
Foresight in worldwide academia enhances global governance of science

Yury Nikolayevich Sayamov

Faculty of Global Processes,
Lomonosov Moscow State University,
Moscow, Russia
Email: y.sayamov@yandex.ru

Abstract: This article presents transdisciplinary approaches to urgent questions in our globalised world society. Transdisciplinary research, especially foresight includes political, cultural, developmental, historic, economic and legal aspects. The present historic analysis draws attention to the issue of the global governance of science, considered here to be of growing importance for the present world development and strategic foresight. Introducing the notions of the global knowledge world and the knowledge society, the author presents the vision of the management of science as an international task and one of the development goals. He analyses the relationship of science and bureaucracy, establishing a kind of systematisation for the decision-making process related to science, most importantly of UN and United Nations Educational, Scientific and Cultural Organization, and of a non-governmental character. In conclusion, some ideas are expressed and proposals given as to how, in the author's opinion, the goal of the global governance of science can be fostered.

Keywords: global governance; Global Research Academy; global studies; globalistika; Irina Bokova; Lomonosov University; UNESCO Chair; UNESCO.

Reference to this paper should be made as follows: Sayamov, Y.N. (2017) 'Foresight in worldwide academia enhances global governance of science', *Int. J. Foresight and Innovation Policy*, Vol. 12, Nos. 1/2/3, pp.81–93.

Biographical note: Dr Yury Nikolayevich Sayamov (Russia) born 1945/01/01 in Kislovodsk, Russia. Graduated from the Moscow State Maurice Thorez Institute of Foreign Languages (English, German), Moscow, 1969; Post Graduate at the Institute of World Economy and International Relations of the Academy of Sciences of the USSR, Moscow, 1969–1971; Member and Employee of the Committee of Youth Organizations of the USSR (responsible for cooperation with youth organisations in Western Europe), Moscow, 1969–1970; Post Graduate at the Higher Political School, Prague, 1972–1977; Doctor of Historical Sciences awarded at the Higher Political School, Prague, 1978; First Secretary of the USSR Embassy, Prague, 1978–1980; Doctor of Historical Sciences, Moscow, 1982; First Secretary, Councillor, Deputy Permanent Delegate of the USSR Permanent Delegation at UNESCO, Paris, 1982–1989; Professor at the Diplomatic Academy, Moscow, 1989–1993; Councillor to the Mayor of Moscow, 2009 to present; Professor at the Lomonosov Moscow State University, 2010 to present; Head of the UNESCO Chair at the Lomonosov Moscow State University (UNESCO Chairholder), 2011 to present; Academician and Vice President of the Academy of Peoples Diplomacy, Moscow, 2007 to present; Member of the European Cultural Centre, Geneva, 1990 to present and of other international cultural, educational and scientific research institutions. Dr. Sayamov is also the author of over 100 scientific research studies, books, articles and publications.

1 Introduction

The idea of governing the world is most probably as old as humanity itself. Only recently has foresight and educational technologies added the significant potential to harmonise educational content and educational processes on an international level - and such is actually cared for and implemented by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as one of its aims.

At the beginning of its history, the human world was small, consisting of separate areas in which people lived. The first river civilisations of Ancient Egypt along the Nile River; in Mesopotamia called the Fertile Crescent of the Tigris and Euphrates rivers; in Ancient China and India along the Yellow River and the Indus; not to mention the Mexican and Peruvian civilisations on the yet-to-be discovered American continent; all existed in an isolated manner and lacked knowledge about the others.

The end of the isolated existence of peoples and the opening of a new page in the common global history of humankind came approximately 37 centuries ago when the Egyptian pharaoh Tutmes of the XVIIIth dynasty undertook the subjugation of Syria and reached Mesopotamia, thus bridging the gap between two great civilisations for the first time. According to the known French scientist Gaston Camille Charles Maspero (1846–1916, French scientist, researcher of ancient civilisations), it was the beginning of the common world historical drama that has been played since that time on the global scene, merely changing its contents, actors and outside appearance.

With great geographic discoveries paving the ways between civilisations, the exchange of knowledge acquired important dimensions. Perhaps it was this which made Sir Francis Bacon (1561–1626, English scientist, philosopher and statesman) declare his famous '*Scientia potentia est*' (knowledge is power).

