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"Knowledge into Solutions"

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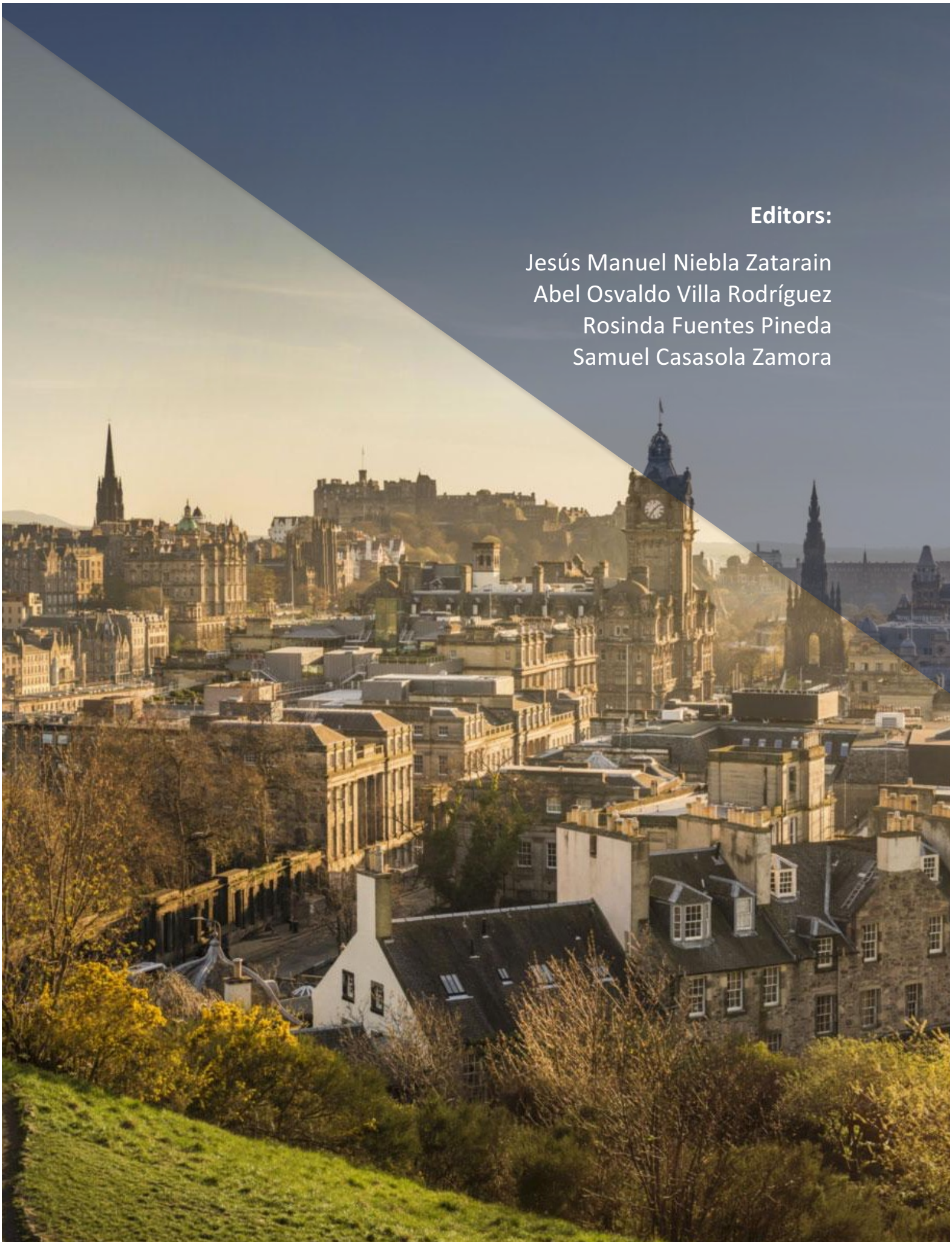

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Introduction

One of the most important strategies that any country should pursue is the selection and development of its young talent. It is then a pleasure to write this brief introduction to the memory of the XIV Symposium of Mexican Students and Studies in the UK. As you will see this symposium is a sample of the talent of more than 100 Mexicans that are part of the 1300 plus Mexicans that are pursuing Master and Doctoral Programs in UK universities.

Mexico has a long tradition of supporting programs for the development of science and technology that need to be updated and rethought given the changing international and national context. Until today the students look for programs in the UK and apply in general considering its individual tastes, and without notice it, the negotiations to accredit an UK university at CONACYT in Mexico. I considered that it is necessary to add to this quasi random process, a combination of priority driven strategies to guarantee that the talent formed in UK universities could have an appropriate fit and places in Mexico to develop both its research and productive capabilities.

It is clear that the first benefit for the Mexican students is the simple exposure to different contexts, technologies, and solutions to local problems. The necessary consequence is to create the opportunities to take back to Mexico links, partners, and institutional contacts to develop new areas of opportunities in Mexico. The National Autonomous University of Mexico (UNAM), through its internationalization program, is aiming to provide part of the necessary institutional support to optimize the benefits for the individuals, our institutions and the country.

The XIV Symposium of Mexican Students and Studies in the UK, is an excellent showcase to start, develop and maintain these efforts. We at the Centre for Mexican Studies in the UK, from UNAM, are pleased to be part of this effort and will be committed to support with UNAM participation the work that has been done by our Mexican young talent in the UK.

I hope that you will find the materials written in this memory as engaging as I was able to witness in the presentations in Edinburgh. I am sure that you will proudly receive the results presented by our Mexican young talent and share with me the optimism for their return and application in our country.

Dr. Luis Duran Arenas

Director of the Centre for Mexican Studies in the United Kingdom

UNAM

July 11th 2016

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History Preservation. Book Art in Mexico in the XXIst century as a collective memory preservation device

History Preservation. Book Art in Mexico in the XXI st century as a collective memory preservation device

Keywords: Mexico, Book-Art, Collective memory.

Abstract

The present paper is part of the thesis we are developing in the Interinstitutional Art and Culture Doctorate, PNPC, CONACYT at Michoacan university.

We review the role of Book-art in Mexico in the XXI st century as a collective memory preservation device. This means several artists use it to narrate events related to pre-hispanic tradition, history, violence, impunity and corruption. In order to support this thesis we use two concepts: Marc Auge's *Ruin* (Auge, 2003:158) and Ana Maria Guasch's (Guasch, 2011:43) *Art as Archive*. Finally, we present three cases in which Book-art becomes collective memory: Juaritoz magazine (Ciudad Juarez), Leñateros workshop (Chiapas) and Zafarrancho Tales (Michoacan).

Book-Art.

The term Book-Art was first used by Clive Phillpot (Phillpot, 2013:160) in the 80's, when he published a series of essays in Artforum magazine. In them, he reflected about books as visual art pieces. After that, Bibiana Crespo (Crespo, 1999:257) used the word Book-Art to refer all art pieces based on either the *idea* or the *structure* of the common book (Crespo, 2010:26).

Although they may contain various forms of text (handwriting, typography, calligraphy) these are always used as images. This means Book-Art stories are told in visual ways, other than in normal books. We find Book-Art precedents in Form and Concept. Form comprehends texts, images, binding and books that might inspire artists, whereas for Concept we use Hortensia Mínguez work (Mínguez, 2015:9) which refers to philosophical

and artistic movements that lead to the appearing of Book-Art: Surrealism, Dada, Cubism as well as post-structuralism (Mínguez, 2015:12).

Book-Art in Mexico.

In Mexico, there are two artists whose work is precedent in Book-Art production: Ulises Carrion and Felipe Ehrenberg. Carrion (1941 – 1989) was a poet who experimented with text, typography and books as visual art elements. Ehrenberg (1943 –) started a press in England, the Beau – Geste Press, specialized in artist's books. This allowed him to produce and sell his own work and helped other artists to do so. He created a very important Book-Art collection that is now in Mexico City.

Their work is known thanks to artist Marta Hellion (1937 -) (Hellion, 2003:209) who studied and registered it in a series of books.

Though during the XX century Book-Art in Mexico was produced by a small group of artists, it has experienced a progressive growth this past decade. More and more artists are attracted to this genre, experimenting and creating in new and different ways.

Book-Art as Memory.

To talk about Book-Art as memory means that this is not a mere memory container but that *becomes itself* the memory.

Even if the artist is telling us personal or family stories we must keep in mind that memory is a cultural construction, it has traces of historic and social context. Through the author's work we might know what was happening in a specific place at a certain period of time. Personal memory then, can also become a collective tale.

We use Marc Auge´s *Ruin* concept for these pieces. In “Time in Ruins” (Auge, 2003:158) the author understands certain objects or places as memory manifestations. The Ruin's visitor is able to know their story by reading its signs, like following a trace. And whenever he does, these tales come back to life.

Book-Art as collective memory is not very different, although in this case there it has the intention of preserving certain objects such as legal documents, press notes, images, personal belongings. With these, the artist narrates an event or series of events that may give a new perspective about History. This is what Anna Maria Guasch calls *Art As Archive*, (Guasch, 2011:43) a particular artistic practice in which the pieces preserve collective memory using those specific objects.

Specific Cases.

1. Juaritoz magazine.

Juaritoz has become one of the most aforementioned magazines in Latin America. It contains a brief consideration about Ciudad Juarez urban art movements followed by photographs. Through Juaritoz we know about the gang members fighting, the disappearance of women and migrants, abandoned houses, false government statements and the violence this place experiments on a daily bases. In these pages we can find the once hidden History of a city, so the magazine becomes its memory.

