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**TRANSLATION AND ANALYSIS OF SOME DOCUMENTS  
FROM ENGLISH INTO SPANISH AND VICEVERSA FOR A  
PUBLIC UNIVERSITY LIBRARY**

**Thesis Submitted to Obtain the Licentiate Degree in English with Concentration in Translation**

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## **Dedication**

To my caring parents, I express my gratitude and whom I am dedicating this thesis. They are role models in my development as a person, who constantly sacrifice so I could be the person I am today. I will endlessly be grateful for their unfailing love, affection, and support. Besides, they are the reason why I enrolled in this career, to be a bridge between people such as my parents who have language barriers. Other than my parents and my sister, who were always there supporting me, it has been a pleasure to get to know many wonderful and admirable professors who always went the extra mile, which also inspired me to pursue my professional goal. Finally, when I thought I could not make it, He had it all planned, laying out all the paths from the beginning to the end of this project, to you, Father God, my wholehearted gratitude.

### **Abstract**

This thesis has the objective of achieving to deliver five accurate, faithful, and natural technical translations while analyzing the effects of the translation methods and procedures employed including their selection and application process. Through the analysis and evaluation using a text analysis chart, a color-coding procedure, and two glossaries as data collection tools, it was possible to answer the research question leading to this research, which was, “What is the effect of the procedures and methods used to translate several documents from Spanish into English and several documents from English into Spanish for a public university library during the 1<sup>st</sup> quarter of 2024?” This project relied on a qualitative method with a descriptive design to collect and analyze non-numerical data while showcasing all the definitions, theories, and also points of view from prominent authors cited throughout this thesis as support to the ideas. In addition, the use of data collection instruments has established semantic and communicative as methods, along with identifying the usage frequency of the nine translation techniques in the texts while recording complex terminologies to ensure consistency in both translations. It conclude that it is possible to preserve semantically all components of a technical text yet making it communicative to all readers by using accurately and precisely all methods and techniques while following proper translation theories.

## Resumen

Esta tesis tiene como objetivo lograr la entrega de cinco traducciones técnicas precisas, fieles y naturales, al mismo tiempo analizar los efectos de los métodos y procedimientos de traducción que se emplearon incluyendo su proceso de selección y aplicación. La análisis y evaluación realizado a través de herramientas de recolección de datos como el cuadro de análisis de texto, el procedimiento de codificación por colores y dos glosarios, se logró contestar la pregunta de investigación, "¿Cuál es el efecto de los procedimientos y métodos empleados para traducir varios documentos del español al inglés y varios documentos del inglés al español para la biblioteca de una universidad pública durante el 1er trimestre de 2024?" que dio origen a este proyecto. Esto se basó en un método cualitativo utilizando un diseño descriptivo para recopilar y analizar datos no numéricos mientras se presentaba todas las definiciones, teorías y también puntos de vista de autores destacados que se citaron a lo largo de esta tesis como apoyo a las ideas. Además, el uso de instrumentos de recolección de datos estableció como métodos el semántico y el comunicativo junto con la identificación de la frecuencia de uso de las nueve técnicas de traducción en los textos y registrar terminologías complejas para garantizar la coherencia en ambas traducciones. Se concluye que es posible preservar semánticamente todos los componentes de un texto técnico y, al mismo tiempo, hacerlo comunicativo para todos los lectores utilizando con exactitud y precisión todos los métodos y técnicas además de respetar las teorías de traducción correspondientes.

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## **Chapter I**

### **Introductory Framework**

This research aims to produce accurate, faithful, and natural translations from English into Spanish and vice versa for a public university library. According to Kabir (2016), "Research is a scientific approach of answering a research question, solving a problem or generating new knowledge through a systematic and orderly collection, organization, and analysis of information with an ultimate goal of making the research useful in decision-making" (p.2). For this, this first chapter will delve into the problem, the literature of the problem, how other researchers have approached it, and the purposes of its study, along with the audience that will benefit from this research.

On the other hand, it will present the plan of procedure that will be used to make this research possible. That includes evaluating all the translation methods and procedures to render faithfulness, transparency, and accuracy when engaging in the translation process. After presenting the literature for the research question, the researcher will showcase all the concepts of the different instruments used to collect and interpret data in the following chapters. Finally, the author will analyze the data and conclude the problem that initiated the research paper. Therefore, the success of this investigation lies in showing the importance of translation, where not only will the researcher enrich her knowledge, but also more people will have access to the translated material owing to this research.

#### **1.1 Problem Statement**

After COVID-19 struck the world in 2020, technology came to play an important role. Technology has become an essential tool for students and professors more than ever before. As stated by Thompson (2021) from The Associated Press news, "A majority of the 38 state

education departments that responded to an Associated Press survey this summer indicated additional permanent virtual schools and programs will be in place in the coming school year" (para. 2). This decision has affected Costa Rica as well. Many universities have been considering staying permanently at home for some courses. For instance, the researcher learned that her university, Universidad Internacional de la Américas (UIA), has been exploring the possibility of delivering courses related to languages, such as English major, at a distance since professors do not need a classroom to teach the course material. Now, although not all universities contemplate this plan, it is certain that pandemic virtual learning has become a permanent fixture in almost all learning facilities. As a result, online browsers have become the most visited places by students and professors.

In Universidad Nacional de Costa Rica (UNA), a library is available for material and sources depending on the field. Usually, when looking for sources for an investigation, English is the language most encountered since it is a lingua franca. Although some students and instructors dominate a second language, such as English, the other half of the population may struggle when they realize that the material they need is in English. Further, some material could only be available in physical editions, forcing students to travel to the library to get just one copy of an article. As evidence, when the researcher requested the translation material, the representative rejected several titles because they were only available in physical format, and that is when the researcher reflected on the problem of accessibility to the public, which means that even though online sources are available at their fingertips, not all students and educators have the opportunity to take advantage of them for their needs.

As a result, this research will focus on translating a document related to solutions for future pandemic outbreaks, issues relating to the economy, and topics evolving language and technology, hoping they will benefit future library readers. To this end, this investigation aims to

analyze: What is the effect of the procedures and methods used to translate several documents from Spanish into English and several documents from English into Spanish for a public university's library during the 1<sup>st</sup> quarter of 2024?

## **1.2 Objectives of the Investigation**

### **1.2.1 General Objective**

To analyze the effect of the procedures and methods used to translate several documents from English into Spanish and vice versa for a public university's library during the 1<sup>st</sup> of quarter of 2024

### **1.2.2 Specific Objectives**

- To translate the documents *Cambio climático. Perspectivas futuras*, *El mecanismo de la crisis económica mundial* and *El valor del idioma español en ciencia y tecnología* from Spanish into English and *Illicit Wildlife Trade*, *Wet Markets*, and *COVID-19: Preventing Future Pandemics* and *Language and Learning in the Digital Age* from English into Spanish for a public university's library
- To apply various translation techniques to the documents to achieve natural, cohesive, and accurate texts
- To evaluate the effect of the translation techniques applied to the documents
- To create a glossary with the most relevant terminology found in both texts

## **1.3 Justification of the Study**

Apart from delivering accurate, faithful, and natural translations from English into Spanish and vice versa for a public university library, it aims to evaluate the possible application of all the translation methods and techniques the researcher learned during the English major and the Translation major. They will be applied to several informative texts. In other words, the translator must use all the procedures and methods accurately while mastering both source and

target languages. In addition, it must follow the translation principles and criteria proposed by leading translators and linguists such as Peter Newmark, Eugene Nida, Catford, Vinay, Darbelnet, Gerardo Vázquez-Ayora, and many others. Catford (1965) defined translation as "the replacement of textual material in one language (SL) by equivalent textual material in another language (TL)" (p.20). What is crucial here is equivalence, just as Newmark (1988) clearly stated once that translation is to convey what the original author intended. Rather than exchanging one word for another, the aim is to arrive at an equivalent to the message's meaning.

Eugene Nida was another theorist famous for his equivalence theory, where "dynamic" and "formal" equivalences arose to create the same reading reaction in target readers as the source text readers. The texts to be translated are scientific, but they intend to inform. That is, jargon and chronotropic distance are to be respected while achieving accurate, faithful, and natural texts for specialized and non-specialized readers. For this, mastering both source and target language, having knowledge of the topic of the source-language text, being able to transfer the same message as the original text, and familiarizing with both source and target cultures are competencies to be employed precisely.

Students and professors from the library Joaquín García Monge of Universidad Nacional de Costa Rica will benefit from these translations. The subject matter of the materials varies, but they are intended to serve as a reference for the different areas being addressed at the time. For instance, one of the texts concerns the prevention of future pandemics, and the researcher chose this text because today's world has been recovering from a pandemic, so whether in school or any specialized field, people should be researching modern ways to prevent any future outbreaks. In addition to this text, the others deal with topics such as language, technology, and economics, which are always demanding regarding references.

As mentioned before, even though written material is not used so much anymore, thanks to the evolution of technology, society has become more state-of-the-art with everything at its fingertips. The translated texts intend to serve the undergraduates and educators as supporting material available online in the public university library. Most information is in English when looking for principal sources; not all university users dominate the language. For the English texts, one topic concerns pandemics concerning preventing future pandemics, whereas the other addresses language and technology. For the Spanish texts, the subjects enclose economy, language, and technology by addressing the worldwide economic crisis and how the Spanish language behaves in science and technology.

Accordingly, the task of bringing these materials into the library's database for all to reference will be accomplished rigorously using the processes, methods, techniques, and principles of translation. First, according to Newmark, the text must be analyzed so translators can determine which criteria should be applied. With this, reading must come first, followed by considering the intention of the text and the translator, the readership, and based on these, what attitude and stylistic scales should be used. The second layer of the translation process will be applying the translation methods and procedures based on the language functions, text categories, and text types.

As mentioned before, the texts selected are intended to inform and be used by all types of readers from the public library. The focus should be on the material and the audience's understanding; however, these texts contain technical words related specifically to the fields of science, technology, language, and economy. The type of equivalence prioritized is the formal equivalence from Nida's theory, where the original author's content and form are the first concern. Thus, semantic translation must convey the structure and technical vocabulary precisely.

After selecting the translation method, translation procedures will be chosen for the smaller units of the texts. Translation procedures include transposition, modulation, omission, amplification, explicitation, literal translation, punctuation changes, compensation, equivalence, adaptation, borrowing, calque, and sentence inversion. All these terms will be further discussed in Chapter II of this investigation. Daniel Gile's sequential translation model should be followed instinctively during translation. Translation is not linear; instead, it involves several stages, making it more of a back-and-forth movement. In the translation process, knowledge base and acquisition are crucial for translators to dominate the linguistic knowledge and extralinguistic language of both passive and active languages. Lastly, with the assistance and guidance of a thesis tutor, a grammar reader, and a philologist, the documents to be translated shall be rendered accurate and user-friendly for all university users and possible outsiders.

#### **1.4 Antecedents**

Translation has been used since the emergence of human language. As explored in Datta G. Sawant's research (2013) titled "History of translation," he mentioned that scholars such as George Steiner (1975) stated that there are four periods that comprise translation history: Cicero and Horace to Alexander Fraser Tytler (First period, Rome), Valery (Third period), Valery to 1960s (Third period), and 1960s onwards (Fourth period). He pointed out that translation history dates back to 3000 BC, and the most ancient translation work, the Rosetta Stone, was from the 2<sup>nd</sup> century BC. Further, Mesopotamians and Egyptians translated judicial and religious texts. However, it was not until 240 BC that Livius Andronicus pioneered literary work translation with Homer's *Odyssey*, who made this Greek work accessible to Romans and gave a great impetus to literary culture in Latin. It is worth mentioning that Andronicus endeavored to preserve the artistic quality of the original text by translating some lines literally and others freely, remaining faithful to Homer and the Latin Language but also altering untranslatable phrases and ideas.

Further, well-known translation terms such as "word for word" and "sense for sense" came to the translation world owing to Cicero and Horace, who, according to Sawant, these translation theorists belonged to the later generation of translators. Apart from them, Quintilian, Catullus, and Younger Pliny also sought to theorize and practice translation. The researcher mentioned that the most significant turning point in translation history took place with the Bible translation. Although John Wycliffe is considered the author of the first English Bible translation, there were already translations centuries before. As Sawant (2013) stated, "The Bible continues to be the most translated book in the world" (p. 2). It has been translated into over 2000 languages and is currently available to some 98 percent of the world population, making it significant in translation history. The very first English translations of the Bible were in prose, where a literal translation was displayed above the words. Sawant explained that modern Bible translations are done using two approaches: Formal equivalence, also called literal translation or Formal correspondence, is used to render and preserve the meaning of the words and phrases from the original one. Whether Dynamic equivalence, also called paraphrase translation, the sense and the intent are the objectives during the translation process.

Moving on to the 16<sup>th</sup> century, George Chapman translated Homer's Iliad and Odyssey in metrical form, and became one of the most famous English translations. By the 17<sup>th</sup> century, many prominent theorists such as John Denham, Abraha Cowley, John Dryden, and Alexander Pope arose. In particular, John Dryden was known for exposing three translation methods: metaphrase, imitation, and paraphrase. In the 18<sup>th</sup> century, translation began to be systematic, and Alexander Fraser Tytler's study, "The Principles of Translation (1791)," is a good example. During this century, translators focused on removing unnecessary and incomprehensible details and strove for easy reading. Translating having the readers in mind but also rendering the author's intent more natural.

During the 19<sup>th</sup> century, two tendencies arose: translation was a category of thought where the translator embellishes the work, whereas the second tendency was leading a text or an author to be known. Also, poetic translation was supported by many new theories. The last period addressed was the 20<sup>th</sup> century when Bible translations reached primitive and tribal societies. By the second half of the century, translation was present in schools as a significant course, while machine translation and computer-assisted translation (CAT) tools were also developed. This antecedent was considered because it marked the beginning of the translation course. Getting to know who the first great translator and the most important translator was who successfully left significant legacies for the following generations of translators. How the different translation theorists who studied this discipline and helped discover the different translation approaches emerged. As a translator, it is crucial to dominate the history of translation to understand the shortcomings and strengths of the previous translators so the current translations can be produced at different and enhanced angles.

Regarding history, researchers usually focus on the Western world because of their access to sources. Notwithstanding, sources are available in other worlds, such as the Arab world, which has been a bridge between civilizations since the beginning of history. In 2014, Mohammad Issa Mehawesh conducted a research titled "History of Translation in the Arab World: An Overview," where he put together the history of translation in the Arab world comprising six periods: Islamic Empire, Umayyad Period, Abbasid Period, school of Toledo, Ottoman period, and the 20th century. Mehawesh (2014) started his paper by saying, "Had there been no translation, numerous cultures could not have flourished as they have" (p.684). Translation is a practice that enables communication between civilizations of different cultures.

Translation in the Arab Islamic Empire was the first period Mehawesh focused on. The translation was known first with the birth of Islam in the seventh century when Paganism's

heritage was translated into Arabic, and one of the prominent translators of that time was Jarjas. Also, just like the Holy Bible is the central religious text in the Western world, the Holy Koran is the predominantly sacred text in the Arab world. Its translation was the most important event in the history of Arab translation and has been translated into all world languages. It is essential to highlight that the Holy Koran was translated using "sense for sense translation" because message understanding was the intent. However, the Islamic civilization only had insight into this method in the 12<sup>th</sup> and 13<sup>th</sup> centuries. Unlike in the Western world, translation in the Arab world has had wide social and governmental support from the outset.

In the Umayyad period, the translation movement kept growing, and the first translations were from Greek and Coptic languages into Arabic. This period contributed to the evolution of history with their translation practices in science, arts, medicine, culture, and astrology, where "Thousands and One Nights" was one of the most well-known literary works translated. Baker (as cited in Mehawesh, 1998) mentioned that word-for-word and sense-for-sense translation methods arose during this period. In the 13<sup>th</sup> century, through the school of Toledo, the Arabic world felt its presence in the Western world by translating successful works in fields such as medicine, mathematics, astronomy, and astrology. As a result, the Arabic system of numeration, algebra, and many other works and theories are still present today.

The Ottoman period set the fall of the Islamic Empire. Here, Arabs were not allowed to use languages other than Turkish, and translation movements remained by focusing more on official and legal documents until 1805. With a new governor, Mohammad Ali, groups of students were sent to study in Europe because he wanted them to become translators, so his army and administration were up to date. Riffa Al-Tahtawi was the most important translator in this period.

The last period Mehawesh focused on was the twentieth century when the Ottoman Empire was falling apart; therefore, the Arab world was under the command of foreign countries. Translation practices had their adjustments, and new theories came to assist translators. Translators' associations, such as "The Committee of Arab Translators" and important organizations specialized in translation, such as the "World Arab Translator's Association" (WATA), were created to promote projects such as KALIMA to help Arabic readers have more access to outside materials. Mehawesh concluded his research by pointing out that there was still a gap when comparing the number of translated works between Arab translators and Western translators. Further, he drew attention to the current translation status in the Arab world by saying that it was not flourishing as in the past years with the dynasty of the Abbasids. However, projects such as KALIMA were translating its golden return. Mehawesh's paper was selected to have a vision of other worlds. The eastern and western worlds are the most visited regarding references. However, the translators' task is to seek and learn all possible translation approaches available in different countries. In addition, translation reaches many cultures, dialects, and traditions, so learning about perspectives from other regions is important.

For many years, translation was defined as a tool to convey utterances from one language into another without altering their message. However, in M. Carmen África Vidal Claramonte's (2009) paper, "Rethinking Translation in the 21st Century," she addressed that nowadays, according to many theorists, translators are not invisible, and translation is not an easily defined discipline where a dictionary does all the work. Claramonte stated that there are many types of translations and many concepts for a translation process, so the more one inquires, the less sure one is about translation as easy as people say.

It is mentioned that in this era of globalization, absolute equivalence is impossible to achieve because, as Claramonte (2009) said, "...translation is much more than just a mirror"

(p.42). With so many people coming and going from one country to another, translation has become not a simple task of transferring words but rather identity, culture, and understanding of the world. Therefore, neutrality and objectivity do not fit here, and translation is related to the existence of human beings since their beginning rather than just a mere discipline.