However, what knowledge and science are has remained debatable right up to the present day, as have notions of science governance and the governance of science (Bush, 1945).

According to the Report of the Expert Group on the Global Governance of Science of the European Commission (EC, 2009, p.8), "science is broadly conceived as a special kind of knowledge along with a distinctive set of practices and cultures for producing it."

In the Latin language, 'science' means 'knowledge'. Science, being a human enterprise, produces and forms knowledge. People engaged in science are what we call scientists, whereas science itself, on the other hand, can in a sense be considered as what scientists are doing.

Today, it is widely recognised that science, belonging to the whole of humankind, represents the major driving force of globalisation. It has caused the emergence of the notion of global knowledge. "Global processes and the emergence of the information society have given rise to the notion of the Global Knowledge World and subsequently the so-called 'knowledge society'" (Ilyin and Ursul, 2012, p.107). For that target, curricula for 'Global Studies' are implemented in several cities, including the Lomonosov State University in Moscow that frequently hosts conferences (Sayamov, 1976, p.62, 1980, p.160, 1990, p.21, 1991, p.338, 2005, 2012, 2013a, 2013b; Ahamer, 2005, 2012a, 2012b, 2013a, 2013b; Müller et al., 2013).

The knowledge society means the increase and acceleration of the exchange of knowledge, of transfer and integration leading to the globalisation of cognitive activity.

The management of science has ever been more about acquiring the characteristics of an international task crossing national boundaries.

The feeling that there is a growing necessity for a kind of global management of science has increased as a result of its changing geography.

Historically, science has been concentrated around a limited number of countries. Now, more science is being done and greater knowledge produced by more people in a greater number of places. Traditional centres of science - France, Germany, Great Britain, Italy, Russia - found themselves in the XXth century facing a changed global constellation with new, rapidly developing science powers: the USA, which attracted and accumulated scientists from all over the world; and the Union of Soviet Socialist Republics, which absorbed Russia and its scientific patrimony. They formed two poles of the bipolar world order established after the end of the Great War in 1945.

The collapse of the bipolar system after the dissolution of the USSR in 1991 coincided chronologically with the emergence of new world scientific centres and powers. In the foreword to the UNESCO Science Report (UNESCO, 2010, p.xvii), the UNESCO Director-General Mrs. Irina Bokova pointed out that the Triad made up of the European Union, Japan and the USA globally dominating science and technology (S&T) “is gradually giving way to a multipolar world, with an increasing number of public and private research hubs spreading across North and South. Early and more recent newcomers to the S&T arena, including the Republic of Korea, Brazil, China or India, are creating a more competitive global environment by developing their capacities in the industrial, scientific and technological spheres.”

The example of power support and the promotion of science were set in the Soviet Union in the period between the two world wars, when the on-going and accelerated development of science was made a state priority and enjoyed all the financial, material and moral assistance along with the permanent attention and supervision of top-level party, state and government leaders. It resulted in advanced technologies which helped to defeat Hitler, create the A-bomb, launch the first Earth satellite, and soon after that the first man into space.

The scientific achievements of their counterpart made the USA urgently mobilise their own potential in order to raise the level and prestige of American science. The scientific development of the ‘Moon race’ program finally provided the USA with leadership in S&T when the Soviet Union experienced a tremendous setback resulting from the ‘perestroika’ destruction.

More recently, China has gained the title of the next scientific superpower. In a research study, two British fellows analysed the Chinese science development program (Wilsdon and Keely, 2007) which foresees investments in the S&T national sphere to the unprecedented sum of over 87 billion euros (about 122 billion US dollars) by 2020.

Another rising scientific giant is India. American and English laboratories and scientific centres are full of scientists of Indian origin. Many researchers are going back home. Both China and India are creating conditions to reverse the brain-drain process and to get scientists to return from their occupations abroad.

The growth of S&T worldwide presents new challenges and develops new needs for the global governance of this process. High-level science emerging in new areas not yet fully prepared for it makes the management of science ever more necessary both internally within the countries and externally in the global community.

1.1 Science and bureaucracy

If we take bureaucracy as merely a way of organising work without the usual opprobrious connotation, we can clearly see its many national and international applications to science (Guston, 2000).

Nationally, science is subjected to bureaucracy and decision-making at the levels of:

- the president of the country (prime minister, federal chancellor, king or other supreme governor) and his administration
- the state government (federal government).