2. Leñateros. Mayan workshop.

Leñateros is a Book-Art workshop in Chiapas. The Mayan and Tzotzil communities make a variety of books with all ecological materials. They make the paper to produce their pieces as well as the illustrations, binding and containers. Leñateros works mainly with Mayan and Tzotzil people in collaboration with several authors to narrate pre-hispanic tales, myths and legends. It is a beautiful way to preserve what was once an only oral tradition, almost forgotten after the spanish conquest.

3. Zafarrancho Tales.

Zafarrancho Tales takes place in the purépecha community of Cherán, Michoacan. Native artist Angel Pahuamba requested the Cherán children to ask their grandpas for stories that define their village and with these he made the book Grandpa Tales. Zafarrancho is the story

about a great fight in which almost all residents took machetes and other weapons and attacked each other. There were many deaths that day as consequence of the political parties arrival, dividing the people for selfish interests related to illegal forests exploitation. Since Zafarrancho, Cherán people organized to throw off all political parties and has now an independent way of government with laws created by the elders of the village. Now, the Zafarrancho Tales stand for liberty and social memory.

Conclusions.

Mexican Book-Art has experienced a significant growth. What began as a small group activity is becoming a more and more used medium to tale stories.

There are two main themes in mexican Book-Art production: Memory and Social Criticism.

Book-Art as Memory can be understood as a *Ruin* or as an *Archive*.

A Ruin is an object that remains after an event, creating a new landscape. It has particular marks that act as signs, leaving a trace that the visitor (or reader in this case) can follow to reveal its story.

On the other hand, Book-Art as Archive refers to its capacity of providing different views about History by using particular objects to build their narratives.

Book-Art in Mexico in the XXI st century has become a space for artists to express things that could not be expressed by other mediums or materials. It allows them to explore narrative possibilities from different perspectives. It contains, preserves and shares with its readers multiple ways to approach reality. The Book-Art becomes the very memory of those who made it and those who read it.

We can say then that it certainly is a collective memory preservation device.

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Videogames: the act of be and being there. A Study of videogames as ergodic literature

Videogames: the act of be and being there. A Study of videogames as ergodic literature

Keywords: Videogames, Visual Arts, Cyberliterature, Ergódic Narrative

Abstract

Addresses videogames as an ergodic audio-visual narrative medium, in which we are allowed to explore the borders between interpreters and receivers. Pointing that in the forms of narrative expression and transmission of the story, the mode of acquisition thereof greatly influences the way of use. Reaffirming there are forms of narrative that can only exists or be consumed in certain media, referring specifically to those in which it requires direct intervention and a non-trivial reader, in this case video games. Also describes video games as a narrative form, which offers an open path of the experience of "be" and "being there" through the erlebnis, the act that generate knowledge through interpretation.

Introduction.

The medium as a generator of meaning: Through various media and forms of narrative expression, humanity has sought to generate, produce and transmit what looms as the human experience through our stories, which has allowed us as specie to develop the ability of human empathy through imagination (Landis, 2015).

We can dare to assert that in the oral tradition, singing, dance, staging, performance, literature, hypermedia, and other forms of narrative expression, converge a number of features that distinguish a media from the others, conditions that determine the nature of acquisition and therefore the use of the stories; for example, the chant as narrative, has a number of elements that are not shared with films, and vice versa, and when we sought to move a narrative object from one medium to another, for example, in the adaptations of musical pieces to a film, the story suffers a series of transmutations which inevitably makes it a different object to that of their original environment and therefore has a different consumption to its original use. Since 1982 Jesús Martín Barbero has pointed us that in the forms of narrative expression and transmission of the story, the mode of acquisition thereof

greatly influences the way of use (Martin-Barbero, 1983), claim buttressed by Espen Aarseth in Cibertext. Perspectives on Ergodic Literature (1997), when he says that there are forms of narrative that can only exists or be consumed in certain media, referring specifically to those in which it requires direct intervention and a non-trivial reader.

A central point of the arts since the twentieth century has been its relationship with the technological revolution (Hobsbawn, 2013), being the information technology and communication those which have had most impact on production, preservation and consumption of the arts. And together with the massification of technologies for human communication, the cost reduction in the informatics devices, accessibility to the self-directed learning in programming coding, and the accessibility to mass media platforms for the exhibition of audio-visual objects, those allowed the expansion of artistic and cultural practices that respond to the emergence of new genres and forms of visual and media arts, due to the development of technologies (Vidaurre-Arenas, 2013).

Why are Videogames Ergodic Literatures? Ergodic literature is a category coined by Espen J. Aarseth, to designate all these forms of narrative in which the reader, either as collective or individual, has the ability to alter, construct and modify a story.

The term Ergodic derives from the Greek ergon: work, and hodos path. Aarseth (1997) argues that Ergodic literature requires a nontrivial effort of the reader to navigate through the text, meaning that an Ergodic narrative requires the direct participation of the reader to advance the plot. When someone participates in an Ergodic narrative is constantly aware of strategies and paths not taken, voices not heard. Each decision will make some parts of the text as narrative more or less accessible, and never is know the exact outcome of these decisions. The participant of Ergodic narratives, is a player, a gambler, who can explore, get lost or discover secret paths (Aarseth, 1997).

Although apparently Ergodic literature seems to be highly linked to the use of computer technologies, if we look closely, we can find several narrative forms detached from the computer practices. Following Aarseth's text, we could see some examples of what can be

classified as forms of Ergodic literature, to name a few, books created by R.A. Montgomery: Choose Your Own Adventure, the pen and paper RPG as Dungeons and Dragons (Gygax, 1974), non-linear narratives that make use of hypertext, the multiuser dungeons MUDs, and we can even venture to say that Cortazar's Rayela (2006) is a form of Ergodic literature as it is the direct participation of the reader that structure, gives meaning and progress to related. Among the oldest forms of Ergodic narrative, we can mention the Arcana Tarot or Book of Thoth, in which each reader is able to construct her own narrative through the use of visual elements.

If we look to video games as an audio-visual narrative media, we will be able to identify much of what was proposed by Aarseth, in the videogames as narrative, we are allowed to explore the borders between interpreters and receivers. The videogames have set new ways in which we perceive, configure, build, and appropriate the image (Ponce-Diaz, 2013). Video games, as part of the spectrum of visual arts and narrative disciplines have enabled the structuring of new mobility in the arts and the construction of intellectual images. Addressing this image as a narrative exercise in which everyone is creator and receptor from certain intertextuality (Zavala, 2006), the receiver leaves her waiting position and makes a personal tour in which generates an intellectual image; the receiver produces her own concept and reconfigures the image, and what is not narrated is filled with her experience, background, knowledge and participation (Iser, 1989). The image, especially the kinetic image, is a powerful representation of the individual relationship of space than text, thus migration from text to image or intellectual image seems unavoidable (Aarseth, 1997). Videogames allow us the intellectual construction from the material and visual, allowing the building a reality from another reality. That is why video games are a contemporary image, a way of looking at the visual culture, giving us open paths of the experience of "be" and "being there": when playing, the subject thinks and feels (Fernández-Christlieb, 2011).

Humanity in the persecution and dilemma of free will, is always looking sketches of freedom, of being a participant in what happens around her and the reader is looking at all costs not face predictability. The idea of spontaneity in an audio-visual narrative is exclusive

in video games (Landis, 2013). In video games, the participant may change, configure, reconfigure, build and deconstruct the reality presented in the story; facing challenges, questions and moral dilemmas acquires the ability to choose the development of events, facing the action and its consequences, which enriches their experience and generates an erlebnis the intellectual act that generates knowledge through interpretation (Heidegger, 1996).

Conclusions

Talking video game we can refer to what was enunciated by Jacques Rancière: we could to transform viewers into actors or the ignorant into connoisseur. What we have to recognize is that every spectator is itself an actor in his or her personal history, the power of the participant is not in its capacity as a member of a group, but in the power it has to translate in their own way what she perceives and link it to its singular intellectual adventure. It is always the individual who traces her own path in the forest of things and signs (Ranciere, 2008). We may venture to say that video games are an aesthetic revolution of the contemporary artistic production because they are manifestations of culture, modify, configure and transmute it. No one can be excluded from their influence even when are not played by them (Landis, 2013), either on consoles, computers, mobile phones, the use of video games is more common and naturalized, increasingly permeating in the contemporary culture. Video games are an issue that concerns the cultural spectrum, because culture feeds off itself by changing its own components, and video games rewires and transforms the visual culture, by transforming every day's acquired experience (Hine, 2000), thus opening up new fields of study, new possibilities of generating knowledge.

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The role of regional innovation systems (RIS) in creating technological capabilities (TC) in the agricultural sector of Northwest Mexico: the cases of Sonora and Baja California Sur

The role of regional innovation systems (RIS) in creating technological capabilities (TC) in the agricultural sector of Northwest Mexico: the cases of Sonora and Baja California Sur

Keywords: Global Value Chains, Technological Capabilities, Value, Agriculture

This thesis investigates how firms in the agricultural sector that participate in Global Value Chains develop Technological Capabilities. The main objective is to understand how small-scale growers organised in firms learn how to produce under the organic farming systems, that is how they acquire the skills and what efforts they make to learn. In addition, the second aim is to understand how leaders in the Value Chain support the learning process of the participating firm. Previous works have focused on the importance and strategic role of Technological Capabilities (Haque et al. 1995; Lall 1992; Kessing and Lall 1992) of firms which have enabled them to achieve competitive advantages. Furthermore, studies on Global Value Chains (Gary Gereffi 1994; G Gereffi, Humphrey, and Sturgeon 2005) have stressed that in emergent economies, the presence of Transnational Companies (TNC) in regions or localities changes the behaviour and thus the dynamics of local companies when it comes to adding value to their products and that these international linkages can play a role in accessing technology and knowledge and enhance the learning process and innovation. This study combines these two approaches and applies them to the context of the agricultural sector in Mexico, especially in the Northwest region, which has undergone changes as a result of presence of TNC, where they have created interactions with global markets. To identify the firms participating in Value Chains, a list was created based on official databases from the Mexican Ministry of Agriculture on Good Agricultural and Manufacturing Practices. Semi structured interviews were conducted in the firms that granted access targeting 4 key positions: the Chief Executive Officer, Chief Certification Officer and Chief Field Officer, and growers per se. The interviews were recorded and pictures of fields were taken where allowed. A pilot study was conducted and the analysis of data revealed that firms do acquire the skills based on the their own efforts but also in collective action, that is, that participating firms in Value Chains learn from other participating firms in the same value chain and they support each other in the learning

process. The leaders of the value chain make available financial, technical and input resources to the participating firms. In addition, people in the participating firm see themselves as part of a bigger entity, that is, the entire value chain, since they cooperate with one another to support its objectives. The pilot study results suggest that the learning process of firms in value chains is characterised by strong social content where growers learn in situ and are taught how to do things in the field and with constant interaction with other growers. Trust plays a role since seeing someone as their peer at all times and solving their daily issues creates an atmosphere of cooperation, which ultimately reflects the efforts of firms to learn and the others to teach them.

