**COVID 19** (42)

## Meditaciones en periodo de caos (15)

## « *Fondos de Recuperación de la UE, y más allá* »

**Pedro R. García Barreno**

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| «*One word is too often profaned*<br>*For me to profane it,*<br>*One feeling too falssely disdained*<br>*For thee to disdain it;*<br>*One hope is too like despair*<br>*For prudence to smother*». | «Ya se profana mucho la palabra<br>como para que la profane yo.<br>Ya se desprecia mucho el sentimiento<br>como para que lo desprecies tú.<br>Ya la esperanza es casi un desengaño<br>como para que la ahogue la<br>prudencia». |

Percy Bysshe Shelly (1792-1822), *One Word is Too Often Profaned*, 1822.

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> «Para ayudar a reparar los daños económicos y sociales causados por la pandemia de coronavirus, la Comisión Europea, el Parlamento Europeo y los dirigentes de la UE han acordado un plan de recuperación que liderará el camino hacia la salida de la crisis y sentará las bases para una Europa moderna y más sostenible. El presupuesto a largo plazo de la UE, junto con *NextGenerationEU*, instrumento temporal concebido para impulsar la recuperación, será el mayor paquete de estímulo jamás financiado a través del presupuesto de la UE. Un total de 1,8 billones de euros ayudará a reconstruir la Europa posterior a la COVID-19, que será más ecológica, digital y resiliente. El nuevo presupuesto a largo plazo aumentará los mecanismos de flexibilidad para garantizar su capacidad de hacer frente a necesidades imprevistas. Se trata de un presupuesto preparado no solo para las realidades actuales, sino también para las incertidumbres del futuro. Más del 50 % del importe apoyará la modernización, por ejemplo, mediante: investigación e innovación, a través de Horizonte Europa».

El tren, más tipo FEVE que AVE, hasta los topes de coronavirus, está saliendo de la estación. Queda mucho por conocer, y la búsqueda de ese conocimiento debe apoyarse. Queda mucho por hacer, fundamentalmente en el ámbito de la empresa industrial. La pandemia encendió las luces rojas. No basta con fabricar productos de los que otros son propietarios. Es imprescindible un entramado empresarial potente con capacidad innovadora y que compita en el mercado internacional. También, que los fondos se distribuyan con equidad y por mérito; un Comité presidido por persona respetada es esencial. Sin dejar de lado la educación, formación convergente, nuevas habilidades y nuevos hábitos entre ellos la colaboración público-privada. También proyectos con objetivos definidos a medio y largo plazo. Sirva de ejemplo el *Project 2061: Science for All Americans*, iniciado en 1985, cuando el cometa Halley nos visitó por última vez. Una perspectiva de 75 años.

« *“The next normal arrives: Trends that will define 2021 – and beyond”. The COVID-19 pandemic has changed the world, and its effects will last. Here are some factors that business leaders should keep in mind as they prepare for the next normal*. *2021 will be the year of transition. Barring any unexpected catastrophes, individuals, businesses, and society can start to look forward to shaping their futures rather than just grinding through the present. The next normal is going to be different. It will not mean going back to the conditions that prevailed in 2019. Indeed, just as the terms “prewar” and “postwar” are commonly used to describe the 20th century, generations to come will likely discuss the “pre-COVID-19” and “post-COVID-19” eras*.» (Sneader & Singhal).

Esta «Meditación», que cierra la serie, se limita a reproducir una serie de documentos y escritos que, fundamentalmente dirijo a nuestras autoridades con el propósito de ayudarles a evitar la ceguera por el covid. Se destruirá una enorme cantidad de puestos de trabajos y se crearán otros nuevos. El reemplazo será largo y costoso.

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El Presidente Franklin Delano Roosevelt escribió, el 17 de noviembre de 1944, una carta a Vannevar Bush, *Director of the Scientific Research and Development*, cuyos párrafos finales:

«***New frontiers of the mind are before us****, and if they are pioneered with the same vision, boldness, and drive with which we have waged this war we can create a fuller and more fruitful employment and a fuller and more fruitful life.*

*I hope that, after such consultation as you may deem advisable with your associates and others, you can let me have your considered judgment on these matters as soon as convenient - reporting on each when you are ready, rather than waiting for completion of your studies in all.*

*Very sincerely yours, (s) Franklin D. Roosevelt*.»

Vannevar Bush contestaba en julio del siguiente año:

«*It is clear from President Roosevelt's letter that in speaking of science that he had in mind the natural sciences, including biology and medicine, and I have so interpreted his questions. Progress in other fields, such as the social sciences and the humanities, is likewise important; but the program for science presented in my report warrants immediate attention.*

*In seeking answers to President Roosevelt's questions I have had the assistance of distinguished committees specially qualified to advise in respect to these subjects. The committees have given these matters the serious attention they deserve; indeed, they have regarded this as an opportunity to participate in shaping the policy of the country with reference to scientific research. They have had many meetings and have submitted formal reports. I have been in close touch with the work of the committees and with their members throughout. I have examined all of the data they assembled and the suggestions they submitted on the points raised in President Roosevelt's letter.*

*Although the report which I submit herewith is my own, the facts, conclusions, and recommendations are based on the findings of the committees which have studied these questions. Since my report is necessarily brief, I am including as appendices the full reports of the committees.*