They establish rules and regulations for the entire country and initiate laws affecting science;

- the national (federal) parliament.

This adopts national (federal) laws affecting science;

- the national (federal) ministry of science and other related ministries, national (federal) agencies and other institutions of a governmental nature.

These supervise the execution of law and establish under law the acts, instructions and regulations affecting science;

- the governor at the local level (head of the region) and his administration
- the local government (government of the region).

These establish rules and regulations for the region and initiate laws affecting science;

- the regional parliament.

This adopts local (regional) laws affecting science;

- the local (regional) ministry of science and other related ministries, local (regional) agencies and other local institutions of a governmental nature.

These supervise the national and regional execution of law and establish under law the regional acts, instructions and regulations affecting science;

- the city government.

This establishes rules and regulations for the city and initiates laws affecting science;

- the city parliament.

This adopts city laws affecting science;

- District and other territorial authorities.

These establish rules and regulations for the territory.

- municipalities.

These take decisions organising life for the respective territory.

Besides this, science has its internal bureaucracy:

- national bodies, academies, unions with their administrative structures, decisions, prescriptions, regulations
- directorates of scientific research bodies (institutes, laboratories, centres)
- rectors, deans, heads of chairs and departments and their staff in universities and other higher educational establishments doing science.

There are often contradictions with regard to the management of science among the above, as well as between them and the state & governmental bureaucracy.

Relations between science and national bureaucracy are almost always quite complicated and ambivalent. As far as scientists are concerned, on the one hand, they need recognition, moral and financial support. On the other hand, they often do not accept bureaucratic interference in science or attempts to teach how it is practiced. As for bureaucracy, its representatives and structures, on the one hand, need creative science able to produce valid and valuable results in order to justify state and government policies. On the other hand, they try to subordinate science and shape it into the form they think it should take.

Huge bureaucratic machinery, even when striving to advance science, may sometimes suffocate it. To escape this, some see an increase in the international governance of science as desirable, presuming that national states would accept the supremacy of international regulations.

1.2 International management of science

Internationally, the management of world science is represented in the activities of international bodies and structures:

- of an intergovernmental nature (IIGOs)
- of a non-governmental character (INGOs).

Among the first, the backbone of its present system makes the United Nations Organization (established after World War II) guarantee peace and foster social and economic development including science.

The UNESCO, created barely before the ink on the UN charter had dried, became directly responsible for science and herewith the most important organisation for its international management in a practical sense.

Recently, the importance of the UN and its specialised agency UNESCO to world science has been confirmed by the forming in 2013 of the UN Secretary-General's Scientific Advisory Board to strengthen the connection between science and policy. In total, 26 eminent scientists, representing natural, social and human sciences and engineering, were appointed to a Scientific Advisory Board announced by the UN Secretary-General, Ban Ki-moon. The new Board will provide advice on science, technology and innovation for sustainable development to the UN Secretary-General and to executive heads of UN organisations. UNESCO will host the Secretariat for the Board.

“The creation of the Scientific Advisory Board follows on from a wide-ranging consultation work entrusted to UNESCO by the UN Secretary-General Ban Ki-moon”, said UNESCO Director-General Irina Bokova. “It brings together scientists of international stature, and will serve as a global reference point to improve links between science and public policies” (UNESCO, 2014).

The Board is the first such body set up by the UN Secretary-General to influence and shape action by the international community to advance science and sustainable development. The initiative derives from the report of the UN Secretary-General's High-Level Panel on Global Sustainability "Resilient People, Resilient Planet: A Future worth choosing" (January, 2012). This report recommended the launch of a "major global scientific initiative to strengthen the interface between policy and science".

The fields covered by the Board range from the basic sciences, through engineering and technology, social sciences and humanities, ethics, health, economic, behavioural and agricultural sciences, in addition to the environmental sciences.

It aims to ensure that up-to-date and rigorous science is appropriately reflected in high-level policy discussions within the UN system, offering recommendations on priorities related to science for sustainable development that should be supported or encouraged; providing advice on up-to-date scientific issues relevant to sustainable development; identifying knowledge gaps that could be addressed outside the UN system by either national or international research programs; identifying specific needs that could be addressed by on-going assessments and advising on issues related to the management, public visibility and understanding of science.

The creation of the board and the results of its first session in Berlin, Germany can be seen as practical steps towards the establishment of a system for the international management of science in the interests of its advanced development towards peace and sustainable development.