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Conflicts of Interest in Mexico: Legal and Practical Suggestions

Conflicts of Interest in Mexico: Legal and Practical Suggestions

Keywords: conflicts of interest, anticorruption policy, Mexico, Enrique Peña Nieto

Abstract:

Mexican law's definition of conflicts of interest and current proposals to change it hold on to a narrow and impractical definition of conflicts of interest, which does not allow for any kind of prevention or mitigation. In order to prevent scandals, new legislation on the matter would require a reconceptualization of how public servants manage their assets, how public decisions are made, and the verification of the information in declarations of assets and interests.

This paper seeks to show that the definition of conflicts of interest found in Mexican law, which focuses on the direct decisions made by public servants, is too narrow and impractical to allow for any kind of prevention or mitigation of problematic situations. A broader definition based on public servants' performance would allow for scandals, such as First Lady Angelica Rivera's purchase of a mansion from a contractor that had been favoured by President Enrique Peña Nieto's administration, to be prevented and mitigated before causing larger problems. The proposals that are being discussed to deal with future cases of the sort fail to change the system that allowed for the said scandal to happen. Such a change would be more likely to happen if there were changes to the way decisions are made by public servants and within the Mexican government, and there was an emphasis on verifying the veracity of the information obtained from declarations of assets and interests.

The only mention of conflicts of interest in Mexican law is in Article 8, Fraction XII, of the public service law[1], which says "there will be interests in conflict when a public servant's actions in their work are affected by their personal, family, or business interests." According to the Secretariat of Public Administration's (SFP[2] in Spanish) interpretation, said definition

[1] *Ley Federal de Responsabilidades Administrativas de los Servidores Públicos*
[2] *Secretaría de la Función Pública*

requires a direct decision to be made by the public servant in question in order to constitute a conflict of interest. By focusing on decisions that have already been made, this definition does not allow for any kind of mitigation or prevention to happen after the fact. Either the person is guilty or they are not. A broader definition may be found in Carson (1994), where conflicts of interest are defined as: "situations that make a person's work more difficult by making their motivations questionable due to real or perceived biases." This definition is useful in that by focusing on performance, rather than past decisions, it shows that conflicts of interest do not necessarily include any problematic decisions or immoral acts. Unlike corruption, which necessarily involves immoral decisions, conflicts of interest are involuntary biases that only become problematic if left unmitigated or linked to separate immoral decisions. For example, if a judge were presented with their best friend or their worst enemy as defendants, they would have conflicts of interest with both, without needing to do anything immoral. In that situation, it would be their responsibility to recuse themselves or be open about how they plan to avoid their biases from compromising their performance. Mexican law does not allow for either option, as it only considers the situation a conflict of interest after a problematic decision has been made.

The case surrounding the First Lady's mansion is simply not a conflict of interest under Mexican law, but Carson's definition allows for a broader analysis of the context in which such a scandal could be prevented. The case boils down to the First Lady buying a mansion with an unusually favourable deal from a contractor that had been favoured by the Peña's administrations as governor and president. The same contractor had recently been the only contender for, and won a lucrative international contract to build a high-speed train line (Lizarraga et al, 2015). As the President did not make any direct decisions that involved the contractor in question, there were no past problematic decisions to punish, and it was not considered a conflict of interest under Mexican law. Nonetheless, the decision became problematic by bringing the President's possible biases to the table, without a mechanism for him to prove that nothing illegal or immoral had happened.

The scandal was caused by questions that were not contemplated in the law's definition of conflicts of interest. Under the current definition, it is impossible to know whether or not the contractor in question's relationship with the First Lady led to them being unfairly favoured by the President's administration, or whether the information that was made available about the President's assets was reliable. Preventing such scandals requires a reconceptualization of how conflicts of interest are managed in Mexico, which should focus on performance rather than direct decisions. By focusing on performance, it is possible to interpret that if the scandal led to the First Lady explaining her finances in a Youtube video, and to the President abruptly suspending his campaign pledge for the train line contract, his job performance may have become difficult due to the situation surrounding the mansion. As his declarations of assets were up to date, and she made hers public as well, it is clear that more unverified disclosure did not address the questions that led to the scandal.

The proposals being discussed on the matter either do not address conflicts of interest, or focus on more disclosure without any types of verification or mitigation. A notable example is the *Ley Tres de Tres* initiative, which was brought to Congress by civil society organizations in 2016, and both takes the same narrow definition of conflicts of interest that can be found in the current law, and focuses on the disclosure of public servants' declarations of interests without any kind of verification (Cortés Campos et al, 2016). A proposal that would change the way conflicts of interest are managed in Mexico would need to address the way public servants are expected to manage their assets, the way public decisions are made, and the quality of the information that is released by public servants in their declarations of assets and interests:

1. Firstly, there should be a mechanism for public servants to make sure that their decisions relating to their assets will not raise questions about unfairly favouring specific individuals, and for the case to be independently investigated if such questions do come up. In the United States, both mechanisms are exercised by the Office of the Inspector General, which may be contacted by any public servant with questions about possible or

perceived conflicts of interest[3]. Similar actions by the SFP[4] would be possible in the short term, as its official regulations already allow it.

2. Secondly, there should be careful oversight over how public decisions are made. Because there is no paper trail for the President's abrupt cancellation of the train line contract (Notimex, 2015), there is no way of knowing if it was connected to the scandal or if any problematic biases were involved. A way of preventing this would be for the public service law to include a provision on public decisions and who is qualified to make them. Sweden has a system where anyone who makes decisions relating to the government must first prove in a public document that they are qualified to make them. If there is controversy regarding who is qualified to make any decision, an independent third party may be called upon to evaluate the situation[5]. This would be possible in Mexico in the medium term, as the 2015 anticorruption reform gave Mexico's Supreme Audit Institution[6] the ability to carry out "real-time audits" with this purpose[7].

3. Finally, there is no existing or proposed mechanism to verify the veracity of the information in Mexico's declarations of assets and interests, and they are mostly confidential, which does not allow for any type of oversight. Some countries have tackled these issues directly, such as Chile, where a legal representative undersigns the verification of the veracity of all declarations[8], or Lithuania, where a national ethics commission publishes nearly every declaration in its webpage[9]. Another option is the French model, where declarations are confidential and carefully analysed by an independent committee upon the end of the public servant's tenure[10].

[3] United States Code, Title 18, Chapter 11 – Bribery, Graft, and Conflict of Interest
[4] *Secretaría de la Función Pública*
[5] Sections 11 and 12, The Administrative Procedure Act
[6] *Auditoría Superior de la Federación*
[7] Article 79, Fraction I, *Constitución Política de los Estados Unidos Mexicanos*
[8] Articles 60 and 61 of the *Ley orgánica constitucional de bases generales de la Administración del Estado*
[9] Article 10, Law on the Adjustment of Public and Private Interests in the Civil Service
[10] Articles 432-12 and 432-13 of the Penal Code

The proposals that are being discussed to change the way corruption is fought and conflicts of interest are managed in Mexico are a plea to change the system. Nonetheless, they fail to do so, and there is a strong sense that it is due to a lack of political will to do so. The proposals introduced in this paper would help build a system that Mexican public servants can trust, which would in turn allow for conflicts of interest to stop being an obstacle to the government's credibility and effectiveness.

