

## Science, Diplomacy and Sustainability in Bilateral Relations Between Cuba and the United States

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### Abstract

Starting from existing global agreements and scientific certainties that establish the foundations for further global human social and economic development, the role of science within priorities of national interests of both Cuba and the United States is discussed. Likewise, the way that relations between scientists of said countries have evolved along history, and how their results of research can show significant impact on real priorities of their respective national developments. Taking into account asymmetries between both nations and the century-old urge of Washington to exert domination over Havana.

**Keywords:** *science, diplomacy, development, sustainability*

### Introduction

In September 2024, the United Nations launched a so-called Pact for the Future to guide the achievement of humanity's global development goals. Just about the same time, mid-October 2024, marked the 25th anniversary of the Budapest World Science Conference. This event, held under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Council for Science (ISC), was the greatest effort of the world's scientific community to alert society and governments of the world over the opportunity of opting for a collective will and the priority to promote ways to achieve sustainable development and provide the world with a code of conduct and a framework for action that could lead to the creation and consolidation of a global knowledge society, which in turn could build a future of sustainability (UNESCO, 2000).

Despite the unprecedented global mobilization and more than seven years of preparation to produce a movement that could change the then very negative trends in the world's economic and social development, the conference failed to overcome the pitfalls of collective hypnosis in the face of the advance of neoliberal capitalism and the lack of attention by the governments of developed countries to the urgent need for collective rational political leadership to provide an opportunity for the construction of a society that would seek global human, economic and social development based on knowledge.

The evolution of the world economy under the laws of the so-called "Washington Consensus", the declaration of the unipolar world according to the thesis of F. Fukuyama (1992) and the roadmap of Z. Brzezinsky (1997), all of them under the growing influence of digital technologies, defined the evolution of human societies towards the information society, rather than towards the knowledge society promoted by the global scientific community.

The digital enabling technologies and biotechnology that promised so much in terms of education, culture, new therapies and formulas for a better and more widespread human development, were very quickly oriented towards the promotion of the market, entertainment, distraction and addiction. The dizzying technological development in a society permeated by its influence and convinced of the “trickle down” theory whereby “the market ethic” would grow the economy and benefit all societies by creating more jobs, which would also immeasurably increase the wealth of nations, took the existing world system by storm.

From their very origins, both Cuba and the United States have seen their respective developments as nations closely intertwined as immediate neighbors, and in this process the declaratory discourses of the great power of the North have been conditioned by internal political forces, which in the debate on hypothetical national interests (which are rarely clearly defined), privilege one or another extreme of different types, according to the immediate political situation.

Several authors have recently coincided in dividing the discourse of U.S. political elites, defining, on the one hand, the dissemination of an uncritical idealized narrative, and on the other, the execution of real policy, which is always conditioned by the interests of large corporations. The objective of this article is to explore the role of science and its applications to the sustainability of human societies in general, and specifically within the framework of bilateral relations between Cuba and the United States. Likewise, to observe how science plays an important role in the definition of political relations according to the real interests of both nations, regardless of the political discourse in force in the short term and the manipulation of the long-term strategy of the imperial corporate power.

## Development

In order to comprehend the true dimension of these challenges and alerts, it is necessary to refer to the background, in order to define the evolution of the following components:

- The evolution of national science systems, especially in Cuba and the United States.
- The process of depletion of the planet's capabilities to guarantee human habitat caused by the distortions of the world economy imposed by imperialism.
- The evolution and radical changes in the organizational forms of energy use, productive processes and the recent advent of enabling technologies and their contribution or not to the objectives of sustainable human development.

## Origin and evolution of the national systems of science, technology and innovation in Cuba and the United States.

Although the development of the national capacities for science in Cuba and the United States had a common, parallel and coincident origin in the historical horizon, its subsequent evolution was conditioned by the unequal development of the national economies with respect to the corresponding European metropolises.