Translators face new challenges every day due to the influx of new cultures into their world, and the translation process is being interfered with not only by their surroundings but also by the translator's decision-making process. In her paper, the researcher mentioned Umberto Eco, who placed the theory that manipulation is present during the translation process. However, there is a concept called "Core Content" because there is a degree of universalism, so there is an extent for manipulation. A limit is set where the core meaning is common to the audience, but still, every reader can have their interpretation. Claramonte finished her research by stating that if translators become the dominant center, some approaches encourage them to go further. However, whenever an approach a translator opts to follow, the translation process and the decision-making will be different, so the translator is responsible for the final product.

This research paper was chosen because the translator found it important to know how translation has evolved in terms of its definition and how translators view it. Translation was a simple term back then but gained so much influence that the discipline and people behind it became known. Thus, with it, I learned that translators must be updated with cultures and traditions. In addition, many approaches will emerge during the course, and translators must select the appropriate methods and manage the risks.

Nowadays, with all the exchanges of cultures and traditions, people travel around the world where business goes from one country to another, translation has become an essential tool for everyone. With the world having new inventions every day to make people's lives easier, technology has created thousands and thousands of software to help people when they do not

understand specific foreign terms. In 2016, Agwu Uzoma Patience conducted research titled "Modern Technology in Translation: Contributions and Limits," she focused on how machine translation has come to this modern world to make the translation process easier while showing its downsides. She pointed out that almost everything requires translation due to globalization, so people worldwide understand the service or system quickly.

Translators' job is to humanize translations by filling the semantic gaps; however, people's requests demand them to opt for translation technology so they can deliver their translations quickly. Patience addressed the history of translation technology and pointed out the creation of systems such as Logos, the system created by the Pan-American Health Organization, and other systems produced by Japanese computer companies. Then, Translation Memory tools like Trados drove Alta Vista's creation, an online machine translation service that offers multiple services in the desired language. Afterward, she showed the difference between machine translation (MT) and computer-assisted translation (CAT). The difference is that MT is a software that does not require human intervention; it does the whole work, while CAT is more realistic since humans can manipulate it in case some terms do not fit the context.

Later in her paper, she discussed the impact of these modern technologies on translators in today's world. Currently, compared to years ago, countries are trading goods, and people worldwide are exchanging communication more than before. Patience claimed that translation technology has helped translators meet the current world demand by up to 400%. As evidence, she talked about Angelique Patrits, a language officer who declared that her organization must translate two million pages into 24 different languages every year. With translation technology, they can meet the goal.

Next, Patience talked about how translation technologies work and machine translation strategies. Translation technology provides translators with a preliminary version, and the

revision step is where the unit to be translated is polished to be meticulous and of high quality. Afterward, essential computer tools were listed: databases, concordances, online bilingual texts, translation memories, and the limits of modern translation technology. At the end of the research, Patience concluded by stating the importance of translation in this globalized world. She ended up recommending translators to welcome any future technology and learn how to use it to deliver accurate and qualified translations.

Machine translation is the field that is interfering in the discipline the most. Therefore, this work was considered because although translators oversee humanizing translations filling the semantics gaps, machine translation would soon be more powerful. There is no chance to avoid them. As Gapper said, translators must learn how to interface with them and use them to their advantage to speed up the translation process, easing the research part where translators look for jargon within a dictionary. There is no doubt that translators fear they will soon be replaced by machine translation, but translations must be humanized because of semantics, which machine translation still needs to figure out.

Now, landing in the northern world, where home Costa Rica is located, let us revisit the possible insights for Costa Rica when translation started to gain more importance worldwide. In a research conducted by Sherry Gapper in 1992 titled "La traducción como campo de estudio: tendencias y posibilidades actuales," she aimed to explore the possible roles for developing countries such as Costa Rica because translation was so imperative in the 20<sup>th</sup> century worldwide, that had become to be a field of study. It mentioned that translations were intended for a small group of readers specialized in religion, literature, and science. However, in the 20<sup>th</sup> century, even laypeople had access to translation because manuals, personal use products, articles, and news were translated works.

It pointed out that the definition of translation has evolved just like literature, depending on each period's different criteria and conditions. People used to define it as a new written work encompassing the same content as the original text, but now, thanks to the vast works, translation has become a complex term. The changes experienced in every field have been affected, and linguistics has nourished it with concepts such as communicative translation. Gapper presented three translation approaches: interpretation, terminology, and automated translation, and how each of their evolution would shape the development of translation in Costa Rica.

From the three of them, the field of terminology was relatively new at that time because technology and scientific development created new terms for every invention. From there, they realized dictionaries and glossaries were always behind since they are instruments that need years to launch; instead, terminology databases arose. A digital tool that was constantly updating new terms from different fields, easing translators from the research process. Moreover, one of the tendencies that could offer many opportunities was automated translation. Computer science was why translation had undergone drastic changes even though it was not well-received many years ago. With it, the volume of translations would increase, the types of translations made would vary even more, and language development would be affected.

Despite all these new advances, the researcher pointed out that Costa Rica was still at the starting point because there was no active participation in the field, so more knowledge about the new tendencies was needed. When something groundbreaking arose, it was something already discovered in other countries. That is why Gapper finished her paper by urging Costa Rica to focus less on translating already known works and more on producing translations for national works that can be beneficial overseas so more readers would learn about Costa Rica. Also, at that time, there was urgency in having trained translators and interpreters because the translations failed to convey the authors' message.

This antecedent was chosen because it helped to understand how translation evolved and shaped the current course of translation in the country. It is known that, thankfully, nowadays, universities such as Universidad Nacional de Costa Rica (UNA), Universidad Internacional de las Américas (UIA), and Universidad Latinoamericana de Ciencia y Tecnología (ULACIT) are encouraging Costa Rican people to study this discipline with their translation courses. It indeed accomplished the creation of professionals in the field. It is acknowledged that translation is still not flourishing as in other Western countries. However, companies such as Tilde Traducciones, founded by two women who graduated with a master's degree in English-Spanish translation at UNA, have accomplished groundbreaking results in only five years of its creation, and they are helping Costa Rica reach overseas.

### **1.5 Scope**

- Analyze the possibility of using all the translation criteria and procedures seen during the major
- Evaluate the usage of translation methods and procedures during the translation process.
- Analyze the final translation products using different data collection instruments such as text analysis, color coding, and glossaries
- Produce high-quality translations that are faithful, accurate, and natural
- Render translation principles were proposed by prominent authors such as Peter Newmark, Eugene Nida, Jean-Paul Vinay, Jean Darbelnet, Gerardo Vázquez-Ayora, and Catford
- To assist the current generation of students, professors, and other users of the public university
- To increase the number of available documents in Spanish and English related to science, economics, language studies, and technology at the Joaquín García Monge Library

## Chapter II

### Theoretical Framework

This chapter will showcase all the translation methods and procedures used to deliver accurate, faithful, and natural translations for future users. Kivunja (2018) stated that "A theoretical framework comprises the theories expressed by experts in the field into which you plan to research, which you draw upon to provide a theoretical coat hanger for your data analysis and interpretation of results" (p.46). With the correct definitions, readers will comprehend better and follow the path in which the texts have been translated. Further, these concepts will let the readers critically evaluate the research areas. This chapter will deal extensively with text analysis definitions, translation methods and procedures, glossaries, and the categories and processes corresponding to each concept to cover each step of the translation project.

It is worth mentioning that to have accurate definitions, several authors will be consulted for each method and procedure. As mentioned, many authors will be consulted as information sources because their works will give significant confidence to this project since they are experts who have been inquiring in the field for many years. Further, with these scholarly works and theories, the researcher is connected to the existing knowledge that will serve as a basis for the hypothesis. Grant and Osaloo (n.d.) clearly stated that "Without a theoretical framework, the structure and vision for a study are unclear, much like a house that cannot be constructed without a blueprint" (p.13). In other words, with the theoretical framework built, the structure for all the other research design points will be firmly established later.

#### 2.1 Text Analysis

Translators must analyze the source unit before translating to determine the methods and procedures for correctly conveying the utterances. Nord (2005) reported that text analysis is done

to fully comprehend the source text, and most translators who fully agree with this step do this (p.1). From this, translators can determine barriers such as jargon and investigate them in advance so they will not hinder the translation process and affect fluency. Describing the source text's structure, content, and functions is the primary goal of text analysis.

Specific pre-tasks include reading the text, identifying the intention of the text and the translators, text styles, readership, stylistic scales, attitude, setting, quality of the writing, connotations and denotations, and last reading. Translators must analyze the text since the target readership may deviate from the source audience regarding culture and tradition. Further, text functions must be considered so translators can determine the core of the text. Definitions such as text styles, stylistic scales, and text functions have categories that will be addressed separately for a broader explanation and exemplification.

The very first step is reading the text given. Cragie and Pattison (2018) advised that "Reading is an integrated activity that not only enables the translator to grasp the ST's basic characteristics and build a picture of its content and sense, but also involves decoding (or understanding) the formal aspects of ST discourse" (p.12). General and close reading are the two types of reading. Here, translators can study both languages' grammatical and syntactical factors since syntax may differ in some languages. Then, it must identify the text's intention, whether to inform or persuade and when it comes to the translators' intention, it must match the author's. In translation, connotation and denotation must be considered. Connotation means the secondary meaning, which can be found in definitive texts, while denotation means the actual meaning of a word found in informative texts. As the last step, it must consider other aspects such as untranslated terms, neologisms, proper names, institutional names, and cultural factors.

must consider other aspects such as untranslated terms, neologisms, proper names, institutional names, and cultural factors.

### 2.1.1 Text Styles

A text style is a communicative function an author has given to a text for the readers to use. Leech and Short (2007) define style as "(...) how language is used in a given context, by a given person, for a given purpose, and so on." (p.9). Thus, the linguistic approach must depend on the style of the given text. Beier (2020) mentioned that an author's decision on style can be either personal or evoke an effect on readers. In addition, style is considered not only on the source text but also on the target text (p.8). To this end, it is essential that translators read the unit, capture the function of the text, and project the style since the new text reflects the translator's choice. The goal is for readers to perceive the original author's intention, not the translator's. Despite the nature of a text, style can be categorized into four types.

#### 1) Narrative

Narrative is a style that involves a sequence of events, aiming to tell experiences, a story, and usually a resolution to a problem. Gabriel (2004) discussed that, unlike other types of text styles, narratives entail chains of temporal events or interrelated actions performed by characters (p.3). It focuses on the use of verbs plus verb-nouns or phrasal verbs. In terms of the structure, it has orientation, complication, and resolution. Orientation introduces the characters and briefly explains the time and place. Complication refers to the climax, which refers to the challenges the characters confront in the story. Finally, the resolution shows if the characters managed to solve the confrontation.

#### 2) Description

The descriptive style involves the description of a process, an event, a place, a person, an animal, or an object where the audience can sense it vividly. Zetira (2015) said, "Description recreates sense impression by translating into words, the feel, sound, taste, smell, and look of things. Emotion may be describing too, feelings such as happiness, fear, loneliness, gloom, and

joy" (p.18). That is, description features sensory information, bringing writing to life. Pardiyono (cited in Santika, 2018) reported that three parts comprise a descriptive text: communicative purpose, rhetorical structure, and grammatical patterns. Communicative purpose refers to the description of either human or non-human objects. Then, identification and description are the two parts of a rhetorical structure. Lastly, linking verbs, adjectives, and adjectival nouns belong to the grammatical pattern of this style (p.14-15). In this way, a qualified recreation of feelings, objects, sounds, and tastes through texts can vividly make the readers feel the story.

### 3) Discussion

In discussion texts, an issue will be placed on the table, ready to be analyzed, evaluated, and interpreted. In other words, different points of view will be shown when developing a discussion, and there are differences between both sides. Husein and Pulungan (2017) said, "Discussion is a process to find the meeting point between two different ideas. It is important to get an understanding of the two differences" (p.1). Pro and contra viewpoints will be displayed as the issue is addressed. This text style centers on abstract nouns, verbs of thoughts, and texts written in the present tense.

### 4) Dialogue

Together with the previous styles, dialogues are the last in the list of the most used styles. Jenlink and Banathy (2005) define dialogues as "A culturally and historically specific way of social discourse accomplished through language and verbal transactions. It suggests community, mutuality, and authenticity—an egalitarian relationship" (p.4). Dialogues are a communication tool that encloses the interaction between two or more people who share ideas and introduce new knowledge of everyday situations. Language and nonverbal signals or transactions are the forms of dialogue. Conversation and dialogue are two terms used interchangeably. Brennan (2010) mentioned, "A conversation is not simply a sequence of messages expressed as speaking turns,

produced by speakers, and received and decoded by addressees. Conversations are structured into adjacency pairs, with first and second parts produced by different speakers" (p.1). Dialogues focus on colloquialisms and fanaticisms since they are small talks between people who understand each other and interact socially.

### **2.1.2 Stylistic Scales**

Two authors can write the same document, but each author will express the message differently owing to the characteristic elements that contribute to shaping a text by assigning it to register vocabulary complexity and tone of communication. Depending on their backgrounds, these elements will differ. Sawant (2015) stated that addressing an author's style is essential because one can understand why the author has decided to write the work the way he or she did (p.1). All content and materials are neutral, and the writers give it authenticity, allowing readers to perceive the material distinctively from other writers. By considering the stylistic scales, translators can deliver the message of a passage accurately, rendering the author's style. Further, this will lead the target readership to have the same feeling as the readers from the source-language text had.

#### ***2.1.2.1 Scale of Formality***

The scale of formality refers to an author's register for a text. According to Heylighen and Dewaele (1999), a theoretical definition of formality is currently absent, but people have their insight by categorizing it between formal and informal. For instance, when it comes to something a judge reads in a trial, people consider it formal, and dialogues between friends and family are informal (p.3). However, this does not define formality because the aforementioned are situations rather than merely structures of formal and informal language.

A scale called "Formality Score" (F-score) was proposed to measure formality based on the number of deictic and non-deictic words. Deictic or context-dependent words are anchored or attached to something meaningful because they can mean different things on their own, which makes them ambiguous. On the other hand, non-deictic words or context-independent expressions are supplemental information; without them, a statement cannot be accurate. It is mentioned that deictic words such as pronouns, verbs, adverbs, and interjections are expected to decrease with increasing formality. In contrast, non-deictic words, including nouns, adjectives, prepositions, and articles, will become more frequent with increasing formality.

While the F-score is an effective tool for measuring the formality scale, Martin Joos proposed another scale in 1962. In his book "The Five Clocks," he proposed five styles, including frozen, formal, consultative, casual, and intimate. The first style is for print and declamation, where what is said cannot be distorted and must have a single meaning. In the formal style, participation is absent, and its purpose is to inform. People in this style speak or write in the third person; therefore, they have to plan, just as writers have to prepare an outline before starting to write. Then, the consultative style is used when addressing strangers. This can be related to Heylighen and Dewaele's context-dependent words, where speakers or writers must provide complete information since they do not know the receptors. However, strangers will become acquaintances sooner when a casual style arises. Ellipsis and slang are the two features of casual style, yet slang is strict because it belongs to intimate style and extractions. In an intimate style, speakers create a specific code between them, so the information shared is null to a third party.

Other authors, such as Newmark (1988), also suggested eight scales of formality comprising officialese, official, formal, neutral, informal, colloquial, slang, and taboo (p.14). For instance, "The consumption of nutrients whatsoever is categorically prohibited in this establishment" represents the largest formality scale. Whereas this same statement using the

lowest formality scale, which is taboo, will be, "Lay off the fucking nosh." In this translation project, the formality scale chosen can range from official to neutral since the documents selected are informative, so the purpose is to convey information so professors and students can comprehend the content accurately.

### ***2.1.2.2 Scale of Generality or Difficulty***

The scale of generality or difficulty measures the complexity level of the vocabulary present in a text. Depending on the nature of the content, the author may determine how complex the terminologies will be. Further, apart from the content, the audience is a factor to be considered since the readership is why the text is written. Newmark (1988) proposed five scales, ranging from simple, popular, neutral, and educated to technical (p.14).

At the level of simple generality, the terms used in the text are less difficult and more comprehensible to the audience because of the simple and general vocabulary. For the popular level of complexity, the terminology used in the narrative is also simple since it uses the vocabulary of the time. The scale of neutral generality used in a document refers to the difficulty balance where vocabularies are simple and simple. Then, for educated complexity, the terminologies are proper for most of the audience since they are documents for institutions or universities with educational purposes. Lastly, for technical scale, as its terms clearly say, it is meant for technical purposes. This scale is divided into two types of difficulty: technical and opaquely technical. Technical generality is found in documents that contain technical vocabulary, such as in a manual for an electronic appliance. Opaquely technical differs from technical in that this type of vocabulary is only understandable to an expert in the field or topic.

As mentioned before, depending on the type of audience and the nature of the material, authors can determine the level of complexity they will use. For instance, if the audience is children, the level of complexity will be simple. However, the material is about epidemiology

and coronavirus, some of the chosen texts. In that case, the level used will be technical since the document will contain specific subject jargon. Translators must also ensure that the range of difficulty chosen matches with the original text or the client's request. In this way, the scale of generality or difficulty chosen for this research is educated and technical since it has terminologies specifically for subjects of epidemiology, coronavirus, economy, language, and technology.

### ***2.1.2.3 Scale of Emotional Tone***

Lastly, the emotional tone scale encompasses the tone of communication in which words or vocabulary are used in a text. Ji (2020) proposed four psychometric scales with psychologically relevant category words, one of which is the emotional tone scale. This scale comprises positive and negative emotions where higher than 50 is positive and lower than 50 is negative. On the one hand, it shows that multimedia-based public posts have a score of 79.5 because they use high-frequency positive emotional words such as "agree," "amazing," "bravery," "hope," and "important," among others, aiming to attract people's attention to persuade them into or out of following some social movements, or to remind them to buy a certain product.