In the course of the official visit of the UNESCO Director-General Irina Bokova to the Russian Federation on April 24, 2014, a meeting took place at the Russian Academy of Sciences (Figure 1). The President of the Russian Academy of Sciences, member of the UN Secretary-General's Scientific Advisory Board Academician Vladimir Fortov and UNESCO Director-General Irina Bokova preliminarily discussed holding the second meeting of the Board in The Russian Federation.

Figure 1 Meeting during the official visit of UNESCO Director-General Irina Bokova (in red) to the Russian Federation on April 24, 2014 at the Russian Academy of Sciences. Photo from the author (sitting at the far top of the table) (see online version for colours)



Russia has been pioneering through UNESCO the idea of the international management of science under the aegis of the organisation since the 1990s.

The Chairman of the Government of the Russian Federation at that time, Victor Chernomyrdin, in his letter addressed to the UNESCO Director-General Federico Mayor of October 27, 1997, proposed a joint project on the international management of science.

In his response, the UNESCO Director-General Federico Mayor welcomed the proposal on “the establishment of an international institute which would seek to elaborate a universal model for the reform of the science infrastructure in the spirit of peace.”

In a joint Appeal by UNESCO Director-General Federico Mayor, President of the Russian Academy of Sciences Y. Ossipov, Russian Federation Minister of Science and Technology V. Bulgak and President of the Russian National Commission for UNESCO V. Fortov, it was stated:

“On the threshold of the new millennium humankind has realized more clearly than ever before the necessity of converting science from a mechanism multiplying dangerous technologies into an instrument in the service of peace and the well-being of nations.

The international cooperation, feelings of solidarity and responsibility felt by the world scientific community, of all those who participate in science and in the use of its achievements are able to pave the way to this noble aim.

To achieve it, great importance might be given to the following: the creation of an international structure proposed by the Russian scientists who would seek to elaborate a universal model for the reform of the science system in a spirit of peace” (PCAIC, 1988, pp.22–29).

However, the Chernomyrdin government soon resigned and the project was postponed. Nevertheless, the initiative continued gaining ground in the international scientific community and resulted in advanced activities by the Science Sector of UNESCO to examine the situation science finds itself in and to make a kind of inventory of scientific potential and establishments in various countries the world over, leading to an elaboration of the approach and an understanding of how the international management of science could be organised.

The notion of the international management of science involves a whole web of activities, attitudes and policies for organising, supporting and regulating scientific processes and products. The governance of science can be global in two senses: first, as applied to all of science and second, as traversing national borders all over the world.

2 Global governance and international governance

Some make a distinction between terms of ‘global governance’ and ‘international governance’:

“In contrast to international governance, global governance is characterized by the decreased salience of states and the increased involvement of none-state actors in the norm- and rule-setting process and in compliance monitoring. In addition, global governance is equated with multilevel governance, meaning that governance takes place not only at the national and international level ..., but also at the subnational, national and local levels. Whereas, in international governance, the addressees and the makers of norms and rules are states and other intergovernmental institutions, non-state actors ... are both the addressees and the makers of rules in global governance” (UN, 2001, p.2).

In this way, the global governance of science implies the involvement of none-state actors and points out the character of science as of a none-state transnational social institution.

As a matter of fact, international organisations from the non-governmental sector are increasingly becoming active actors in world affairs including science. The systems of relations and cooperation that the UN and UNESCO share with international non-governmental organisations promote and facilitate their involvement. The list of INGOs in an official relationship with UN (categories I, II and Roster) and with UNESCO (categories A, B and C) embraces hundreds of organisations. Among them, the most important - mainly so-called ‘umbrella structures’ that represent unions of unions - are concentrated in the upper category I or A. Of special significance for science and its management on the global level are:

- The International Council of Scientific Unions (ICSU)
- International Social Science Council (ISSC)
- World Federation of Scientific Workers (WFSW)
- Council of International Organizations of Medical Sciences (CIOMS)
- International Association of Universities (IAU)
- International Council for Adult Education.

All of them have category A status with UNESCO, and among their declared aims are the development and management of science on an international level (UIA, 2013).

2.1 Internal and external management of science

When doing science, the scientists themselves apply the variety of ways and methods of managing their production of knowledge, among them being simulation, systemic modelling, structural analysis, research and experimentation and many others.

