

Keynote Paper: **Personal Sustainability for Social Ecosystem in the OBOR**

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ABSTRACT

The message I want to substantiate is about how the historical routes and events of our common past cannot be biased by recent historical events. The events of the twentieth century cannot hide the previous history. On the contrary, they must serve to modulate and learn from a thousand-year perspective. That is, they must be analysed under a criterion of continuous improvement. For example, the economic relations between Spain and China back 500 years in history and teach us a lot about successes and failures. On the other hand, the fourth industrial revolution (Industry 4.0) in which we are immersed, allows us to implement a globalized world under the criterion of interactive network, where the essential values of respect for diversity and inclusion become crucial, as reflected in the China's initiative One Belt, One Road (OBOR) and the United Nation's Sustainable Development Goals (SDG).

This sustainable development is only feasible if human capital is sustainable. That is, people must have healthy habits to be efficient. Good leaders must not only demonstrate their own personal sustainability; they must also seek the social sustainability of their ecosystem. Only by maintaining personal sustainability based on good habits, they will be able to exercise appropriate cognitive processes for decision making, adaptability and resilience that the Fourth Industrial Revolution, and therefore "OBOR", requires for its feasibility.

My presentation will approach it in a holistic way. First part will be about the evolution of the term "Ecosystem" from biology to social economy. Secondly, I will discuss what ideas come out of the OBOR proposal, from my perspective as a citizen of the European Union. Third, I will address personal sustainability as a social responsibility to carry out any project.

Keywords: OBOR, ecosystem, industry 4.0, personal sustainability, social responsibility, SDG.

1. Social Ecosystems

120 years ago, the father of neuroscience, the Nobel Prize and Spanish doctor Don Santiago Ramón y Cajal, concluded that the nervous system was not a reticule, but "a set of intelligent individual elements interconnected in network", with feedback, that follows the law of the dynamic polarization. That is, the information follows a specific route in the neuron itself, enters through the dendritic tree, is processed in the neuronal soma, is encoded in the terminal cone, and is distributed coded through the axon. This discovery not only changed the way of understanding how the Nervous System works, but also gave rise to the cybernetics and the development of the digital and connectivity technologies that we enjoy today. The practical technology of today is based on the biological advances of the 19th century.

The nervous system behaves like an ecosystem, as a community constituted by units that produce coded bioelectricity (neurons) together with complementary components of its environment, which behave as isolators or facilitators of this coded bioelectricity, as well as providers of oxygen, glucose, amino acids, etc. (glial cells) immersed in an airy, aqueous or dry environment with which it interacts. This set of organized cells make up the nervous system, which can modify the environment and in turn is modified functionally and structurally by that environment. That is, it behaves like an ecosystem.

Twenty-five years after the award of the Nobel Prize to Doctor Ramón y Cajal, the British botanist Arthur Tansley coined the word "Ecosystem" to refer to "a localized community of living organisms that interact with each other and their particular environment of air, water, soil, minerals and other elements. These organisms influence each other and their terrain, compete and collaborate, share and create resources, and co-evolve, and are inevitably subject to external interruptions, to which they adapt together" (Willis, 97).

Sixty years later, in 1993, business strategist James Moore imported the concept into the increasingly dynamic and interconnected world of commerce (Moore, 1993). As he wrote in his article published in Harvard Business Review, "Successful businesses are those that evolve quickly and effectively. However,

innovative companies cannot evolve in a vacuum. They must attract resources of all kinds, attracting capital, partners, suppliers and customers to create cooperative networks [...]. I suggest that a company be seen not as a member of a single industry, but as part of a 'business ecosystem' that traverses a variety of industries. In a 'business ecosystem', companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, meet the needs of customers and, finally, incorporate the next round of innovations” (Moore, 2006).