On the other hand, news-based public posts are categorized as negative emotions because they have a score of 28.89 by using low-frequency negative emotional words such as "damage," "disaster," "problem," "incompetent," "weak" in addition to others since they want to inform people about issues happening at the moment. Hence, the audience is aware of the current situation in case they have to make certain changes according to what the posts said. On the other hand, news-based public messages are classified as negative emotions because they have a score of 28.89 as they use low-frequency negative emotional words such as "damage," "disaster," "problem," "incompetent," "weak," besides others, having the desire to inform people about

problems currently taking place. Hence, people know if they need to act differently about their surroundings.

According to other authors, such as Peter Newmark (1988), the emotional tone scale can be classified depending on the intensity of the vocabulary employed in the texts. He suggested four scales: intense, warm, factual, and understatement. Intense emotional tone is characterized by the exuberant use of intensifiers to convey a message. For instance, instead of "This is helpful," the author will say, "This is absolutely helpful," to transmit the intensity of the idea. Regarding the warm emotional tone, texts convey their message with gentle vocabulary: "They love to stay under the sunset to enjoy this heart-warming melody." For a factual tone, it would be inappropriate to use the adjective "cool" in a text to show a factual tone. Instead, "important," "exceptionally well judged," "characterful," "respectable," and "considerable" would be the proper expressions. Lastly, for understatement, Newmark presented the adjective "cold" with the example of "Not. . . undignified."

### **2.1.3 Text Function**

Text function refers to a unit's intention and helps translators apply the correct stylistic scales to address the corresponding readership. In addition, Shiyab (2017) mentioned that text functions are crucial because they are the elements that help text types emerge (p.76). Language is a code of symbols and words, so whenever people transmit a message, they encode it in a certain format, leaving the receivers to decode it. Thus, the content producers write has a purpose and intention, either emphasized by the author or the reader. With that, it establishes the function and will help to determine the style, register, attitude, setting of the text, and other aspects a text should have.

Newmark (1988) used the theory of language proposed by Bühler, later adapted by Jakobson. Bühler presented informal, expressive, and vocative functions, but Jakobson later

suggested three more functions, including aesthetic, phatic, and multilingual. For translators to determine the text function, it is important to consider the author's relationship with the audience, whether the writer is informing the audience about a topic, calling to action, or expressing a message. Based on this, the present research will focus on the three proposed by Bühler since every narrative aims to achieve one of the three mentioned. Nevertheless, Soto (2022) discussed that a text cannot be categorized into one type, enclosing it in one function (p.20). For instance, one type of material that can have all three functions is a commercial advertisement since it informs the public about a certain product using expressive styles to persuade them to purchase. These three functions will coexist in all types of texts, yet one will be more prominent.

### ***2.2.1 Informative Function***

This function deals with facts; its objective is to communicate information, so the emphasis is on the material's content. People tend to mix informative texts with descriptive ones; however, as Kerpedjiev (1992) mentioned, descriptive texts are intended for readers to recognize objects, whereas informative texts help to increase readers' comprehension, enlightening them about a certain topic or informing them about some realistic situations (p.1024). The domains of this function can be technology, science, and media.

Using this function, the author is irrelevant in texts since the focus is on the content. Further, in terms of format, according to Newmark (1988), "The format of an informative text is often standard: a textbook, a technical report, an article in a newspaper or a periodical, a scientific paper, a thesis, minutes or agenda of a meeting" (p.40). Therefore, these texts usually use neutral and formal linguistic styles to communicate the content, albeit some will use jargon inherent to specific fields. According to Munday et al. (2022), translators should avoid redundancy with this type of text and write it in plain prose, disregarding stylistic embellishments. (p.102). In addition, translators are not allowed to miss any factual content of the source text, and explicitation is

advised to be used when required. Informative texts are the most common material, and due to their accessibility and vast availability, most are poorly written. Ultimately, translators are the ones who must factually and stylistically correct the original work besides translating it.

### ***2.2.2 Expressive Function***

The unit producer's feelings, emotions, and ideas are resonated and reflected in this text function. In agreement with Hassan and Jabbar (n.d.), "The speaker or writer tries to express his feelings. He or she reflexes his or her impression. This function could give a clear image for the personality of the speaker or writer" (p.16). This function emphasizes the author's mind about personal expression. The domains of this function can be entertainment, literature, music, and art. For instance, definitive texts can be poetry, stories, song lyrics, essays, or films.

In most cases, readers' response is unconcerned, as authors do not expect to receive any feedback, and readers generally do not respond to authors when they have finished reading a book or after listening to a song. In other words, they are viewed as the audience, readers, or listeners of the author and not interlocutors. Nevertheless, Nord (2018) stated that in a two-way intercultural sender-receiver exchange, cultural problems may arise depending on their backgrounds (p.41). Although authors do not expect a response, they hope their works will be received and understood, but cultural norms and traditions may differ from one language to another. That is when translating an expressive text, equivalents of the source text culture values must be found in the target text. For instance, many qualities and expressions have different connotations in different regions and cultures.

In his book, Newmark (1988) presented three text subtypes for this text function, including serious imaginative literature, authoritative statements, autography, essays, and personal correspondence (p.39). Serious imaginative literature comprises lyrical poetry, short stories, novels, and plays. Examples of authoritative statements are legal documents and other

written works such as scientific, philosophical, and academic subjects. Further, they have a stamp from the authors, and the content is delivered denotatively. Lastly, for autography, essays, and personal correspondence, Newmark (1988) said, "These are expressive when they are personal effusions when the readers are a remote background" (p.36). The translator's job consists of conveying the message. However, the predominant task is to convey the individual components of the text so that the audience can identify the feelings, emotions, and ideas that the author wants them to perceive.

### ***2.2.3 Vocative Function***

The vocative function is the last text function addressed in this research. It is aimed to influence behavior, to call to action. Therefore, unlike informative and expressive text functions, vocative texts focus on the receptors. In keeping with Newmark (1988), the language employed must be understandable and accessible since the readership is the target (p.41-42). For example, if people buy a kitchen appliance and do not know how to install it, they will use the manual as a guide for assembly. However, if the manual contains technical words that only experts understand, then it fails to fulfill its purpose of inducing the reader to act as the text intended. The domains of this text function include tourism, advertising, politics, and religion. For example, some genres or text varieties can be advertisements, sacred texts, political documents, and instructions.

Before giving it a pragmatic impact, the source text must be precisely reviewed at a linguistic and cultural level. By doing this, the text will match the comprehension level of the readership. According to Glušac and Čolić (2017), this function not only works as monosemic but belongs to a morphological, syntactic, and pragmatic-semantic category from which six parts of the communicative process can be extracted according to the orientation of the text (p.452). First is the conative function addressing the recipients, the emotive function targeting the sender,

the phatic function regarding the contact, the poetic function focusing on the message, the referential function aiming at the context, and the metalinguistic function addressing code. As well as expressive texts, authors do not expect any response. However, there is an obvious answer that readers will agree with: rhetorical interjections and questions can be employed. Translators must deliver the exact message with the linguistic values so the target-language readers perceive the same appealing sense as the original text.

### **2.3 Translation Methods**

When referring to techniques and strategies applied to translate at the textual level, that is, the whole units of texts, it refers to translation methods. Newmark (1988) proposed eight methods of translation: word-for-word translation, literal translation, faithful translation, semantic translation, adaptation, free translation, idiomatic translation, and communicative translation (p.45). However, semantic and communicative translation achieve accuracy and economy, the two goals of translation, which is why they are the most highly regarded. This theory arose from whether to translate as closely as possible to the original text, being the literal translation, or to translate as easily as possible for the reader, being the free translation.

This must be done before translating, and for translators to determine which method to use, they must evaluate the text type. Toury (as cited in Schaffner, 1999) presented three norms translators must adhere to before deciding the correct translation method. They are preliminary norms, initial norms, and operational norms (p.5). The first refers to when translators choose the texts they will translate and the strategies. In the initial norm, translators must decide whether to follow the source text or the target culture. This norm can be defined as domestication or foreignization. Venuti (1995) said, "Under the regime of fluent translating, the translator works to make his or her work "invisible," producing the illusory effect of transparency that simultaneously masks its status as an illusion: the translated text seems "natural," i.e., not

translated" (p.5). Domestication translates as reader-friendly, so readers enjoy the content with no strangeness. On the contrary, foreignization is where the translation maintains some foreign features. For instance, some terms are not known in the target language, so translators have to transfer the term as it is.

Lastly, the decisions made during the translation process refer to operational norms. This can also be the micro-techniques applied to words or expressions at word and sentence levels. Translators must carefully select the methods since it will determine if the text will be translated, focusing on the reader or the author. Further, according to Nida and Newmark, the equivalence effect is crucial regardless of the translation method selected. If the semantic translation cannot accomplish the equivalence effect, then the communicative translation should be selected. The semantic translation is chosen for this translation project because it intends to convey the specialized terminologies of the content.

#### ***2.1.4.1 Semantic translation***

When the intention is to render the author, the translation method is semantic, so its translation is as close as possible to the original text. According to Newmark (1988), "Semantic translation is personal and individual, follows the thought processes of the author, tends to over-translate, pursues nuances of meaning, yet aims at concision in order to reproduce pragmatic impact" (p.41). It provides readers with appropriate, acceptable, natural meanings but is still strongly biased toward the author, so expressive texts are its domain. Moreover, by Garikimukku (2019), the structure, sentence length, and even word position must be carefully followed while preserving the contextual meaning (p.31). Thus, as this type of translation focuses more on the aesthetic value of the source language text, the final version often needs to be more comfortable and complex. It remains with the source culture and accurately reproduces the source text's significance.

As mentioned in the justification of the study, semantic translation resembles Nida's formal equivalence, and it is often confused with literal translation in that both respect the source text. However, semantic translation renders the source text as close as possible and intends to convey the contextual meaning. In contrast, literal translation translates word for word in its extreme version. In addition, it is worth mentioning that Anderman and Rogers (2003) stated that when meaning is transferred from one language to another, it will always be an approximation since the new expressions belong to another semantic system. Thus, semantic losses are inevitable (p.71). Here is where semantic translation plays its role since it deals with procedures, and these help to reduce such losses. This type of translation is the most widely used in fields such as literature, as the author's ideologies and concepts remain nearly intact as they reach the audience.

#### ***2.1.4.2 Communicative Translation***

Unlike semantic translation, communication would make all possible textual changes to give the reader a contextual meaning of the text. Thus, this method is reader-centered. In agreement with Anderman and Rogers (2003), communicative translation ensures target readers experience the same reaction as those of the source text; thereby, the final text is easier to read straightforwardly and simply than the original text, making it a more appealing method (p.71). In this case, communicative translation corresponds to informative and vocative texts since these texts are reader-focused or content-focused. With semantic translation, all cultural aspects remain in the original text, while communicative translation makes the cultural content more accessible to the reader. Moreover, conversely, to semantic translation, where the final product is awkward and complex, communicative translation is better than the original text.

This method has similarities with Nida's dynamic equivalence in which the intention is to produce the same effect in the target text readers. Although this method of translation seems to

offer more freedom in the translation process, Zheng (2017) addressed that, although readers expect to have an easier reading, translators still need to respect the forms of the source language text (p.628). In general, the equivalence effect must be achieved. Otherwise, the public will be unable to follow the instructions provided in a manual, people will not buy any advertised product, and no one will vote for political candidates. This is for vocative texts; the equivalence effect is also desirable for informative texts. After all, achieving accurate communication from the source text to the target text is the job of communicative translation. That is, more intention than procedure because as mentioned, semantic translation focuses on procedures.

## **2.2 Translation Procedures**

As text analysis mentions, the first step in a translation process is reading, where general and close are the two types. Regarding general reading, translation methods are in charge, whereas translation procedures deal with close reading. Translation procedures are carried out on specific words and expressions in a text; depending on the author, it may go as far as eight procedures or more. Vinay and Darbelnet (1972) proposed seven translation procedures that can be used in isolation or combined. Further, translators can opt for two translation approaches: direct, literal, and oblique. When the source language text's structural, lexical, and morphological patterns correspond perfectly with the target text, it is called direct or literal translation.

Alternatively, structural or metalinguistic divergences in the source language text result in certain stylistic effects that cannot be transferred to the target text. It refers to oblique translation where structural, lexical, morphological, and even cultural background equivalence cannot be achieved.

A further characteristic of direct or literal translation is that the perfect correspondence or equivalence is only achieved if the two languages are close. At the same time, word-for-word translation is impossible for oblique translation since language patterns do not match. For these two approaches, Vinay and Darbelnet proposed different translation procedures. Borrowing,

calque, and literal translation are the three translation procedures assigned for direct or literal translation, while transposition, modulation, equivalence, and adaptation are the four procedures for oblique translation. As one of the proposed objectives, this translation project will attempt to employ all the translation procedures. In addition, other procedures such as omission, amplification, explicitation, and punctuation changes are introduced to complement the main ones. Lastly, this chapter will define and explain one of the collection instruments to be used in this project, the glossary, to illustrate its importance and the factors considered to build the glossary for this project.

### **2.2.1 Transposition**

Transposition is the first translation procedure for oblique translation. According to Guix and Wilkinson (2019), transposition modifies the grammatical category of a sentence part without modifying the general meaning (p.261). It may be mandatory because the target language requires it or facultative by the translator's choice. Such changes are made when the source text does not match the grammatical structures of the target language. Brunn and Gilbreath (2022) also mentioned that it involves either category or unit shift, referring to word class and language unit (p.616). These changes are intended to provide a more natural readability and not to change the original text's semantic strength, meaning, or context. In other words, during the translation process, any changes can be made as long as these adjustments do not alter the meaning of the text or its naturalness. If the text's message deviates during the process, translators must re-evaluate the idea of using this procedure or reconsider substituting grammatical categories.

As mentioned before, transposition may be mandatory when translators consider it the only way to achieve a successful translation. This is in agreement with Vazquez-Ayora (1977), who used the expression "changing the vehicle," referring to the notion that there are differences

in the vehicle of ideas from one language to another (p.268). Hence, using this oblique translation, "change the vehicle" can be exemplified as having a verb in the target text where a noun was present in the source text. There are seventeen varieties of transpositions that translators can perform when undertaking the translation process, and some of them are transposition from adverb to verb, noun, adjective, transposition of determiner, double transposition, and crossed transposition. For instance, a transposition from adverb to the verb will be: "I merely asked her name," where the word "merely" is the adverb to be replaced by a verb to adapt the message in the target language achieving "Me contenté con preguntarle el nombre."

#### **2.4.2 Modulation**

Modulation is the second translation procedure that belongs to oblique translation. According to Boucher (2018), modulation is applied when syntactic or lexical restrictions relate to the source language text. It does not interfere with the grammatical structure but is intended to change the point of view. (p.69). As in transposition, modulation can be optional or mandatory.

Further, fixed and free modulation are the two subcategories. Fixed modulation refers to the one that is recorded in bilingual dictionaries. In contrast, free modulation is the one that still needs to be recorded in the dictionaries, and it is employed by translators when literal translation is rejected in the target language.

Translators must master modulation, as it is the most dangerous procedure in oblique translation. Vazquez-Ayora (1977) reported that, in general, when the translation is inaccurate and flawed in the final version, it is due to the lack of this procedure. It is also said that amateur translators sometimes use modulation. However, the result turned into transposition (p.293). Transposition operates on grammatical species, while modulation acts on categories of thought. As a result, the more advanced the procedure, the more dangerous its application, and modulation

is an advanced technique that requires both linguistic and stylistic knowledge from translators as it tends to involve translators' subjectivity.

Vinay Darbelnet and Vazquez-Ayora presented nine similar modulation types in their books. Some of them are, for example, modulation of abstract for concrete, part for whole, one part for another, inversion of terms, active for passive, and negated contrary. For example, modulation of abstract for concrete can be, "You can bet your life," translated into Spanish, "Puedes apostar la cabeza." In the source language, the author used "life," but for Spanish readers, this can be too abstract as life is too broad; thereby, "Cabeza," meant head, was used so readers can perceive the message more concretely and concisely.

### **2.4.3 Omission**

Omission does not belong to the principal translation procedures of the stylistic execution; however, it serves as a complement and combines other procedures. Vazquez-Ayora (1977) addressed that this technique is often ignored and poorly used, as it is essential in any translation process, and sometimes, its application is compulsory (p.359). In addition, this is a procedure that translators can use to reach oblique translation. Most translators believe their job is to translate accurately and faithfully everything contained in the given unit, and by doing so, translators may overwhelm the readership by showing them strange elements that should have been removed.

The goal of translation is to convey the message of the source text into the target text naturally, so if the final product needs to be clearer and understandable, it has failed the principle. In addition, for translators to apply a particular omission, they must first carefully analyze the content and ensure that it will not suppress or detract from the original message of the content. Some of the ten most common cases where translators may apply omission are, for example, abusive redundancies, simple repetitions, auxiliary "can" with verbs of perception, and some prepositions that only make the expression idiomatic in English but have no semantic value in

Spanish. As an illustration, a statement can be idiomatic in English but may have no semantic value in Spanish. "Hurry up" has its correspondence in Spanish as "Apresúrate" where "up" was left. This is because in English, it is an accepted phrase, but in Spanish, "hurry" does mean hurry, but "up" means above and over, so paired with "hurry" would not convey the intended message.

#### **2.4.4 Amplification**

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### 2.4.5 Explication

Another complementary procedure is exploitation, and, as with amplification, its role is to introduce precise details, giving a detailed explanation that the source text failed to provide. Unlike amplification, which focuses on the structure, explication modifies elements depending on the semantics. Due to this, explication is optional, and amplification is compulsory. Moreover, this technique allows for more explanatory content for future readers to understand the message better. As Vazquez-Ayora (1977) mentioned, this is another type of expansion used for content elements that need to be sufficiently explanatory and specific, making the message obscure and imprecise (p.349). Sometimes, elements are implicit in the source language text because the author has written it either based on the experience of the intended situation or on linguistic habits and cultural aspects.