People of science effectuate their own supervision of the quality of knowledge produced through peer review and replication, as well as by means of scientific discussions, conferences, presentations and professional publications. They themselves are in a better position to make judgements about scientific and research funding priorities, to influence grant panels and decisions regarding the support and promotion of gifted colleagues.

At the same time, cases of rivalry, related blackmail and other disgusting revelations are common in the scientific community aimed at the promotion of scientists and their schools ‘by any means’, sometimes making the internal self-management of science dubious and unreliable.

The term ‘external management of science in a given country’ here means its governance by non-scientists, mainly bureaucrats of various levels. Such external governance of science in a given country includes:

- Establishing rules, standards and regulations for the work of scientists and their organisations.
- Supporting and funding of research with priority for some pre-selected directions in accordance with national interests and preferences as they are seen by the respective

bureaucratic structures. In some countries, there exists the so-called state agenda to undertake the scientific research of themes and the development of technologies the state is interested in.

- Patenting scientific discoveries and attributing to scientists the certificates and property rights to generated scientific knowledge and elaborated innovations, as well as scientific degrees, titles and state awards.
- Channelling scientific activities in the desired directions, thus often restricting the freedom of a scientist and of his research work.

Between the internal and the external government, contradictions might occur resulting in tensions and conflict. People doing science are usually sensitive to external interference, especially when they harbour a feeling of injustice, unfairness or humiliation on the part of those making them subordinate.

Taking into account the power that science might have in and over society, the necessity for social control over science and its innovations should be acknowledged. Civil society, however, is not to limit the production of knowledge, but to participate in steering its use to appropriate ends.

There is a notion of the linear model of science tracing its results through technological application to social benefits and advantages. According to this, the government provides scientists with all that is necessary in financing, materials and organisation and gives them the opportunity to decide themselves how to achieve the best results, limiting state interference in science to a minimum.

At present, the linear model of scientific development - in contrast to the post-war era - is increasingly substituted by regulatory regimes often demonstrating their incompetence to govern science.

A revelation of the potential to use science for destruction culminated in the Hiroshima and Nagasaki A-bomb tragedy and made the governance of science a global public issue, inspiring the world's outstanding scientists Albert Einstein and Bertrand Russell - in their famous manifesto of 1955 - to appeal to all those doing science that they should seriously take responsibility for the results of their scientific work and tell society the truth about the dangers of the nuclear age.

Technological catastrophes attaining the size of the globally dangerous nuclear disaster of Chernobyl highlighted the issue of risk-avoiding and prevention management in science. New concerns have come into being with regard to bioethics and genetic engineering in the form of food-producing plants and animals that could potentially be reformed into human beings by biotechnology.

Reflections about the management of science along with its globalisation are increasingly acquiring their own global character. Societies are constantly moving towards a greater dependence on science. Politics, economics and science are becoming ever more intertwined. Belief in science is growing in society.

With this, overstated hopes that undermine public trust in science occur that by scientific means (such as that of genetic modification or nanotechnologies application) global problems of poverty or hunger could be resolved.

In particular, science concerning the most important branches such as defence, energy, security, electronics and information technologies sometimes called 'mandated science' needs a kind of global management in order to prevent eventual conflict development which, under some circumstances, might be globally dangerous.

In fact, the global management of science appears to be a life necessity (i.e. of paramount necessity) due to the growing need to jointly search for global scientific responses to the global problems, new risks and challenges that humankind is facing.

2.2 A vision of action for the global governance of science

In any case, there is a question about what could be done to approach the global governance of science. Certainly, there could be a variety of suggestions, but in the logic of this article it appears justified to consider an option based on UNESCO as the main international intergovernmental organisation responsible for science within the UN system, with the large involvement and participation of the non-governmental sector represented by international scientific organisations from the UNESCO list and by other relevant scientific structures wishing to contribute to the achievement of the global governance of science on UN and UNESCO principles.

For this purpose, an international structure under the aegis of UNESCO could be considered as a newly to-be-established body, or as one of already existing organisations (e.g. the same Scientific Advisory Board at the UN Secretary-General).

Action for the global governance of science should be developed into a movement of concerned scientists, and their organisation based on a kind of foundation.