*A single mechanism for implementing the recommendations of the several committees is essential. In proposing such a mechanism I have departed somewhat from the specific recommendations of the committees, but I have since been assured that the plan I am proposing is fully acceptable to the committee members.*

*The pioneer spirit is still vigorous within this nation. Science offers a largely unexplored hinterland for the pioneer who has the tools for his task. The rewards of such exploration both for the Nation and the individual are great. Scientific progress is one essential key to our security as a nation, to our better health, to more jobs, to a higher standard of living, and to our cultural progress.*

*Respectfully yours,(s) V. Bush, Director.*»

El Informe comienza:

«*Progress in the war against disease depends upon a flow of new scientific knowledge. New products, new industries, and more jobs require continuous additions to knowledge of the laws of nature, and the application of that knowledge to practical purposes. Similarly, our defense against aggression demands new knowledge so that we can develop new and improved weapons. This essential, new knowledge can be obtained only through basic scientific research.*

*Science can be effective in the national welfare only as a member of a team, whether the conditions be peace or war. But without scientific progress no amount of achievement in other directions can insure our health, prosperity, and security as a nation in the modern world*.»

Y concluye:

Action by Congress

«*The National Research Foundation herein proposed meets the urgent need of the days ahead. The form of the organization suggested is the result of considerable deliberation. The form is important.*

*The Foundation here proposed has been described only in outline. The excellent reports of the committees which studied these matters are attached as appendices. They will be of aid in furnishing detailed suggestions.*

*Legislation is necessary. It should be drafted with great care. Early action is imperative, however, if this nation is to meet the challenge of science and fully utilize the potentialities of science. On the wisdom with which we bring science to bear against the problems of the coming years depends in large measure our future as a nation*.»

En resumen, el Informe V. Bush recomienda al Gobierno la creación de la *National Research Foundation* para apoyar la investigación en las diferentes ciencias – Física, Ingeniería, Química y Medicina- y el entrenamiento de personal en investigación, defensa nacional y cooperación científica internacional, además de una organización

del sistema de investigación Americano sobre cinco pilares fundamentales: Investigación científica (civil y militar), Educación (colegios, universidades e institutos), Laboratorios (privados y gubernamentales), Goverment to plan and finance projects. El Informe defiende la financiación de la educación y la investigación por el gobierno, y apoyándose en la frase de la carta del Presidente Roosevelt «*New frontiers of the mind are before us*», justifica que esa financiación pública no debe limitar la libertad de acción. Recomienda la contribución financiera del gobierno a través de un sistema de becas a la industria como un medio de captar y formar nuevos talentos, para lo que, de igual manera, sugiere un sistema de becas para estudiantes pre- y graduados en recompensa de sus méritos, ello asociado con una mejora en el sistema formativo. Contribuyó de manera decisiva al progreso de la ciencia y educación; ello fue clave en el crecimiento de los EE. UU. tras la guerra y la política científica y tecnológica de la OTAN. También sirvió de acicate para la formación de los *National Institutes of Health* (NIH) y la *Office of Naval Research* (ONR). Debido al éxito de estas y otras agencias, la financiación de la investigación básica por el gobierno federal se considera vital para el interés nacional.

Tal vez le faltó insistir en la llamada «Idea de Wisconsin», atribuida a Charles Van Hise, Presidente de la Universidad:

> «*I shall never be content until the beneficent of the University reaches every family of the satate*.»

Tras el Informe V. Bush deben destacarse, al menos, dos ambiciosos proyectos transversales, movilizadores y con objetivos concretos, que no consiguieron plenamente sus ambiciosos objetivos.

Cuando John F. Kennedy ocupó la presidencia de los EE. UU. en enero de 1961, la mayoría de sus conciudadanos percibían que su país había perdido la «carrera espacial» con la Unión Soviética que había deslumbrado con el lanzamiento del primer satélite artificial, *Sputnik 1*, hacía cuatro años. Este sentimiento se agudizó cuando en abril de 1962, el cosmonauta ruso Yuri Gagarin se convirtió en el primer hombre que «tocó el espacio», antes de que EE. UU. pudiera lanzar el primer astronauta del Proyecto Mercury. Adelantar significaba tocar la luna y, para ello, un desembolso de $ 22 mM.

Kennedy, ante el Congreso, en mayo de 1961, propuso que EE. UU.:

> «*Should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth*.»

El 12 de septiembre de 1962, el Presidente Kennedy pronunció un célebre discurso ante una muchedumbre de 40.000 personas en el *Rice's University's Rice Stadium*. El discurso incluye:

> «*We choose to go to the Moon. We choose to go to the Moon in this decade and do the other things, not because they are easy, but because they are hard; because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one we intend to win, and the others, too*».

Su sueño se cumplió tras su muerte, cuando el *Apollo 11* alunizó en julio de 1969. A partir de 1972 el futuro del programa espacial de EE. UU. parece incierto.