The producer of the text has extralinguistic knowledge of the situation, but the reader needs to understand it. For example, a writer wrote a pandemic topic paper in 2023 mentioning the word "bubble," referring to the term "social bubble" that arose during COVID-19 in 2020. Nevertheless, a student references this paper in 2033 but needs to comprehend the term. The author used the term without considering future readers who did not go through COVID-19. The author should have used a more neutral term or specified where it originated.

Although translators have free access to make elements of the content clearer, that does not mean that translators have all the freedom to make implicit elements explicit in the target language. They must respect elements such as reticence, suspensions, ellipsis, opacity, and all effective work resources. In general, as with any other translation procedure mentioned above, it is advisable to apply it after analyzing the need to explain or specify the details for the target readers. One of Ayora's numerous examples was the explication of the sentence, "Living for the

moment,” translated into Spanish as “Viviendo solo por el momento presente.” The term “moment” was made explicit by adding “presence,” referring to the present, the present moment.

### **2.2.6 Literal Translation**

The first translation procedure that belongs to the direct approach is literal translation. This is the simplest procedure that translators are exposed to, as it does not require many mechanisms or changes. However, Ayora (1977) explained that literal translation is a precise correspondence of structure and meaning between English and Spanish. (p.257). As mentioned above, it only works if the two languages are close because the source grammatical constructions are converted to their closest equivalent in the target language. Ayora also encouraged translators not to fear using this procedure simply because readers or clients criticize them for their translation work being "too literal." For example, "She is reading" is translated into Spanish as "Ella está leyendo." Each element was translated literally; however, the message's meaning did not deviate; rather, the message fit together correctly because the source grammatical structure found its equivalence in the target language.

It is worth mentioning that translators often use literal translation and word-for-word translation interchangeably. This is because theorists such as Vinay and Darbelenet, some of the early pioneers in translation studies, agree with it since they even started the definition of literal translation by saying "Literal translation or word-for-word translation." (p.48). Nonetheless, Newmark, who translates academic studies, argued that literal and word-for-word translation are two different terms. Word-for-word translation follows a strict syntactical order of the source language, wanting to show how the original text was made and how the word order occurs. On the contrary, the literal translation is when the meaning of the SL corresponds to the TL.

### 2.2.7 Punctuation Changes

This chapter has so far covered all translation methods and the majority of the procedures that can be deployed to produce accurate, faithful, and natural translations. However, punctuation is also a crucial aspect that determines the quality of a translation by helping target audiences read the content fluently by making the necessary pauses within a text. According to Newmark (1988), "Punctuation can be potent but is so easily overlooked that I advise translators to make a separate comparative punctuation check on their version and the original" (p.58). Translators must analyze the punctuation system of both source and target languages. For example, punctuation marks are different in English and Spanish; the most common case is exclamation and question marks. In English, these marks are placed only at the end of a sentence, as in "Are you hungry?" However, in Spanish, they are placed at the beginning and the end of a sentence, as in "¿Tienes hambre?" Translators must, therefore, carefully study and evaluate the texts to determine which punctuation marks should be retained and which should be removed to conform to the structures of the target language.

On the other hand, extralinguistic knowledge is a requirement that translators must have and must master in order to achieve equivalence and accurate transference of all the correct punctuation marks from the source language to the target language. They can be needed or removed in different languages, but there are cases in which one punctuation can have different meanings from one language to another. Newmark explained this by giving several examples showing that suspension marks indicate a pause in French while they signify the omission of a passage in English. In other cases, exclamation marks draw the audience's attention in German, while commas are used as conjunctions in French.

### 2.2.8 Compensation

The seventh translation procedure that will be used is compensation. As well as omission and explicitation, it does not belong to the principal procedures of the stylistic execution proposed by Vinay and Darbelnet. However, according to Vazquez-Ayora (1977), this procedure is for oblique translation. Sometimes, translators need help finding precise equivalences for some units, leading target readers to feel absent when reading the text, either content or nuances loss. (p.373). These are precisely the two issues why compensation exists. Authors such as Lopez Guix and Minett Wilkinson (1997) also agreed when they stated that compensation is more of a balance between expansion and reduction due to language differences. Hence, gains and losses happen during the translation process. Compensation comes to save that loss (p.293).

Other authors, such as Hervey and Higgins (2002), referred to it as the introduction of another translation to mitigate the risk of a translation ending up being a literal translation with loss of message content (p. 43). In addition, compensation is frequently used for non-technical texts since technical texts have mostly accepted TL correspondences where direct translation is possible. Compensation application includes changes in the formality of the sentences, punctuation marks, making what is implicit explicit, and phonic issues with literary, political, and journalistic ST where sounds of the words are the strategy to call people's attention. To illustrate compensation in action, here is an example. "¿Cómo se encuentra hoy, María?" as the translation for "How are you, María?" Here, compensation was used for punctuation marks because Spanish has opening and closing marks. Moreover, "Cómo está María? It would be an accepted translation; however, the translation chosen better meets the cultural aspects of the Spanish language, accomplishing naturalness and semantic meaning. With this procedure, sentences suffer grammatical structure changes, but target readers get to have the linguistic and semantic context of the source text.

### 2.2.9 Equivalence

Equivalence is another procedure of oblique translation. One thinks that equivalence is when there is correspondence between orthographic words and elements of meaning in both languages. However, Baker (2018) stated that such a one-to-one relationship is not possible since elements of meaning may be represented by several orthographic words across languages (p.11). In other words, equivalence is when the meaning of the source text is accomplished in the target text. Vinay and Darbelnet (1995) mentioned that "Equivalence-oriented translation is a procedure which 'replicates the same situation as in the original, whilst using completely different wording'" (p. 342). Searching for the right word does not imply that both source and target word must be written alike or have the same number of letters, but rather that the chosen word has the same connotation.

Other authors, such as Vazquez-Ayora (1977), presented three strategies translators can use to fix equivalence problems (p.316-318). The first one is situation equivalence. Expression expressions may not agree or be identical when expressing the same situation in two languages. For instance, "Every cloud has a silver lining" is translated into "No hay mal que por bien no venga." Here, structural and stylistic elements are deferred because the author's intention, the nature of the message, and the type of audience are the factors to be reflected. Otherwise, "Toda nube tiene su orla de plata" would be the direct translation that meets the source text's form and content. However, it is just an additional element because this sentence has no meaning.

The second strategy is the equivalence of large units. It is when translation occurs at a maximum perspective rather than on the principle of minimum semantic units. That is, sentences must be considered as a whole and not as isolated elements as some inexperienced translators who take form over meaning. The last aspect mentioned was metaphors and idioms. Translating a metaphor can lead to three possible outcomes: modulation of a metaphor by transforming it into a

non-metaphorical expression, modulation of a metaphor into a simile, and equivalence from one metaphor with another. It presented the following idioms: an idiom to a plain expression, a plain expression to an idiom, and one idiom to another. Equivalence is finding meaning instead of forcing original words to fit into the target text.

### **2.2.10 Adaptation**

The last procedure of oblique translation from Vinay and Darbelnet's list is adaptation, and they defined it as when the context referenced by the source message does not exist in the target text. This refers to the cultural mismatch, so recreation arises by creating another context but maintaining equivalence. According to Baker and Saldanha (2009), adaptation is familiar to the 21<sup>st</sup> century. Translators have always used it in their intellectual processes as the freest translation to convey the content by adapting the target's cultural taste and habits (p.3). Specific genres, such as drama, tag this procedure. It is also associated with advertising and audiovisual, where character and function are the center rather than the form or semantic meaning.

Local and global adaptation are the two major types of adaptation. Local adaptation addresses problems from the original text where translators must deal with cultural differences in isolated parts of the text. This type of adaptation contributes to a limited effect in the target text. However, global adaptation targets outside factors and is employed throughout the text. It is used to reconstruct the source text's function, impact, and purpose, obligating translators to put aside the form and the semantic meaning. Since it is applied to the whole unit, translators must evaluate the target audience's knowledge of the source content, achieve coherence and source text discourse, and evoke the meaning and purpose of both source and target text.

To illustrate how adaptation works, here are two examples. "He kissed his daughter on the mouth" translated into Spanish as "Abrazó tiernamente a su hija." This seems socially accepted in North America, but this can be inappropriate in Latin America. Thus, when translating this

cultural fact where the message was to show the father's love to the daughter, metalinguistic elements, linguistic meaning, and context played a major role in avoiding an unpleasant impression on the Spanish readers. Another instance is when American kids address their parents; they use more informal titles such as "old man," "man," and "pop." However, in most Asian households, this is not common; people use honorifics limited to only "father" and "dad." Other cultural difference is when that among young people and old people, young people would never address their elders by their first names, they must use honorific titles such as "Sr." "Mr." "Madam" and their surnames. In Latin America, once people become friends, it is socially accepted to call people from any age group by their first name because some people would feel disrespected when they are addressed by "Sr." or "Madam," inferring their names were forgotten by the other person. In other words, this stylistic element must be considered in translation.

### **2.2.11 Borrowing**

The second procedure of direct or literal translation is borrowing. This procedure occurs when translators encounter unique concepts or expressions of the source text. None of the other procedures could help find their equivalents in the target text because there is simply no target correspondence for the term. As stated by Cui (2012), "Borrowing is a translation procedure that the translator uses a word or expression from the source language in the target language holus-bolus" (p.829). When a word is taken from the source language without translating it is called transference. Lexical terms such as "software," "Coca Cola," "link," and "email" have been accepted into Spanish, and although translators transfer them as they are from the source text into the target text, the audience will find them understandable. This is a simple procedure that only requires a little mechanism. Nonetheless, it does require translators' good command on the

language to identify the necessity and whether the term is already accepted in the target language to be conveyed as it is.

From the previous examples, according to it can identify two types of borrowing: pure and naturalized. Pure borrowing is to take the source term as it is and place it into the target text. "Software," "Coca Cola," "Whisky," "iPhone," "jet lag," and "cappuccino" are some of the terms used as pure borrowings due to lexical gaps in the target text. Source terms become part of the target language for naturalized borrowings owing time and usage. However, the term suffers a phonetic and a morphological transformation. For instance, "beef steak" eventually became "bistec" in Spanish. Phonetically, speakers do not pronounce it as it is, but as they think it sounds; morphologically, they write it as they pronounce it.

Apart from the two types of borrowings, there are necessary, unnecessary, and sociological borrowings. The examples given previously for pure borrowing are necessary borrowings; however, terms such as "link," "hot dog," and "email" have their correspondence in Spanish, but people use them purely for convenience and fashion because "enlace," "perro caliente," "correo electrónico" are their corresponding equivalence in Spanish. Lastly, for sociological borrowings, here are two examples. "Gay" originally meant colorful, but later took on other purposes. Another example is "homofobia" where originally phobia was used referring to fear, but now it is used for hatred. According to Zakhir et al. (2020), this procedure can showcase the local linguistic flavor of the source language text (p.115). In other words, it is not always used due to target text lexical gap, but rather to present the semiotic and cultural aspects. Nevertheless, it is translators' job always to find equivalence for the corresponding word and seek this as a last sort.

### 2.2.12 Calque

The last procedure from direct or literal translation is calque. According to Munday (2004) "A calque is a special kind of borrowing whereby a language borrows an expression from another, but then translates literally each of its elements" (p.149). Compared to borrowing, calque translates word for word, and the expressions are incorporated into the target language in a vernacular way. Also, Gilbreath and Brunn (2022) stated that lexical calque and structural calque are the types of calques (p.615). This helps to create a new term, avoiding using borrowed terms.

Other authors such as Lopez-Guix (1997) mentioned that borrowing is phonic and morphological adaptation while calque is matter of construction (p.243). For example, "Football" is pure borrowing because the pronunciation and writing is the same; "Fútbol" is naturalized borrowing since there is a change of spelling and writing; "Balompié" is calque because "Foot" for "pié" and "balom" for ball" and transposition of word order was applied then due to Spanish grammatical structure. However, it can see that it took each element of the word "football" to construct "balompié."

Vinay and Darbelnet (1995) proposed two types of calques: expression and structure. Expression calque is when syntactic structures of the target language are followed as in "weekend" to "fin de semana". At the same time, structure calque refers to when the syntactic construction is completely new in the target language, as in "science-fiction" to "ciencia ficción" because "fiction" really means "fantasía" instead of "ficción". Apart from Vinay and Darbelnet, Lopez-Guix also presented four types of calques, but these are foreign elements adopted in the target language which are discordant. They are lexical calques, orthographic calques, typographic calques, and syntactic calques.

Starting with lexical or paronymic calque. It refers to two words with similar forms, but both acquire different meanings throughout the time, leading to false correspondence. A very

common mistake is presented in the numbers “trillions” and “millions” because “trillion” is “billón” in Spanish, and “million” is “un milliard” or “mil millones.” Regarding orthographic calque, translators transliterate proper names, places, and ethnicities that lack meaning in the target language. Proper names that have their correspondence in Spanish, but translators leave them in English as in “William the conqueror” has its match in Spanish as “William el Conquistador”. However, it is worth mentioning that proper names are translated only if their correspondence is known and accepted.

Typographic calque arises when translators mirror the form, using punctuation marks of the source language. As in “Hi, how are you?” into “Hola, como se encuentra?” when it must be “Hola, ¿cómo se encuentra?” Also, in English, months, years, religions, and nationalities are written with capital letters, but Spanish does not. Lastly, syntactic or structural calque is the most critical of the list. It is when source structure constructions are transferred as they are into the target language. An example is, “to find guilty” translated to “encontrar culpable” instead of “declarar culpable”.

### **2.2.1.3 Sentence inversion**

Sentence inversion is the last complementary procedure that translators can use to combine with the principal techniques proposed by Vinay and Darbelnet. According to Vazquez-Ayora (1977), it is when two elements of a sentence switch places when translated into the target language (p.248). That is, expressions and terms are not affected. With this procedure, translators can easily invert sentence elements to adapt it to the target speech pattern. The purpose is to accomplish naturalness when reading the target text owing to the fluency. It also helps the audience to have a different point of view or emphasis from the source text since the grammatical structure of the target language is slightly different.

For example, "The main objective is previously explained, as you observed" is translated as "Como pudo observar, el objetivo ha sido previamente explicado ."The English sentence pattern used is rare in Spanish. Generally, the speaker or the reader is addressed first before conveying the message, rather than vice versa. However, relating the message and then address the audience is acceptable in English. Another example is the translation of the sentence "I took my job from my friend" into "Yo tomé mi trabajo de mi amigo." This is a literal translation where all the elements have their equivalents in the target language and the grammatical structure, yet naturalness is missing. With the help of sentence inversion, elements switched their places turning into "Mi amigo me cedió el trabajo." Here, the elements are arranged to make them sound natural and the point of view changed. In the first one, the person took his job from his friend, but in the second one, his friend relinquished his job.

## **2.7 Glossaries**

Each field has specific jargon, and authors use these terminologies when writing documents to convey the content. However, for technical and scientific documents, most of the terminology may sometimes be unfamiliar to amateurs or readers belonging to something other than the branch. Therefore, in agreement with Tackabery (2005), authors can create glossaries that include definitions of specialized words found in the text, so that non-technical and technical users are instinctively helped to maintain the reading flow (p.427). This also applies to translators to prevent target readers from disrupting the reading process to search the meaning of the words they do not understand. In addition to technical jargon, researchers may encounter other standard terms that they find difficult for the public to understand.

Although glossaries can be a reading tool for the public, they can be used by writers, researchers, and translators for future reference. In the same way machine translation stores correctly translated terms so that subsequent translations can be done more quickly, glossaries

can help researchers, editors, and translators speed up their work process. Also, Gapper (2008) mentioned that in many fields, such as translation, interpretation, language teaching for specific purposes, and other similar fields, the creation of glossaries is essential to meet the requirements of international standardization, information technology and other fields such as education and commerce (p.9). Standardization of terms can be applied to translators working in teams. This will guide other translators to use the proper terms throughout the text so the final version is homogeneous.

Glossaries, in addition to the features mentioned above, help to maintain consistency during the translation process. This is because translators tend to use synonyms to avoid tiresome repetition of the same word throughout the text; however, this can lead to inconsistencies because synonyms can have different meanings. To avoid this situation, translators must research to ensure the reliability of the synonym, but this is time-consuming. Instead, by having a glossary with the corresponding synonyms with their definitions and translations in several target languages, time can be saved, and consistency can be achieved so readers have a precise meaning of the words in a text.

Having addressed the definition and relevance of this instrument, an explanation will be given on how to create a glossary. Gapper reported that a glossary has a macrostructure and a microstructure. The macrostructure refers to the general structure that a glossary should have, and it includes a preface, indications for users, and a table of abbreviations or appendices. Also, the glossary should be divided into different languages and topics. In contrast, microstructure refers to the design of the structure of each entry and the information contained in each entry or article. Gapper pointed out that, before creating a glossary, it is necessary to study and analyze previous glossaries to provide an example and a solid basis for building it. A series of guidelines were listed regarding the development of a useful glossary.

During the first step, the nature of the glossary is determined based on audience, intent and setting. Next, determine what terminology, definitions, and other information will be included in the glossary. In this step, some criteria should be established to carefully analyze which terms are relevant to include in the glossary due to their technical nature. Also, the glossary should include information that will enable the future audience to understand better the term: the grammatical category, the definition, the synonym or antonym of the word, the equivalence in the target language. The last step is to determine the format of the glossary including the font type and size, the order in which each word will appear in the glossary. With all the above features in mind, translators should implement this instrument to deliver high-quality work to their clients without compromising the level of readability, as the audience will enjoy the text regardless of the technical words because they have a glossary at their fingertips.

