context for the scientific theories and methods taught in our classrooms and utilized in our laboratories. To appreciate the current state of astronomical knowledge, it is essential to understand this human struggle through which it was obtained. Without Henrietta Leavitt's discovery of the periodluminosity law for Cepheid variable stars, Edwin Hubble could not have utilized this cosmic ruler to determine that our universe is expanding. Likewise, Annie Jump Canon's system of classification of stars by their spectra provided a key tool that is still utilized by modern astronomers. The revolutionary understanding of the dynamics of stars, brought about by Cecelia Payne-Gaposchkin's clever insights, connected contemporary concepts in physics with observations of stellar spectra for the first time. These contributions serve as foundations of modern astrophysics. The Glass Universe serves as an essential and fitting tribute to these undeservedly lesser-known pioneers of astronomy. Sobel's book provides a key part of a wider contemporary effort to right this oversight by providing the long overdue recognition that these great astronomers deserve. Perhaps when future generations of astronomers learn their craft, the names Cannon, Leavitt, and Payne-Gaposchkin will be introduced as equals to those of Russell, Hubble, and Eddington.

New and Returning IBHA Members

One of the key purposes of the IBHA is for those of us who are interested in Big History to have a place to associate. It is a place to learn of other members' Big History activities and thoughts. So we are delighted to welcome new members to the IBHA - and by the vote of confidence and recognition of the value of our association by those who have renewed their membership. It is a pleasure to have each of you with us.

Ken Baskins	Eung Seok Kim
Fenna Blomsma	Seohyung Kim
Adalberto Codetta	Davidson Loehr
Raiteri	James MacAllister
Javier Collado-Ruano	David Osleger
Janusz Duzinkiewicz	Julia Rathmann-Bloch
Duane Elgin	Pedro Rosario-Barbosa
Arturo Giraldez	Ken Solis
Alex Holowicki	



An example of the value of an ongoing association of big historians is the discussion that has been going on in our website blog. In this case, the discussion is about "information" in big history. Please consider either joining in this discussion, or start a new topic of your own. You may later wish to develop this into a paper or panel proposal for the 2018 IBHA conference, where the discussion can continue in person. This may lead to a submission of an article to Origins or the Journal of Big History, which is made available to IBHA members.

IBHA members are from:

Argentina	France
Australia	Germany
Austria	Hong Kong
Bahrain	India
Belgium	Ireland
Brazil	Italy
Canada	Japan
Chile	Korea
China	Netherlands
Denmark	Nicaragua

Norway Peru Russia Serbia South Korea Spain Sweden United Kingdom **United States**



UvA MOOC

In our big history MOOC, renowned scientists and scholars from the University of Amsterdam and beyond will take you on a journey from the Big Bang until today while addressing key questions in their fields. After completing this journey you will have developed a better understanding of how you and everything around you became the way they are today. You will also have gained

an understanding of the underlying mechanisms that have helped shape the history of everything and how they wil help shape the future. Last but not least, you will have developed the skill to use this knowledge to put smaller subjects into a bigger perspective with the aid of the little big history approach, which can help you develop some new ideas on these smaller subjects.

You can take the course for free on <u>Coursera</u>, <u>YouTube</u> and the experimental platform <u>Chronozoom</u>, or use (parts of) the course to put your own lessons or courses in a broader perspective.



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The AAAS states that by joining it, you are committed to advancing science, engineering, and innovation. As we all know, big history has been made possible by the fusion of the sciences and humanities. Below are a few recent articles about the controversies science is facing in our current society.

Donald Tump's War on Science Lawrence M. Krauss New Yorker, December 13, 2016

Why Trump Will Lose His War on Science Jeffrey Kluger

Time, January 26, 2017

March for Science

Trump's 5 Most "Anti-Science" Moves

The president-elect has taken what is widely seen as a hostile stance toward the scientific community. Here's why Andrea Marks Scientific American, January 18, 2017

President Trump and science: 10 things to look for (and fear?)