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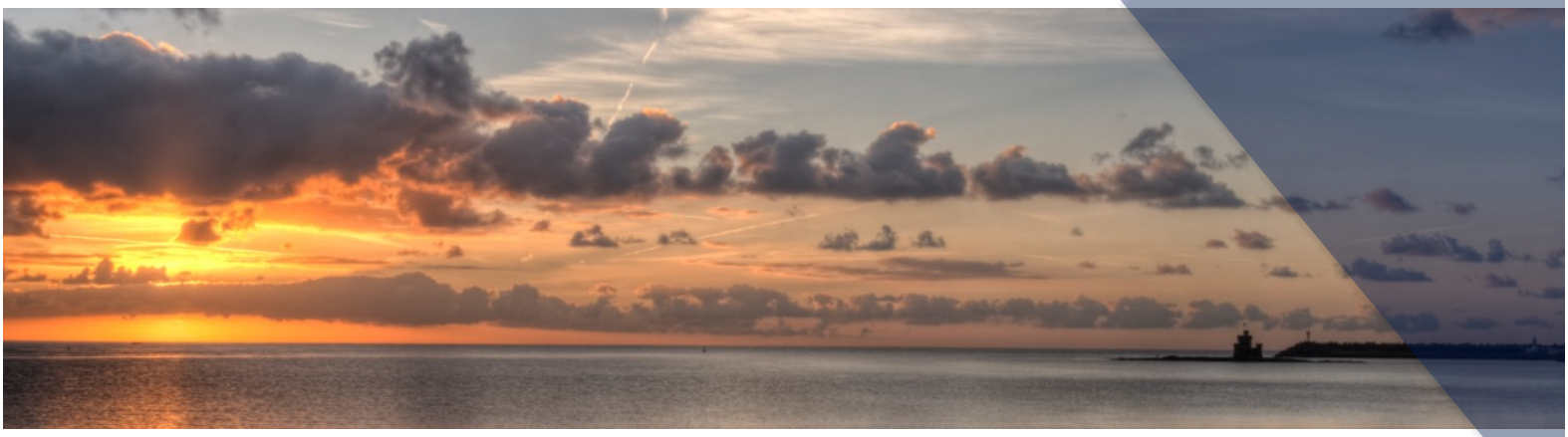
Energy and Anticorruption Agendas in Mexico: A Marriage of Convenience



Keywords: energy policy, anticorruption policy, Mexico, Pemex, Extractive Industries Transparency Initiative (EITI)

Abstract:

Mexico's energy and anticorruption reforms were defined and are being enacted without being linked in practice. Given their importance, this separation is counterproductive. As a solution, this paper suggests the decentralization of the National Anticorruption System to include the energy sector, and for Mexico to enter the Extractive Industries Transparency Initiative.

When analysing Mexico, it is often difficult to separate the history of the country from its government under the *Partido Revolucionario Institucional* (PRI)'s one-party system before 2000 and its multiparty system after that year. This issue is particularly clear when discussing the on-going agendas in the Mexican energy sector and the Mexican government's evolving anticorruption policies. This paper seeks to argue for a closer relationship between the energy and anticorruption reforms, which would allow them to become more effective and strengthen the government's legitimacy.

The connection between corruption and energy depends on the way institutions function in any given context, as there are no types of corruption that are specific to the energy sector. According to the OECD (2015: 46), what makes the utilities and energy sector particularly prone to corruption is its tendency to function as a monopoly, whether naturally due to its size, or because of specific regulations that lead to such practices. The relevance of corruption in this sector comes from the importance of the sector itself, not from the nature of its corrupt practices. It is one thing if access to education or healthcare fail, but a failure of the energy sector to function would send every post-industrial-revolution society

into crisis (Ruth, 2015). As corruption makes institutions both less effective and less legitimate[11], corruption in the energy sector is an extremely important issue to tackle.

The relationship between the Mexican government and Mexico's energy sector is close. The 1938 nationalization of oil and gas brought them together, but it was the discovery of the vast Cantarell oil field in the 1970s which turned Mexico into an oil state by placing it as the fourth oil producer in the world. The economic instability that resulted from such a reliance on oil called for reform, which was a contentious issue until it was achieved in 2013. However, *Petroleos Mexicanos* (Pemex) was still left dealing with issues associated with being an ineffective monopoly that is plagued by a chronic lack of modern technology, clientelism[12], an unusually powerful union, politicians with no qualms about keeping unmitigated conflicts of interest, widespread bribery and inefficiency. It is impossible to talk about the Mexican energy sector without taking corruption into account, and vice versa.

Attempting to combat corruption in Mexico without taking the energy sector into account, and trying to regulate energy without an anticorruption angle are both irrational plans. Nonetheless, that is the way the energy reform of 2013 and the anticorruption reform of 2015 came to be. Due to its large scale and the controversy surrounding it, the energy reform focused on turning Pemex into a less monolithic company managed by the state and allowed the private sector and foreign actors to have a limited role in its operations, decentralizing the Mexican energy market to open it to international standards of corporate governance (Mills, 2014). Transparency mechanisms were added as an afterthought, and mostly to ensure that international stakeholders would not complain about their absence. On the other hand, the anticorruption reform centralized federal audits, administrative sanctions, and the prosecution of corruption offenses around a single National Anticorruption System (NAS), which focused on the central structure of the federal government. It included the possibility of instituting some oversight over the energy sector and federally funded unions, but without any concrete mechanisms to achieve it. In

[11] Understood as any kind of justification to govern.
[12] Defined as the exchange of goods and services for political support.

summary, the energy sector began a process of decentralization directed at reforming Pemex, while anticorruption agencies were centralized and focused on the federal government's central structure.

Such a disconnect between both reforms is counterproductive. This paper suggests one medium-term change to the laws that will put both reforms into practice, and a long-term change that would encompass both constitutional reforms and their international implications. They are briefly described in the following paragraphs:

1. The NAS[13] should not focus only on the federal government's central structure, and it should explicitly include critical sectors of the economy in which the federal government actively participates, such as energy. Although Mexico's oil sector ranks in the highest places of the 2013 Resource Governance Index due to its newly organized internal control structures, which include Pemex in the country's transparency policies, any kind of external control is difficult (NRGI, 2013). This is because Pemex controls all the information about itself, including what is released to the public and what the government uses to make policy decisions. Allowing the NAS to exercise external control over the energy sector would solve the Pemex-centric bias found in the information about energy in Mexico and allow for further improvements in the corporate governance measures contemplated by the energy reform. This could be achieved in the medium term by including the energy sector in the anticorruption reform's secondary laws, which are being discussed in Congress as of June 2016.
2. Mexico would be well served by joining the Extractive Industries Transparency Initiative (EITI), which seeks to promote awareness about how energy and mineral resources are managed around the world in order to improve practices in its member countries (EITI, 2015). The EITI is a long-term commitment that would require binding agreements between the Mexican government, Mexico's energy sector, and various stakeholders from the private sector and civil society in Mexico and abroad. Besides being a strong nudge towards openness and corruption control for the Mexican energy sector, joining

[13] National Anticorruption System

the EITI would allow for further energy-related legislation to be made with these characteristics in mind. This could include energy sectors for which there is still no specific legislation in Mexico, such as renewable energy and shale oil and gas. This is a long-term proposal, as the timelines required by the EITI would require it to be a campaign promise by a presidential candidate, and for such a commitment to transcend any specific presidential period.

The overarching problem this paper responds to is the need for Mexico to go from an individualistic system where everyone can fix their own deals and bend the rules their way, to a system where people know what to expect from the law and the government. In essence, corruption control in any sector is not a different concept from maintaining the rule of law. Building a system that can be trusted by all stakeholders, in Mexico and elsewhere, would be a wise political move and a sound business decision.

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Integrated Urban Water Management (IUWM): Myths or reality in Mexico City

Keywords: Water management, Sustainability, Mexico City, Magdalena River Restoration, Hydro-Cultural infrastructure Tlaltenco and Transition.

Urban water systems are changing as new paradigms are striving to reconsider water flows and climate uncertainty within urban planning (Gandy 2014), embracing the idea of 'living with water' instead of fighting against it (Wiering & Immink 2006; van-Herk et al. 2013). Feldman (2007) describes these paradigms as 'no regrets' solutions, as they reduce urban vulnerabilities without representing a cost for the society. In other words, these interventions produce benefits regardless climate change events occurrence.

The new water management paradigm relies on the efficient use of water and the ecosystem services. In that order, it considers using rainwater for domestic supply (Marlow et al. 2013), while dealing with rain where it is located, reducing drainage volumes and flood risks (CIRIA 2007).

The aim of this research is to study the possibilities of incorporating this new water management approach in Mexico City. For that reason, this research focuses on two projects that aimed to introduce a sustainable water management changes and how they were stopped to be implemented by several constraints. This research through interviews and literature review analyses the next two cases:

Magdalena River Restoration Project

On 2007, a project started in order to restore the only river that meanders in its natural form in Mexico City. The main goal of this project was to return the environmental value of the river through a comprehensive approach. This project included conservation works in the upper basin, the hydraulic restoration, through the assemblage of drainage/sewage pipes and treatment plants, and the regeneration of green spaces along the river (Gonzalez & Zamora 2011; Mazari-Hiriart & Meza-Paredes 2011). Although it was carried by the Mexico City's Environmental Agency, only 10% of the plan was completed due to poor of

governmental support, budget limitations, and poor community participation that became public rejection to the river's restoration (interviews).

Hydro-Cultural infrastructure Tlaltenco

During the Metro Line 12 construction, the Tlaltenco communal landowners had to give half of their land to allocate a train station, which its construction highly damaged the remaining land of the peasants. This project aimed to create a productive area for the communal land owners while treating and incorporating 100 L/sec of wastewater to the nearby aquatic area (chinampas). However, any part of this project was constructed as there was no political and economic support, and the little support the project had, faded away once that a new major started to rule (interview).

Legal literature points out several problems that limit sustainable projects in Mexico, emphasising the complex regime that restricts new regulations, such as water use control in priority basins, especially on those that are vulnerable and overused (World Bank 2013). Additionally, the lack of communication among different governmental ministries in the federal sphere, and between federal and municipal agencies (Akhmouch 2012; Martinez & Bandala 2015) results in overlapping practices and contradictory objectives (Perez-Campuzano et al. 2016).

In the case of Mexico City, water conservation projects for environmental purposes seem useless because the Water Sustainable Use Index for the city's valley is negative, as the amount of consesioned water is higher than the available amount of it (SAGARPA 2012). Additionally, sustainable projects must deal with a complex water system. Water belongs to the nation, hence water is managed by a federal agency, called CONAGUA (Martinez & Bandala 2015). Water services are provided by municipal agencies, such as the Water System of Mexico City (SACMEX), so treatment plants are constructed, operated and manage by SACMEX (Garmendia-Cedillo 2012). However, sustainable projects tend to be supported by the municipal Environmental Ministry, having a low hierarchy rank than the own ministry (interviews).