This criterion begins to be a practical reality. For example, in China the term "shanzhai" formerly described copycat versions of electronic goods, but it is now referred to as the "shanzhai ecosystem" - highly collaborative arrangements across hundreds of enterprises that are accelerating entrepreneurial innovation in areas such as smartphones and the next generation of smart watches (Lindtner, Greenspan and Li, 2014).

The “social ecosystem” approach explores the people and organizations that help to achieve a particular social outcome, and the factors within their environment that contribute to, or to hinder, their success. When applied to the particular challenge of human-to-human exchange, as proposed by OBOR, the standard model of the social ecosystem is enhanced by an explicit incorporation of a development process. A process that emphasizes coexistence, focusing on the importance of entrepreneurship, financial, technical and undeniably intercultural social aspects for the revitalization and sustainability of communities, countries, nations and federations.

It is within this concept of "Social Ecosystem" that the five pillars of OBOR - policy communication, road connectivity, unimpeded trade, money circulation and cultural understanding - can be effectively developed. However, as stated by PRC's President Xi Jinping, in order to carry out these pillars, a new type of business leadership is required, less selfish and less individualistic. He points out that this new leadership must be more friendly and cooperative, with greater capabilities of openness, innovationness, connectiveness and inclusiveness (Xi Jinping, 2017). That is, a more sustainable business leadership. In this sense, in his political speeches and practical recommendations, as European and Spanish citizens, Palmira and myself understand that President Xi Jinping does not make a linear and deterministic reading of the OBOR. On the contrary, we believe that he makes an inclusive reading of roads and maritime, terrestrial, aerial and even spatial routes from the perspective of the 21st century. His message does not refer to unidirectional routes, but also to open, innovative, communicated, inclusive and multi-radial routes that create peace and globalized improvement for the 22nd century.

2. China-Spain: The First Globalization of the World

The first time I attended a lecture delivered by Andrew Leong on OBOR, I thought about the "Manila Galleon", a sea route that for more than 400 years connected China with Spain through America. In the sixteenth century, Spain and Portugal were a state under the dynasty of a single royal house. In fact, there were two sea routes: i) the “Galeón de Manila” o “Nao de China” (Manila Galleon), across the Pacific Ocean, and ii) the “Galeón de Macao” (Macao Galleon), across the Indian Ocean. Chinese goods were exported from the coasts of Fujian, Guangdong and Macao to the Chinese quarter of Manila, from there the Pacific Ocean route took the goods to the port of Acapulco in New Spain (now Mexico). From there, the exports arrived by land to Santa Cruz, on the coast of the Atlantic Ocean, and finally by the seaway of Colón through the Atlantic Ocean to the European ports of Seville, Lisbon, Huelva or Vigo in the Kingdom of Spain.

We must remember that during the sixteenth and seventeenth centuries America, from the now named Oregon to the Antarctic land, and in the Pacific Ocean, the Mariana Islands, Guam, Borneo and the Philippine Islands, were part of the Spanish Empire. At that time, China enjoyed the splendour of the Ming Dynasty. For this reason, Manila became the point of confluence of the Chinese export to America and Europe. Thus, centuries before London and New York reached international prominence, a commercial route between Spain and China was established, and it marked the beginning of a new era of globalization. For example, traditional Spanish dress, typical of Madrid or Andalusia, is influenced by Chinese women's body-fitting clothing and by the use of "Chinese shawl" or "Manila's shawl" (in Spanish, “mantón de Manila”) and the Chinese fan, in Spanish named “abanico”. This influence is to such an extent, that in a “flamenco dance” performers cannot miss the Chinese shawl and the Chinese fan. The goods imported from China, the “mantón de Manila” and the fan “abanico”, are essential pieces in the flamenco dances.