## Chapter III

### Methodological Framework

In a research study, the methodological framework is a guiding tool for the researcher to take the correct steps to complete a research procedure. McMeekin et al. (2020) clearly stated that “a methodological framework provides structured practical guidance or a tool to guide the user through a process, using stages or a step-by-step approach” (p.2). Aspects to be developed in the research must be justified, and the methodological framework will define these aspects. When separating methodology from framework, according to McMeekin et al. (2020), "Methodology is defined as the group of methods used in a specified field, and framework is defined as a structure of rules or ideas" (p.2). Possible procedures researchers can adhere to are observations and data collection. This research section is crucial because it helps the researcher formulate the hypothesis, solve problems, and investigate. As for the hypothesis, the proposed translations of the four informative texts will be used. To demonstrate their validation, the methodological framework will ratify that the translations reproduce the original texts and convey the original message to the target audience accurately, naturally, and faithfully.

#### 3.1 Research Approach

Once the research question is established, the type of data needed to answer the problem must be determined. If researchers want to use numerical data, they may opt for a quantitative method where the relationship among variables is tested. Determined instruments are needed for this method, and the most common way to carry it out is by interviewing participants with questions using platforms such as Google Forms, where the software automatically analyzes the numerical results. Then, for more textual data, they may opt for a qualitative method to analyze the problem being explored. This is also known as the inductive style, where data is collected in

the participant's setting. Lastly, a mixed method is applied if numerical and textural data are used to prove a research question. Combining both methods can have a broader scope for searching for solutions for the objectives proposed in the investigation.

The present translation project does not require numerical data but focuses on analyzing and evaluating translation methods and procedures applied to the texts. Therefore, the qualitative approach will be chosen since it focuses on the utterances, and in this research, the aim is to understand the use of different translation methods and procedures. A further reason for choosing qualitative research is that the questioning nature of this research is an open-ended question, a characteristic feature of the qualitative approach. It will also attempt to dissect the texts to analyze, interpret, and categorize how each method and procedure was used in the translation process.

In this way, the application of each method, procedure, and principle during text analysis will be justified to ensure that the translations rigorously follow the criteria and principles. Some basic principles of the qualitative method that researchers ought to follow strictly are, according to Cropley (2015), "Research question," "Philosophy of research," "Method of gathering data," "Role of researcher and subject," and "Data analysis." In addition, qualitative data are collected through narratives called narrative reviews. Most researchers opt for narratives based on online works such as articles, journalistic works, case studies, or other theses and research published by other authors.

### **3.2 Research Design**

Having determined the research focus, the research design must also be established. Researchers can use different research designs, but only one will be chosen, and the researcher will stick to it so there is no bias among the other designs. There are six types of research designs: Descriptive, correlational, semi-experimental, experimental, review, and meta-analytic.

By giving a small insight into all of them, a descriptive research design is when the data can be collected by case study, naturalistic observation, and survey; correlational is a design where a case-control study or observational study is conducted; semi-experimental design comprised of field experiments and quasi-experiments; experiment design refers to an experiment with random assignment; literature review and systematic review have to do with the review design; lastly, meta-analysis refers to the meta-analytic design.

As mentioned before, qualitative research was chosen, and this approach has six research designs. They are phenomenological, ethnographic, grounded theory, historical, case study, and action Research. Phenomenological is a design where investigators apply the " Bracketing " process by collecting data from individuals. However, researchers must put aside personal feelings to analyze the problem precisely. For ethnographic studies, investigators study lives with them. In grounded theory studies, the data is collected, but the theory comes from the same data collected by the investigators. Then, historical studies gathered historical data, but the data collected must be precise and authentic. In the case of studies, investigators examine communicatively people, groups of people, and institutions. Lastly, action research is a design where an action is taken, and the study participants and researchers work together.

Although qualitative research is selected, quantitative research designs can also be mentioned. Four designs can be determined: descriptive research, correlational research, causal-comparative/quasi-experimental research, and experimental research. Descriptive research design can be used with a qualitative approach within these designs. According to Gall et al. (as cited in Nassaji, 2015), "The goal of descriptive research is to describe a phenomenon and its characteristics. This research is more concerned with what rather than how or why something has happened" (p.131). In this type of research, the hypothesis emerged after the data were collected. Thus, analyzing the data provides a test of the hypothesis formulated. Four texts will be

translated in this translation project using different translation procedures, methods, and principles to properly convey the message of the original texts intended for users of the university public library. The problem is to analyze the procedures and methods applied to the units. Therefore, the descriptive research design will be selected to describe all the translation methods and principles used. In addition, since the data will be the texts to be translated and the hypothesis will be the translations with the translation procedures and methods, the same information will be investigated to determine whether the principles, methods, and procedures correctly assess the hypothesis of meaning. This design will provide information on the analysis categories, which are the original texts and the translations.

### **3.3 Information Sources**

The sources from which researchers obtain information to develop research are known as information sources. According to Jeyapragash (n.d), depending on the sources, documentary and non-documentary are the two types. The difference between these two sources is that the documentary is recorded in documents. In contrast, non-documentaries are not recorded, referring to humans, organizations, and mass media since they are life sources. For each source type, categories of sources are listed depending on the information and organizational content.

For the first type, documentary, the content level is classified into primary, secondary, and tertiary. Primary sources are known as first-hand information. This contains the original information because it has yet to be interpreted, reanalyzed, or reevaluated by a second or third party. For example, articles and journalistic papers. Notwithstanding, secondary sources have been reused for a new purpose in a second research. In other words, it depends on the original data for its existence, and usually, only part of the information is considered. For instance, most research background information is secondary because they will always mention information taken from primary sources that have a history useful for the background information. Lastly,

tertiary sources are the sources that guide people to use primary and secondary sources, and directories are one example of tertiary sources.

On the other hand, non-documentary sources are classified into formal and informal. In the formal category, organizations, universities, and industries are examples. For the informal category, some examples are conversations or discussions between people. In this translation project, primary sources are dominant. For chapter I, although a few statements come from secondary sources because some works of the primary sources cannot be read, most information comes from primary sources such as books. This also applies to chapters II and III, where only primary sources such as articles and books were used. It intends to use at least 15 sources to support all the claims made in the research.

### **3.4 Analysis Categories**

Analysis categories refer to the approach with which the specific objectives will be met. Although the research design, research approach, and sources of information are fundamental, the analysis categories are also crucial in the methodological framework because they will establish the definitions necessary to carry out the research. This is a translation project; therefore, the primary and essential analysis categories will be the various translation methods and procedures used to accurately convey the correct message from the source to the target language. As mentioned in Chapter I, semantic translation is the selected method since the objective is to transfer the technical words from the texts.

#### **3.4.1 Translation**

According to Newmark (1998), since translators are using another language to transfer meaning into another language, the translation must achieve the author's intention by rendering the text's meaning into another language.

### **3.4.2 Translation Methods**

Now that translation is defined, methods and procedures are next to be explained since they are the main analysis categories in the research. Kellou (2020) stated that translation methods are techniques and strategies used at the textual level to the entire text from an SL into a TL in the light of a translation assignment and a contextual situation of communication.

### **3.4.3 Translation Procedures**

Newmark (1998) defines translation procedures by mentioning that translation methods focus on the entire text while translation procedures work on smaller units of the text. It is worth mentioning that Vinay and Darbelnet (1958) stated that although the unit of translation is the smallest segment of the utterance, translators must not translate words but ideas and feelings; thus, they cannot translate the union of signs separately.

## **3.5 Data Collection Instruments**

It is important for the research to have several data collection instruments to help in the data collection and analysis of the data collected to achieve the objectives and find a solution to the proposed research question. As mentioned in the research design, the color-coding systematic procedure will be used to collect and analyze the information. Also, a text analysis chart and a glossary will be the other two data collection instruments employed because they can help analyze the translations of the texts and serve as a reference to the translator and readers.

### **3.5.1 Text Analysis Chart**

The first instrument will be a chart used to classify the texts to be translated into several factors. In other words, to showcase this instrument, a six-column chart will be created wherein the text analysis criteria will be found in the first column, including factors such as text style, text function, the generality or difficulty of the texts, the scale of the emotional tone of the texts, and the translation method. For the following columns, the titles of the texts (two in English and three

in Spanish) are placed at the top, and the characteristics are filled in downwards. With this, the translator has a concept of the difficulty of the text and how to translate it for the correct type of audience.

*Table 1*

<b>Text Analysis</b>	<b>Illicit Wildlife Trade, Wet Markets, and Covid-19: Preventing Future Pandemics</b>	<b>Language and Learning in the Digital Age</b>	<b>Cambio Climático. Perspectivas Futuras</b>	<b>El Mecanismo de la Crisis Económica Mundial</b>	<b>El Valor del Idioma Español en Ciencia y Tecnología</b>
Text Style					
Text Function					
Scale of Formality					
Scale of Generality or Difficulty					

Scale of Emotional Tone					
Translation Method					

*Table 1 shows each factor the texts will be analyzed before being translated. Source:*

*Researcher's creation*

### 3.5.2 Color Coding

Color coding is the second instrument employed in this investigation by categorizing all the translation procedures applied to the text units so their usage can be evaluated and justified later. It is attempted to use seven translation procedures paired with their corresponding color to 30 paragraphs (15 paragraphs from the English texts and 15 paragraphs from the Spanish texts). Also, it is important to highlight that each paragraph will have nearly 100-150 words so the analysis can be concise. Moreover, each procedure paired with its unique color will be displayed in a chart at the beginning of the paragraphs. If one word has two translation procedures, the translator will use symbols or characters such as parenthesis, brackets, slashes, bars, or underlying to differentiate the multiple procedures employed.

**Table 2**

Translation Procedure	Color Assigned
Transposition	
Modulation	
Omission	

Amplification	
Explicitation	
Literal translation	
Compensation	
Equivalence	
Adaptation	

*Table 2 shows each technique with corresponding colors in the color-coding systematic procedure. Source: Researcher's creation*

### 3.5.3 Glossary

As a final instrument, a glossary will be used to register relevant terminologies for the advantage of the readers and the translator. When readers come across a certain unknown terminology, they will have this glossary to help them they can skip any extra research and cut their reading enjoyment. This index or database will be truly helpful for translators because it will facilitate their future translations by providing them with information about the utterance in doubt. It will compose one glossary in English and one in Spanish with four columns with the title of the text at the top. The source terms will be placed in the first column, whereas the target terms will be in the second column. The grammatical category will be displayed in the third column, while the definition will be in the last column.

*Table 3*

<b>English into Spanish Text Title</b>			
<b>Término en el idioma de partida</b>	<b>Término en el idioma de llegada</b>	<b>Categoría gramatical</b>	<b>Definición</b>


*Table 3 shows the chart with the factors used to categorize and classify the terms to create the Spanish glossary. Source: Researcher's creation*

**Table 4**

<b>Spanish into English Text Title</b>			
<b>Term in Source Language</b>	<b>Term in Target Language</b>	<b>Grammatical Category</b>	<b>Definition</b>

*Table 4 shows the chart with the factors used to categorize and classify the terms to create the English glossary. Source: Researcher's creation*

### **3.6 Collection Data Process and Data Analysis**

The process will start by reading the given material and applying general and close reading so the translator can mentally analyze and get familiar with the text, the meaning of the text, the intention of the author, and its potential difficulties, such as syntax or technology. General reading gives an overall view of the main topics and subjects, while close reading focuses on words that can be challenging for translation. In other words, in this very first step, the

translator must search for possible issues such as jargon and other technical words that, when translating, may not match the target language. Suppose translators select methods and techniques and start translating without reading the source text. In that case, they may soon realize that the translation process should be smoother because they need to understand the jargon or because the techniques and methods chosen were not the right ones.

At this point, the translator will determine the analysis of the text and its factors. In this step, the translator will use the first data collection instrument, the text analysis chart, to determine the text's complexity and type of audience. Then, the different translation procedures and methods will be selected to accurately transfer the source text's message into the target language. Upon the finalization of the translations, the accuracy, faithfulness, naturalness, and reading fluency will be checked, as well as the punctuation accuracy since sometimes may differ from language to language. If one of these elements fails, the translation does not pass the plausibility test; thus, the translator will have to go back and evaluate the utilization of the translation techniques until these features are fully accomplished.

After the translations are carefully revised, the next step is to apply the second data collection instrument, the color-coding systematic procedure. As mentioned before, the translator will choose 15 paragraphs of each text, and then it will start highlighting when a translation procedure of the list has been applied to an utterance. Also, if one utterance has more than two procedures applied, the translator will use symbols or characters, and the instrument will be used only for the translated version. Once the color-coding instrument has been applied correctly to the texts, the translator will move to the data analysis and interpretation of the results. Here, the researcher will display the results of the text analysis chart used before the translation and the paragraphs with the colors. Further, the last instrument, the glossaries, will be built here since the translations and the two previous instruments are accomplished.

## Chapter IV

### Translations

#### 4.1 Translation from English into Spanish

Existe otra forma de ver el impacto de la alfabetización como sistema de comunicación del lenguaje. Las personas son capaces de lograr hacer más cuando cuentan con una herramienta como una pistola, una pértiga con pértiga en el salto o una carretilla elevadora en una planta industrial, cuando no se cuentan con una (Wertsch 1998). La capacidad humana mejora considerablemente con las herramientas hasta el punto de que podemos ver a la “persona-con-herramienta” como una entidad integrada. Es decir, podemos ver al ejecutante que salta con pértiga como “humano con pértiga” (saltador de pértiga), al ejecutante que utiliza una carretilla elevadora como “humano con carretilla elevadora” (operador de carretilla elevadora) y al ejecutante que lleva una pistola como “humano con pistola” (pistolero). Así pues, cuando pensamos en la alfabetización, podríamos ver al “ejecutante” como “humano-con-escritura” o incluso, en cierto sentido, como “humano-con-lenguaje-con-alfabetización”. “Tanto el ser humano como el lenguaje son capaces de realizar diferentes cosas en presencia de la alfabetización o sin ella” (Havelock 1976, 1986; Olson 1996; Ong 1982; Street 1984).

#### **Alfabetización**

En muchos países se considera que la lectura es una habilidad esencial en una persona que ha recibido una educación. A lo largo de los años en Estados Unidos, al igual que en otros países, hemos vivido varias “guerras de lectura” (Coles 2000; National Reading Panel 2000). Estas guerras se deben a conflictos sobre cómo enseñar a leer a los niños pequeños en la escuela. Un bando de la guerra (véase Gee 2008b para una discusión de ambos bandos) sostiene que ambos, el lenguaje oral y la alfabetización son “lenguaje”. Debido a que los niños aprenden el lenguaje

oral a través de la inmersión en la comunicación y la socialización en las primeras etapas de la vida (no necesitan ninguna enseñanza explícita), se argumenta que ellos deberían de aprender sobre la alfabetización del mismo modo.

Por el contrario, según el otro bando, el lenguaje oral y la alfabetización son dos conceptos diferentes. El lenguaje oral surgió hace mucho tiempo en el transcurso de la evolución humana, mientras que la alfabetización surgió hace relativamente poco como creación cultural. Además, este bando argumenta que, a diferencia del lenguaje oral, la alfabetización debe enseñarse abiertamente como una habilidad que no es “natural” para los niños como lo es el lenguaje oral.

No obstante, ambos bandos de la guerra de la lectura aciertan y se equivocan, porque la alfabetización no es un “lenguaje” como lo es el lenguaje oral. Es más bien un sistema de comunicación para el lenguaje oral o el lenguaje del pensamiento o el lenguaje de signos. Existe un papel para la enseñanza abierta en la alfabetización (y ninguno en la adquisición de la lengua materna, aunque esto no impide que algunos padres lo intenten).

Sin embargo, la alfabetización (el uso de la escritura como sistema de comunicación del lenguaje) se adquiere realmente a través de la socialización (tanto en la familia como en la escuela) y de la práctica auténtica y no sólo o inclusive principalmente de la instrucción explícita (Gee 2004; Heath 1983). Los niños se convierten en miembros de una “cultura alfabetizada” (en realidad una versión u otra dependiendo de sus comunidades) a través de la aculturación (Gee 2004; Heath 1983; Scollon & Scollon 1981; Street 1984). Es así como los niños aprenden otras destrezas culturales como la cocina, la narración de cuentos o los videojuegos. La instrucción desempeña un papel, pero queda en un segundo plano frente a la socialización como miembro de un grupo cultural o, al menos, socialmente distintivo.

Los niños que provienen de hogares en los que no se les ha inculcado desde pequeños alguna versión de la cultura alfabetizada, (y una versión que les garantice un buen rendimiento escolar, dado el funcionamiento real de las escuelas) llegan a la escuela con la necesidad de practicar y experimentar más actividades de alfabetización de las que la escuela suele tener tiempo o voluntad de proporcionarles. Lamentablemente, estos niños suelen recibir grandes dosis de instrucción explícita y, a menudo, de destrezas y ejercicios. Sin embargo, este enfoque no es óptimo para ayudar a los niños a formar una vinculación profunda con la alfabetización como “identidad” (ser una persona alfabetizada, un lector de por vida, un escritor comprometido, etc.), aunque a menudo, se consigue preparar a los niños para que aprueben los exámenes.

Existen determinadas partes del cerebro humano que se utilizan tanto para el lenguaje oral como para la alfabetización. Por ejemplo, muchas partes del cerebro dedicadas a la comprensión participan tanto en el uso del lenguaje como en la alfabetización; además, estas partes del cerebro también se utilizan para comprender cosas y actividades del mundo. La comprensión es un proceso multifuncional que no está relacionado únicamente con el lenguaje o la alfabetización (Barsalou 1999; Kintsch 1998).

Lo que caracteriza al lenguaje oral es que ha sido diseñado para la comunicación cara a cara y el pensamiento, así como los diálogos con nosotros mismos (Tomasello 1999) y ésta es también su limitación más profunda. Además, el lenguaje oral se desvanece sin dejar rastro en cuanto se habla o se piensa. Incluso si creemos recordar lo que hemos pensado o dicho previamente, no podemos estar seguros de que nuestra memoria sea correcta, ya que no existe forma de comprobarlo. A continuación, veremos cómo las tecnologías contribuyen a compensar esta limitación.

Lo que diferencia a la alfabetización es que, como código o sistema de comunicación del lenguaje oral, puede transmitir significados mucho más allá de los contactos cara a cara. Además, sirve como registro que puede ser comprobado por varias personas. Sin embargo, esta es también

la limitación más profunda de la alfabetización, ya que puede utilizarse de formas que el autor nunca pretendió o deseó.

