WASWAC

# HOT NEWS

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# CONTENTS



*A Special issue on viewpoint of*

*sustainable development of soil protection science and its associations*

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## Foreword of the advancement of knowledge and the future of scientific soil protection associations

WASWAC was founded in Hawaii, the USA in January 1983. WASWAC has dedicated to promote the protection and wise use of soil and water resources, made significant contribution in the field of productive and sustainable land use, in the past 40 years. How to adapt the changing world, to serve our members better in the future is one of the challenges we are facing.

This issue of Hot News published José L. Rubio's opinion article, *the advancement of knowledge and the future of scientific soil protection associations*. As a deputy president of WASWAC, he thought deeply and systematically about the development of the associations related to soil conservation. He proposed the key trends to shape the future of scientific associations and the initiatives to encourage the participation of young scientists. He shows the way of our work. Please email to the secretariat if you have any comments or suggestion to WASWAC development.

Duihu Ning

President of the WASWAC

June 5, 2023

# The advancement of knowledge and the future of scientific soil protection associations

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## Creativity, progress and social environment

Throughout human history, discovery and creativity have always been considered mysterious processes, and I would dare say that, in part, they still are. In other times, creativity was thought to be something alien to the human being, something external that came from the inspiration of the "muses" or external higher powers. Something that came from where was not well known but that was alien to the individual. Today we know that it is a cognitive activity that, like other mental functions, is developed by our neural system. We have gone from considering it as something like a favor of the gods to a function of our neurons (Lehrer,2012). But we are still at the beginning of understanding the fascinating process of discovery, creativity or progress in new technologies and for the moment, in its essence, the fact of finding the solution to the problem posed or doing something differently, remains with us with certain mystery and surrounded by false myths.

In fact, and for a long time, discovery has been considered as something inscrutable, as a innate quality that only reached a few lucky ones. However, human beings follow common behavior patterns set by our genetic system as a species. Within these common patterns, some individuals achieve advances and developments that are outside the general pattern and, furthermore, this situation can be shared by other individuals with whom there is no contact of any kind. In different individuals, or groups, a situation of experience, knowledge and attraction to the unknown or not experienced is reached, in which the triggering of discovery can arise almost inevitably. But this situation prior to discovery derives from and is a consequence of accumulated prior knowledge. In this sense, Newton's phrase: "If I have seen further, it is because I have stood on the shoulders of giants", perfectly illustrates this situation. By the way, it is a metaphor that is attributed to Newton but that, apparently, he was not, far from it, the first to use it.

Thus, a climax situation can be reached whose next step is a eureka that previously remained hidden. And once this climax or momentum

has been reached, if one researcher does not make the discovery, it is very likely that another will. However, it does not necessarily follow from this level of climax that discovery is inevitable. Nature does not easily reveal its secrets. Most of the inventions have a long and slow cumulative process behind them that can last decades and in which advances have progressively been produced in different necessary and complementary aspects, which finally create the momentum for the individual, or groups, to produce the discovery. It could be said that progress occurs only when that "moment" arrives. However, at the individual level and prior to discovery, certain conditions are necessary. In the first place, a previous stage of saturation of knowledge on the subject is necessary. Observation skills and mental disposition are also necessary for the proper evaluation of facts, data and observations. Somehow, the human mind only sees the things it is prepared to see. Hence the timely phrase of Louis Pasteur in which he warns that "chance favors the prepared spirit." Sometimes, and if these previous aspects have occurred, the phenomenon of serendipity can arise, when we have relaxed and mentally distanced ourselves from the subject.

But for the discovery or advance to occur and for it to be implemented, other conditions external to the researcher are also necessary, such as collaboration between individuals and the social and economic capacity of their environment to echo the discovery and develop it. Also the cultural and institutional context that can appreciate the interest of its application. Of course, and as in everything, luck and the confluence of favorable situations can be important factors. It is in these external and complementary circumstances to the advancement of knowledge that associations can carry out crucial work. One of their priorities should be to promote the factors that stimulate creativity and collaboration and exchange of knowledge between human beings. Humanity has always been facing obstacles to overcome and unravel to improve their living conditions. This will not change in the future and basically, even with the irruption of new advanced technologies, it will always be in the still mysterious recesses of the human brain that these advances will take place.