But, what did China import? What did the Manila Galleon bring from America (the “New Spain”) to China? Sweet potato, peanut, corn, tomato, American rice, etc. But above all, silver. Silver that China had adopted as a means of payment and for which it acquired an insatiable appetite. Silver that arrived in abundance from New Spain through the route "Galeon de Manila". In particular, coins of silver, the "Spanish dollar", the “Real de a 8” (“pieces of eight”). For this reason, the trade between Acapulco (Mexico) and Manila has been renamed by economic historians as the "Ruta de la Plata" or “The Silver Route” (Gordon and Morales, 2018). This sea route (Fig. 1) was covered by 150 large-scale ships armed with cannons to safeguard against English and Dutch pirates (curiously, English and Dutch were the terrorists of that time). If interested in deepening on this topic, I recommend the book of USA’s historians Juan Jose Morales and Peter Gordon "The Silver Route: China, Spanish America and the Birth of Globalization 1565-1815" (Gordon and Morales, 2017).

Economic historians have proposed that not only the crisis of the seventeenth century was a global event, but the creation of the Spanish Empire of the Trastámara coincided during the fifteenth century with the economic prosperity of the Ming Chinese Empire. Parallel events in both areas, closely linked by a material link: Silver. In this way, the sixteenth century was the first globalization of the world (Gordon and Morales, 2018).

In 1375, a peasant revolt spread through China, ending with the Yuan dynasty, heiress of the Mongols of Genghis Khan, which had dominated the Empire since the thirteenth century, and the Ming dynasty came to power. The economy of the Yuan dynasty had functioned relatively flexibly through the use of paper money, invoices that authorized the bearer to receive the specified amount. One hundred years after, around 1480, the paper money system went into crisis, and by the beginning of the 16th century it had lost all its value.

In 1492, the Spaniards discovered the appropriate technology to travel by a maritime route towards the West with the possibility of returning to the East. The contribution of Christopher Columbus was not only to discover lands towards the West of Europe - he knew them by the story of Alonso Sánchez de Huelva and other fishermen -, but as a cartographer he knew the marine currents to the East through the Canary Islands and the currents towards the West through the islands of Madeira. He thus provided the Kings of Spain with the possibility of a successful return trip. They tried to reach the coast of China and Cipango (Japan), but Spaniards navigators discover the unknown American continent.