La expresión “lenguaje escrito” puede resultar engañosa, porque en realidad significa “una versión escrita del lenguaje oral”. En cierto sentido, aunque el lenguaje escrito tiene capacidades que el lenguaje oral no, este es un lenguaje oral “paralizado”. El inglés, como muchas otras lenguas, se escribe con un abecedario, lo que es uno de los inventos más ingeniosos e importantes de la cultura humana (Havelock 1976; Olson 1996; Pattison 1982). Un abecedario usa letras para representar los sonidos de las palabras. El inglés tiene unos 44 “fonemas” (sonidos individuales del habla que distinguen unas palabras de otras). Sin embargo, el abecedario inglés emplea solamente 26 letras para representar estos 44 sonidos. Las 26 letras representan miles y miles de palabras, lo que resulta prácticamente un milagro de eficacia.

Un abecedario es un código para preservar el lenguaje oral, ya que les permite a los hablantes alfabetizados descifrar cómo “decir” (a los demás o a sí mismos) lo que está escrito sin tener que decirlo en voz alta, claro está. Sin embargo, estos códigos pueden variar bastante. Por ejemplo, hay sistemas de escritura que no usan abecedarios, sino símbolos escritos para sílabas y no para sonidos individuales. Por ende, una palabra de dos sílabas como “sillas” se representaría con dos símbolos en vez de seis símbolos (letras). Dichos sistemas requieren más símbolos que un abecedario, pero por lo demás representan palabras tal y como se dicen en la escritura alfabética, ya que las sílabas son una unidad de sonido, no de significado.

También existen sistemas de escritura que representan directamente los significados (propriadamente los morfemas de una lengua) y no los sonidos o las sílabas. Por ejemplo, un símbolo redondo podría representar un círculo o el sol (o, si el sistema no es icónico, podría utilizarse un símbolo arbitrario para “sol” y otro para “hijo”). Dichos sistemas de escritura no son códigos para el lenguaje oral porque no les indican a los hablantes cómo decir lo que está escrito.

No obstante, estos sistemas tampoco son muy eficaces, ya que requieren miles de símbolos para miles de significados diferentes cuando un abecedario sólo requiere, más o menos, un par de docenas de símbolos.

Dichos sistemas de escritura suelen cambiar con el tiempo para incorporar símbolos que señalan al menos parte del tiempo o la palabra del lenguaje oral a la que se asocia el significado. Incluso estos sistemas de escritura basados en el significado y no en el sonido, codifican significados que los hablantes de una lengua pueden decir con palabras. De hecho, los hablantes de diferentes lenguas pueden decirlos en sus diversas lenguas, ya que los símbolos representan significados y no sonidos de las palabras en cualquier lengua. Sin embargo, el lenguaje oral sigue siendo primordial incluso en estos sistemas.

Para el resto de este libro, cuando hablemos de lengua escrita nos referiremos a los sistemas de escritura alfabética y lo que digamos también se aplicará, en su mayor parte, a las lenguas que se escriben mediante símbolos para sílabas en lugar de fonemas (sonidos individuales del habla), ya que las sílabas son unidades de sonido. Además, la mayoría de las lenguas que tienen sistemas de escritura relacionados más directamente con el significado que con el sonido, utilizan algunos símbolos que señalan palabras en la lengua oral. No obstante, en este libro nos limitaremos a los abecedarios cuando hablemos del lenguaje escrito.

Más adelante cuando hablemos del aprendizaje, señalaremos que el mejor indicador del éxito académico de un niño, incluido el aprendizaje de la lectura, es su vocabulario oral alrededor de los cinco años de edad (Dickinson & Neuman 2006; Gee 2004; Hart & Risely 1995). Por lo tanto, el desarrollo del lenguaje oral es la base del éxito académico y de la alfabetización en la escuela.

Ya hemos mencionado que una persona con una herramienta (por ejemplo, un martillo, una pistola, un montacargas, un sartén) suele ser más poderosa que otra sin ella. De la misma

manera, la alfabetización es una herramienta y especial porque permite transmitir el lenguaje oral y cuando se combina con la alfabetización resulta diferente del lenguaje sin alfabetización. Al igual que una persona que lleva un arma es diferente de otra que no la lleva, también lo es una persona que viaja en un vehículo que le permite llegar a muchos lugares a los que no podría ir solo con las piernas. Del mismo modo, cuando las personas combinan el lenguaje con la alfabetización, pueden realizar cosas e “ir a lugares” a los que no podrían ir sólo con el lenguaje.

Por ejemplo, antes de la alfabetización, el lenguaje se utilizaba en “culturas orales”, es decir, culturas sin alfabetización o con muy poca alfabetización (Havelock 1976, 1986; Ong 1982). En las culturas orales, las personas utilizaban el lenguaje para conservar y transmitir sus recuerdos y era prácticamente la única forma de hacerlo, por lo cual utilizaban mucho el lenguaje oral con fines memorísticos. Con el tiempo, desarrollaron usos especiales del lenguaje para la memoria y la transmisión del aprendizaje. Por ejemplo, las culturas orales desarrollaron relatos épicos (como la *Iliada* y la *Odisea* de Homero) que conservaban la historia y los conocimientos de la cultura y los transmitían de generación en generación mediante repetidas narraciones. El griego homérico se prestaba especialmente para este tipo de relatos en el sentido de que desarrolló estructuras y formas (por ejemplo, fórmulas, frases poéticas y repeticiones que mejoraban la memoria y establecían dispositivos narrativos) que facilitaron el recuerdo y la repetición (Parry, 1971), lo que constituye un buen ejemplo de cómo la cultura cambia, mejora y desarrolla el lenguaje más allá de sus formas originales.

Desde que Grecia desarrolló la alfabetización después de la época de Homero, la memoria humana ha logrado mejorarse de una forma totalmente nueva. En efecto, la alfabetización era una herramienta especial para la memoria ya que eso permitió que ahora los recuerdos (la historia y el conocimiento) puedan almacenarse (físicamente) en los libros y no en las mentes; leyendo y no hablando. Además, con ello, ahora el conocimiento se puede dividir en secciones o categorías

como la filosofía, la diplomacia, la biología, la cocina, la guerra, etcétera. En una cultura oral, todo o gran parte del conocimiento debía integrarse y almacenarse en los mismos relatos memorables, ya que separarlos en distintas categorías habría supuesto el memorizarlos en demasiadas cabezas distintas y transmitirlos por demasiados canales distintos y en formas no muy memorizables como el equivalente oral de una entrada de enciclopedia.

En una cultura alfabetizada, el lenguaje oral ha potenciado viejas y nuevas capacidades. Por ejemplo, cuando le cuento una experiencia a un amigo, puedo escribirla cuando está fresca y contarla basándome en lo que he escrito. También puedo comprobar la exactitud de lo que he dicho releendo el texto. Por ende, la vieja técnica de relatar los recuerdos, incluso cuando se relatan oralmente, ha mejorado mucho.

El lenguaje también adquiere nuevas capacidades cuando surge la alfabetización. Como hemos señalado, se exigía demasiada memoria para almacenar cada tipo o rama de conocimiento por separado. De hecho, era difícil crear y desarrollar diferentes tipos y ramas de conocimiento, ya que existían limitaciones graves en la memoria y en la capacidad humana para almacenar y recordar todo lo que se decía en un lenguaje (oral) que desaparecía en el momento en que se hablaba.

Sin embargo, cuando una cultura está alfabetizada, es capaz de desarrollar en profundidad y por separado las distintas ramas del saber, que van mucho más allá de lo que una persona pueda recordar o relatar. También puede empezar a crear diferentes estilos de lenguaje para las diferentes ramas del conocimiento, tales como el lenguaje de las matemáticas, biología, carpintería, asuntos militares y otros. Ahora, el lenguaje tiene una propiedad importante que es que las personas pueden hablar (y escribir) en distintas variedades de lenguaje asociados con diferentes ramas del conocimiento. Sin embargo, esta habilidad podría desaparecer pronto si

perdemos la alfabetización, ya que una vez más, todo conocimiento tendría que almacenarse en la cabeza y transmitirse oralmente.

El lenguaje en las culturas orales ya era múltiple y había distintas variedades como el lenguaje ritual, los relatos épicos orales, el lenguaje cotidiano y, a veces, las diferentes variedades de lenguaje para hombres y mujeres. Sin embargo, la multiplicidad del lenguaje se ha mejorado enormemente gracias a la alfabetización.

Con respecto a la memoria (retener recuerdos y transmitirlos) y a la multiplicidad (múltiples estilos de habla y escritura), la alfabetización fue una nueva herramienta que le permitió al lenguaje “subir de nivel” y mejorar para algunos propósitos. A su vez, también se vieron mejoradas la mente y la actividad humana.

Como ya hemos dicho, con las herramientas y las tecnologías siempre hay ganancias y pérdidas. Cuando las personas cambian el lenguaje para hacer algo nuevo, así como ocurrió y ocurre con la alfabetización, algunas capacidades antiguas se pierden, se modifican radicalmente o pierden importancia. Por eso, la habilidad de construir relatos épicos para transmitir historias y recuerdos está muy atenuada en las culturas modernas alfabetizadas, ya que hemos perdido gran parte del arte de utilizar los recursos lingüísticos para contar relatos épicos orales, así como las frases formuladas, la repetición y los recursos poéticos y narrativos dramáticos. Estas habilidades y recursos siguen presentes en muchas personas y culturas, pero están muy atenuados o debilitados. Los podemos encontrar todavía en la poesía, pero carecen de la solidez y el protagonismo que tenían en las culturas orales cuando el lenguaje se ajustaba a los gustos de Homero.

Las personas que se encuentran en la transición entre una cultura oral y una alfabetizada (una transición que suele ser relativamente lenta y desigual) pueden percibir la pérdida de las antiguas maneras de utilizar las palabras. Actualmente, pocos de nosotros somos conscientes de

la pérdida de la narración oral épica como forma de transmitir conocimientos y cohesionar una cultura. En cambio, sí somos muy conscientes de algunas pérdidas causadas por los medios digitales, ya que éstos son más nuevos, entonces las pérdidas son más recientes y nos encontramos en la transición entre la cultura alfabetizada y la cultura digital (con la alfabetización situada en una nueva ecología de prácticas).

Cuando se habla de tecnología, el tema de la pérdida ocupa un lugar preponderante. Solemos destacar lo que se ha perdido (como las cenas familiares y las conversaciones a la hora de cenar frente a la televisión), pero también existen ganancias y es necesario que hablemos de ambas en relación mutua y de cómo pueden verse compensadas las pérdidas en otros ámbitos. Por ello, retomaremos este tema en varias ocasiones a lo largo del libro.

En una cultura en la que el lenguaje se transmite regularmente por escrito, no sólo existen ganancias y pérdidas en cuanto a la utilización del lenguaje, sino que también en otros aspectos de la cultura y en la manera en que las personas actúan e interactúan en ella. Esto es porque el lenguaje es fundamental para lo que los seres humanos logren una sociedad y una cultura.

Por ejemplo, en muchas sociedades, la escritura cambia por completo la naturaleza de los contratos (Graff 1979, 1987). En una cultura oral, las personas tienen que confiar en la palabra de los demás y si buscan justicia en algún tipo de tribunal, las pruebas se basan principalmente en las palabras de las personas y en la credibilidad que tienen o parecen tener. Por el contrario, en el caso de la escritura, la confianza se deposita, a menudo, en documentos e instituciones como la ley y los abogados y no en las palabras de las personas, más que los testimonios orales suelen comprobarse mediante testimonios escritos. Además, en las sociedades modernas, el lenguaje oral ha perdido parte de su función a la hora de crear confianza y establecer contratos.

### **La alfabetización como tecnología**

Al igual que los automóviles, las cintas, las grabadoras, los televisores y las cámaras digitales, la alfabetización es una tecnología y como todas las tecnologías, está ahí para ayudarnos en trabajos que se realizaban sin ella, pero de manera menos eficaz o peor calidad (o, al menos, diferente). Además, permite que las personas logren nuevas ideas y al igual que los automóviles, la alfabetización ha transformado el mundo.

Como tecnología, la alfabetización ha cambiado con el tiempo. Empezó como inscripciones hechas por la mano humana mediante un instrumento de escritura. Más tarde, se utilizaron la imprenta, la máquina de escribir y la computadora para escribir. Actualmente, existen tecnologías que permiten que el lenguaje oral se convierta directamente en letra impresa sin necesidad de escribir a máquina. Además, es muy probable que en el futuro las personas escriban documentos hablándoles a las computadoras mientras que los oyentes tendrán la opción de leer el documento o simplemente dejar que la computadora lo lea en voz alta. Con este desarrollo tecnológico queda claro que la escritura es un medio de transmisión del lenguaje oral (pensamiento, signos).

Sin embargo, esta nueva tecnología es diferente de la imprenta tal y como la conocemos ahora. Cuando escribimos (componemos un escrito), solemos pasar del lenguaje silencioso de nuestra cabeza a la escritura porque no solemos decir en voz alta lo que queremos escribir, simplemente lo escribimos. Sin embargo, con la nueva tecnología, pasamos del lenguaje silencioso que existe en nuestra cabeza al lenguaje hablado y de ahí, a la escritura. La composición será diferente porque habrá ganancias y pérdidas, ya que la “vieja” manera de componer será diferente. Expresarle a una computadora lo que pensamos en silencio cambiará sin duda el proceso de composición. Es probable que lo mejore en algunos aspectos (escuchar lo que queremos decir puede hacernos revisarlo) y lo empeore en otros (las personas pueden componer “sin pensar”, simplemente hablando sin mucha previsión).

Este libro se interesa por la alfabetización tal y como actualmente la conocemos. Se trata del lenguaje escrito en libros, letreros, cartas y documentos, así como en anuncios y junto a imágenes en los llamados “textos multimodales” (en los que están presentes tanto las imágenes como las palabras). En la actualidad, muchas personas tienden a considerar esta tecnología (la alfabetización) como algo antiguo, tradicional y para nada a la moda como las tecnologías más recientes, a menudo digitales como las redes sociales, los videojuegos, la fotografía y las películas digitales.

Muchas personas temen que la lectura y la escritura se estén “desapareciendo” frente a los nuevos medios digitales, pero lo que realmente temen no es que la lectura y la escritura estén realmente desapareciendo, sino que algunas de nuestras maneras favoritas de leer y escribir estén desapareciendo o se estén volviendo mucho menos frecuentes (como leer una novela tranquilamente en soledad). En realidad, la lectura y la escritura están aumentando en el mundo digital, pero también están cambiando.

Nuestro argumento es que la alfabetización, como tecnología de transmisión lingüística, mejoró y potenció el lenguaje en muchos sentidos (“subió de nivel” y “potenció” el lenguaje, para utilizar el lenguaje de los videojuegos). Además, le dio nuevas habilidades a la lengua (propiedades, poderes) y mejoró las antiguas. También atenuó algunas de las capacidades del lenguaje o cambió dónde, cómo, por qué y cuándo se aplicaban o utilizaban. Haremos un razonamiento similar sobre los medios digitales actuales que también “suben de nivel” o “potencian” el lenguaje, con pérdidas y ganancias, pero más ganancias que pérdidas.

En nuestra opinión, existe una “naturaleza humana” y una “naturaleza lingüística” (una forma básica del lenguaje humano) que la evolución puso en marcha. La naturaleza humana es lo que comparten todos los seres humanos, independientemente de su cultura, mientras que la naturaleza lingüística es lo que comparten todas las lenguas, independientemente de su cultura.

La cultura ha permitido a los seres humanos y al lenguaje desarrollarse mucho más allá de sus “naturalezas”, pero sus naturalezas siguen definiendo parte (pero sólo parte) de lo que son, pueden hacer y pueden ser. La cultura puede conducir a desarrollos que violan de tal modo la naturaleza de los humanos (como humanos) y del lenguaje (como lenguaje) que son peligrosos y malos para nosotros.

En la actualidad, no es muy popular en las ciencias sociales hablar de naturaleza humana o naturaleza lingüística. Las ciencias sociales modernas tienden a destacar y valorar la variedad cultural por encima de lo que comparten los seres humanos y las lenguas, pero comparten cualidades importantes. Si bien sus “naturalezas” son muy flexibles y capaces de grandes modificaciones, pueden ser violadas o quebrantadas.

Existen prácticas concretas de alfabetización que han violado la naturaleza humana y lingüística. Por ejemplo, hubo una época (que por desgracia aún continúa en algunos lugares) en la que en Estados Unidos se castigaba a los niños sordos por hacer señas y se les negaba la oportunidad de aprender el lenguaje por señas americano (American Sign Language), con el fin de enseñarles inglés oral (lo cual era difícil para ellos, ya que por supuesto, no podían oír) y alfabetización en inglés, cuando es más fácil aprender alfabetización en inglés si uno tiene una lengua materna y un lenguaje por señas es a menudo la única lengua materna que una persona sorda (de nacimiento) puede adquirir. Por naturaleza, los seres humanos quieren y necesitan expresarse a través del lenguaje y esta política con los niños sordos viola esa naturaleza. El lenguaje es interactivo por naturaleza y una persona sorda puede interactuar mucho mejor con el lenguaje por señas que hablando.

A menudo, la alfabetización en las sociedades modernas ha restringido tanto quién puede expresarse públicamente, quién puede publicar y quién no, quién puede producir conocimiento y quién sólo puede consumirlo, que el profundo deseo que tienen los seres humanos de expresarse,

producir y no sólo consumir y de ser partes vitales de sus sociedades y contribuir a ellas se ve a menudo frenado o frustrado. Sin embargo, hoy, veremos como los medios digitales están corrigiendo este grave problema en algunos aspectos importantes.