El segundo proyecto elegido se refiere a *National Cancer Act* 1971. En 1970 diversos movimientos de la sociedad civil norteamericana manifestaron su preocupación ante la ausencia de tratamiento efectivo para la segunda causa de muerte de aquel país, el cáncer. El Presidente Richard Nixon recogió el guante en el *State of the Union Adress*, en enero de 1971:

> «*I will also ask for an appropriation of an extra $100 million to launch an intensive campaign to find a cure for cancer, and I will ask later for whatever additional funds can effectively be used. The time has come in America when the same kind of concentrated effort that split the atom and took man to the moon should be turned toward conquering this dread disease. Let us make a total national commitment to achieve this goal*.»2

En diciembre de ese mismo año reafirmo su compromiso endosando como Ley, el 23 de ese mes, el *National Cancer Act* (P.L. 92-218), conocida como *The War on Cancer*, aunque tal frase no aparece en la mencionada Ley. Concluyó el acto de la firma:

> «*I hope in the years ahead we will look back on this action today as the most significant action taken during my Administration*».

Para Vincent DeVita, director del *National Cancer Institute* (1980-1988):

> «*The War on Cancer* […] *did everything it was supposed to do. It supported basic research handsomely. It set up application programs—the EORTC [European Organisation for Research and Treatment of Cancer] and U.S. clinical trials programs. The incidence of cancer in this country started dropping in 1990 and has continued to drop every year since, and so has mortality. And the morbidity from cancer, comparing 1971 to 2005, is like night and day* […] *So, every benchmark of the mandate has been hit*».

A pesar de ello, según *AMN Healthcare,* más de 1.2 millones de norteamericanos desarrollan cáncer cada año, y un nuevo caso se diagnostica cada 30 segundos en EE. UU.

En julio de 1979 el Presidente Jimmy Carter reconocía la decadencia científico-tecnológica de EE. UU:

> «*What can we do? First of all, we must face the truth, and then we can change our course. We simply must have faith in each other, faith in our ability to govern ourselves, and faith in the future of this nation. Restoring that faith and that confidence to America is now the most important task we face. It is a true challenge of this generation of Americans* […] *Little by little we can and we must rebuild our confidence. We can spend until we empty our treasuries, and we may summon all the wonders of science».*

Por la ceguera covidiana señalada, olvidamos que el pasado 12 de diciembre de 2020 deberíamos haber celebrado el Cuadragésimo aniversario de la «Ley Bayh-Dole» que, según *The Economy*:

> «*Possibly the most inspired piece of legislation to be enacted in America over the past half-century was the Bayh-Dole act of 1980. Together with amendments in 1984 and augmentation in 1986, this unlocked all the inventions and discoveries that had been made in laboratories throughout the United States with the help of taxpayers' money. More than anything, this single policy measure helped to reverse American's precipitous slide into industrial irrelevance*.»

Antes de 1980, las restricciones gubernamentales en los EE. UU. limitaban la comercialización de las invenciones que habían sido desarrolladas en proyectos de investigación académica financiados con fondos federales. El doce de diciembre de 1980 inició su andadura, en EE. UU., The Patent and Trademark Law Amendments Act (P. L. 96-517), más conocida como Ley Bayh-Dole (B-D) por sus artífices los Senadores Birch Bayh (Demócrata por Indiana) y Robert Dole (Republicano por Kansas). El Capítulo 18-Parte II-Título 35 recoge:

> «*It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise without unduly encumbering future research and discovery; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area*.»

Por su parte, la *Stevenson-Wylder Technology Innovation Act*, coetánea de la B-D, había consolidado similares derechos y responsabilidades para las agencias del gobierno como los *National Institutes of Health* (NIH). Además, la *Small Business Innovation Development Act* de 1982 (P. L. 97-219) y la *Federal Technology Transfer Act* de 1986 (P. L. 99-502) reforzaron el escenario. La Ley B-D reserva para el gobierno ciertos derechos, y ninguna de ellas contempla el control de precios.

En 1980, el Gobierno Federal de los EE. UU. almacenaba, aproximadamente, 28.000 patentes. Menos del 5% de ellas fueron licenciadas a la industria a efectos de su desarrollo en productos comerciales. Durante el Año fiscal 1997 –poco más de quince años de B-D– licenció el 70% de las patentes:

> «*The Bayh-Dole Act allows for the transfer of exclusive control over many government funded inventions to universities and businesses operating with federal contracts for the purpose of further development and*

*commercialization. The contracting universities and businesses are then permitted to exclusively license the inventions to other parties. The federal government, however, retains "March-in" rights to license the invention to a third party, without the consent of the patent holder or original licensee, where it determines the invention is not being made available to the public on a reasonable basis (in other words, to issue a compulsory license)*.»

En el Año fiscal 1999 las licencias de patentes producidas por las universidades supusieron la introducción de 417 nuevos productos en el mercado. Ello generó 40 mil millones de dólares US y 270.000 puestos de trabajo. En resumen, con la Ley B-D, el gobierno de los EE. UU. renunció a la propiedad intelectual de los resultados de la investigación realizada con fondos federales en las Universidades y en otras instituciones no gubernamentales.