At the end of the 18th century, the ideas of the European Enlightenment reached the evening soirees of high society in important urban centers of the New World. In Boston, Philadelphia and New York in the nascent United States of America and in Havana, Cuba, groups of intellectuals oriented to philosophical, geographical, naturalistic and medical studies began to organize. Pioneers were the American Philosophical Society in Philadelphia, in the United States, and in Cuba the Patriotic Society, later known as the Economic Society of Friends of the Country (Sociedad Económica de Amigos del País). The diaries of the German academic traveler Alexander von Humboldt, who visited both countries in 1800 and 1804, record his exchange with research circles in social meetings such as those organized at that time in Berlin, Paris, London and other European cities.

The first four national Academies of Sciences had emerged in Europe much earlier, in the 17th century, in Italy, England, France and Germany. It was not until the 1860s that academies of science emerged in the Americas. After long processes of integration, the first national academies of science in the Americas appeared in Cuba

(1861) and the United States (1863), and in the 19th century academies of science outside Europe were only established in New Zealand (1867), Argentina (1874) and Canada (1883). There were not so many in Europe either after three centuries. Only five were founded in the 17th century, four in the 18th and four in the 19th century. Until the beginning of the 20th century, science was only practiced in very few capitals and almost always as an individual activity of some professors with their students or apprentices in university cloisters, museums, or in very few laboratories existing at that time.

In both countries that decade would witness, in turn, bloody and fratricidal armed conflicts, linked to the emergence and definition of the very survival of the respective national states. In the case of the United States, the conflict was between two different modes of production and two different visions of future economic development. In the case of Cuba, in addition to a similar change in the mode of production, the struggle was essentially over its emerging identity as an independent nation. These two oppositions to the two largest European empires, Spain and Great Britain, which had been disputing global hegemony for centuries, marked in both countries the character of the creation of the main scientific organizations of each.

The United States was born as a federated state of adjoining territories of different levels of development, economy and state organization. This origin was, therefore, a long political process that still continues today to compensate for differences and establish balances. From very early on, once Great Britain was defeated in the war to define the feasibility of the United States as a nation, the ruling caste of European origin dictated the Monroe Doctrine, the result of the elaboration of the geopolitics of the American world under the aegis of the nascent United States of America, which claimed the right to declare sovereignty over the entire group of nations of the Americas.

Two factors would come to define the future after the military conflict that engulfed the country in the mid-19th century and threatened to divide it forever. First, industrial development, and second, the depredation of neighboring colonial territories at the expense of France, Mexico and Spain.

For its part, within the framework of these processes of national consolidation, the Academy of Sciences of Havana emerged as an element of higher social organization that was an integral part of the first efforts to recognize a national identity in Cuba, while in the case of the Academy of Sciences of the United States, the institution was created by decree of President Abraham Lincoln to support the nation as an advisory body in the Civil War, so that from its origins it was conceived as an element of specialized advice to the military effort of the country, and this was recorded in its founding documents.<sup>1</sup>

It should be noted that at the time of the establishment of both Academies of Sciences there were already long-standing contacts between their scientists. This is the case of Felipe Poey and his long epistolary exchange with the founding researchers of the Washington Academy, Joseph Henry and Spencer Baird, with whom he had been collaborating for two decades in the classification and promotion of the original collections of the Smithsonian Institution, as well as with other colleagues in institutions in Philadelphia, New York and Harvard, or of his son, also founder of the Cuban Academy, meteorologist Andrés Poey, with his American colleagues.

These exchanges were between fellow researchers who respected each other as equals, and it should be noted that it was precisely in the United States during the V International Sanitary Conference, held in Washington,

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<sup>1</sup> The Act of Incorporation of the National Academy of Sciences of the United States signed by President Lincoln on March 3, 1863, in the middle of the Civil War, established that the Academy would have the obligation to provide scientific and technical advice free of charge to any government department when requested to do so. It is recorded that during the remainder of the 19th century and up to 1916 the Academy was consulted on only a dozen occasions. On that date in 1916, by Executive Order of President Woodrow Wilson, the National Research Council was created, a new contingency executive body in charge of coordinating the scientific and technological research of the entire nation in the service of the preparations for the war in which the country was involved in Europe. After the end of that conflict, the National Research Council remained in operation as a permanent operating body of the National Academy of Sciences, performing the organization and service of the specialized advisory function in science and technology matters for all entities of the U.S. government. "Governing Documents" [www.nasonline.org](http://www.nasonline.org). Accessed 10/15/24.