The UNESCO potential which could be used for this purpose includes over 700 UNESCO Chairs working in more than 130 countries and embracing hundreds of universities and scientific research bodies with their activities. They could be entrusted with elaborating proposals on the subject under consideration.

A road map towards the global governance of science under the universal principles of the UN and UNESCO Charter could be elaborated upon, discussed among scientists on the most open and wide basis and approved at a world conference.

Such a forum could be organised as a UNESCO World Conference if member states, the UNESCO Executive Council and the UNESCO General Conference approve its holding.

A world conference on the global governance of science could additionally be convoked by an international preparatory board under the auspices of the UN and UNESCO.

United Nations Educational, Scientific and Cultural Organization, having UNESCO Chairs as an effective instrument of global application, can use their worldwide network to advance the idea and to contribute to the elaboration of the principles of the global governance of science.

A global mobilisation for the idea of the global governance of science can be effectuated through the involvement of scientific unions on the local, regional, national and international levels.

The scale of the task is in response to its global importance.

3 Conclusion

The above sections show that foresight-centred research can be suitably enhanced by foresight. Several examples supported by UNESCO underline the high potential for humanistic learning and the global governance of science.

- Global processes have created the global knowledge society and formed the new global role of science as the major driving force of development.
- The global management of science appears to be a life necessity due to the growing need to jointly search for scientific responses to the global problems, new risks and challenges that humankind is facing.
- Science presently subjected to bureaucracy and nationally based decision-making should proceed to be governed internationally based on the activities of international bodies and structures of an intergovernmental nature (IIGOs) and of a non-governmental character (INGOs).
- The UNESCO, as directly responsible for science in the UN system and herewith the most important international organisation for the whole issue of the global governance of science, may provide its aegis to establish a universal platform and a practical framework for the project with the large involvement and participation of the non-governmental sector represented by international scientific organisations and by other relevant scientific structures wishing to contribute to the achievement of the global governance of science on UN and UNESCO principles.
- A world conference on the global governance of science could be convoked to elaborate, discuss and approve practical steps forming a kind of a road map towards the global governance of science on the principles of the UN and UNESCO Charter.
- The special importance of the UN and its specialised agency UNESCO for world science's governing perspectives has been recently confirmed by the establishment in 2013 of the UN Secretary-General's Scientific Advisory Board to strengthen the connection between science and policy.
- In the non-governmental sphere, activities for achieving the global governance of science could be developed into a movement of concerned scientists and their organisations based on a kind of foundation.
- United Nations Educational, Scientific and Cultural Organization Chairs, as an effective instrument of global application, can be used with their worldwide network to advance the idea and to contribute to the elaboration of the principles of the global governance of science.

References

- Ahamer, G. (2005) "'Surfing Global Change": how didactic visions can be implemented', *Campus-Wide Information Systems*, Vol. 22, No. 5, pp.298–319. doi:10.1108/10650740510632217
- Ahamer, G. (2012a) 'The jet principle: technologies provide border conditions for global learning', *Multicultural Education & Technology Journal*, Vol. 6, No. 3, pp.177–210. doi:10.1108/17504971211254010
- Ahamer, G. (2012b) 'Human geography trains diverse perspectives on global development', *Multicultural Education & Technology Journal*, Vol. 6, No. 4, pp.312–333. doi:10.1108/17504971211279554
- Ahamer, G. (2013a) 'Multiple cultures of doing geography facilitate global studies', *Multicultural Education and Technologies Journal*, Vol. 7, Nos. 2/3, pp.228–250. doi:10.1108/17504971311328099 [Outstanding Paper Award 2013].