El argumento: dado que el gobierno prácticamente no explota el resultado del trabajo de investigación por él financiado, los científicos y sus instituciones necesitan un incentivo para patentar primero y licenciar después sus descubrimientos con el fin de desarrollar productos útiles. Como respuesta a la Ley B-D las universidades crearon oficinas licenciatarias de tecnología y los miembros del claustro se interesaron en que sus descubrimientos se patentaran. Los fondos de capital-riesgo incluyeron a las universidades en sus carteras de negocio, los investigadores se reconvirtieron en empresarios y las universidades en parques tecnológicos. Para los responsables de las universidades se abrió un nuevo problema: ¿debemos co-invertir con nuestros miembros facultativos?; ¿deben los estudiantes participar en el nuevo "negocio"?; la Universidad ¿debe ser a la vez patrón, beneficiario filantrópico y licenciatario?; el investigador ¿puede trabajar simultáneamente como inventor-empresario y médico activo y mantener la confianza del paciente y del público?

Permitan una cuña de un país bastabte olvidado en nuestro medio. En 1982 Indira Gandhi pronunciaba, entre otras, las siguientes palabras:

«*New knowledge is often the best way of dealing with old problems. We see our space effort as relevant for National integration, education and communication, and the fuller understanding of the vagaries of the monsoon which rules our economic life. Mapping from the sky also gives information about natural resources. Oceanography augments food and mineral supplies. Modern genetics open out vast possibilities* […] *It is an inherent obligation of a great country like India, with its traditions of scholarship and original thinking and its great culture heritage, to participate fully in the march of science which is probably mankind's greatest enterprise today*».

La *National Security Decision Directive*, proclamada por Ronald Reagan el 21 de septiembre de 1985:

«*Our leadership position in science and technology is an essential element in our economic and physical security. The strength of American science requires a research environment conducive to creativity, an environment in which the free exchange of ideas is a vital component*.»

Diez años después, los ejecutivos de las dieciséis empresas líderes de EE. UU escribían, el 2 de mayo de 1995, ante la posibilidad de un recorte o congelación presupuestaria dirigida a I+D:

> *Open letter to Congress from the executives of some of America's leading technology companies*:
>
> «[…] *For all these reasons, it is essential that the federal government continue its traditional role as funder of both basic and applied research in the university environment. If we want to keep the American Dream intact, we need to preserve the partnership that has long sustained it. As we reach the final years of the century, we must acknowledge that we face a moment of truth:*
>
> *Will we nurture that very special innovative environment that has made this "the American century"? Or will we follow the other great civilizations and yield our leadership to bolder, more confident nations? As the Congress makes its decisions on university research, let there be no mistake: We are determining the 21st century today*», concluía el escrito.

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Resumen. Este final de la serie *Meditaciones* coincide con el día de Timoteo de Éfeso y Tito de Creta. El 26 de enero de 1500 Vicente Yáñez Pinzón fue el primer europeo en poner pie sobre suelo brasileño. Doscientos años después el terremoto Cascadia provocaba en la costa norteamericana del Pacífico noroccidental una falla de 1000 kilómetros y un sunami que arrasó la costa japonesa. Y trescientos más adelante el terremoto Gujarat hizo algo parecido en la costa occidental de India, y, hoy, tiembla la tierra donde los Católicos erigieron campamento durante el asedio de la ciudad Nazarí. Y el 26 de enero de 2020 se estrellaba el helicóptero que transportaba a la estrella de la NBA Kobe Bean Bryan, la que era historia viva de los *Lakers*. Como remate, hoy, el titular de la cartera de la Sanidad española retorna a su residència, tal vez por nostalgia, aunque alguien le dijo para animarle que era «ejemplo de persona que escucha y resuelve»; otro agafava el AVE cap a la Villa y Corte; originaria de la ultraperiferia comunitaria una licenciada en leyes cambia de sitio en la mesa del »Consejo, y la UE mendiga las dosis de vacuna abonadas a las multinacionales, que no ONGs, porque se intuye que no habrá remedio para todos. Por aquí el tocomocho es conocido desde épocas pretéritas.

El relato expuesto y como todos los relatos sesgado, intenta reforzar la idea de que un país con convicciones, que cree en su capacidad de recuperación educativa, científica y tecnológica y con un liderazgo eficaz, es capaz de sobreponerse a calamidades de cualquier índole. Aunque las alegrías suelen ser efímeras; manejar las situaciones complejas en la incertidumbre requiere mentes bien amuebladas.

«*The best way to have a good idea is to have lots of ideas*».
Linus Carl Pauling (1901-1994)
PN Química 1954, PN de la Paz 1962.

«*Gentlemen, we've got no money, so we've got to think*».
Ernest Rutherford (1871-1937)
PN Química 1908.