What we do know for sure is that collaboration and the right social environment are essential for the advancement of knowledge and progress. In this sense, scientific associations favor collaboration between individuals and groups and contribute to the exchange of ideas and knowledge that are essential for progress. Additionally, collaboration can

allow people to work together on projects that are too large or complex for one person to tackle.

On the other hand, the appropriate social environment is also an important factor in the advancement of knowledge and progress. A climate for science is necessary and creating it should be a priority for scientific associations. This positive and stimulating environment can encourage creativity and innovation by providing a safe and welcoming space for exploring new ideas. Additionally, a collaborative environment that values learning and curiosity can motivate people to seek new knowledge and share their findings with others.

For all these reasons, the role of society and the social environment in the advancement of scientific knowledge and discovery is fundamental, since science does not exist in an isolated vacuum, but is closely related to the society in which it is inserted. Scientific advances require a favorable climate or social environment. Culture, beliefs, politics, and social structures can influence scientific inquiry and how scientific knowledge is used.

Society can influence scientific education and the scientific literacy of the population. Science education can help individuals understand scientific concepts, which in turn can influence how science is perceived and scientific knowledge is used. It can also help foster a culture of inquiry and motivate people to seek answers to important questions.

In summary, society and the social environment can influence the advancement of scientific knowledge and discovery, be it in the choice of research areas, in the way in which research is carried out, in how the results are used, and in education and scientific literacy of the population. Therefore, it is very important to foster a society that values scientific research and supports the development of a strong scientific culture.

For this reason, the organized collaboration promoted by scientific societies and associations and their influence in creating an adequate social environment are essential for the advancement of knowledge and progress. When collaboration is encouraged and a social environment that values learning and curiosity is created, people can work together to develop new ideas and solutions that can lead to important advances in different areas of life.

When all these circumstances, individual and social, occur, the invention can take place. What Henry James called "guess the invisible from the visible" or, according to Martin Heidegger, the "disclosure process" can occur.

And this process or epiphany takes place in our neural network. No one knows how yet. It is not yet known how this flash of seconds duration can be produced, in which the understanding of the problem and its possible solution suddenly appear. According to neurological studies (Lehrer 2012), the gamma wave flash originates from a convolution of the right superior temporal lobe. And once it has happened, the solution to the problem is obvious. How had it not occurred to me before? Now, as we have indicated, we must be prepared to be able to realize that tenuous and rapid burst of neuronal current in which the solution appears fleetingly. An important personal preparation and adequate social conditions are required. If these occur, we will be able to become aware of that streak of faint neural waves in which the answer to the problem or the long-sought invention travels. It is the eureka that only for tenths of a second our synapses send us. In short, a new idea or solution is a neural pattern that suddenly changes and works in a new pattern that had not previously occurred before.

The influence of the social environment in the process of creativity and innovation in the advancement of knowledge is also demonstrated in the phenomenon of simultaneity reached by individuals or research groups working independently and without any prior contact. (Merton, 1973, Rubio, 2017).

This pattern of simultaneity in discovery can also be observed in the developments of cultures and civilizations over time in which coeval and independent discoveries and advances have occurred. Perhaps one of the most important has been that of agriculture, which arises almost synchronously in areas so far apart and evidently without absolute contact between them, such as the Fertile Crescent-Mesopotamia, China, Mesoamerica and India. In this same sense, isolated societies in different corners of the world progressed and discovered advances that were also achieved by distant civilizations. These advances occurred not only in agriculture, but in an enormous variety of subjects such as writing, the calendar, mathematics, architecture, social organization, the use of water, art, the manufacture of tools and utensils, domestication of animals…

Why does this situation occur? Researchers on the subject consider that more than unique cases, they should be considered as a common guideline in science and in the pattern of human progress (Kuhn, 1962). Somehow a cumulative process of experiences, observations and progress is taking place, many times based on the common practice of trial and

error. A certain climax of time or accumulated knowledge is created that at a given moment generates the irruption of discovery. But this process has multiple facets and implications.

This process can occur in remote minds working independently on the same problem. And it can also occur in scientific or social groups working together. In fact, today it is recognized that the great scientific contributions arise from the collaboration of groups, and each time these collaborations increase their international and multidisciplinary character. There is a clear trend towards collaboration and teamwork in the development of science. The increasing pattern of awarding Nobel Prizes to groups of scientists rather than to individual researchers is significant. There are practical reasons such as the need for different specialists covering a scientific field and the need to use expensive and sophisticated research infrastructures.