- Ahamer, G. (2013b) 'Game, not fight: change climate change!', *Simulation and Gaming – An International Journal*, Vol. 44, Nos. 2–3, pp.272–301. doi:10.1177/1046878112470541
- Bush, V. (1945) *Science: The Endless Frontier*, United States Government Printing Office, Washington.
- EC (2009) *Global Governance of Science*, Report EUR 23616 EN of the Expert Group on Global Governance of Science to the Science, Economy and Society Directorate, Directorate-General for Research, European Commission, Brussels. Retrieved from: http://ec.europa.eu/research/science-society/document_library/pdf_06/global-governance-020609_en.pdf (access 18 May 2014).
- Guston, D.H. (2000) *Between Politics and Science*, Cambridge University Press, New York.
- Ilyin, I.V. and Ursul, A.D. (2012) 'Globalistics: new investigative trends in science', in Grinin, L.E., Ilyin, I.V. and Korotayev, A.V. (Eds.): *Globalistics and Globalization Studies*, Uchitel' Publishing House, Volgograd.
- Müller, U., Ahamer, G., Peters, H., Weinke, E., Sapper, N. and Salcher, E. (2013) 'Technologies and collaborative education strengthen conviviality in rural communities in the Alps and in Senegal', *Multicultural Education and Technologies Journal*, Vol. 7, Nos. 2/3, pp.207–227. doi:10.1108/17504971311328080
- PCAIC. (1998) *Documents of the Project Center of the Association of International Cooperation*, Russian Federation, Moscow, Vol. III.
- Sayamov, Y.N. (1976) Presentation at the World Conference to End the Arms Race, for Disarmament and Détente, Helsinki, Sept. 23–26, 1976, Continuing Liaison Council of the World Congress of Peace Forces. Available at: http://books.google.at/books?id=AQ_AQAAIAAJ (access 23 May 2014; p.62).
- Sayamov, Y.N. (1980) Presentation at the World Conference Against Apartheid, Racism and Colonialism, Portuguese National Committee Against Apartheid, Racism and Colonialism in Southern Africa. Available at: <http://books.google.at/books?id=WXIQAAAAIAAJ> (access 23 May 2014; p.160).
- Sayamov, Y.N. (1990) *Presentation at the Conference Preserving The Global Environment - The Challenge of Shared Leadership, on April 19–22, 1990*, Arden House, Harriman, NY, World Resources Institute, Columbia University. Available at: <http://books.google.at/books?id=SsCqjpnvtiUC> (access 23 May 2014; p.21).
- Sayamov, Y.N. (1991) *Presentation at the Conference "American Economic Power: Redefining National Security for the 1990s", Hearings before the Joint Economic Committee, Congress of the United States, One Hundred First Congress, First Session, November 9, 15, and 16, 1989, Part 2*, United States. Congress. Joint Economic Committee, U.S. G.P.O. Available at: <http://books.google.at/books?id=WXIQAAAAIAAJ> (access 23 May 2014; p.338).
- Sayamov, Y.N. (2005) *Presentation of Moscow's Concept & Vision for the Olympic Games by the Deputy Head of the International Relations Department of Moscow City Government*. Sports Federation & Olympic Committee of Hong Kong, China. Available at: http://www.hkolympic.org/articles_detail.php?cid=21&id=2007 (access 23 May 2014).
- Sayamov, Y.N. (2012) 'Approaches to the resolution of conflict the role of the global civil society in constructing a peaceful community'. *Presentation at the November 2 Seminar*, The Asia Institute. Available at: <http://www.asia-institute.org/2012/11/02/november-2-seminar-approaches-to-the-resolution-of-conflict-the-role-of-the-global-civil-society-in-constructing-a-peaceful-community/> (access 23 May 2014).
- Sayamov, Y.N. (2013a) 'Education as a global "soft power" for sustainable development', *Campus-Wide Information Systems*, Vol. 30, No. 5, pp.346–357.
- Sayamov, Y.N. (2013b) 'Global governance of science – wishful thinking or a life necessity?', *International Journal of Technology and Educational Marketing*, Vol. 5, No. 2, pp.34–45.
- UIA. (2013) *Directory of International Nongovernmental Organizations (INGO's) in Official Relationship with UNESCO*. Volume I: Category A and B (and Index), Union of International Associations, Brussels. Retrieved from: <http://www.uia.org/yearbook> (retrieved 18 May 2014).

- UN. (2001) *Global Governance and the United Nations System*, United Nations University Press, New York.
- UNESCO. (2010) UNESCO Science Report. Retrieved from: <http://www.unesco.org/new/en/natural-sciences/science-technology/prospective-studies/unesco-science-report/> (access 18 May 2014).
- UNESCO. (2014) UN Secretary-General's Scientific Advisory Board to Strengthen Connection between Science and Policy. Retrieved from: <http://en.unesco.org/post2015/news/un-secretary-general%E2%80%99s-scientific-advisory-board-strengthen-connection-between-science-and#sthash.6nMKD9jY.dpuf> (access 18 May 2014).
- Wilsdon, J. and Keely, J. (2007) *China - The Next Science Superpower*, Demos, London.