The main two goals related to water management in Mexico are to satisfy the water services to the whole population and return the ecological balance to the hydrological basin. However, it seems that the ecological balance has to be achieved through the construction of treatment plants (CONAGUA 2011). A controversial strategy, as treatment plants are highly underused in Mexico (Barkin & Klooster 2006), but it protects the decision to build the Atotonilco Wastewater Treatment Plant (AWTP) to treat 70% of Mexico City's wastewater (Martinez & Bandala 2015). A project which presence limits any other sustainable project that aims to improve water management in Mexico City, as wastewater has to be produced to keep the plant working in optimal condition (Peña-Garcia 2012).

In conclusion, Foxon & Pearson (2008) recommend not invest in a narrow set of technologies due to uncertainties, such as invest in a single plant to treat most of the wastewater of a mega-city. Although Atotonilco plant only represents a small change in the water system behaviour, which still depends on high-technology devices, it can be catalogued as successful because it was constructed overpassing the political time restrictions. Hence, this research enquiries the next:

- Is it necessary that small projects learn from the Atotonilco Treatment Plant's implementation process?
- How is possible to prioritise pollution prevention over water treatment as environmental policy?
- Is it necessary to limit the government's participation?

Some international sustainable policies tend to move to interventions involving private investors and community, with little political intrusions (van-der-Heijden 2014). However, this seems still far away in Mexico's policy decision-making.

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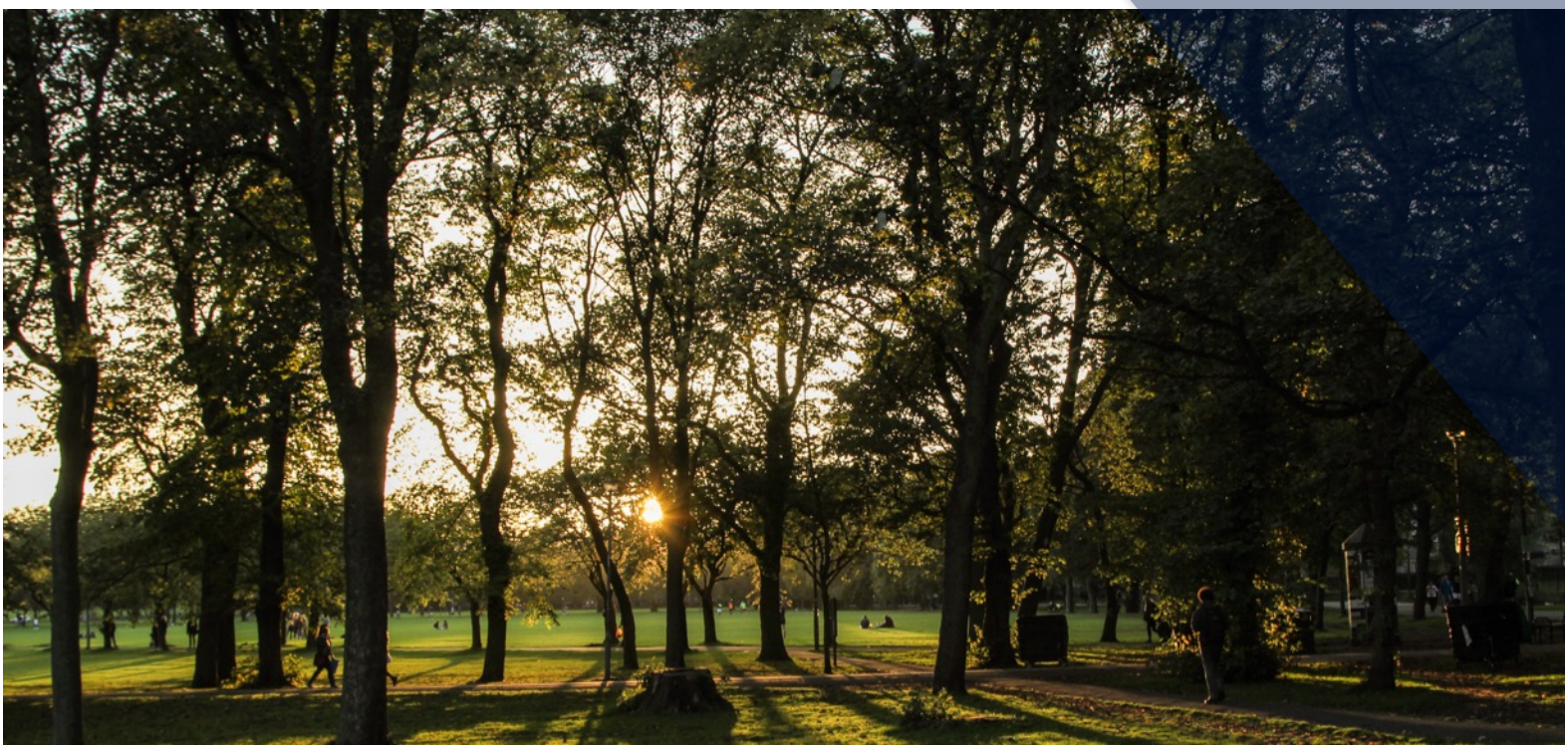
Robotics and Copyright: The Role of Artificial Intelligence Towards the Generation of Automated Material



Robotics and Copyright: The Role of Artificial Intelligence Towards the Generation of Automated Material

Keywords: Artificial Legal Intelligence Copyright Legal Informatics

Abstract

The role of technology and copyright law has been a constant one. Nevertheless, the increasing use of information technology (IT) tools had made this relation more dynamic and complex, specifically the implementation Internet and the recent use of Artificial Intelligence (AI). As part of this, during the last decade the implementation of devices capable of reproducing human cognitive processes, led to the creation of potentially artistic material. In this scenario, the legal framework has been required to provide a position related to the potential effect of granting copyright protection to this works. In the current presentation this situation will be addressed assessing the relation between technology and.

Technology and Copyright: The Beginning.

The relationship between technology and copyright law can be traced over a century ago. Nevertheless, the interaction between these two areas grew exponentially with the arrival of automated technology specifically, the Internet. The effect of this technology was such that its impact could be found in areas considered, until that point, restricted to humans only.

An area that became interested in this approach was the one related to copyright works. Suddenly, a new market enabled providers to implement their services through a digital environment, which was able to reach potential new clients (Howkins, J. (2002). However, this new scenario was used to develop a new type of illegal activity: unlawful distribution of copyrighted works (Economics, F. (2011).) This new form of crime forced both the industry and the law enforcement agencies to develop new strategies to try to diminish these activities. In the following lines, these approaches will be provided.

The Law Engages the Internet.

To illustrate this point, special mention will be given to US. The first attempts to regulate illegal distribution during these early stages were addressed against distribution services. A highly publicized cased against Napster (Lemley M and Reese R 2004). had for result the Court ordering the company to pay monetary compensation to right's holders and the modification of their sharing scheme. Despite the success of this first attempt, it failed to cause a lasting effect. Distribution only "evolved" making these services even more technically complex. With the previous in mind, enforcing efforts were relocated (Lichtman, D., and Landes, W. 2002): users who made material available for downloading. By the time this was implemented, the number of users who made this was far too big to bring them to Court, so it was decided to select a number of them to cause a detrimental effect. The Recording Industry Association of America (RIAA) presented 35,000 lawsuits; this reduced illegal downloading by two thirds in certain cases. However, the number of users who were doing this proved to be far too large to be affected by approach, and the effect was only temporal. The last attempt was aimed to Internet Service Providers (ISPs). The objective was to force them to stop providing their services to customers who have engaged in illegal online copyright distribution. Regardless of early success, this approach also failed in presenting a suitable platform to prevent illegal distribution of copyrighted works. The reason was that the ISP gave an early warning to the client, at this point, the customer migrated to another service.

Having the traditional legal approach failed in addressing illegal distribution on the Internet, the industry decided to develop their own technological scheme: Digital Rights Management.

The Arrival of Digital Locks to Copyrighted Works.

Digital rights management (DRM) is a type of server software developed to enable secure distribution — and perhaps more importantly, to disable illegal distribution — of paid content over the Web. [...]" (Van Tassel, J. 2006; Gasser, U., & Palfrey, J. G. 2007). The idea

of these devices was to provide a technological tool that was capable of allowing a lawful use of a protected material, this was achieved by restricting certain types of action on the works (Kwok, S. H. (2002). This technology offered several advantages, in the case of the users, the material under this approach was to be secure and free of digital threats. From the perspective of the authors, it allowed to have an actual counter measure against illegal digital use copyrighted works.

Nevertheless, this first technological attempt failed from the moment it was implemented. It lacked of the capacity of identifying what a lawful client was allowed. Also, it became evident it did not have the capacity of performing legal reasoning and ultimately, it proved to be so poorly designed that it was used as a back door by hackers to steal personal information from clients. The previous led to its removal from digital products.

The previous shows that the first attempt to enforce copyright law through automated devices failed. Nevertheless, a new approach is being proposed to retake this position from a different perspective. In the following lines the role of automated technology in the creation of copyright works will be presented.

Automated Technology and Copyright

A new type of relation has emerged between copyright and technology with the arrival of autonomous devices. The previous is the direct effect of the development of artificial creativity, which has allowed to understand the reproduction of cognitive processes that take place in the human mind to create a piece of art (Boden, M. A. 2009). As it might be inferred this has resulted attractive to several industries such as music, literature and graphic arts (Sawyer, R. K. (2011). One of the earliest and finest creation was provided by Chamberlain, W. (1984) in the form of RACTER. This development created for the literature field, this implementation developed the first book, a poetry anthology, written entirely by a computer. Its creators decided to measure the quality of its composition by participating in a literature contest, it won the event. Another implementation is the Painting Fool, this on going project aims to produce an autonomous device capable of creating paintings

suitable to be considered art. On the music field there is GenJam, a software capable of providing potential solos for jazz compositions.