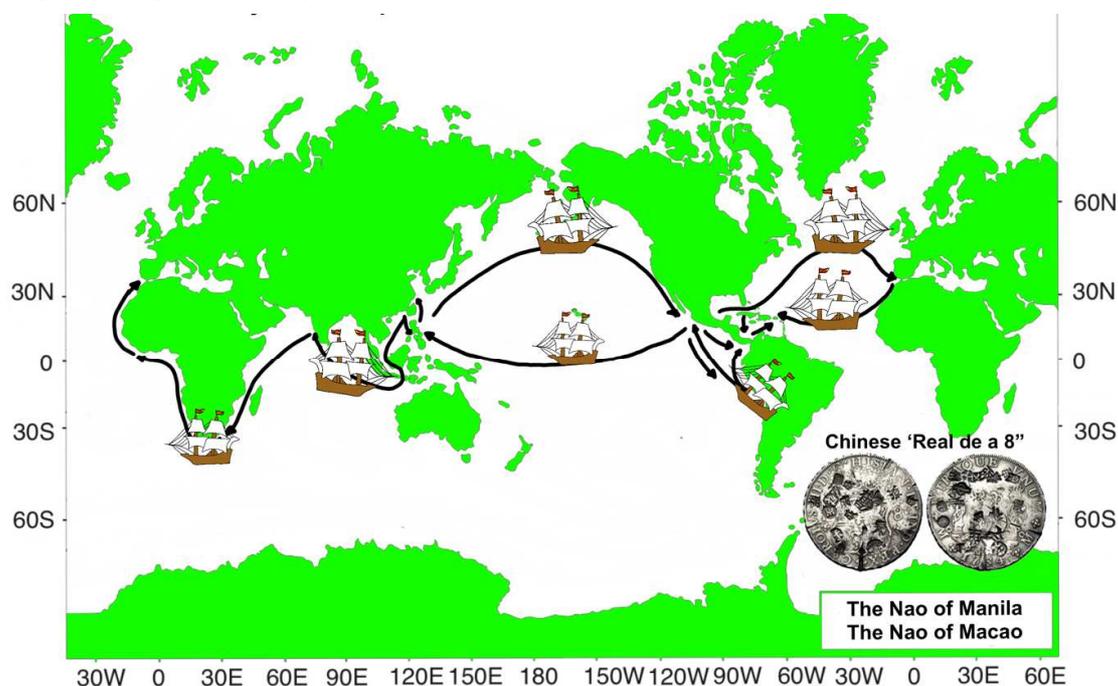


Figure 1. The Silver Route: China, Spanish America and the birth of Globalization. 1565-1815. Source: own elaboration.

Following the route of the Indian Ocean, Rafael Perestrello, cousin of Christopher Columbus, was the first European explorer to disembark in the South coast of China, and to trade with Guangzhou people in

1516 (Brockey, 2007). The Spanish navigators Magallanes and Elcano circumnavigate the globe, and in 1521 they occupied the Island of Cebu, in the archipelago that would be called the Philippine Islands. The occupation by the Spanish Empire of the Philippine Islands and Borneo, as well as Formosa (currently Taiwan), increased trade relations between the Ming Empire and the Spanish Empire. But for fifty years, from New Spain to the Philippines was only one way. The trip back to Spain was by the route of the "Galeón de Macao", a Portuguese route from Macao to Goa, the Indian Ocean and the Atlantic Ocean to reach Lisbon or Seville.

At that time, in China the Ming emperor was Jiajing (he ruled between 1521-67) and in Europe he was Charles I of Spain and V of the Holy Roman-Germanic Empire (he ruled between 1516-1559). The emperor Carlos was married with Isabel of Portugal. Both emperors had military and religious wars in the territories under their control. While Jiajing pursued Buddhism in favour of Taoism, Charles persecuted Protestantism in favour of Catholicism. For thirty years the relations between Spaniards of Cebu and the Portuguese of Macao with the Ming Dynasty were difficult, although the Chinese businessmen maintained important commercial exchanges. But in 1550 the Spaniards helped Emperor Jiajing to defeat Chinese and Japanese coastal pirates, and the Portuguese to defend them against English and Dutch pirates.

At the beginning of the sixteenth century (1525) the Spaniards began to exploit the silver mines of Zacatecas in New Spain (now Mexico), and in 1533 the mines of Potosi in Alto Peru (now Bolivia). Towards the end of the sixteenth century, the Spanish empire produced 80% of the most sought product by the world's largest economy of the time, the Ming Empire. In 1560, Admiral Legazpi and the cartographer Urdaneta arrived with a fleet to strengthen the capital of the Philippines in Manila, closer to mainland China and with a better harbour than Cebu. At that time the Emperor Wanli (1572-1620) ruled in China and the Emperor Philip II of Spain and I of Portugal ruled in Europe. It will be the master cartographer Urdaneta who will successfully undertake the return route from the China Sea to New Spain (Mexico). Because of the war against Japan in Korea and the change in economic management, China needed silver, at the precise moment when the Spaniards in 1565 found the route to return to America, thanks to the advice of Chinese navigators about the existence of the Kuro Shio current.

At the height of power of the Ming dynasty, Emperor Wanli's China was the world's leading economic power, accounting for a quarter of the world's population. The introduction of yams, maize, potatoes and the American rice of two crops by the Spanish allowed Ming China's population to double to at least 100 million. The loss of value of the oldest paper money system meant that this large percentage of the world economy demanded precious metals as a way to guarantee the value of the products and the rate of change in prices. The centralized fiscal reform named "Single Whip Reform" imposed by force the silver coin, as exchange value. One of the characteristics of those golden ages for both the Chinese Empire and the Spanish Empire was the existence of a multitude of leaders able to make appropriate decisions and successfully face the challenges.