### **Efectos de la alfabetización**

Se ha escrito mucho sobre la alfabetización y sus efectos en una sociedad (Gee 2007a; Goody & Watt 1963; Graff 1979, 1987; Olson 1996; Scribner & Cole 1981; Street 1984) y se ha afirmado que la alfabetización conduce a sociedades más humanas, más modernas y a personas más inteligentes. En realidad, la alfabetización ha tenido efectos muy diferentes en las distintas sociedades porque no tiene una serie de resultados predecibles. Más bien, tiene ciertas “posibilidades”; es decir, efectos que surgen si el contexto es el adecuado. Por lo demás, los efectos de la alfabetización, al igual que los de otras tecnologías como la televisión y las computadoras, dependen de los contextos específicos en los que se producen las diferentes prácticas de alfabetización.

Los efectos de la alfabetización dependen de lo que la gente haga realmente con ella. En algunos casos, las personas más alfabetizadas y educadas son políticamente más inactivas y aceptan mejor el orden establecido (porque tienden a beneficiarse de él). En otros casos, las personas han utilizado sus conocimientos de alfabetización para desafiar el orden establecido y participar en el activismo político. Lo mismo ocurre con los medios digitales y otras tecnologías. La alfabetización y los medios digitales pueden ser herramientas para engañar a las personas, controlarlas o supervisarlas, o también pueden ser herramientas para informarlas, liberarlas y darles una impresión de control y autoestima.

En este libro nos ocupamos tanto de las prácticas alfabetizadas (lo que las personas hacen con otras utilizando la alfabetización junto con otras herramientas y tecnologías) como de las “posibilidades” de la alfabetización. Es decir, a lo que la alfabetización tiende a conducir en

igualdad de condiciones y cuando otros factores no se oponen a estas posibilidades. Además, la alfabetización tiene características similares a las de un martillo, ya que está diseñado para ser útil y bueno en ciertas cosas, pero no hay garantía de que se vaya a utilizar de esa manera y lo mismo ocurre con los medios digitales.

## 4

### LENGUAJE E INTERACCIÓN

#### Los procesos continuos de vinculación-distanciamiento y de contenido-interacción social del lenguaje

Analicemos los siguientes dos textos. El primero pertenece a una escritora fanática de ficción de 15 años que se comunica por Internet con sus fans (Gee & Hayes 2010: 135). El segundo es de un libro de texto de ciencias de secundaria (Martin 1990: 93):

¡Por fin puedo editar mis fotos! ¡Mi portada 4 LH 1.7 se ve INCREÍBLE! ¡¡¡¡Estoy tan emocionada de publicarla!!!! ¡Compruébelo usted mismo! ¡Deberá salir este fin de semana o el próximo!

La destrucción de una superficie terrestre por los efectos combinados de la abrasión y la eliminación del material meteorizado por los agentes transportadores se denomina erosión.

Estos textos representan dos polos del lenguaje (Levinson 1983; Milroy & Milroy 1985; Tannen 1985). El primero corresponde al lenguaje informal y de vinculación social, mientras que el segundo consiste en un lenguaje formal y distanciador. Aquí cabe aclarar lo que significa “distanciamiento”. El lenguaje académico no es necesariamente distanciador para los científicos que lo utilizan a fin de realizar su trabajo, pero sí lo es para quienes no están

familiarizados con él. Además, lo más importante es que es distanciador en el sentido de que está diseñado para ser “racional” y no emocional. Está diseñado para ser eficaz en la argumentación y no para proyectar emociones en las relaciones sociales (Bazerman, 1988; Myers, 1990).

Los dos ejemplos anteriores son textos, aunque muchas personas (quizá debido a la escuela) asocian más la escritura con el segundo ejemplo que con el primero. Ahora, lo mismo sucede en el habla. Compare “Hoy hace muy buen tiempo, ¿verdad?” con “Hoy el tiempo está dentro de las normas estadísticas para esta estación”.

Los polos informal/vinculación-formal/distanciamiento son polos de un continuo y podemos utilizar lenguas que se encuentren entre estos polos. No obstante, estos polos son una propiedad importante de las lenguas humanas en el mundo. Además, están cambiando rápidamente bajo la influencia de los medios digitales, tal y como veremos más adelante.

Muchas personas que han recibido una educación tienden a considerar la lengua como una herramienta para intercambiar información. Suelen hacer más hincapié en el contenido de lo que se dice que en la relación social que se comunica. Sin embargo, el lenguaje siempre tiene una dimensión social y cualquier uso del lenguaje se sitúa en algún punto del continuo entre el lenguaje informal/de vinculación y el lenguaje formal/distanciamiento (Labov 1972).

El lenguaje es y ha sido desde siempre una herramienta tanto social como de información. Los hablantes construyen sus enunciados pensando tanto en el contenido (información) como en las relaciones sociales. Cuando utilizamos un lenguaje más formal de distanciamiento frente a otro más informal de vinculación, implica algo sobre nuestra relación con las personas con las que nos comunicamos.

Las interacciones sociales y de contenido también están en el continuo. En algunas conversaciones, el contenido es (o parece ser) más importante que las interacciones sociales debido a que este lenguaje tiende a ser más formal y distante. Por ejemplo, esto suele ocurrir en

una conferencia en clase, aunque la interacción social también es importante aquí. Esto es porque los profesores suelen querer asegurarse de que los estudiantes estén despiertos y alerta. Sin embargo, en otras conversaciones como cuando hablamos del clima para ser cordiales y amistosos con nuestro vecino de al lado, la interacción social es más importante que el contenido. También existen casos en donde hay un equilibrio entre la importancia del contenido y la interacción social.

Cuando en una conversación, el contenido es menos importante que la interacción social, tendemos a pensar que el contenido es “trivial” o “sin sentido”, en donde los llamamos a veces “conversaciones triviales”. Sin embargo, el objetivo de estas conversaciones no es transmitir información, sino construir o mantener ciertos tipos de interacción social y de relación que puedan ser igual de importantes (Gumperz 1982a, 1982b).

Siempre construimos nuestros enunciados tanto para decir “algo” como para establecer una relación social con nuestro interlocutor. Por ejemplo, analicemos los siguientes enunciados. Cada una de ellas comunica un contenido similar, pero expresan diferentes tipos de relaciones sociales y actitudes hacia la persona con la que hablamos:

1. Estaré en su fiesta esta noche.
2. No puedo esperar a la fiesta de esta noche.
3. Vamos a festejar mucho esta noche, amigo.
4. Supongo que tengo que ir a su fiesta esta noche.
5. Es un privilegio para mí asistir a su fiesta esta noche.
6. Si realmente me quieres, iré a tu fiesta esta noche.
7. Tienes suerte de que vaya a tu fiesta esta noche.

Todos estos enunciados expresan que estaré en la fiesta, aunque también comunican diferentes cosas. Cada enunciado también refleja algo sobre la relación que mantengo con el

oyente además de mi actitud hacia el mismo. No existe una forma “neutral” de comunicarse. Ser neutral o no comprometerse no es más que otro tipo de relación y actitud.

Cuando estudiamos la comunicación en el lenguaje, siempre tenemos que preguntarnos qué se dice y cómo se dice para expresar un tipo concreto de relación social y un conjunto de actitudes hacia esa relación (Gumperz 1982a, 1982b). Para acuñar algunos términos nuevos tenemos que preguntarnos en qué punto se encuentra un enunciado concreto dentro de un continuo que va desde la “conversación trivial” (en la que la interacción/relación social es más importante que el contenido) a la “conversación intermedia” (en la que la interacción/relación social y el contenido tienen una importancia más equivalente) y a la “conversación importante” (en donde el contenido es más importante que la interacción/relación social).

Es relevante darse cuenta de que las “conversaciones triviales” no siempre son triviales y las “conversaciones importantes” no siempre son importantes. Entablar pequeñas conversaciones antes de una reunión de negocios sobre cómo está el clima o cómo fue que llegaron a la reunión les permite a los empresarios hacerse una idea de la personalidad de cada uno y de su actitud hacia los demás. Esto puede considerarse “trabajo oculto”.

Por otra parte, hay muchas conferencias universitarias que, por muy informativas que sean, no son importantes ni para el profesor (que quiere irse a casa a escribir) ni para los estudiantes (que quieren irse a casa a socializar). No podemos saber si una determinada forma de hablar es trivial o significativa a menos que comprendamos el contexto completo en el que se produce.

En cierto sentido, no hay interacciones triviales para los seres humanos porque incluso las conversaciones más triviales “enriquecen” las interacciones y las relaciones sociales además de sustentarlas. Incluso, las conferencias que no le interesan a nadie están relacionadas con certificados (títulos) y salarios que sí les interesan a las personas. Por ende, se habla para conseguir propósitos y objetivos que no siempre son lo que parecen.

### **La alfabetización y el continuo contenido-interacción social**

Como hemos dicho antes, la escritura es un sistema de transmisión del lenguaje oral en el que las palabras habladas y la interacción cara a cara desaparecen. Es fácil suponer que la escritura transmite sólo el contenido y no las relaciones sociales o las actitudes como lo hace el lenguaje oral, pero esto no es cierto.

El continuo contenido-interacción social, existe tanto para la escritura como para el habla y no puede ser de otro modo ya que, la escritura transmite el lenguaje oral y éste está pensado para comunicar simultáneamente contenidos y expresar relaciones y actitudes sociales. Estos objetivos no pueden separarse en el lenguaje humano.

Las cartas (cuando eran comunes) se utilizaban a menudo para conversaciones triviales, así como para conversaciones importantes (una esposa le cuenta a su marido soldado que está embarazada). También hay muchas revistas populares que se dedican a publicar chismes sobre famosos (muchas veces ni siquiera ciertos), como una forma de conversación trivial. Lo más interesante es que los textos transmiten actitudes y relaciones hacia sus lectores, pero de maneras distintas a como se transmite en las conversaciones cara a cara.

La escritura hace posible lo que llamaremos “relaciones ficticias” (Scollon y Scollon 1981). En la escritura, tanto la “persona” emisora como las “personas” destinatarias pueden, en ocasiones, ser ficticias. Sin embargo, esto no se logra tan fácilmente en el habla porque las relaciones ficticias suelen conllevar engaños que, en algunos casos, podrían acarrear penas de cárcel.

Cuando el escritor (el “hablante” en la escritura) y el lector (el “oyente” en la escritura) son ficticios, pueden ocurrir cosas interesantes en la dimensión social del lenguaje. Si bien tendemos a pensar que el contenido es primordial en la escritura, ésta, como tecnología permite cambios (con respecto a la comunicación cara a cara) en la forma de tratar la interacción y las relaciones sociales, así como el contenido.

Pensemos en la advertencia que aparece en un frasco de medicamentos (Gee 2010):

Mantenga éste y todos los medicamentos fuera del alcance de los niños. En caso de una sobredosis accidental, busque ayuda profesional o contacte inmediatamente con un centro de control de intoxicaciones. Como con cualquier otro medicamento, si está embarazada o en período de lactancia, consulte a un profesional de la salud antes de utilizar este producto.

Es probable que esta advertencia haya sido redactada por un equipo de abogados y empresarios. ¿Quién es el autor de la advertencia? ¿Quién “habla”? ¿La empresa que produce el medicamento? ¿Un comité? ¿La ley? Ningún individuo o institución es el autor o escritor.

¿A quién va dirigida la advertencia? No a nosotros como individuos y quizá tampoco directamente a los usuarios del medicamento, ya que muchos de nosotros no leemos las letras pequeñas de los envases. Por ende, es posible que se dirija a los abogados o a los tribunales en caso de acción judicial o tal vez a los “consumidores” en sentido económico o jurídico.

En cuanto a la advertencia, vemos que el autor (escritor) y el lector son bastante imprecisos o indeterminados. Los llamaremos “ficciones” (aunque, en este caso, también podríamos llamarlos “abstracciones”). Lo que queremos decir al llamarlas “ficciones” es que tratamos la advertencia como si estuviera dirigida por alguien a alguien, cuando en realidad no está claro quiénes son esos “alguien”.

Sin embargo, como lenguaje institucionalizado, la advertencia sigue teniendo una “voz” y una “actitud” y crea cierto tipo de relación con el lector por muy vago o confuso que éste sea. Esta etiqueta suena formal, pero a la vez afectiva. Es como una homilía sobre las drogas, y no una declaración directa sobre la aspirina. Además, considera que el lector está bien informado, ya que supone que sabe cómo buscar ayuda profesional, encontrar un servicio de toxicología y qué es un profesional de la salud. Por último, parece asumir que el lector es una mujer.

Más recientemente, en las etiquetas de los frascos de aspirina se ha añadido lo siguiente, además de la advertencia anterior (Gee 2010):

Los niños y adolescentes no deben utilizar este medicamento para la varicela o los síntomas de la gripe antes de consultar a un médico sobre el síndrome de Reye, una enfermedad poco frecuente pero grave que, según los informes, está asociada a la aspirina. ES ESPECIALMENTE IMPORTANTE NO UTILIZAR ASPIRINA DURANTE LOS ÚLTIMOS 3 MESES DEL EMBARAZO A MENOS QUE LO INDIQUE ESPECÍFICAMENTE UN MÉDICO, YA QUE PUEDE CAUSAR PROBLEMAS EN EL FETO O COMPLICACIONES DURANTE EL PARTO.

En la versión actual, las instrucciones son mucho más directas y utilizan términos específicos como “niños y adolescentes”, “este medicamento”, “varicela o gripe”, “médico”, “síndrome de Reye”, “aspirina” y “embarazo”, en lugar de “todos los medicamentos”, “cualquier medicamento” y “profesionales de la salud”, lo que resulta más autoritario e intimidatorio. Además, el mensaje asume que el lector desconocía todo esto, mientras que la advertencia anterior trataba su contenido como de sentido común.

Como escritura, la advertencia del frasco de aspirinas es una forma de transmitir el lenguaje oral. La advertencia “habla” y alguien escucha (lee). No obstante, lo que hace esta advertencia escrita no podría conseguirse con el habla porque las abstracciones o ficciones no pueden, en realidad, hablar y no pueden escuchar. Por eso, el escrito da lugar a toda una serie de nuevas voces, nuevos hablantes y oyentes.

Otro ejemplo de autores y lectores como ficciones o abstracciones es el ensayo, que es una forma escrita (o género) que surgió en el siglo 17 (Bazerman 1988). En el siglo 20 ya se había convertido en la principal forma de lenguaje escrito utilizada en las escuelas, especialmente en los grados superiores como enseñanza secundaria y universitaria. El saber escribir y leer ensayos se consideraba como una característica de una persona culta y educada. Además, constituía un importante paso para obtener una “buena educación” y graduarse de la universidad. Estos, sin embargo, ya no desempeñan el mismo papel en la actualidad.

Los ensayos fueron tan fundamentales para el concepto que tenemos en el siglo 20 de una persona que ha recibido una educación que la forma de alfabetización fundamental para la enseñanza se ha

denominado “alfabetización ensayística” (Scollon & Scollon 1981). En este sentido amplio de “ensayo”, la escritura expositiva y científica son formas de alfabetización ensayística.

¿Quién es el autor de un ensayo? Parece que, si Joe Doe escribió el ensayo, Joe Doe es el autor, pero los ensayos no deben escribirse con ninguna identidad o voz específica relacionada con Joe como individuo único. De hecho, deben escribirse con la “voz de la razón” por la “persona racional”, sin dejarse influir por ella. Además, el ensayo no debe reflejar la cultura específica del autor, sino los argumentos de una mente racional y, por tanto, universal.

¿Quién es el lector de un ensayo? El ensayo se dirige al mismo tipo de persona que se supone que es su autor: un intelecto racional, universal, acultural y sin emociones, que se enfoca en los argumentos y las pruebas.

Con los ensayos, el escritor y el lector son ficciones o abstracciones. Los autores y lectores auténticos tienen que escribir y leer como si fueran mentes universales, racionales, aculturales, carentes de emociones e incorpóreas. En realidad, esto nunca fue posible, pero sin duda era una postura que autores y lectores debían adoptar si querían ser considerados cultos.

Se da algo bueno en la postura del ensayista que es sin duda podemos aplaudir cuando las personas intentan superar el interés propio, el conflicto cultural y la implicación emocional para alcanzar intereses comunes. Sin embargo, también hay algo malo y es que las personas no existen sin cultura, ya que el interés propio, a menudo, puede encubrirse en un lenguaje aparentemente racional y neutral y la emoción no es realmente lo contrario de la razón, sino que, a menudo, es necesaria para su aplicación (es difícil escribir sobre lo que no te importa).

Nuestro objetivo no es juzgar los ensayos, dado que, en cierta medida, constituyen la prueba de fuego de una persona con una base académica. Lo que queremos destacar es que la creación de un autor y un lector como ficciones (seres universales, racionales y culturales) es una forma de utilizar el lenguaje vinculada a la forma escrita del ensayo. Históricamente, esta forma de utilizar el lenguaje ha creado e influido también en nuevas formas de hablar y de pensar. Cuando un estudiante presenta un informe científico en clase o un científico da una conferencia en un congreso, la “voz” es la misma: la mente

razonadora, desinteresada, sin emociones y acultural. Como ejemplo, considere las frases siguientes (Gee 2004, 2010):

1. Los gusanos cornudos sí que varían mucho por lo bien que crecen.
2. El crecimiento del gusano cornudo presenta una cantidad importante de variaciones.
3. El crecimiento del gusano cornudo sí que presenta una cantidad importante de variaciones.

La oración 1 representa lo que podríamos llamar “lenguaje cotidiano”, que los lingüistas denominan “la lengua vernácula”. Es el tipo de lenguaje que puede hablarse y escribirse, pero no es probable que aparezca en un ensayo o un informe científico. Por su parte, la oración 2 representa una variedad de lenguaje que asociamos con los profesores universitarios y otros eruditos, que, a veces, se denomina “lenguaje académico” (Schleppegrell 2004). Este tipo de lenguaje puede ser hablado o escrito, pero lo asociamos más con la prosa ensayística o expositiva que con el habla, y mucho menos con el “lenguaje cotidiano”.