However, the previous presents a question regarding the legal status of the material created under this approach: is it still copyrightable?

Has the era of artificial copyrighting arrived?

The previous has raised concern about the status of human art and the role that technology may have in the near future. However, analysing this problem from a legal perspective it can be stated that it does not present an imminent threat. The previously described versions of artificial creators based their functioning in processing input, they still need to receive this from, in most cases, human operators. The previous does not allow them to portray a key feature in most copyright regimes: spontaneity. While most jurisdictions and international agreements have taken this position, the UK's Copyright Designs and Patent Act (CDPA) of 1988 have created a legal figure that includes the use of computers in the creation of copyright works, Computer Generated Material (CGM). However, this conception still considers the human element as provider of the input needed to create the work.

Finally, the present research is based on the presence of automated devices capable of creating copyright works is a matter that needs to be addressed. The main concern lies on the fact that technical development will soon allow these devices to operate independently. This puts human generated work in a great disadvantage in matters of time, quality and production volume. To solve this, the adaptation of the legal framework is needed to control CGM and incentivise and prefer human generated material. Nevertheless, the previous provides a potential solution for copyright infraction. Having stated that these devices operate based on input and that new versions are being capable of doing it autonomously, this presents an opportunity to address only licensed works. The previous takes advantage of the technological features of these devices, adding them an extra feature: legal reasoning.

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Does mindfulness reduce the dissonance between what we think and what we do?

Does mindfulness reduce the dissonance between what we think and what we do?

Keywords: mindfulness, social psychology, hypocrisy, cognitive dissonance, helping behaviour

Abstract

The aim of the research is to study the moderating effect of mindfulness on the relationship between the psychological discomfort felt by being hypocritical and being motivated to help others using a quantitative approach. An unexplored area within social psychology will be address to generate empirical knowledge and delineate potential implications in social contexts.

One of the fascinating features of studying human behaviour is that some of the psychological and social processes that help to explain it do not follow common sense logic. A very good example of this is when people fail to follow their own standards, or in other words end up being *hypocrites.* People need to feel there is consonance between their cognitions and behaviour to maintain their self-integrity (Stone et al., 1997: 63). Therefore they tend to behave consistently with what they think (Maio et al., 2015: 171). However, research within social psychology has found that in fact; people become hypocritical in some circumstances, such the so called environmental hypocrite case (Somerville, 2016). For instance, how many times have you seen any of your friends - but not necessarily you- not following the recycling guidelines, but saying he or she is concerned about the changes due to the global warming?

Hypocrisy occurs when people advocate a particular behaviour but they fail to actually do the target behaviour (Stone et al., 2008: 1024). It has been used within social psychology as a paradigm through which dissonance is evoked via experimental designs to examine behavioural change. Previous research has found that when people become aware of being hypocritical, they feel psychological discomfort which motivates them to change their behaviour and reach consistency (Maio et al., 2015: 174); so for example, young adults were

motivated to buy and use condoms (Aronson et al., 1991; Stone et al., 1994), female swimmers showed water conservation behaviour (Dickerson, et al., 1992) and children approved significantly less risk behaviours (Morrongiello et al., 2008) compared to all the participants who were in the non-hypocritical condition. One of the human behaviours that has not been studied in relation to the hypocrisy paradigm is helping behaviour. Due to the need of such prosocial behaviours in the current social global context, it becomes relevant to explore that possible relationship.

One of the recent topics of interest within psychology has been the study of mindfulness and its applications. Although it has been well-studied in areas such as clinical psychology and more recently in neuroscience (Baime, 2011: 46), its inquiry within social psychology is just emerging. Mindfulness reflects a conscious awareness of one's own experience occurring in the present moment (Brown et al., 2003) and heightened levels of mindfulness have been associated with prosocial behaviours (Davidson et al., 2012). Therefore, results relevant to investigate if being mindful of feeling uncomfortable due to behave hypocritically influence people's behaviour to help others.

The aim of this research project is to examine whether invoking hypocrisy leads to different levels of psychological discomfort as a function of mindfulness, and whether this leads to different effects in helping behaviour (i.e. donating money to charity). An experimental design will be employed to create control and experimental conditions to which participants will be randomly allocated. Firstly, all participants will be asked to express why it is important helping others; and then in order to create the hypocrisy condition, only the participants in the experimental condition will be reminded of their failure to behave consistently with their position. Secondly, the level of discomfort that all participants might feel at the moment of the study will be measure using the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988) and the Discomfort Index (Elliot et al., 1994). Thirdly, within a hypothetical scenario of having the opportunity to donate money to charity, participants will be asked how much, if any, they would like to donate from the payment they will receive (£3). Finally, the level of mindfulness will be evaluated using the Mindful

Attention Awareness Scale (MAAS, Brown et al., 2003). The research will compromise two studies. The first one will be held in the laboratory using the software MediaLab to set up the questions for the conditions, and participants will be recruited via Experimental Management System operated by the School of Psychology at Cardiff University. The second study will be a follow-up online study via Qualtrics where participants will be recruited through the Prolific Academic platform. The same methodological design will be used.

It is expected that mindful individuals will not feel higher discomfort while feeling hypocritical, and in consequence will be less likely to change their behaviour by donating money to charity. These possible results will raise concern on how being more or less mindful could have negative impacts on behavioural changes within social spheres; where rather than influencing people to help others it might influence them to be more reluctant to get involved in prosocial behaviours. Furthermore, the research will open different lines for future work to try to clarify this interaction. For instance, compassion as a mean of generating altruism could be considered in the model as a variable motivating people to be keener to help others. All of this with the purpose of transforming "Knowledge into Solutions" by drawing a possible intervention to aid behavioural change towards helping others or more specifically, the development of prosocial behaviours.

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Indoor air quality in low energy homes in Mexico City

Indoor air quality in low energy homes in Mexico City

Keywords: Indoor Air Quality, Low-energy homes, Mexico, health and wellbeing on homes.

Abstract

This work looks into the indoor air quality at homes in Mexico City, and the use of the PassivHaus building certification as a way to improve it. For this purpose, monitoring in some homes in Mexico City is being carried out. Low-energy homes often address airtightness as a measurement to assure thermal comfort with the lowest energy consumption possible. Nevertheless, it is known that other problems might arise by addressing airtightness; such as ventilation, air pollution and mould. This paper focuses on Indoor Air Quality (IAQ) and describes the possible implications of IAQ in low-energy homes in Mexico.

Introduction

In Mexico, housing accounts for around 16.7% of national energy consumption and 6% of CO_2 emissions (Fernandez Marinez et al., 2011). As part of policy to combat the effects of climate change Mexico has developed the *NAMA for Sustainable Housing in Mexico* (see (Feist, 2012; Kaineg et al., 2012)) and policies such as *Sustainable building - environmental criteria and minimum requirements* (NMX-AA-164-SCFI-2013) among many others. However, its implementation has not been successful. On one side governments initiatives are good, but on the other there is a lack of institutions that helps to control them (Lopez Silva et al., n.d.). Buildings energy efficiency has been an important issue in recent decades. Improving building envelope on pursuing energy savings and CO_2 emissions reductions has been widely studied. Much has been learned about the impact of buildings on the environment, reduction of energy consumption, and reduction of greenhouse gases associated with buildings (Emmerich and Persil, 2012). Airtightness is one of the most common practices to achieve energy savings and maintain a comfortable indoor environment. However, as we make buildings airtight other problems arise. Indoor air

quality (IAQ) can lead not only to health problems; it might as well increase or decrease energy performance. This has being widely discussed as mechanical ventilation in airtight-dwellings which has proven to be inefficient for removing heat during warm seasons. IAQ controls rely on the capacity of systems to filter and ventilate indoor air. Crump et al., (2009) suggests that a lack of air infiltration could lead to poor indoor air quality as indoor air is not replaced, creating an environment where pollutants, humidity, and condensation become a high risk. Recent studies have noted the importance of IAQ in low-energy buildings and the consequences of greater airtightness in the building envelope (Crump et al., 2009; Emmerich and Persil, 2012). Emmerich and Persil (2012) suggest that sealed buildings may raise pollution levels because air is not being replaced at a sufficient rate. Moreover, other studies suggest that construction materials, behaviour of residents and building maintenance play an important role in increasing contaminants (ASHRAE, 2007; Bernheim et al., 2015; Poppendieck, 2015). If airtightness needs to be addressed in low-energy homes, one of the biggest challenges in the Mexican context is to move from passive and natural ventilation to sealed environments, relying on the use of mechanical ventilation.

Human health and IAQ in Mexico City

In Mexico City respiratory problems are often seasonal (Rosas, 2001), with the number of cases peaking in periods of rainfall (July-September). Rain causes a decrease in common air pollutants, suggesting that they may be found indoors rather than outdoors. Pollution problems increase mortality and illness[14]; as well as chronic obstructive pulmonary diseases (Rojas, n.d.; Rosas, 2001; Yip and Madl, 2000). The lack of daily control and monitoring of air allergens and pollutants makes it difficult to understand this problem. However, some pollutants have been identified as particular sources of concern and studies are being carried out. Some of these chemical contaminants are carbon monoxide (CO), formaldehydes (HCHO), hydrocarbons (HC), nitrogen oxides (NO_x), ozone (O_3), $PM_{2.5}$ and PM_{10} particles, and sulphur dioxide (SO_2). Many of these have been found indoors and outdoors in residential areas, especially $PM_{2.5}$ and PM_{10}, and HCHO. This paper does not

[14] cardiopulmonary, respiratory, cardiovascular, and even cancer

intend an exhaustive review of the IAQ on health's implications, but rather an explanation of the possible health effects and its sources in buildings.