D.C. in 1880, that Carlos J. Finlay presented for the first time his hypothesis of the mosquito as the transmitting agent of Yellow Fever, which he would reiterate later that same year, a few months later, before the plenary of the Cuban Academy of Sciences in Havana. Twenty years later, Finlay himself, in collaboration with the American physician Jesse Lazear, from the School of Public Health of the Johns Hopkins University in Baltimore, was able to experimentally confirm the certainty of his hypothesis as opposed to others of the team of researchers working in Cuba during the turn of the century, and then, in collaboration with Doctors Leonard Wood and Walter Reed in Cuba and William C. Gorgas in Panama, to undertake sanitation campaigns to eradicate the so-called "Scourge of the Tropics". Thus, the highest achievement of world virology in the 19th century was reached by an original scientific hypothesis of a Cuban researcher and its final demonstration and introduction into practice in both countries, the whole region and the world through bilateral collaboration with American scientists.

The history and details of the exchanges in various disciplines can be found in the works listed in the references and in others published together with this one. Suffice it to say that since then to date, collaboration between researchers from both countries has been almost uninterrupted for more than a century and a half and has been of great importance for their contributions in various fields of science for Cuba, the United States, the Caribbean region and the world in general.

During the rest of the 19th century and the first half of the 20th century, scientific activities continued to be the work of societies and institutions of the scientists themselves under the protection of large universities and other educational centers or of the nascent industries. It would not be until the middle of the 20th century that governmental efforts would emerge in both countries for the development of science.

In the United States, the main research and development centers were organized by the large industrial monopolies. When the United States was attacked at Pearl Harbor on December 7, 1941 and President Franklin D. Roosevelt called for the war effort, ad-hoc research activities were organized through the creation of commissions. It was not until the end of the war, in the post-war period between 1945 and 1950, that the governmental structures in charge of the sciences were established and linked to permanent advice to the defense agencies of that country. After the report presented by a commission headed by Engineer Vannevar Bush entitled Science, the Endless Frontier, and successive organizational processes in 1950 established the National Science Foundation, the first governmental institution for the promotion of science.

In Cuba, for its part, after the U.S. occupation the Academy of Sciences continued as an independent non-governmental collective organization of scientists, but the development of the Cuban economy according to the extractive interests of the main investors did not promote local research activities, so that the Academy remained essentially a primarily medical entity. When in 1950 the Government of President Carlos Prío Socarrás requested a loan from the International Bank for Reconstruction and Development (origin of the World Bank), the Commission in charge under the direction of Francis A. Truslow proposed the need to straightaway promote applied research and consequently recommended the immediate establishment of a Cuban Foundation for Technological Research. The truth is that this idea was not taken up and at the time of the triumph of the Revolution, Cuba only had a few medical laboratories and four experimental stations (three agricultural and one industrial).

On January 15, 1960, a few days after the first anniversary of the revolutionary triumph, Fidel was invited to close the meeting for the Twentieth Anniversary of the Speleological Society of Cuba at the headquarters of the Academy of Sciences in Havana. It is there where he delivers the speech in which he states that

[...] The future of Cuba must necessarily be a future of men of science, of men of thought, because that is precisely what we are sowing the most. What we are sowing the most are opportunities for intelligence.

Said and done, the Literacy Campaign was launched, and once it was concluded, the Academy and the University Reform were re-founded, with the expansion of technical and basic science careers together with a broad system of scholarships for young people from all over the country so that they could access high school and university.