**NOTAS**

*W. Wayne Allen*, Chairman & CEO, Phillips Petroleum Company, *Norman R. Augustine*, President, Lockheed Martin Corporation*, John L. Clendenin*, Chairman & CEO, BellSouth Corporation, *Robert J. Eaton*, Chairman & CEO, Chrysler Corporation, *George M.C. Fisher*, Chairman, President & CEO, Eastman Kodak Company, *Robert W. Galvin*, Chairman, Executive Committee, Motorola Incorporated, *Louis V. Gerstner, Jr.*, Chairman & CEO, IBM Corporation*, Joseph T. Gorman*, Chairman & CEO, TRW Incorporated, *Gerald Greenwald*, Chairman & CEO, United Airlines, *George H. Heilmeier*, President & CEO, Bellcore, *Jerry R. Junkins*, Chairman, President & CEO, Texas Instruments Incorporated, *John McDonnell*, Chairman, McDonnell Douglas Corporation, *Randall L. Tobias*, Chairman & CEO, Eli Lilly and Company, *P. Roy Vagelos*, M.D., Former Chairman & CEO, Merck & Company Incorporated, *John F. Welch*, Chairman & CEO, General Electric Company, *Edgar S. Woolard, Jr.*, Chairman & CEO, E.I. DuPont DeNemours and Company. *«A Momenth of Truth for America. An open letter to Congress from the executives of some of America's leading technology companies», Washington Post May 2, 1995.*

«*Imagine life without polio vaccines and heart pacemakers. Or digital computers. Or municipal water purification systems. Or space-based weather forecasting. Or advanced cancer therapies. Or jet airliners. Or disease-resistant grains and vegetables. Or cardiopulmonary resuscitation (CPR).*

*We take for granted these and thousands of other technological breakthroughs that have made American society the most advanced in history. They have made our economy more competitive, created millions of jobs, and underpinned our entire standard of living. They have vastly improved our health and extended our life span. In a very real sense, they epitomize the American Dream.*

*But these breakthroughs didn't just happen. They are the products of a long-standing partnership that has, as a matter of national policy, fostered the discovery and development of new technologies. For many years, Administrations of both parties, working with Congress, have consistently supported university research programs as a vital investment in our country's future. Industry has played an equally critical role, carefully shepherding these new technologies into the marketplace.*

*This partnership -- the research and educational assets of American universities, the financial support of the federal government, and the real-world product development of industry -- has been a critical factor in maintaining the nation's technological leadership through much of the 20th century.*

*Just as important, university research has also helped prepare and train the engineers, scientists and technicians in industry whose discipline and skill have made technological breakthroughs possible. It has sparked innovation and prudent risk-taking. And as a result of the opportunity afforded such skilled workers in our technologically advanced economy, many disadvantaged young people have used high-tech jobs as a "stepping stone" to more productive and satisfying lives.*

*Unfortunately, today America's technological prowess is severely threatened. As the federal government undergoes downsizing, there is pressure for critical university research to be slashed.*

*University research makes a tempting target because many people aren't aware of the critical role it plays. It can take years of intense research before technologies emerge that can "make it" in the marketplace. History has shown that it is federally sponsored research that provides the truly "patient" capital needed to carry out basic research and create an environment for the inspired risk-taking that is essential to technological discovery. Often these advances have no immediate practical usability but open "technology windows" that can be pursued until viable applications emerge. Such was the case with pioneering university research done on earthquakes in the 1920s, which led over time to the modern science of seismology and the design of structures that better withstand earthquake forces.*

*Today, we, the undersigned -- executives of some of America's leading technology companies -- believe that our country's future economic and social well-being stands astride a similarly ominous "fault line." We can personally attest that large and small companies in America, established and entrepreneurial, all depend on two products of our research universities: new technologies and well educated scientists and engineers.*

*Technological leadership, by its very nature, is ephemeral. At one point in their histories, all the great civilizations -- Egypt, China, Greece, Rome -- held the temporal "state of the art" in their hands. Each allowed their advantage to wither away, and as the civilization slipped from technological leadership, it also surrendered international political leadership.*

*For all these reasons, it is essential that the federal government continue its traditional role as funder of both basic and applied research in the university environment. If we want to keep the American Dream intact, we need to preserve the partnership that has long sustained it. As we reach the final years of the century, we must acknowledge that we face a moment of truth:*

*Will we nurture that very special innovative environment that has made this "the American century"? Or will we follow the other great civilizations and yield our leadership to bolder, more confident nations? As the Congress makes its decisions on university research, let there be no mistake: We are determining the 21st century today*.»

https://homes.cs.washington.edu/~lazowska/cra/ceo.letter.html

American Association for Advancement of Science (AAAS), *Project 2061: Science for All Americans*, Washington, D.C.: AAAS, 1989.

«*Before the 'Common Core', there was Science for All Americans*» comenta Kathy Wren. La adopción de los *Common Core State Standards* y los *Next Generation Science Standrads* es el tema dominante en la reforma educativa de los EE UU en lo que llevamos de siglo. Sin embargo, el quid de los esfuerzos actuales reside en un ambicioso libro editado hace más de veinticinco años por la *American Association for the Advancement of Science* (AAAS), el primero en plantear la necesidad de que la siguiente generación debería contar con una formación adecuada en ciencia, tecnología y matemáticas. Hoy exite