Health effects of indoor air pollutants.

Intense and short exposure of CO can lead to loss of consciousness. Exposure to elevated levels of this pollutant can be associated with Sick Building Syndrome symptoms: irritability, headaches, visual impairment, reduced work capacity and manual dexterity, poor learning ability, and difficulty performing complex tasks. Other effects are association with low birth weight, and an increase in perinatal deaths (Bruce et al., 2000; Mott et al., 1997). Particles PM_{10} and $PM_{2.5}$, are airborne substances known or suspected to be causes of cancer, genetic mutations, birth defects, or other serious illnesses. Their effects are variable, from cataracts, strong irritation, reddening eyes, runny noses and respiratory irritations, to cancer and cardiovascular problems (Bernnan, 2015; Bruce et al., 2000) and hypertension (Holguín et al., 2003). O_3 damages the cells that line the respiratory tract, causing irritation, burning, and breathing difficulty. It causes respiratory problems, aggravates asthma, causes inflammation of lung tissue, and inhibits the body's immune system. Other temporary effects include decreasing lung capacity from 15% to 20% (Mott et al., 1997) and hypertension (Holguín et al., 2003). Effect of SO_2 may include wheezing, gasping, and shortness of breath, exacerbating asthma. It may exert corrosive effects on nasal lining, the trachea of the lungs and the alveolar tissue (Bruce et al., 2000; Mott et al., 1997).

Residential indoor air quality

The air quality is defined by its biological, chemical and physic characteristics (BRE, 2016). The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE, 2007) define *acceptable indoor air quality* as,

> *"…air in which there are no known contaminates at harmful concentrations as determined by cognizant authorities and with which*

a substantial majority (80% or more) of the people exposed do not express dissatisfaction".

This assumption may be suitable for highly occupied buildings, but might not be appropriate for low occupied buildings, such as homes. Other definitions discussed by Crump et al., (2009) express the importance of maintaining the comfort and health of occupants maintaining safe contaminants levels on breathable air.

Studies of indoor air pollution therefore involve examination of emission, accumulation, and assessment of pollutants regularly caused by poor ventilation. Hence, outdoor air pollution, whether chemical, physical or biological in origin, could lead to indoor contaminants (Crump et al., 2009). Of particular interest are issues involving air quality and human comfort within a building's interior. Recommendations for appropriate outdoor airflow rates to dilute polluted air indoors vary considerably (Pepper and Carrington, 2009), however a rate of 2.5 l/s*person is acceptable in residential buildings (ASHRAE, 2007). Residential indoor air pollution includes, but is not limited to, the following factors:

- allergens (mould spores),
- building materials and finishes,
- cleaning, maintenance, and personal care products,
- CO and NO_2 combustion,
- cooking, dry cleaning clothes, and human activities,
- O_3,
- Pesticides, and
- ETS.

Building sources of air pollution

There is an extensive collection of scientific literature on sources of air pollution (Coward et al., 2001; Crump et al., 2009, 2002; Dimitroulopoulou et al., 2005; WHO, 2010, 2000). Table 1 provides a summary of the main sources and types.

Table 1, Sources and types of indoor air pollution. Source: (Crump et al., 2009)

Source	**Main Pollutants**
Outdoor air	Benzene, biological particulates, NO_x, O_3, particulates, SO_2
Combustion of fuel	CO, NO_x, particulates, VOCs
Tobacco smoke	CO, particulates, VOCs
People	CO_2, organic compounds
Building materials	Ammonia, fibres, formaldehyde, other particles, radon, VOCs
Consumer products	Formaldehyde, pesticides, VOCs
Furniture	Formaldehyde, VOCs
Office equipment, including MVHR	O_3, particulates, VOCs
Bacteria and fungi	Biological particulates, VOCs
Contaminated land	Contaminated dust (i.e. metals), methane, VOCs
Ground	Moisture, radon
Washing and cleaning	Moisture
Animals	Allergens

The main sources of inorganic indoor air pollution are: combustion of fuel, outdoor air, and respiration. Therefore there is a strong relationship between IA pollution and human behaviour. Space heating, water heating and cooking are everyday activities that may cause fuel burning. Other sources may include ETS and vehicles.

Conclusions

Interest on IAQ in airtightness houses has been a topic of studies recently. Scientific evidence suggests that there is a high relationship between IAQ and the building environment. In Mexico airtightness homes are not common, however as we move into a more energy efficient homes, airtightness homes will become more common as suggested on the *NAMA for Sustainable Housing in Mexico.* Homes in Mexico are traditionally ventilated with natural techniques, this however opposed to the actual low-energy home ventilation techniques. Therefore, people need to adapt its behaviour to mechanical controlled environs and be aware of its implications.

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Visual typographical educational systems as a medium of communication in México: a proposal from the theory of Otto Neurath, ISOTYPE

Visual typographical educational systems as a medium of communication in México: a proposal from the theory of Otto Neurath, ISOTYPE

Keywords: ISOTYPE, symbolic Applications, Graphic Communications; typographic language; Education.

Abstract

This Project aims to understand the work and development of the method of image education proposed by the Austrian thinker and philosopher Otto Neurath, who proposed an **I**nternational **S**ystem **O**f **TY**pographic **P**icture **E**ducation (ISOTYPE) (Hartman, 2002: 65). It was created with the intention of breaking the barriers of language as a communication and educational tool.

From this perspective, this study aims to provide data that serves to create new visual systems, which can be applied to different social groups.

ISOTYPE Context

At present, the symbolic applications around us are loaded with much more information and history,-than we could imagine. Otto Neurath is one of the most important precursors in the redesign of current scientific thinking. His interest in understanding and decoding the graphic world that surrounded him, because of the communicative advantages thereof, were directed towards using them for their.

> Jede Arbeit, die für das Problem der internationalen Sprachen getan wird, -sei es in Hinblick auf eine Wortsprache oder auf eine Bilderhilfssprache- wird internationale Entwicklungen allgemein fördern. Eine internationale Sprache muß internationale Bedürfnisse[15] berücksichtigen und muß gleichzeitig so einfach wie möglich sein (Neurath ,1991: 358).

[15] We can see thereby that Neurath is interested in the search for the universality of language. Neurath was concerned on one hand with symbolic universal tools and on the other, with a mathematical logical system model applicable to the script language. Neurath, Otto. 1935. Isotype

In this aspect, the ISOTYPE draws a special visual vocabulary of about two thousand symbols and special visual grammar that can be used to tell a story in pictures, which can be understood almost at first sight. (Hartmann, 2002: 177). This method is concerned with the resolutions of the symbolic language and was intended as a work from interdisciplinary groups. These were created by the sociologist with the intention of reaching objectives and general agreements to implement the model within the education system.

Neurath wondered about the future of the search for communicative symbolic models that could be applied to education. He did not ignore text in addition to support visual ideas, he just tried to simplify the lexicon to a certain number of characters, so that these could be accessible for an audience with little knowledge of science and technology.

Social humanistic principles

Currently, the scientific community is beginning to address understanding and clarification of these typographic systems and its various benefits as evidenced by a recent study on picture pedagogy (Groß. 2015: 1-5). In addition to this, this research aims at providing data of attempts to implement the system[16] in other fields of social communication. This can be compared with Neurath's original project.

Neurath was a social activist, who during the inter-war period worked in different social and cultural institutions in which he managed to put his theories into practice. First in Austria, then in Germany, Russia, Czech Republic and finally when he had to immigrate during the Second World War. Neurath worked on projects in England and the United States (Sander, 2008: 463-484)

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und die Graphik. In Gesammelte bildpädagogische Schriften, Hrsg. Rudolf Haller und Robin Kinross. Wien: Hölder-Pichler-Tempsky (1991).

[16] All the time when we refer to system. We are understanding the system from the perspective of Ferdinand de Saussure i.e. a system of distinct signs corresponding to distinct ideas, as a faculty of constructing a language. Saussure, ferdinand, 1893 Cours de linguistique generale 2011, New York, Columbia Press.

A month before his death in October 1945, Neurath published his book "From hieroglyphics to Isotype". This would be his last attempt at characterising the system;

> Neurath's efforts were not fully successful: first, the close interconnection between the project and the person; second, the changing media, societal and political contexts; and finally Neurath's less developed understanding of the contextuality and manipulability of pictures. (Sander, 2008: 2)

It is known, that the principles and purposes of this communication system were humanitarian-democratic (Neurath, 1933: 358). Because in the time when they were planned, social conditions in Europe due to the Adult Illiteracy and language difficulties were the reason for the creation of such a system. It was intended to eliminate social disparity of knowledge (Neurath, 1933, id). But it is unclear to what extent problems like illiteracy and language discrimination (more), can be tackled using this system, improving the quality of life of a community.

As we know, because of the war period, in which the system was intended to be applied to, the political interests of their time were the main impediments to successful implementation in the education system of Austria (Sander, 2008: 463-484) as the scientist intended. However, there is evidence that the system was applied in education as well as in other international social institutions. Due to the flexibility of the system, which allowed to use it with different intentions.

New and old alternatives in to solutions

Currently, the importance of the transmission of knowledge in our society shows that these typographical agreements have responded and continue to respond to a growing number of new social needs.

> *Ohne viele neue Wege der Verständigung und Erziehung können wir nicht erhoffen, unser Kulturleben zu demokratisieren. Unsere gegenwärtigen*

Beschränkungen verhindern die freie Diskussion gemeinsamer Probleme und die Verbreitung einfacher, aber wichtiger Tatsachen. (Neuraht, 1933: 403)

Without many new ways of understanding and education, we can not hope to democratize our cultural life. Our current restrictions prohibit free discussion of common problems and dissemination of simple but important facts.