The main research centers created from the development needs, based on the scarce existing laboratory facilities and the qualified force of the national universities, first undertook the task of studying, describing and characterizing Cuba's natural conditions and resources. From this, state plans for economic and social development were designed and in a period of three decades the system of R&D centers created by the Revolution in the country was able not only to have a scientific vision of the natural environment, the economy and Cuban society, but also to apply that knowledge to national development, achieving human advancement objectives characterized in indexes that in many ways compete with those of developed countries. In addition to the above, research centers in various branches were able to advance in the creation of new productive technologies and finished products applied to health - human and animal - agriculture and various productive processes, which led the RAND Corporation to comment in a report prepared for the World Bank in March 2001 that "... Brazil and Cuba are the only two Latin American countries developed above the world average in their scientific and technological capacity".

It is thus demonstrated that the scientific and technological development that has been internationally recognized in Cuba is a genuine result of the Revolution in compliance with the development strategy outlined since the revolutionary triumph itself, as recorded in two specialized reports prepared at the request of the World Bank in 1950 and 2000, respectively.

#### **Science and the limits of development.**

In 1992, the Earth Summit in Rio de Janeiro succeeded in producing two conventions of transcendental scope: the Framework Convention on Climate Change and the Convention on Biodiversity. These undoubtedly addressed the need for concerted action on the two most urgent problems threatening the global environment and there is no doubt that the most notable warning on that occasion about both problems was given in his brief five-minute speech by our Commander-in-Chief Fidel Castro when he said: "An important species is in danger of disappearing: mankind". But to reach an understanding of the reasons that sought a settlement on the legal bases that could then reconcile the collective interests of humanity in order to promote sustainable development, we would have to travel a long road that began even much earlier.

A good time to set a global alert in this respect was the energy crisis of 1972. The preceding decade had marked several extremes for human societies. The process of decolonization, the wars in Southeast Asia, especially the Vietnam War and related conflicts, the struggle for civil rights in the United States, the generational clash of the counterculture and the initial steps in the conquest of outer space, just to mention the main movements, had shaken the foundations of global governance. The social cataclysm did not respect borders or horizons. Led by youth, 1968 was a year of turbulent social and political clashes in Washington, Mexico and Paris, and of revolutionary effervescence in Asia, Africa and Latin America.

The 1960s, on the other hand, had already brought us the first widely publicized warning about environmental pollution caused by indiscriminate pesticides in the development of extensive agricultural practices with the work "Silent Spring" by the writer Rachel Carson (Carson, 1962), while the emergence of a growing number of independent nations as a result of decolonization led the World Bank to create a high-level commission, chaired by the Canadian Chancellor, to argue the requirements of international development, which produced the report entitled "Counterparts to Development" (Pearson et al., 1969), and, towards the end of that decade, a team from the Massachusetts Institute of Technology (MIT) was commissioned by the Club of Rome to conduct a prospective statistical study on the global limits to the impact of forms of commercial and economic industrial development based on the practices of the existing capitalist economy. The result of this request was the publication in 1972 of "The Limits to Growth" (Meadows et al, 1972), which already warned that the maximum thresholds of exhaustion of the regenerative capacity of various resources of the planet as a habitat for the human species were about to be crossed.

Although the statistics showed that these growth limits were clearly defined on the basis of the current production and consumption patterns of the economy of the existing world system, the main variables used were



neither conclusive nor absolute, although they already warned of the need to achieve a possible and desirable sustainable balance, which immediately became the obvious corollary for the solution of the conflict defined by the report.

The following decade brought the results from the hands of atmospheric chemists who discovered in the reading of sequential observations of atmospheric ozone the growing hole in the concentration of this gas over the polar cap, which eliminated an important filter of excess ultraviolet solar radiation, the cause of skin cancer. As an evolution of all these alarms, the UN World Commission on Environment and Development, known as the Brundtland Commission, after its Chair, former Prime Minister of the Netherlands, produced the report "Our Common Future" (UN, 1987).