At that time, the world operated in a global economic system to counterbalance the global economy, in which the Spanish Empire, producer of 80% of the world's silver, was closely related by its magnitude to an almost unique client: the Ming Empire. This counterweight system made possible that three areas of the world entered a trade triangle - China, Latin America and Europe - creating the first global economic system, based on the silver (von Glahn, 1996). The Spanish silver coin, called "Real de a Ocho" (pieces of eight), became the first currency for worldwide use. That's why it came to be called the Spanish dollar. The "Manila Galleon" or "Nao of China" periodically transported silver in minted coins as "reales de a ocho", the only one that China accepted as payment. Often the Spanish silver's "pieces of eight" were stamped with Chinese characters (Fig. 1). In Asia that coin continued to be used until the twentieth century and was the currency of course in the USA until the year 1857.

But in 1571, the introduction of new techniques of silver extraction through the use of mercury, and the discovery of new veins of cinnabar (mercury) in Huancavelica, near Potosí, meant a new record to the decline in the price of silver. The production of silver in America was in the hands of business owners of the Peruvian and Mexican mines, who paid a fifth (20% tax) to the Treasury of the Spanish Empire. The so-called "quinto real" (Góngora del Campo, 1963). In Peru or Mexico, businessmen lived with greater luxury than the King himself in Spain. A tsunami of bad social and individual habits invaded those ecosystems of the silver mines. It began by breaking the royal ordinances and ended by implementing regimes of subhuman slavery. Outbreaks of decadence and corruption that many current social philosophers perceive in the hypermodern Western social model (Lipovetsky, Charles and Charl, 2004).

The greed began to generate speculation with the mineral and a hyperextraction of silver. In the mid-seventeenth century, the difference in the price of silver between China and Spain became equal, and the value of the metal began to depreciate. The response of the large mining companies in Latin America was to reduce production in the hope of increasing prices. This process took place in the 1630s and affected the percentage destined for the king in Spain (fifth real = 20% tax). Given that the fifth real was a percentage tax, the low production of the mines - controlled by private entrepreneurs who could, through production, try to influence the global price - meant a decrease in the revenues of the Spanish Treasury, at a time when that silver suffered deflation.

In that context, the depreciation of silver affected the imperial treasury of the Ming Dynasty. The treasury had accumulated a huge amount of the precious metal, going from 2.3 million taels (86,250 kg) in 1570, to 23 million (862 tons of silver) in 1642. The accumulation of silver coins, as the only precious mineral, meant less diversification, and the descent the price of silver diminished proportionally the purchasing power of the Chinese treasury (Adshad, 1973). The fiscal crisis of the Ming dynasty endangered the stability of the empire, which was involved in a succession of internal struggles for power and popular revolts, till in 1644 the Manchues took Beijing and established the Qing Dynasty. From 1643, after the nefarious reign of Charles II, and the fact that he did not leave a real descendant, the Trastamara-Austrian Dynasty in Spain fell into disrepute, and a war of succession began, till in 1714 the Bourbon Dynasty came to the Spanish Empire.

The end would not come for both empires till later. In 1834, Spain lost its last possessions in the American continent, and only five years later, China was defeated in the First Opium War, followed by a long process of decline for both countries. The Philippines was Spanish territory until 1898 (that presence is still evident today in the names and surnames of the current Filipinos). In the year of 1898 USA invaded the Philippines, prohibited under penalty of punishment to speak Spanish and closed the Philippine-Acapulco sea route. However, even in Sarawak (Malaysia) and south of the Philippines, "chavacano" is spoken, a dialect derived from Mexican Spanish.

3. Personal Sustainability

Economic historians have proposed that not only the seventeenth century crisis was a global event, but the very creation of the Spanish empire and the economic prosperity of China during the sixteenth century, parallel developments, are the result of both areas being closely linked by a material link, silver (von Glahn, 1996).