## Scientific associations and the advancement of knowledge

Scientific associations are organizations that bring together individuals with a common interest in a particular field of science or technology. These associations are typically membership-based, and they serve as platforms for networking, knowledge sharing, and professional development. The history of scientific associations dates back several centuries and has played a significant role in advancing human knowledge and promoting scientific progress.

The first scientific association, as we know them today, is considered to be the Royal Society of London, that was founded in 1660 by a group of scientists who sought to promote "experimental philosophy." Through their activities and by publishing some of the most important scientific papers, including those of Isaac Newton, the society played a significant role in the development of modern science, However, there are some illustrious precedents in the "academies" and study centers of Greco-Latin studies and later, the Muslim ones. We must also mention in China, the Sinarum Academy, founded in 1603, which among other topics was dedicated to the study of geography.

In the centuries that followed, scientific associations emerged in many other countries, including the United States, France, Germany, Spain and Japan. These organizations played a critical role in advancing scientific knowledge by providing platforms for the exchange of ideas, the publication of research findings, and the development of scientific disciplines.

Scientific associations have also played a vital role in promoting education and professional

development in science and technology. Many associations offer training programs, workshops, and conferences that allow members to stay up-to-date on the latest developments in their fields and to network with other professionals.

One of the key benefits of scientific associations is their ability to facilitate collaboration among researchers and institutions. Through collaborations and partnerships, scientists can work together on complex scientific challenges that would be difficult to solve alone. Scientific associations also facilitate the sharing of resources, such as equipment and data, which can be critical to advancing scientific knowledge.

Another important benefit of scientific associations is their ability to advocate for scientific research and funding. By representing the interests of their members and promoting the importance of science to society, these associations can influence public policy and funding decisions that affect scientific research.

Scientific associations contribute to the advancement of knowledge and strengthen connections and social well-being. This is even more relevant in times of uncertainty and global change. The associations reinforce the activities of search for solutions, improvement of knowledge, innovation, education-awareness, technological developments and social connections that enrich and enhance the hope of a better future.

## Scientific associations and soil protection

Soil is one of the most important natural resources that is essential for the survival of all living organisms on Earth. It is the foundation of the food we eat and supports the growth of all vegetation. It also acts as a filter for pollutants, helps regulate the Earth's climate, and plays a critical role in the water cycle. Despite its importance, soil is often taken for granted and subjected to degradation through human activities such as deforestation, unsustainable agriculture, urbanization, and mining. This has led to a growing concern about the state of global soils and the need for their protection and conservation.

Scientific associations related to the protection and conservation of global soils have been playing a crucial role in advancing our understanding of soil and its importance to human and environmental well-being. These associations bring together scientists, researchers, land users, policymakers, and other stakeholders to promote scientific research, education, and outreach on soil-related issues. They also help to facilitate the exchange of knowledge and best practices on soil conservation and management.

If their role has been important in the past, it will most likely be even more so in the future. A future that includes challenges such as the climate emergency, land degradation, biodiversity loss, extreme weather events, loss of agricultural land, loss of water resources, loss of food and famines, pandemics, sea level rise and floods, instability social and forced migrations. All these challenges are directly or indirectly related to the good or bad management of soil and water resources.

As our knowledge expands, science becomes increasingly collaborative. Practitioners from increasingly distant disciplines are coming together, recognizing the complexity of some of the most important problems we face; science is at the heart of the solutions. The COVID-19 pandemic offers a perfect illustration of a complex crisis that has brought together molecular biologists, epidemiologists, physicians, social scientists, engineers, materials scientists, and many others.

Scientific associations dedicated to soil study and conservation are relatively recent, and the first scientific associations specifically dedicated to soil protection and conservation were founded in the 20th century.

One of the first scientific associations to include aspects dedicated to soil protection was the International Union of Soil Sciences (IUSS), founded in 1924 in Rome as the International Society of Soil Science (ISSS). The IUSS is a non-governmental organization dedicated to fostering research and teaching in soil science, as well as promoting the protection and sustainable management of soil worldwide.