Since then, there has been a dichotomy between the stated objectives of achieving a sustainable balance in the long term for the use of the planet's resources to adequately meet the needs of the global population (UN, Millennium Development Goals - MDGs, Sustainable Development Goals - SDGs); and, in contrast to these goals, commercial and social economic practices in which unsustainable patterns of production and consumption promoted by monopoly capitalism are maintained, which on the other hand, based on permanent financial manipulation, only favor a smaller and smaller percentage of human societies (Piketty, 2014).

The possibility of a sustainable permanence of the human species on the planet and the way to achieve it is debated between these dilemmas, which unfortunately is manipulated by the media between the extreme narratives that it is either an unsolvable problem, or that it is a false mirage not as serious as it is said to be. Nevertheless, the world scientific community, analyzing in depth each of the situations that have brought to limits the possibility of an equitable sustainable development, has systematically demonstrated the conclusion that the conflict is permanently maintained and aggravated by arbitrarily imposed practices in order to continue privileging the minorities that hold power in the developed capitalist countries.

First of all, we must take into consideration the opposing elements in this dilemma.

On the one hand, as the entire planet has become a global community of production, consumption and services, the market is regulated according to supply and demand, but the mechanisms for regulating the market have been conditioned by the domination by the world's leading power of international trade, financial and political organizations and their increasing use as instruments of force for geopolitical domination.

In the debates on the U.S. presidential elections, the antagonism of these visions has become evident, which will ultimately be modulated by the vested interests of the U.S. bipartisan political system in terms of supporting the maintenance of unipolar hegemonies in the midst of a global geopolitical situation that, in addition to maintaining it in permanent instability, has demonstrated the impossibility of keeping it unalterable.

It is absurd to privilege and prioritize the maintenance of an unsustainable hegemony over the pursuit of the global sustainability of human societies. The corollary elaborated by Yuval Noah Harari in *Sapiens* (Harari, 2014), inspired by the works of Drs. Jared Diamond, "Guns, Germs and Steel" of 1997, and Ian Morris, "Why the West Dominates and for How Much Longer" of 2010, both from the University of California, is that the destabilization caused by neoliberalism since the Washington Consensus, which, in order to guarantee the short-term profits of the richest, wrecked the foundations that gave stability to any of the national economies, including those of the most developed countries themselves. That corollary has left us on the edge of the endless war declared in October 2001 by U.S. President George W. Bush. This war is being conducted by the US military apparatus and its allies, who have become the leaders of the tools of global domination nurtured by the Military Industrial Complex.

To summarize, the reality we have faced in the last fifty years is that there is a global international effort that fosters a consensus aimed at promoting the collective development of human societies and establishes global agreements in this regard that have gone through the statements of the highest multilateral forums of supposedly binding commitments. However, despite evidence, consensus and purposes, the squandering of

fossil fuels, the growing marginalization and exploitation of the Global South, military chaos and humanitarian catastrophes are systematically imposed.

The following is a partial list of the main milestones in the definition of the objectives to be pursued in long-term sustainable human development according to the best knowledge of world science.

### **Main Steps in the Process of Building Consensus on the Requirements of Sustainable Development**

- Report of the Pearson Commission for International Development. Washington. 1969.
- MIT Report to the Club of Rome on Limits to Growth. 1972.
- Human Environment Summit. Stockholm. Stockholm, Sweden, 1972.
- UN Conference on Human Settlements HABITAT I. Vancouver, Canada 1976.
- United Nations Conference on Health for All. Alma-Ata, USSR, 1978.
- United Nations Conference on Science and Technology for Development. Vienna, Austria. 1979.
- Report of the Commission on Environment and Development "Our Common Future". UN. New York, 1987.
- Earth Summit. Rio de Janeiro, Brazil, 1992.
- UN Habitat Conference on Human Settlements II. Istanbul, Turkey, 1996.
- World Conference on Science. Budapest, Hungary, 1999.
- World Conference of Academies of Sciences. Tokyo, Japan, 2000.
- World Summit on the Information Society, Geneva, 2003 and Tunis, Tunisia, 2005.
- Millennium Development Goals 2000-2015. UN.
- UN Conference on Human Settlements Habitat III. New York, UN, 2016.
- Sustainable Development Goals 2015-2030. UN.
- Summit of the Future. UN 2024.