acuerdo unánime entre los expertos en educación en el mundo anglosajón que *Science for All Americans* –un esfuerzo de colaboración durante tres años entre cientos de científicos, matemáticos y otros docentes– tuvo un formidable impacto sobre la reforma educativa al definir el concepto de cultura o educación/formación científica y su relevancia en los estándares educativos en ciencia, tecnología, ingeniería y matemáticas (STEM); objetivos propuestos por vez primera en 1989 cuando el *Project 2061* de la AAAS publicó el libro citado. «*Project 2061 is a long-term initiative of the AAAS to reform K-12 education in natural and social sciences, mathematics, and technology. Begun en 1985, The Project is developing a set of tolos to help local, state, and national educators redesign curriculum in these areas and ensure its success*». Es un proyecto a largo plazo; inició su andadura cuando el cometa Halley nos visitó por última vez y su horizonte se expande hacia su próxima visita en 2061: ¡75 años de perspectiva! *Project 2061* y STEM fueron fruto del impacto que supuso la puesta en órbita del satélite *Sputnik* por la Unión Soviética en la sociedad norteamericana. «*The post-Sputnik science education reform was really about preparing the next generation of scientists. Science for All Americans took a new position on science literacy, which was that everyone needs some level of science knowledge and habits of mind so that when reading about a scientific report in the newspaper, for example, one would think about it in a more critical way*», resume Jo Ellen Roseman, directora del *Project 2061*.

Sirva de referencia la constante preocupación e implicación directa de diversos gobiernos en tema tan crucial para forjar el futuro de las naciones. «Si queremos que América lidere el siglo XXI, nada es más importante que dar a todos y cada uno la mejor educación posible; desde preescolar al final del bachillerato», son palabras del Presidente de los EE UU, Barack H. Obama. En noviembre de 2009, el Presidente lanzó la iniciativa «Educar para Innovar» con el fin de movilizar a los estudiantes de Norteamérica y conseguir superar la poco alentadora posición intermedia en educación y alcanzar la excelencia formativa en ciencias y matemáticas en las próximas décadas. Esta iniciativa incluye esfuerzos no solo del gobierno federal sino de todas las empresas líderes del país, fundaciones y otras organizaciones sin ánimo de lucro y sociedades y entidades científicas que, sin duda, acudirán a la llamada de su Presidente. Todo ello en el marco referido STEM con las siguientes áreas prioritarias: conseguir una coalición con todos los presidentes de las citadas empresas para unir los esfuerzos del sector privado; formar cien mil nuevos profesores-STEM en los próximos diez años; incrementar de manera significativa la participación e inversión federal en STEM, y potenciar el talento STEM en las escuelas.

Para concluir, las «iniciativas presidenciales» se han establecido como un hecho distintivo de los gobiernos de la nación que bien valdría la pena importar. Sirvan de ejemplo: «*Landing a man on the moon and returning him safely to the Earth*» [primera iniciativa de la «era post-Sputnik»], 1961, John F. Kennedy; «*National Cancer Act*» [*The War on Cancer*], 1971, Richard M. Nixon; «Birch E. Bayh-Robert J. Dole *Act*» [*Government Patent Policy Act*], 1980, James E. Carter; «*Strategic Defense*», 1983, Ronald W. Reagan; «*Nanotechnology*», 2000, William J. Clinton; «*Malaria*», 2005, George W. Bush; «*American*

*Competitiveness*», 2006, George W. Bush; «STEM» [*Science, Technology, Engineering & Mathematics education*], 2009, Barack H. Obama; «*Global Health*», 2009, Barack H. Obama; «BRAIN» [*Brain Research through Advancing Innovative Neurotechnologies*], 2013, Barack H. Obama; «*Precision Medicine*» [PMI *Cohort Program*], 2015, Barack H. Obama.

A modo de resumen sirva la presentación al *MIT – The Third Revolution*: «*The past decade has seen the evolution of new interdisciplinary research areas: bioninformatics, synthetic biology, nano-biology, computational biology, tissue engineering, biomaterials, and system biology are examples. These new fields share a comparable, underlying research model, convergence, and there is a need to see them asa unity in order to ensure their continued progress. The successful application to this model will require not simply collaboration between disciplines, but true disciplinary integration*».

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«*DEAR DR. BUSH: The Office of Scientific Research and Development, of which you are the Director, represents a unique experiment of team-work and cooperation in coordinating scientific research and in applying existing scientific knowledge to the solution of the technical problems paramount in war. Its work has been conducted in the utmost secrecy and carried on without public recognition of any kind; but its tangible results can be found in the communiques coming in from the battlefronts all over the world. Some day the full story of its achievements can be told.*

*There is, however, no reason why the lessons to be found in this experiment cannot be profitably employed in times of peace. The information, the techniques, and the research experience developed by the Office of Scientific Research and Development and by the thousands of scientists in the universities and in private industry, should be used in the days of peace ahead for the improvement of the national health, the creation of new enterprises bringing new jobs, and the betterment of the national standard of living.*

*It is with that objective in mind that I would like to have your recommendations on the following four major points:*

*First: What can be done, consistent with military security, and with the prior approval of the military authorities, to make known to the world as soon as possible the contributions which have been made during our war effort to scientific knowledge?*

*The diffusion of such knowledge should help us stimulate new enterprises, provide jobs four our returning servicemen and other workers, and make possible great strides for the improvement of the national well-being.*

*Second: With particular reference to the war of science against disease, what can be done now to organize a program for continuing in the future the work which has been done in medicine and related sciences?*

*The fact that the annual deaths in this country from one or two diseases alone are far in excess of the total number of lives lost by us in battle during this war should make us conscious of the duty we owe future generations.*

*Third: What can the Government do now and in the future to aid research activities by public and private organizations? The proper roles of public and of private research, and their interrelation, should be carefully considered.*

*Fourth: Can an effective program be proposed for discovering and developing scientific talent in American youth so that the continuing future of scientific research in this country may be assured on a level comparable to what has been done during the war?*

***New frontiers of the mind are before us**, and if they are pioneered with the same vision, boldness, and drive with which we have waged this war we can create a fuller and more fruitful employment and a fuller and more fruitful life.*

*I hope that, after such consultation as you may deem advisable with your associates and others, you can let me have your considered judgment on these matters as soon as convenient - reporting on each when you are ready, rather than waiting for completion of your studies in all.*

*Very sincerely yours, (s) Franklin D. Roosevelt*.»