Both empires focused on the monetarization of silver, but at the same time they moved away from their citizens, eventually stopped caring for the needs of their social ecosystems. In general, the leadership fell in quality. They forgot the principle of continuous improvement, and their mediocrity made them more aggressive and more exclusionary. Bad habits in political leadership and business leadership led them to focus only on the short-term benefits and contributed to the social breakdown. That lack of leadership's sustainability led to the loss of the values that had been made both empires flourish on both sides of the world.

The organization of work and social life requires good habits for efficient long-term results and to implement projects and channelling them towards a good end (Sherman et al., 2012). A healthy sleep habit is the key to personal sustainability (van der Helm et al, 2011). The fourth industrial revolution is characterized by the popularization of electricity; therefore, by the ability to have an intense light at any time of day or night. That is to say, in biological terms, that the fourth industrial revolution is characterized by having broken the light-dark natural cycle. Day and night have become artificial, with the repercussion on the social habits that this entails (Goel et al., 2013). This breakdown of the natural light-dark cycle, and its modulation according to the annual climate season, has forced a large majority of human beings to learn to manage sleep (Wong S.N., Halaki M. and Chow C.M., 2013).

The sleep serves both to cleanse of biochemical waste generated during the activity of our awake brain, to restore our memory during periods of dreaming and to search, in a non-conscious way, a solution to the problems that have arisen in the previous waking time. Therefore, insufficient sleep in quantity and quality seriously deteriorates our cognitive processes. Thus, with a sleep deficit our capacities of openness, innovationness, connectiveness and inclusiveness - in short, of adaptability and resilience - are severely altered. As a result, we become irascible, excluding, defensive, sullen and closed to any change. Adaptability and resilience to change are the first cognitive abilities that are altered and deteriorate (Fernández-González and Lopez Fresno, 2017). It is the antithesis of the criteria postulated for the good

course of the OBOR. To achieve continuous improvement, in other words, to achieve a sustainable adaptive change focused on excellence, a revolution in economic planning, political cooperation, business leadership, and technological advancement is required, to simultaneously achieve the three pillars of sustainable development: economic growth, social inclusion and environmental sustainability. These pillars require adaptability to cope with the changes and capacity of resilience to cope with the adversities. Only the ecosystems constituted by individuals with such characteristics will be competitive. Today, more than ever, social systems require socially responsible life habits.

4. Conclusion

The OBOR initiative and different social researchers suggest and indicate that it is necessary to work on a sustainable mobility system (Burns, 2013; Martínez Rodríguez, 2017). It is necessary that by the 22nd century villages and towns will be sustainable to reduce the current tendency towards unsustainable "feudal cities" (Lipovetsky and Juvin 1989; Makinen and Dedehayir, 2012). It is required to have less individualistic and more cooperative people, more open to change, more innovative towards diversity, sensitive to the ecosystem to which they belong, and with strong personal sustainability (Lipovetsky, 1987). New information and communication technologies create new routes for teleworking, tele-education, tele-entertainment and tele-information as never before. In this sense, the history of humanity teaches us that roads make towns, but the paths make up the roads, not only for us, but also for the future. The Spanish poet Antonio Machado wrote in 1912:

*“Walker, are your tracks
the road and nothing else;
Walker, there is no path,
the path is made by walking.
When walking, the path is made,
and when looking back
you see the path that never
it has to be stepped on again.
Walker there is no way
but wake-trails in the sea”.*

Let's all work together, so that our great-grandchildren can remind us as makers of good routes for a sustainable world.

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Author' Background



Dr. Fernando Fernández-González is Medical Doctor specialized in Neurophysiology and Neurology, with more than 46 years of experience in health care and in management. He also received specific training in Biological Engineering. From 1982-1992 he worked with the Spanish Health Ministry as assessor for New Health Care Technologies, being Director responsible of assessment and implementation of new medical devices as innovative technologies for health care at the National Health Authority, and Advisor of the NATO for healthcare technologies. He has an extensive background in Health Care Management and in Medical Technology Assessment.