All these efforts have been systematically developed by building agreements and action programs (negotiated within multilateral international organizations and based on the best available scientific knowledge) that are practicable and achievable, starting with the optimal use of the same original contribution requested to developed countries by the World Bank and the United Nations since 1967 in the report of the UN Commission for International Development, consisting of 0.7 of the GDP of developed countries to be devoted to international sustainable development in a stable and long term manner. Unfortunately, all reports from that time to date show that this pledge has been broken, in the best years, by no less than half of the commitment, which in turn, in more than 80 percent of the contribution finally made, has been invested within the donor countries. In addition, since the end of the 20th century, international development has hardly been recognized as a partial objective and the UN programs mentioned above no longer quantify it in absolute terms, but only in gradual percentage increases.

However, all the agreements and decisions of these conferences, fittingly based on the best available scientific knowledge, have not been fulfilled in due time and form over the last half century due to the systematic failure of developed countries to fulfill their commitments to international development. The growing impossibility of fulfilling official development assistance (ODA) commitments has had two main reasons: firstly, the application of ODA for geopolitical objectives of domination and, secondly, the exaggerated expenditure of the military budgets of the developed countries.

In the half century elapsed since the identification of unrecoverable thresholds in the abuse of the planet's habitability conditions, the global economy has continued to invest and squander more resources in fratricidal wars than in ordering the long-term sustainable development of human societies on the planet, dominated by the mirage of imperial superiority.

### Science, Information and Knowledge

In one of his most recent essays (*Beyond Hegemony*, 2024) and in various conferences, Dr. Jeffrey Sachs, Director of the School of Development at Columbia University in New York, argues that the current geopolitical juncture is characterized by the convergence of the decline of Western hegemony, the global ecological crisis (composed of climate change, the destruction of biodiversity and massive pollution, all phenomena induced by human societies) and the rapid advance of technologies (especially artificial intelligence, information technology, biotechnology and geo-engineering). In this context, a process of instability and adjustment is taking place in which the poles of development are being reconfigured, modifying the patterns of exploitation, production and consumption that have been shaped for centuries in what he characterizes as a change of phase in history, which is currently undergoing a process characterized by uncertainty and the growing danger of a nuclear hecatomb.

For his part, in his address to the 16th BRICS Summit in Kazan in October 2024, the UN Secretary General thanked this group of countries for their support for multilateralism and described the current situation as a

[...] proliferation of wars, the devastation of climate change, pollution and biodiversity loss, growing inequality and stubborn poverty and hunger; a deep crisis that threatens plans for a better future for many vulnerable countries; the fact that less than a fifth of the Millennium Development Goals are on track to be met; the growing digital divide and the lack of safeguards for artificial intelligence and other digital technologies [...] and finally, [...] the lack of representation of developing countries at global decision-making tables. All this has to change [...]

To this end, he said, the recently agreed September 2024 Summit of the Future defined the course of action to strengthen multilateralism, defend peace and human rights and promote sustainable development. Four areas of action are outlined in the Pact for the Future: 1. The reform of the global financial architecture, which is obsolete, useless and unjust. 2. Climate. The goal of maintaining a limit of 1.5 degrees for global warming and objective financial commitments to that end. 3. Technologies. Every country must have the possibility of accessing the benefits of new technologies, and 4. Peace. Strengthen and update the tools to guarantee peace, including the reform of the United Nations Security Council.