By Jeffrey Mervis Science Magazine, January 23, 2017



Trump's Views on Science Are Shockingly Ignorant

His statements show a disregard for science that is alarming in a candidate for high office Scientific American, November 1, 2016

Professor Smith Goes to Washington

In response to the new president's stances on a range of issues, more scientists are preparing to run for political office. Ed Yong The Atlantic, January 25, 2017



Donald J. Trump @realDonaldTrump



The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive. 8:15 PM - 6 Nov 2012

▲ 104,792
 ♦ 67,024

Your Big History Accomplishments

Please send Lucy Laffitte, IBHA Board Member and Secretary at lucy.laffitte@gmail.com,

- the bibliographical data of any big history related publication,
- citation information about any related presentation to a professional, university, or public organization
- course syllabus for any big history course you have taught,
- the names and contact information of any associations that are related to the field of big history,
- or other information of your big history initiatives and accomplishments.



Macquarie University Begins <u>New MOOCs</u> Rooted in Big History: Solving Complex Problems

SOLVING COMPLEX PROBLEMS will teach you revolutionary new problemsolving skills. Involving lectures from over 50 experts from all faculties at Macquarie University, we look at solving complex problems in a way that has never been done before.

To solve complex problems, whether it is the challenge of developing a new product, or Einstein's task of trying to explain how gravity worked - and literally everything else in between - it is not enough to take the problem and apply already existing skills. The skill that has always led to big breakthroughs in any field or industry is the skill of seeing something in a new way. That is the vital skill you will learn in this Coursera specialization.

Achieving this expanded view of a complex problem is simple, effective, and sorely needed in today's world.

To see a complex problem in a new way, you need to contemplate it from different angles. Eventually, you may arrive at the angle that gets you to the next stage of solving the problem. We call this 'TURNING THE CRYSTAL'. You look at one facet of the problem; then another, then another, and gradually a complex picture builds of how a problem is constructed. It then becomes possible to deconstruct that problem, and to solve it successfully, with some highly creative innovation.

At the heart of this specialization are crucial skills that are applicable to any career path, industry, or field.

Projects Overview

The first course of the specialization ANALYZING COMPLEXITY will teach you what unifying patterns lie at the core of all complex problems.

The second course of the specialization EVALUATING PROBLEMS will show you how humans think and how to utilize different disciplinary approaches to tackle problems more effectively.

The third course of the specialization CREATING INNOVATION will teach you what is at the core of all innovations that solve complex problems and how to foster methods to make big breakthroughs possible.

From the very start of the specialization, your assignments will be geared toward tackling a complex issue of your choice which you face in your career path, industry, or field. Each phase of the course builds up to a briefing paper that analyzes, evaluates, and attempts to solve a highly complex problem. The specialization advances your knowledge of your own discipline by teaching you to look at it in new ways and it fosters your own revolutionary new innovations.

COURSE 1

Analysing Complexity

Week I. "What is Complexity?" - What is at the core of all complex problems Week II. "Complex Physical Systems" - What complex problems all have in common in the inanimate world

Week III. "Complex Adaptive Systems" - What complex problems all have in common in nature

Week IV. "Complex Cultural Systems" - What complex problems all have in common in human society

Week V. "Complexity, Fragility, and Breakdown" - Why complex problems arise Week VI. "Complexity in the Anthropocene" - What complex problems face us today

Course 2

Evaluating Problems

Week I. "Thinking about Thinking" – How problem solving evolved in nature, how the mechanics of our brains work, and the psychological biases that can emerge when we think.

Week II. "Philosophy, Science, and Problem Solving" - How humans have

historically approached problem solving, from ancient times to the present.

Week III. "Approaching Problems in the Natural Sciences" – How people in the natural sciences deconstruct problems.

Week IV. "Statistics and Problem Solving" – How statistics can be used to evaluate problems and think critically.

Week V. "Approaching Problems in the Humanities" – How people in the social sciences and humanities deconstruct problems.

Week VI. "Evaluating the Anthropocene" – How to evaluate the problems of the Anthropocene.

Course 3

Creating Innovation

Week I. "What is Innovation?" - What lies at the core of all innovations.

Week II. "The Evolution of Human Creativity" – How humans developed the ability to innovate and think creatively.

Week III. "Innovation in a Complex Global Network" – How innovations emerge from human networks.

Week IV. "Planning Innovation" – How organisations seek out and create the right conditions for new breakthroughs.

Week V. "Market Innovation" – What makes innovations more likely to emerge in a market setting.

Week VI. "Innovation in the Anthropocene" – How innovations are crucial to meet the problems of the 21st century.

Capstone

This is the CAPSTONE where the scaffolding of our problem solving and innovation skills will bear fruit in a series of preparatory assignments to make your briefing paper as effective as possible.