The International Union of Soil Sciences (IUSS) was founded as the International Society of Soil Science (ISSS) on 19th May 1924 in Rome, Italy. The IUSS has been a scientific union member of ICSU (International Council for Science) since 1993. The objectives of the IUSS are to foster all branches of the soil sciences and their applications and to give support to soil scientists in the pursuit of their activities. In addition, the IUSS aims to put soils and soil science on the global agenda and stablishing cooperation with other related organizations and represents Soil Science to a wide external audience.

Other early associations dedicated to promoting the study of soil and its proper use were the German Soil Science Society (Deutsche Bodenkundliche Gesellschaft) and the Soil Science Society of the United States (Soil Science Society of America).

The German Society for Soil Science was founded in 1926, and since then it has been one of the most important associations in the

field of soil science in Europe. This society aims to promote research, teaching and dissemination of soil science in Germany and internationally.

The Soil Science Society of America (SSSA) was founded in 1936, and since then has been a leading society promoting soil and water conservation research, education, and practice in the United States and also providing information about soils in relation to crop production, environmental quality, forestry, ecosystem sustainability, and across other related scientific aspects.

The Spanish Soil Science Society (SECS) was founded in 1947 and is dedicated to promoting, disseminating and preserving the study, knowledge, research and protection of the soil. Today there are soil science societies in practically all European countries, in America, Asia, in many African countries and also in Australia.

In addition, there are currently many other scientific associations worldwide that work focused on the protection and conservation of the soil, among others the World Association of Soil and Water Conservation (WASWAC) which aims to promote the research, teaching and practice of soil and water conservation globally. WASWAC seeks to foster collaboration and knowledge sharing among scientists, professionals, and citizens interested in soil and water conservation, and works closely with other international organizations concerned with environmental conservation.

WASWAC as a worldwide academic society, was established in the USA in January 1983. The WASWAC secretariat, initially located at the Soil and Water Conservation Society (SWCS), Iowa, USA, was moved on April 2003 to the International Center for Research and Training on Seabuckthorn (ICRTS), Beijing, China, and from October 2010 to the International Research and Training Center on Erosion and Sedimentation (IRTCES), also in Beijing. Since its founding, the WASWAC has devoted itself to research and communication to solve scientific and technical problems related to soil and water conservation worldwide.

The aim of WASWAC is to promote the wise use of management practices that will improve and safeguard the quality of land and water resources so that they continue to meet the needs of agriculture, society and nature. The vision of WASWAC is a world in which all soil and water resources are used in a productive, sustainable and ecologically sound manner.

Other associations for soil protection are, the European Society for Soil Conservation (ESSC) which was founded in 1988 to promote

soundly based policies of soil conservation in its broadest sense throughout the countries of Europe by supporting research on soil degradation, soil erosion and soil conservation, providing a network for the exchange of knowledge about soil degradation processes and soil conservation research and practices and producing publications about major questions of soil conservation.

The Global Soil Biodiversity Initiative- GSBI, was founded in 2011 seeking to create a global collaboration of scientists to informing the public and to creating a platform for promoting the translation of expert knowledge on soil biodiversity into environmental policy to enhancement of ecosystem services such as water quality, food production, soil fertility, and biocontrol of human and animal diseases.

Others are: The International Soil Conservation Organization (ISCO), International Union for Conservation of Nature and Natural Resources, Nucleo Ricerca Desertificazione- Centre NRD Uniss, International Erosion Control Association- IECA, Global Network of Dryland Research Institutes –GNDRI, International Commission of Agricultural and Biosystems Engineering –CIGR and Commission on Land Degradation and Desertification-COMLAND

## The future

The future of scientific associations related to the protection and conservation of global soils is promising and demanding. As the world continues to face challenges related to climate change, food security, environmental degradation, population increase, new approaches to land use and nature, social demands and scarcity of water resources, the role of these associations will become even more critical. This future will include rapid and profound changes that will require facing a demanding horizon of new designs, knowledge, innovations and approaches in which scientific associations will have both to adapt and have the opportunity to contribute to a better future.

Being aware of the difficulty of making future prospects, some of the key trends that are likely to shape the future of scientific associations related to soil conservation can be mentioned. Among others:

1)Collaboration and Partnership: Scientific associations will need to work collaboratively and form partnerships with other organizations to address soil-related challenges. This will require them to engage with stakeholders from different sectors, including academia, governments, NGOs, businesses, and local communities.