In view of these scenarios, bilateral relations between Cuba and the United States remain sequestered in a limbo inherited from the Cold War of the last century, harassed by power groups in various levels of the U.S. government structures with an endless web of laws, administrative provisions, unilateral coercive measures and designation in exclusive lists that continue to this day to constitute the most comprehensive and oldest complex of economic, commercial and financial aggressions ever wielded in history by a great power against another nation. This aggressive spawn has gone through all possible alternatives and - always under a set of pretexts - has sought to continue applying the policy defined by the hostile and illegal memorandum of the Assistant Secretary of State for Inter-American Affairs, Lester Mallory, dated April 6, 1960.

However, despite this climate of constant aggression under any pretext, scientists from both countries continue to communicate, exchange experiences, explore new possibilities and promote ways to share the process of creating new knowledge. In the more than half a century of this always aggravated dispute, Cuba was able to build a national system of science, technology and innovation that has obtained achievements, technologies and products at the state-of-the-art of the world scientific level. On the other hand, the research carried out by the scientific communities of both countries offer multiple spaces for sharing work and objectives, but can only advance in leaps and bounds between the various ways in which different U.S. political interests hinder any constructive initiative, until it becomes of interest again and contacts and collaboration are reborn.

In this sense, several institutions of both countries, the region and the world have served as bridges to maintain contacts regardless of the ups and downs of the political confrontation and this has allowed researchers to show different results of joint work of benefit to both countries and to others in the region and the world. Among the institutions that have facilitated these relations, it is worth mentioning, in the first place, both Academies of



Sciences, which in the case of the Cuban scientific academy has been the main entity channeling relations in its capacity as an official institution of the Cuban State, which is not part of the government or the administration, although it has national institutional representativeness.

On the U.S. side, in addition to the National Academies of Sciences (NASEM), the efforts over the years of the Smithsonian Institution and the American Association for the Advancement of Science (AAAS), both of which are among the world's leading non-governmental organizations in promoting international research and collaboration, are noteworthy. Likewise, the International Social Science Council (SSRC), the Latin American Studies Society (LASA) and various non-governmental entities such as the Environmental Defense Fund (EDF), The Nature Conservancy (TNC), and countless university and local organizations, research centers and many other R and D centers and bodies that have appreciated with respect and consideration the work of the Cuban scientific community and share its goals and objectives.

The initiatives that have been realized in bilateral scientific and technical collaboration can show an ever-growing array of successful and very promising results. In the medical care sector, there is the joint confrontation of the Ebola fever epidemic in Sierra Leone, Africa in 2014, as well as an exchange project on primary health care in low-income areas for three months with the City of Chicago in 2017. Both in preventive medicine and in confronting epidemics Cuba can show results far superior to those achieved in the United States thanks to the vision of a comprehensive health system that can provide holistic solutions that are very effective both in prevention and in crises and has been of interest to several cities in the United States. This became evident in the impossibility of a swift and effective response to the emergence of the COVID-19 pandemic, when the lack of integration between public strategies and private care systems failed to immediately contain the spread of the virus and the excessive mortality among the weakest patients.

In the training of medical personnel, U.S. graduates from low-income, disadvantaged families after studying at the Latin American School of Medicine have also demonstrated another aspect in which, despite the enormous difference in size and resources, the Cuban experience can make a positive contribution to U.S. health care.

The possible application of new drugs developed in Cuba after clinical studies, both in vaccines against cancer and in treatments for diabetic foot ulcers in collaboration with important scientific centers in the United States could contribute greatly to improve the morbidity and mortality of diseases that cause considerable havoc in large sectors of U.S. society.

In biodiversity conservation activities and coping with the effects of Climate Change, both in terms of shared natural resources and experiences in research, monitoring, adaptation and resilience projects, the communities of scientists learn a lot from each other and have been able to exchange information, techniques and research resources for bilateral benefit.