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David Baker Associate Lecturer Your Professors David Christian Professor

Shawn Ross Associate Professor

Macquarie University

Solving Complex Problems

Macquarie University is leading the way in transdisciplinary research and ground-breaking methods for teaching. The Big History Institute at Macquarie involves experts from across the natural and social sciences to transcend disciplinary silos and look at complex issues in a new way that harnesses the best methods and ideas of all beds of human knowledge. Macquarie is a hub of inspired and unconstrained thinking. Macquarie was founded with a unique purpose: to bring minds together unhindered by tradition. Created to challenge the education establishment, Macquarie has a rich track record of innovation. Macquarie actively shapes the complex issues that define the future of humanity.



FORECASTING The Center was founded on May 25, 2011 by the Academic Council of The Institute of Oriental Studies of the Russian Academy of Sciences Third International Symposium

Big History and Global Evolution

Moscow, September 26–28, 2017

The 1st announcement



FACULTY OF GLOBAL STUDIES OF THE MOSCOW STATE UNIVERSITY

On September 25–29, 2017 Lomonossov Moscow State University will hold the International Congress *Globalistics-2017*. In the framework of this congress, the Eurasian Center for Big History & System Forecasting in collaboration with the Faculty of Global Processes at Lomonossov Moscow State University is organizing the 3rd International Symposium "Big History & Global Evolution".

Big History is a relatively new field of study. It is a synthesis of disciplines from the natural sciences, social sciences, and humanities, one that seeks to explore overarching trends that stretch across all existence for 13.8 billion years, – based on the most current scholarly thinking. The definition adopted by the International Big History Association is as follows: "Big History is the attempt to understand, in a unified and interdisciplinary way, the history of the cosmos, earth, life and humanity."

Similar to Big History, the macroevolutionary approach seeks *to develop an inclusive view of the cosmos, earth, life and humanity* by erasing boundaries between disciplines, and that is why we have decided to organize a symposium dealing with Big History and Global Evolution as a unified whole.

The symposium will address a wide range of topics, such as:

- How Big History Works
- Interdisciplinary Development of Big History
- Understanding Big History and Evolution

- Big History Patterns, Trends, & Regularities
- Big History, Global Evolution, and Complexity Studies
- Evolution of the Universe
- Evolution of the Earth
- Evolution of Life
- Social Evolution
- Different Forms of Evolution: Connections and Comparisons
- Globalization within the Context of the Global Evolution
- Forecasting Global Future
- Big History Trends and Phases
- Teaching Big History

Co-organizers:

Faculty of Global Studies, Lomonosov Moscow State University Eurasian Center for Big History & System Forecasting in the Institute of Oriental Studies, Russian Academy of Sciences

The Symposium will be held in the framework of the World Congress "Globalistics-2017" organized by the Moscow State University.

We would ask all those who do not exclude the possibility of their taking part in our symposium to fill in the participation form below and to email it to the Symposium conveners by May 1, 2017 at the following addresses:

Prof. Akop Nazaretyan (anazaret@yandex.ru) Prof. Leonid Grinin (leonid.grinin@gmail.com) Prof. Andrey Korotayev (akorotayev@gmail.com) Ms. Evgeniya Stolyarova (stolyarova.evgeniya.2012@mail.ru) Faculty of Global Studies, Lomonosov Moscow State University Eurasian Center for Big History & System Forecasting in the Institute of Oriental Studies, Russian Academy of Sciences

PLEASE, FILL IN THE FORM AND EMAIL IT TO THE SYMPOSIUM CONVENORS:

PROF. AKOP NAZARETYAN (<u>ANazaret@yandex.ru</u>), PROF. LEONID GRININ (<u>Leonid.Grinin@gmail.com</u>), PROF. ANDREY KOROTAYEV (<u>AKorotayev@gmail.com</u>), and MS. EVGENIYA STOLYAROVA (<u>Stolyarova.</u>

Evgeniya.2012@mail.ru) by the 1st of June, 2017

PARTICIPATION FORM:

International Symposium
Big History and Global Evolution

(Moscow, September 26–28, 2017)

Family name, first name	
Title of the presentation	
Abstract	
(within 300 words)	
Institution/organization	
Position	
Office address	
Tel/fax	
E-mail	

The Symposium will be held in the framework of the World Congress "Globalistics-2017" organized by Moscow State University.