James («Jimmy») Earl Carter, Jr. (39º Presidente EE. UU.), *Crisis of Confidence*, American Experience, GBH, Televised speech on July 15, 1979.

«*During the past three years I've spoken to you on many occasions about national concerns, the energy crisis, reorganizing the government, our nation's economy, and issues of war and especially peace. But over those years the subjects of the speeches, the talks, and the press conferences have become increasingly narrow, focused more and more on what the isolated world of Washington thinks is important. Gradually, you've heard more and more about*

*what the government thinks or what the government should be doing and less and less about our nation's hopes, our dreams, and our vision of the future[…]It's clear that the true problems of our nation are much deeper -- deeper than gasoline lines or energy shortages, deeper even than inflation or recession. And I realize more than ever that as President I need your help. So, I decided to reach out and to listen to the voices of America* […] *The threat is nearly invisible in ordinary ways It is a crisis of confidence. It is a crisis that strikes at the very heart and soul and spirit of our national will. We can see this crisis in the growing doubt about the meaning of our own lives and in the loss of a unity of purpose for our nation. The erosiono f our confidence in the future is threatening to destroy the social and the political fabrico f America* […] *Our people are losing that faith, not only in government itself but in the ability as citizens to serve as the ultimate rulers and shapers of our democracy* […] *The symptoms of this crisis of the American spirit are all around us. For the first time in the history of our country a majority of our people believe that the next five years will be worse than the past five years. Two-thirds of our people do not even vote. The productivity of American workers is actually dropping, and the willingness of Americans to save for the future has fallen below that of all other people in the Western world* […] *These changes did not happen overnight. They've come upon us gradually over the last generation, years that were filled with shocks and tragedy* […] *Looking for a way out of this crisis, our people have turned to the Federal Government and found it isolated from the mainstream of our nation's life. Washington, D.C., has become an island. The gap between our citizens and our government has never been so wide. The people are looking for honest answers, not easy answers; clear leadership, not false claims and evasiveness and politics as usual. What you see too often in Washington and elsewhere around the country is a system of government that seems incapable of action. You see a Congress twisted and pulled in every direction by hundreds of well-financed and powerful special interests. You see every extreme position defended to the last vote, almost to the last breath by one unyielding group or another. You often see a balanced and a fair approach that demands sacrifice, a little sacrifice from everyone, abandoned like an orphan without support and without friends. Often you see paralysis and stagnation and drift. You don't like it, and neither do I.* ***What can we do****? First of all, we must face the truth, and then we can change our course. We simply must have faith in each other, faith in our ability to govern ourselves, and faith in the future of this nation. Restoring that faith and that confidence to America is now the most important task we face. It is a true challenge of this generation of Americans* […] *You know we can do it* […] Little by Little we can and we must rebuild our confidence. We can spend until we empty our treasuries, and we summon all the wonders of science. *But we can suceed only if we tap our greatest resources – America's people, America's values, and America's confidence* […] *Working together with our common faith we cannot fail*.»

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> «*The necessary partners in the public-private partnership are based on nonidentical but harmonized efficacy trials associated with collaborating clinical trials networks and laboratories, a common Data and Safety Monitoring Board, and an independent statistical group to determine correlates of protection.*
>
> *To return to a semblance of previous normality, the development of SARS-CoV-2 vaccines is an absolute necessity. To achieve this goal, all the resources in the public, private, and philanthropic sectors need to participate in a strategic manner. The ACTIV public-private partnership and collaborative harmonized efficacy trials are enabling models to achieve our common goal.»*

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«*It is a great pleasure upon behalf of the University to welcome the representatives of its owners, the members of the legislature, and the press. The University of Wisconsin is a state, not a local institution. In nany states the funds which are devoted to higher education are distributed among two or more foundations. In such states the various divisions of the university, such as the College of Liberal Arts, the College of Agriculture, the College of Law, the College of Mines, and the College of Medicine, are local institutions, at least in part. But the builders of the state of Wisconsin at a time when subdivisión in higher education was rife so clearly recognized the futures importance of its, university, so clearly saw that this university must be a state institution, that they placed in the framework of the state, the constitution, a provision for the founding of one university at the capital city; thus forever providing against subdivision and localization of the state's higher education. The only other state which determined that its university work should be done at a unified state institution, located at the capital, is Nebraska. All other states, even those that had the wisdom to concentrate their higher educational efforts, have to some extent recognized local interests by locating the university at some otherpoint than the capital city.*