Faced with the scourge of natural disasters, from their prevention to the confrontation of extreme events, the experience of decades in the protection of populations and settlements through monitoring and education regarding hurricanes and other climatological events can also help in the design and application of equivalent strategies for other types of crises such as oil spills and all types of emergencies. The hurricane cooperation resulting from the joint work of meteorologists and respective authorities of both countries is a model example of how, despite political differences at any time and through multilateral collaboration within the regional association IV of the World Meteorological Organization, scientists from both countries have maintained a work of excellence not only for joint benefit but also for the entire Caribbean region.

These and other equally satisfactory examples are reported in other articles in this publication and in those cited and listed in the reference section of this article. They serve as examples to reflect on how both countries can best contribute to the achievement of global sustainable development goals and the future of human societies.

## Conclusions

Political relations between Cuba and the United States have been in almost permanent conflict since the 19th century; but they have been escalating and intensifying since 1960 to date, with only a short episode of attempted relaxation at the end of Barack Obama's presidential term. The fact that Cuba was the culmination of the wars of independence of Spanish America and that the thirty years of that last war ended up bleeding Spaniards and Cubans "to the last man and the last peseta", allowed the United States to enter the conflict and in the short space of three months manage to dominate the remains of the Spanish empire and convert the few colonies that Spain still retained in protectorates under its aegis.

In the case of Cuba, which had been the motivating element of its communications campaign to justify the war against Spain, the intervening power had no choice but to grant independence, but not before, under blackmailing pressure, imposing on the constitution of the nascent republic a set of amendments that in fact turned it into a neo-colony under the premises of the aforementioned Monroe Doctrine.

That neocolonial condition allowed the overwhelming entry of U.S. investors who bought the land and the local economy at bargain prices and enthroned a corrupt and delinquent local oligarchy that would end up turning Cuba into the recreational den of the mafias and the excesses of the northern power. The victory of the Cuban Revolution in 1959 radically changed the panorama and an economic and social project of national development prevailed over the neocolonial surrender of the governments of the first half of the century. Since then the bilateral relationship has been subject to the assumptions of the two hundred year old Monroe Doctrine, to the precepts of the Platt Amendment of one hundred and twenty years, to the dictates of the Lester Mallory Memorandum of sixty years and to the delusions of an absurd extraterritorial law of the United States of thirty years ago, which has been futilely trying to turn Cuba back into the protectorate it was with the military boot of the United States on its territory in 1898.

In the face of all this abuse, the Republic of Cuba, under the process of the Cuban Revolution since 1959, laid the foundations for an economic and social development of national independence that led to the creation of a more just, equitable, educated and healthy society that has come to compete in human development indexes with the most highly developed countries in the world and that in the scientific field has managed to establish centers and schools of thought at the highest world level in various disciplines.

These centers have established relationships and contacts with counterparts around the world and especially in the United States, which can contribute to the advancement of global sustainable development objectives.

If leaders in the United States could realize the advantages of a constructive bilateral relationship with Cuba that could end the policy of confrontation aimed at imposing neocolonial conditions, renouncing its traditional objective of promoting regime change and instead be dedicated to fostering neighborly relations equivalent to those that exist with the other Caribbean countries, they would find that Cuba would not only be one of their major trading partners in the Caribbean, but would also be a counterpart to achieving greater welfare and development objectives throughout the region.

At least in science, researchers have highlighted the advantages of a constructive bilateral relationship. It would be worthwhile to create the conditions to foster its better development and promotion aimed at achieving higher goals of sustainable development. It should therefore be a priority for both countries to foster a climate of cooperation and exchange in the fields of science as opposed to confrontation and confrontation. This would necessarily result in concrete advantages of national interest for all.

In the intervening years of this century, the policy of endless war declared by the then President of the United States in 2001 has succeeded only in killing millions of citizens of the countries of the Global South and tens of thousands of Americans. Destroying the economies of dozens of countries, increasing the US public debt by several billion dollars and enriching a handful of investors. The world has become more violent and insecure, and the objectives of global development are vanishing, wrecking the social fabric of nations for the benefit of far less

than one percent of the world's citizens who amass useless absurd fortunes and further defer the possibilities of a harmonious development of human societies.

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