2)Technology and Innovation: Advances in technology and innovation will play an increasingly important role in soil conservation.

Scientific associations will need to embrace new technologies and incorporate them into their research and outreach activities. This could include the use of advanced computer technologies as Machine Learning and Artificial Intelligence, Internet of Things, Big Data Analytics, Unmanned Aerial Vehicles (UAVs, drones), Environmental Modelling, Environmental Data Visualization (with virtual reality), precision agriculture, digital soil mapping, among others.

3)Policy and Advocacy: Scientific associations will need to continue to engage in policy and advocacy work to promote soil conservation at the national and international levels. This will involve working with policymakers and other stakeholders to develop and implement policies that support soil conservation and management.

4)Education and Outreach: Scientific associations will need to continue to educate and raise awareness about the importance of soil conservation and management. This includes working with schools, universities, and local communities to promote soil health and sustainability.

5)Interdisciplinary Research: Soil conservation is a complex and multifaceted issue that requires an interdisciplinary approach. Scientific associations will need to continue to promote interdisciplinary research and collaboration across different fields of study, including soil science, ecology, agronomy, forestry, water management, land use planning and environmental science.

6)Global Collaboration: Soil conservation is a global issue that requires global collaboration. Scientific associations will need to work together across national borders to address soil-related challenges and share best practices.

## Young researchers

The role of young researchers can be very important in various aspects including being the support for the continuity and future projection of associations. In this sense, it will be very significant to encourage the participation of young scientists, due to their potential to contribute fresh and innovative ideas, use of new technologies and new approaches and consequently contribute to the advancement of scientific knowledge. As examples of initiatives that can stimulate young scientists to develop their work potential and increase their participation, the following can be considered:

1) Offer leadership opportunities: Scientific associations can offer leadership opportunities to young scientists, such as the possibility of leading working groups or committees within the association. This will allow them to develop leadership skills and work on projects that

may be beneficial to their scientific career.

2) Organize events and activities for young scientists: Associations can organize events and activities specifically designed for young researchers, such as workshops, seminars and conferences. These events can provide networking, learning and stimulation opportunities. The Training Workshops and the International Youth Forum are two good examples of initiatives organized by WASWAC in this direction.

3)Provide Mentoring Opportunities: Mentoring opportunities can be provided to youth, either through formal programs or through the assignment of informal mentors. This can be especially beneficial for those who are just starting their careers and looking for guidance and support.

4) Encourage collaboration: Associations can encourage collaboration between young scientists and other more experienced scientists. This can be mutually beneficial, as young people can learn from the experience of their more experienced colleagues, and more experienced ones can benefit from the fresh ideas and innovative perspectives of young people.

5) Provide resources and support: Associations can provide resources and support to youth, such as scholarships, funding programs, and access to equipment and labs. This can be especially beneficial for young people with limited resources and who need additional support to carry out their research.

6) Use social networks and other technological tools: Associations can use social networks and other technological tools to connect and keep them informed about the latest news and events of the association. This can help young people feel more involved in the association and increase their participation.

It is a recognized fact that adequately promoting the participation of young people in scientific associations is desirable for the future of science. The strategies mentioned above can be useful to stimulate young people participation. It is important that associations recognize the value of young people and actively work to involve and support them in their scientific career.

## Final comments

Throughout the previous paragraphs some of the important advantages of associations have been mentioned, not only for the development of knowledge in general, but also in the specific aspect of each associate who aspires to improve their level of knowledge, their professional development, their commitment to a scientific subject, their sense of contribution and their satisfaction in achieving improvement objectives at both a scientific and

social level. These are aspects to be taken into account and promoted by the boards of directors of all associations.

Associations arise in predisposed societies and are the result of collaboration. They arise in social environments that foster a favorable climax for the advancement of knowledge and for scientific discovery.

The social environment can also influence the motivation and creativity of scientists. For example, an environment that encourages collaboration and the exchange of ideas can stimulate creativity and innovation, while an environment that discourages experimentation and risk can limit scientific progress. An important activity of the associations would therefore be to promote a society favorable to scientific development by making society aware of the advantages that it can obtain with the enhancement of scientific knowledge and with its application to the improvement of living conditions.