In this sense, the PhD project presented here pretends to contribute answering the following questions: How Neurath solved the problem of language barriers, linguistic diversity, as well as differences in educational level through his system? Is it possible to create an education system, not only to universalize knowledge, but to integrate different types of knowledge, such as traditional understanding, that are not taken into account? Is it possible to use the tools of Neurath's theory and the Vienna Circle in Mexican society?

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From Communication of Science, Technology and Innovation (STI) to Social Appropriation of Science, Technology and Innovation (SASTI) in Mexico

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Keywords: Communication; Science; Technology; Innovation; Social Appropriation

Abstract

Science and technology are public assets that can and should be used to increase social welfare of people; and solving economic, social, cultural, environmental and preservation of resources at regional, national and global problems. In the present paper, it will be described the development and implementation of an intercultural communication model of the Science, Technology and Innovation (STI). This model was implemented in culturally diverse contexts, specifically in indigenous communities in Oaxaca and Chiapas. In addition, there is knowledge generation through social networks of innovation, that includes: a) mechanisms to ensure knowledge will be leveraged socially to meet demands critically analyzed by the different groups involved and by acceptable means from the point of view of those who will benefited; and b) mechanisms and procedures to ensure the participation of those with problems, from conceptualization and formulation to its solution.

In this context, the approach of this STI intercultural communication model main purpose is to promote equality of knowledge and multicultural learning by establishing fairer social relations between different communities in the country's societies and the nation as a whole, especially indigenous communities. Recognition and progressive development of these principles and generally specific cultures depend on the ability to dialogue and learn from other cultures and knowledge. This requires interaction between community members and specialists from different disciplines in communication processes that preserve and integrate with fairness and rationality the diversity of knowledge in order to expand their cultural horizons through innovative appropriation of external knowledge.

With this, we consider the possibility to articulate local innovations and traditional knowledge with science and technology. This requires the ability of the communities to incorporate other external knowledge into their production practices. Usually this process

requires the participation of experts in the use of such knowledge, and mechanisms of appropriation of such knowledge by the community in question. This is because it is not just about acquiring knowledge of a particular discipline, but to incorporate some type of specific knowledge in their production practices. This calls for interaction between community members and specialists from different disciplines. Something fundamental is that local and traditional communities incorporate new knowledge with full awareness of what they are doing and the meaning of new scientific and technological knowledge in order to expand their cultural horizons, through an appropriation of external knowledge and create their own space, a scientific and technological culture. This means learning is not only what science establishes but it incorporates such knowledge into their practices (Garcia-Cruz, 2015).

Models of science communication

The first of these models is the so-called *deficit model*. According to this, the public suffers from a lack of scientific knowledge, because of the specialization of science and the speed of their advance, so the communicator must meet the deficit (Marcos, 2010: 122). It envisions a world bifurcated between "scientific sufficiency" and "deficiency of the public". Thus, the deficit model is inherently asymmetrical. It poses a unidirectional flow from the scientific community or to the public. On the basis of this model is the idea that it is not necessary to try to persuade the public of the need or relevance of scientific activities, but they are already persuaded, per se, the value of science (Dellamea, 1998: online).

The deficit model implies a passive receiver; thus it is expected that emitters of scientific messages of intended masses are quite effective, use of a particular rhetorical. A rhetoric that can "accommodate" the facts and methods of science, the limited experience of the public and also limited cognitive abilities of the audience. In this model, communication is then merely "cognitive", i.e., only the "knowledge" is "transferred". The ethical, political, social aspects are considered irrelevant and therefore simply not addressed (Dellamea, 1998, online). In this way, the formal knowledge that scientists give to the wider society is

often deeply problematic, since it is partial, provisional and sometimes controversial. So, it appears that the encounter between science and the public is poor. However, knowledge distribution it is not only necessary, but it must also be considered many other contextual factors (cultural, economic, institutional, political and social) that influence the difficulties between science and the public. From these considerations it follows the second model, called *democratic model*, in which public participation is essential, since as Simon Joss (1999) mentioned, “decision making should be chosen not only by skilled professionals, political processes and policy makers, but must also participate a wider range of social actors, in this regard, representatives of non-governmental organizations, local communities, interest groups and movements of peoples” (Joss, 1999: 290). One of the first approaches to this model is presented in the book "The sharing of knowledge" of Philippe Roqueplo. In this paper, the author mentions that if it were necessary "to popularize"science, it would be for the purpose of "allowing the exercise of its power in a democratic way (*dêmos*: village); for example, to allow the entire population to intervene in the choice of a nuclear policy that obviously concerns all its members" (Roqueplo, 1983: 11). Similarly, John Durant mentions that the democratic model establishes a relationship of equality between scientists and non-scientists, emphasizing the dialogue between experts lay as a precondition for the successful resolution of disagreements. This model recognizes the existence of multiple (and sometimes contradictory) forms of expertise, that allows constructive public debate. That is, while the deficit formal model of formal knowledge is the key to the relationship between science and the public sector in the democratic model extends the range of factors, including knowledge, values, and the relationship of power and trust (Durant , 1999: 315).

In order to reach these agreements public meetings are made to allow ordinary citizens to engage in business of science and technology. This type of meeting is a dialogue between experts and citizens. This method offers a new way to give "voice to people", which shows their opinions in a more open way, and has the opportunity to influence and to structure themselves (Andersen and Jaeger, 1999: 339). However, note that in practice they are not "pure" models. Overall communication experiences are species hybrids between these

models. It also coexists in society. Pointing the existence of models that have relevant developers both political and experiences in the area can make decisions about which model is used and why it is done (Lozano, 2005: 44).

Multicultural Communications model of science and technology

In recent decades, around the world society awareness particularly in Latin America, is culturally diverse. Thus, the national project in each country must be developed with the participation of all cultural groups present: indigenous peoples and many other groups who identify themselves with a culture (Velasco, 2006: 108).

This multicultural reality, political change is necessary and, in this case, developing a model of science communication that allows participation of all peoples and cultures living in each country. For this model, it is essential that journalists are able to understand and articulate the demands of different social sectors (business, including, but not limited to them, but also other social groups) and take them to scientific and technological means to facilitate communication between them, in order to benefit the different social groups (Olivé, 2008: 86-87). Unlike the democratic model, this model is not intended to establish agreements through consensus, and the consensus that would lead us to a homogenization of cultures without respecting one of the main features of the model, respect for their traditions and knowledge of cultures. Within the multicultural model, as far from a homogeneous citizenship supports the diversity of opinions and cultures of citizens, that is, the full recognition of the right of self-determination and autonomy, participation and direct representation of indigenous peoples, protection of traditional knowledge and biological heritage as well as its tangible and intangible heritage. This multicultural model revalues and communicates both, scientific and technological knowledge as traditional knowledge and sources other than knowledge of modern systems of science and technology, as they are seriously considered part of the knowledge that can be brought into play in the processes of innovation and it deserves by both state and international agencies support

for preservation, growth and implementation in the perception and identification of problems and its solution (Olivé, 2008: 76).

For the development of this model, it is also essential to take into account communication, in the sense of a social interaction, as manifested by the School of Palo Alto (approach developed half of the twentieth century). This current has an interdisciplinary view of communication, which is demonstrated by their willingness to develop a general theory of communication that could be applied in contexts as diverse as in the family system, science and technology, among other topics (Rizo, 2005).

This plurality of cultures is valuable to this model, allowing the critical and reflective dialogue both within villages and communities, and between them, which allows the revision and enrichment of each dialogue culture, this will contribute to such groups to preserve their cultural identity and its members can exercise their freedom according to the frameworks and guidelines of their own cultural group or specific community (Velasco, 2006 3). On multiculturalism and, in particular, the multicultural model does not attempt to impose a knowledge on the other, but how they can coexist both scientific and technological knowledge and traditional knowledge, as each village has its own characteristics, such as traditions, beliefs, values, norms and customs; however, the model I propose should be aware that the terms and discussions will never be like, ie, the proposed model will be used in individual and specific cases.

The model of public communication of science and technology that aims to promote intercultural dialogue, harnessing technological communication options currently available, which allow continuous dialogue, forming digital territories which promote public discussion and citizen involvement, containing a reciprocal and interactive communication between the various actors in society, because currently not enough to show the scientific and technological topics linearly where there is no place for communication of different types of knowledge that exist in the communities, ethnicities, peoples, etc. Similarly, this type of communication would work a transit information society to a knowledge society.

Conclusion

As we can see, the multicultural model appeals to interactive communication among all members, i.e. pooling subjects relating to their context. In this regard, the commitments that must permeate as Garcia-Cruz (2015:36) "ethos of communicators must be supported by interaction and verification of information, ie, give the actors a key role in the construction of messages". Currently in Society Seminar Knowledge and Cultural Diversity, we are developing a portal that is responsible for communicating in the broadest sense, the uses of Patsari Stove, their practices and even what the stove users want to know about other communities in the communication strategy. It considers not only the users, but creates a bridge between the different technicians responsible for managing the practices and even recipes, not built the communication from linearity, but we train in different aspects effective of communication with the "other", for example through a course on journalistic genres, community communicators and generate messages by verifying data, information errors, user modifcations and ultimately by staying with the editors of the seminar. Note that the message is never modified, this appeals to teach some communication tools for writing.

Communicating science from the multicultural model appeals to consider the wealth of groups that have traditionally been excluded and become a common tool where new actors emerge with much to innovate and more watching the wealth of a country as beautiful and rich in traditions that have much to get together.

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