*It seems as if the framers of the constitution besides appreciating the adventages of concentration in university education must have understood how mutually helpful may be the university and the government of the state. The university is an institution devoted to the advancement and dissemination of knowledge. The govermnent of the state is devoted to formulating into written law and putting into practice this knowledge.*

*In Germany the relations of' the University and the government are most intimate. Each great scholar has some recognized official duty as adviser of the state upon the subject in which he is an expert. The advantageous relation between the university and government may be illustrated by the depatments of History, political economy, political science, and sociology. The old unsolved economic and social problems and the new problems arising because of changing conditions are investigated by these departments, without partisanship, without bias, with no personal end, but but with the sole idea of finding the truth, the path which leads to peace and prosperity for the people. Thus these departments are in the service of the state. In a similar way it can be demonstrated that every other department is working effectively for the people. This is easy to show for the College of Agriculture, which by its discoveries has returned to the state many-fold in wealth the entire cost of the university. In all other departments the relation of service is as certain, although not so easy to explain in a sentence. So profundly does the faculty believe in the University as an institution in the service of the state that it had placed upon the medal struck for the Jubilee the words, "The University of Wisconsin commemorates fifty years of service to the cormnonwealth".*

*Knowing the frequent tendency of many men to enlarge the importance of their own occupations I have sometimes wondered if the professors of the university unduly magnify their calling,- that of investigators and and disseminators of knowledge.*

*Each person that comes into the world is born wholly lacking in knowledge save of a few simple instinctive actions necessary to maintain life. The knowledge and wisdom of mankind are the slow accumulations acquired through the ages by the expenditure of uncounted sums, inestimable labor, and infinite pain. He who hopes to do any large thing in the world must spend from one-fourth to one-third of his life in hard labor, acquiring the knowledge of the past. And for many a large fraction of this time is spent in the university. It is therefore imperative that the university be of the highest grade in order that the time there spent shall be most f:ruitful. The greater the effeciency of the university the more thorough will be the preparation for life work. Failure on the part of the university to afford opportunities the equal of the best handicaps each individual. Hence a state which fails to keep pace in its university development with surrounding states places its sons and daughters at a disadvantage.*

*When at the time of the Napoleonic Wars Germany found herself overrun by France the statesmen of the nation saw that the future of Germany depended upon the development of higher grade training than that of her enemy. This idea was the foundation of the German state university and the German believes that institution to have been a powerful instrument in the rise of the empire.*

*Perhaps the true position of the university may be brought home by the recent history of Japan. A half century since the accumulated wealth of knowledge of the western civilization was unknown to that country. Hearn says that her civilization was that of twenty-seven hundred years ago. In 1854 Conunodore Perry appeared in the eastern waters and Japan found herself at the mercy of his guns. As soon as the marvelous statesmen of the nation appreciated that they were helpless before the applied science of the west they determined to acquire this knowledge in order to protect themselves. Like Germany they decicled the remedy consisted in education. The great universtties of Tokio and Kioto were founded, and professors were asked to come to Japan from America, from Englancl, from Germany, and from other countries. Also the young men of Japan were sent to the western nations to study in their universities. A number of them have been here. During the past thirty years, less than a generation, Japan has established manufacturies, built railroads, constructed modern armies and navies, and most marvelous of all, she has not only acquired the arts and sciences, of the west, but she has become a leader in them. Many of the foreign professors have been found unnecessary, they have been dismissed, and the universities manned by the sons of Japan. Were it not for these universities Japan would be as impotent before Russia as is China.*

*From one point of view the acquiring of the accumulated knowledge of more than two thousand years in one generation is amazing, but from another point of view is not so strange. For each generation that lives must do the same thing. The children of Wisconsin born to-day must before they begin their life work go through exactly the same training as have the people of Japan during the past thirty years.*

*For Wisconsin to have a univerisity less efficient than those of Japan and Germany will as certainly handicap her sons as were the sons of Japan when their system of education was inferior to that of the west. It is plain therefore that if the state of Wisconsin is to take and hold hold a leading position among the states its university must not be inferor to those of its competitors.*

*If at the outset it was not clear, I hope it is now plain that the university is a state institution not supported in the interest of or for the propfessors. They are merely tools in the service of the state. It is not even mainly supported for the direct benefit of the students who take advantage of its opportunities. It is supported that they may become better fitted to serve the state and the nation. It is supported that the knowledge as well as the achievments and wisdom of the generations may reach all parts of the state, thus securing larger returns from the soil, the scientific development of mineral resources, the expansion of manufacturies, the improvement of the social and economic conditions of the masses, and the enjoyment by the people of the great intellectual and moral experiences of the race.*

***I shall never be content until the beneficient influence of the University reaches every family of the state**. This is my ideal of a state university. If our beloved institution reaches this ideal it will be the first perfect state university*.»
https://www.wisc.edu/pdfs/VanHiseBeneficentAddress.pdf

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«*In these days of complex problems and high-tech solutions, it is essential that those who understand the laws of nature be more involved in the making of the laws of man*».

Thomas H. Kean
*Governor of New Jersey*
*From a speech at the* NASA, 1989.

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**PAZ y BIEN.**
**Pedro R. García Barreno**
**Médico, 1965**
**Madrid, 26/01/2021**