Individually and as groups, we will always need to broaden and improve our knowledge in practically all aspects of the natural world in which we are immersed, in its functioning and in its forms of life, including soils as a cornerstone of terrestrial ecosystem. And obviously, also in the technological aspects that can facilitate a fuller and more satisfactory existence.

Therefore, the future of scientific associations related to the protection and conservation of global soils looks bright. These associations most probably will continue to play a critical role in advancing our understanding of soil functioning and services and in promoting strategies and solutions for the appropriate use and protection of the land. By embracing collaboration, technology, policy, education, and interdisciplinary research, they will help to ensure the health and sustainability of our planet's soils for generations to come.

Despite these opportunities, there are also challenges that scientific societies will need to overcome in order to effectively promote soil protection and conservation. One of the biggest challenges is the lack of public awareness and engagement around soil health issues. Soil is often seen as a "hidden" resource that is not well understood by the general public, which can make it difficult to build public support for soil protection measures. Scientific associations can help to address this challenge by promoting public education and awareness campaigns that highlight the importance of soil health and the threats facing global soils. The social appreciation for soil perhaps will be needed to revise and improve our communication strategies.

Despite this inconvenience, during the last third of the last century, the traditional format

of associations, which still persists, was able to create a stimulating environment of collaboration, exchange, and motivation that made it very gratifying to be part of these groups of professionals associated and auto stimulated by a common goal. It was a kind of golden age for the associations, which, however in last two decades has lost part of its vigor and some of them are even losing members and relevance in achieving their objectives. On the global political agenda, the current apparent greater interest in soil resources has not yet been translated into approaches and actions that can significantly change the current situation and prospects of the planet's soils.

However, in a world that is constantly changing and at an increasingly rapid speed, scientific associations on soil protection will always have many new challenging and stimulating fronts for adaptation, improvement and contribution. As mentioned, one important input could be foster collaboration as platforms that facilitate contact and personal encouragement, inside and outside the association. These increased possibilities for personal contacts significantly contribute to the exchange of information and knowledge and to creating a favorable environment for scientific development, innovation, technological progress and problem solving. These contacts will increase with new forms of communication that will develop under the potential of information technologies. But given the tremendous potential of these online technologies, association boards will do well to devise new forms of collaboration and participation that offer added value and benefits to potential new members to join.

Although we are immersed in a rapidly changing world, and in recent decades we have seen difficulties in the appreciation of scientific associations, I do not believe that their potential for social and scientific contribution is threatened and therefore they could lose importance. I don't think they will disappear, although the current formats may disappear. Surely they will be constantly changing and adapting to the new conditions that are emerging.

In general, the future of scientific associations will depend on their ability to adapt to changes in the scientific and technological environment, as well as their ability to address the needs of their members. Those associations that can stay relevant, foster collaboration and participation of young scientists, and take advantage of new technologies are likely to thrive and play a crucial role in advancing science and research in the future and, in our case, in the future protection of soil resources.

A relevant factor will derive from the need of the human being to tend to unite to cooperate and improve their living conditions. It is an innate social attitude. We will always have to join forces, support each other intellectually and pollinate each other intellectually to find solutions and avoid problems. This is an inherent characteristic of the human being.

And this shared intellectual concern is the guarantee that there will always be progress and there will always be scientific associations to continue supporting that progress.

***References***

Kuhn, T. S. 1962 The Structure of Scientific Revolutions. University of Chicago Press.

Lehrer, J. 2012 Image. How Creativity Works. Boston: Houghton Mifflin Harcourt.

Merton, R. K. 1973 "Resistance to the Systematic Study of Multiple Discoveries in Science", European Journal of Sociology, 4:237–82, 1963. Reprinted in Robert K. Merton, The Sociology of Science: Theoretical and Empirical Investigations, Chicago, University of Chicago Press,1973 ( ttps://en.wikipedia.org/wiki/List_of_multiple_discoveries)

Rubio, J.L 2017 ¿Porque dos o más científicos sin conocer el trabajo de otros, dan a menudo simultáneamente con la misma teoría?, en Ciencia, y además lo entiendo. Coord. Quintín Garrido. Creative Commons, 2017

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