La oración 3 es interesante porque hay algo que está mal. No es el tipo de lenguaje que esperamos oír o leer. ¿Por qué? El lenguaje académico como el de la oración 2 que es una variedad de la literatura ensayística, se supone que se escribe (o se habla) desde la voz de la razón y el argumento. “Sí que” es un adverbio que indica implicación emocional porque muestra que el hablante (o el escritor) está impresionado o preocupado. Sin embargo, esta emoción no debería mezclarse con el lenguaje académico de la oración 2.

La persona que pronuncia la oración 1 (que asociamos más con el habla) es diferente de la que escribe la oración 2 (que asociamos más con la escritura académica). La persona que pronuncia la oración 1 es una persona implicada emocionalmente, que habla como una persona común y expone sus opiniones sobre los gusanos cornudos basándose en lo que ha visto y hecho.

En cambio, la persona que escribe la oración 2 es una persona racional, orientada a la argumentación, que habla como un especialista y no expone sus opiniones, sino el punto de vista de un campo o disciplina basado en pruebas científicas (como pruebas estadísticas de significado) desarrolladas por ese campo o disciplina.

La alfabetización (lenguaje escrito) dio lugar a muchos otros autores y lectores de ficción. ¿Quién es el autor de un anuncio? ¿La agencia de publicidad? ¿La empresa que lo ha pagado? ¿A quién se dirige? ¿A los consumidores? ¿A un determinado grupo demográfico (por ejemplo, jóvenes profesionales menores de 40 años)? ¿A alguien con dinero?

¿Quién es el autor de un discurso político? ¿El político que lo pronuncia? ¿El autor del discurso? ¿La línea del partido político que dicta lo que debe contener? ¿A quién se dirige? ¿A los votantes? ¿A los compañeros de partido? ¿A los votantes indecisos? ¿A los ciudadanos?

En las culturas orales, ciertamente, una persona podía hablar por otra. Un chamán o un sacerdote pueden pretender hablar en nombre de Dios con las palabras de Dios. Un consejero podía hablar en nombre de un jefe o del rey; pero lo que estaba claro era que una determinada persona estaba hablando. Estaba claro que se dirigía a las personas como miembros de una cultura compartida. Sin embargo, un documento escrito emitido por los obispos católicos de Estados Unidos está escrito por una institución (“la Iglesia de Estados Unidos”) y dirigido a los “laicos”, es decir, a un grupo abstracto de personas definidas por su relación con esa institución. La proliferación de autores y lectores ficticios de la alfabetización dio lugar a una proliferación de instituciones y a las instituciones como actores y "hablantes" en sí mismas.

### **Los orígenes de autores y lectores como ficciones**

Los autores y lectores de ficciones, desarrollados tan ampliamente por la alfabetización, tiene su origen en el largo pasado humano cuando aprendimos a mentir por primera vez (Smith 2007) ¿Cómo sería una criatura similar a un ser humano que no supiera mentir? Es posible incluso que

mentir haya contribuido a la expansión del cerebro humano (Byrne & Whiten 1988). Los mentirosos obtienen una gran ventaja en la sociedad y cuando los demás tienen que ser más listos para descubrirlos, los mentirosos tienen que aún más listos para mentir mejor.

Al mentir, las personas pueden pretender ser alguien distinto de lo que realmente son en una conversación. Esto no funcionaría en un pueblo pequeño, pero ciertamente lo hará en una ciudad más grande. Por ejemplo, una persona puede fingir ser un chamán cuando no lo es, hablar en nombre de Dios cuando no lo hace, ser un experto cuando no lo es o ser soltero cuando está casado. Lo podemos ver en las novelas de Jane Austen en donde están llenas de mujeres que tienen que averiguar si los hombres que encuentran viables para el matrimonio son quienes dicen ser en términos de rango, riqueza y carácter moral.

Las mentiras y las metáforas están estrechamente relacionadas. En una metáfora tomamos una cosa por otra. Por ejemplo, cuando digo que Sue es una “auténtica soldada” o que “siguió adelante” porque se esforzó mucho durante las dificultades, intento tratar a Sue, quien en realidad no es una soldada, como si lo fuera. Las metáforas son ficciones y en la mayoría de los casos lo sabemos y no las tomamos de forma literal.

Cuando el sistema legal de Estados Unidos trata a una corporación como una “persona” con derechos, lo hace basándose en una metáfora y es una ficción. En realidad, una empresa no es una persona, pero una vez que esta metáfora se convierte en ley y la sociedad trata a las empresas como personas (por ejemplo, dice que tienen “derechos de libertad de expresión” y, por tanto, pueden hacer donaciones financieras a los políticos de su elección como cualquier “otra” persona), entonces podemos preguntarnos si realmente es una ficción. ¿Nos hemos dejado engañar por una metáfora que nos tomamos demasiado en serio o la ley ha hecho realidad una ficción? Es muy difícil saberlo.

La alfabetización permite que todo tipo de seres ficticios actúen de maneras que tienen repercusiones en el mundo que no esperamos que tengan las ficciones. Por supuesto, la mentira y la metáfora eran posibles en una cultura oral, pero la alfabetización permite llevarlas mucho más lejos. Es habitual en la sociedad moderna, tratar a las instituciones como seres capaces de comunicarse. Estamos acostumbrados a “oír” y “hablar” con la compañía telefónica, el banco, la escuela, los gobiernos, Greenpeace (organización no gubernamental ambientalista internacional) o medios de comunicación como la CNN. Escuchamos a estas instituciones y hablamos con ellas de manera oral y escrita, aunque la escritura fue lo que les permitió surgir, crecer y comunicarse.

## **Comercio ilícito de especies silvestres, mercados mojados y COVID-19: prevención de futuras pandemias**

**A. Alonso Aguirre , Richard Catherina, Hailey Frye, and Louise Shelley**

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Aunque actualmente se desconoce el origen exacto del SARS-CoV-2 (Coronavirus 2 de Síndrome Respiratorio Agudo Grave), es decir el agente etiológico del COVID-19, existen pruebas sustanciales que sugieren que la fuente de transmisión del virus se produjo en el mercado mojado de Wuhan, ya que en estos mercados es frecuente la venta y el almacenamiento en estrecho contacto con murciélagos y animales salvajes. Además, durante varias de las pandemias mundiales pasadas, los murciélagos fueron un factor esencial en la propagación de enfermedades zoonóticas transmitidas de un murciélago a otro animal o directamente a los humanos. Por ende, los mercados de animales vivos favorecen la aparición de nuevos virus como el COVID-19. Este artículo sugiere que, para prevenir futuras pandemias, se prohíba la venta de animales exóticos en los mercados mojados. También aboga por la integración del análisis del comercio ilícito con el estudio de la transmisión de enfermedades zoonóticas así como de las pandemias.

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**PALABRAS CLAVE:** COVID-19, comercio ilícito de fauna salvaje, SARS-CoV-2, enfermedades zoonóticas

### **Introducción**

Mientras el mundo sigue luchando contra las ramificaciones sin precedentes del COVID-19, se plantean dos preguntas centrales, ¿De dónde procede este nuevo virus y cómo podemos prevenir futuras pandemias? Aunque no existe una respuesta definitiva sobre los orígenes del virus, los especialistas en el campo de la inmunología y la microbiología ya han sugerido que el COVID-19 se produjo de forma natural (Choudhury, 2020). Sin embargo, existen pruebas significativas que sugieren que los mercados de animales vivos o mercados mojados de Wuhan,

China, son la fuente original de transmisión del virus. Asimismo, un indicio importante es que algunos de los primeros pacientes que resultaron positivos para COVID-19 tuvieron contacto con los mercados mojados de Wuhan (Broad, 2020, p. 3). Además, el virus causante conocido como SARS-CoV-2 (Coronavirus 2 de Síndrome Respiratorio Agudo Grave) es un betacoronavirus que se originó en los murciélagos al igual que las enfermedades SARS (Síndrome respiratorio agudo grave) y MERS (Síndrome respiratorio de Oriente Medio) (Centros para el Control y la Prevención de Enfermedades [CDC], 2020).

Un estudio de estas formas de contagio apoya la hipótesis de que el COVID-19 podría haberse transmitido desde los murciélagos hacia otro animal susceptible, como un pangolín y de ahí a un ser humano (Choudhury, 2020). La transmisión puede haberse producido en el mercado de animales salvajes o mientras se dirigían a él, donde pueden venderse animales salvajes procedentes del comercio ilícito. En la actualidad, se desconoce con exactitud cómo se transmitió el virus a través de los animales a los seres humanos, pero la amenaza de que los murciélagos propaguen la enfermedad ha sido una de las preocupaciones de las autoridades sanitarias y los investigadores biológicos durante mucho tiempo. Los virus que se transmiten de animales a humanos son muy peligrosos para la vida humana debido a la ausencia de inmunidad colectiva entre la población. Este artículo explorará las relaciones que hay entre la pandemia actual, los mercados de animales vivos, la propagación de enfermedades relacionadas con los animales y el comercio ilícito de animales salvajes e incluirá una serie de recomendaciones políticas prescritas para prevenir futuros brotes que se deriven de estas situaciones.

### **Materiales y métodos**

Para explorar las relaciones existentes entre los murciélagos y el COVID-19, hemos revisado la bibliografía académica y las revistas científicas sobre la ecología y la conservación de los murciélagos, las enfermedades zoonóticas emergentes, el brote de COVID-19 y los mercados

mojados de China. Asimismo, se utilizaron sitios web de organismos autorizados como los Centros para el Control y la Prevención de Enfermedades (CDC) y la Organización Mundial de la Salud (OMS). También se consultaron estudios e informes sobre el comercio ilícito de especies silvestres de destacadas organizaciones intergubernamentales y no gubernamentales como la Oficina de las Naciones Unidas contra la Droga y el Delito (ONUDD) y TRAFFIC. Hemos consultado también la información de los medios de comunicación, tales como The New York Times y The Wall Street Journal.

### **El papel de los murciélagos y las enfermedades relacionadas con el COVID-19**

A pesar de que podrían pasar varios años hasta que se lleguen a conclusiones definitivas sobre el origen del brote de COVID-19, aún existen pruebas sustanciales de que se originó en los murciélagos. Según las investigaciones biológicas y epidemiológicas, las distintas especies de murciélagos pueden ser portadoras de múltiples ramificaciones del virus, muy similares a las del coronavirus actual. Los Angeles Times afirmó que “los científicos estiman que 3 de cada 4 enfermedades infecciosas nuevas o emergentes en las personas proceden de los animales” (Su, 2020).

En el Instituto de Virología de China se descubrió que un murciélago de herradura (*Rhinolophus affinis*), identificado como RaTG13, era portador de una variante de coronavirus que compartía el 96% de su ADN con el SARS-CoV-2 (Coronavirus 2 de Síndrome Respiratorio Agudo Grave) (Ridley, 2020). Si bien esta información aporta pruebas circunstanciales convincentes, no prueba que esta especie de murciélago en particular contribuyera o ayudara a la propagación del COVID-19. Sin embargo, esto no significa que otra especie de murciélago no sea portadora de esta variante del coronavirus que, posteriormente, pueda transmitirse a los seres humanos. Como dato, los humanos compartimos el 96% de nuestro genoma con los chimpancés (Bat Conservation Trust, 2020). Los expertos no están seguros de cómo se transmitió el SARS-

CoV-2 a los humanos, pero es probable que se transmitiera a través de otro animal susceptible como un pangolín, siendo este el mamífero que más se comercia ilegalmente en el mundo (Conciatore, 2019).

Investigaciones anteriores han demostrado que los murciélagos son fundamentales para la propagación de enfermedades similares al COVID entre animales y seres humanos. Aunque los roedores son los responsables de la propagación de la peste bubónica durante el siglo 14, los murciélagos presentan un peligro único como reservorios de virus zoonóticos, ya que albergan incluso más bacterias y enfermedades que los roedores (Luis et al., 2013, p. 3). Por ello, los murciélagos han sido muy estudiados como transmisores de virus por contacto cercano o consumo directo hacia los humanos. Como dato, el consumo humano no sólo resulta perjudicial para los murciélagos, sino que también contribuye a que pierdan su hábitat y como consecuencia de la destrucción del medio ambiente, buscan nuevas zonas para alimentarse, lo que a veces les hace entrar en contacto con el ganado que acabarán vendiendo en los mercados al aire libre (Plowright et al., 2015, pp. 3-4). Además, la destrucción del hábitat puede hacer que los murciélagos eliminen y contraigan más virus, lo que aumenta aún más la probabilidad de que transmitan enfermedades (Olival, 2016, p. 7). Los murciélagos suelen almacenarse y venderse en mercados mojados y a menudo se transportan junto a grandes grupos de animales poco comunes y de comercio ilícito que son consumidos por los seres humanos. Con ello, dicha manera de traslado y almacenamiento favorece la propagación de agentes patógenos entre los murciélagos y otras criaturas diferentes, en ocasiones exóticas y raras, que pueden portar y transmitir enfermedades en situaciones graves y de estrés.

El temor a la transmisión de patógenos de murciélagos a humanos es un tema muy difundido, tanto entre los profesionales de la salud pública como en el mundo académico. La

Sociedad Americana de Microbiología publicó un informe titulado *Identification of a Novel Coronavirus in Bats* (en español, Identificación de un nuevo coronavirus en murciélagos), en el que se afirmaba que “la reciente aparición del coronavirus asociado al síndrome respiratorio agudo severo (SARS-CoV) pone de relieve la importancia de la vigilancia de virus en animales salvajes” (Poon et al., 2005, p. 2001). También explica que “la identificación del coronavirus asociado al síndrome respiratorio agudo severo (SARS-CoV) en civetas y en otros animales salvajes presentes en los mercados de animales vivos indica que este nuevo patógeno humano surgió como resultado de una transmisión entre especies” (Poon et al., 2005, p. 2001).

En este informe se ilustra cómo otras enfermedades similares al coronavirus en animales que han sido identificadas previamente como posibles fuentes de transmisión hacia el ser humano. De hecho, este descubrimiento no es reciente e incluso, ya en el 2007 se temía que existiera un grave peligro para la vida humana. En su momento, un estudio de la Universidad de Hong Kong concluyó que “la presencia de un gran reservorio de virus similares al SARS-CoV en los murciélagos de herradura junto con la cultura de comer mamíferos exóticos en el sur de China, la convierten en una bomba de tiempo” (Cheng, Lau, Woo, & Yuen, 2007, p. 638). De hecho, tal advertencia fue ignorada y el no haber actuado en consecuencia ha contribuido a la pandemia mundial más grave en un siglo.

### **La historia de los riesgos sanitarios relacionados con las prácticas comerciales de animales salvajes**

Esta crisis sanitaria mundial originada por la transmisión zoonótica no es nueva. De hecho, en los últimos 20 años, se cree que varias enfermedades mortales se han originado en los mercados mojados, donde se suelen almacenar carnes frescas, productos agrícolas y animales para venderlos al aire libre, muy cerca unos de otros con escasas o nulas precauciones de seguridad sanitaria o medidas de salubridad. Estos mercados existen en todo el mundo, pero en

China suelen tener especies extranjeras, raras y, a veces, en peligro de extinción que los proveedores ambulantes venden entre otros productos. Además, los mercados mojados facilitan y contribuyen en gran medida a la práctica del comercio ilícito de animales salvajes que, a su vez, ha provocado la propagación de enfermedades zoonóticas entre los animales y los compradores que acuden a los mercados. Cabe destacar también que dichos mercados, el transporte y almacenamiento de animales destinados al comercio de fauna salvaje favorece la propagación de enfermedades de unos animales a otros.

Tal y como afirma un escritor científico, “los mercados de carne viva son laboratorios perfectos para crear nuevos virus. Los animales estresados excretan más virus y son más susceptibles a las infecciones y las jaulas suelen estar apiladas unas sobre otras, lo que facilita la exposición” (Nuwer, 2020). Asimismo, las carnes exóticas que se comercializan ilegalmente, como los pangolines, son menos susceptibles de ser inspeccionadas por riesgos sanitarios y pueden entrar en contacto con murciélagos durante el trayecto. Además, como estos animales poco comunes suelen proceder de zonas remotas, es más probable que sean portadores de enfermedades con las que los humanos nunca han estado en contacto (Hemley, 2020). Por otro lado, las condiciones a las que se somete a los animales vivos en los mercados mojados crean una placa de Petri para la propagación de enfermedades.

Tanto en China como en otros países asiáticos, estos mercados están muy presentes porque los consumidores consideran los mercados mojados más frescos, menos caros y que ofrecen animales poco comunes que sirven como símbolos de estatus o que se cree que poseen elementos curativos únicos (Daszak, Olival, & Li, 2020, p. 7). Con todo, la propagación de enfermedades a partir de los animales vivos y exóticos representa la mayor amenaza. Por ejemplo, los carnívoros salvajes, las aves, los reptiles y los primates que se comercializan en estos mercados son portadores de patógenos de todos los orígenes taxonómicos. Por lo tanto,

patógenos como la enfermedad de Newcastle pueden pasar de las aves silvestres a las domésticas, y patógenos como el virus espumoso de los simios y *Chlamydia psittaci* pueden transmitirse de los animales silvestres a los humanos (Gómez & Aguirre, 2008, p. 17). Existe una historia bien documentada de pandemias regionales e incluso mundiales, las cuales fueron originadas por la transmisión de enfermedades de animales a humanos debido a la práctica de los mercados mojados y el tráfico ilegal de animales salvajes.

En abril de 2020, el responsable en funciones de Biodiversidad de las Naciones Unidas (ONU) declaró que “los países deberían actuar para prevenir futuras pandemias prohibiendo los mercados mojados que venden animales vivos y muertos para el consumo humano, pero advirtió de las consecuencias imprevistas” (Greenfield, 2020). Además, funcionarios de la salud pública de Estados Unidos y de todo el mundo han señalado a los mercados mojados y al comercio ilegal de animales salvajes como las vías de transmisión de enfermedades de animales a humanos, lo que puede producirse por el consumo, el contacto o la mezcla de animales o sus subproductos. Por lo general, los animales son susceptibles a distintos tipos de enfermedades y una vez que una de ellas se introduce en la población humana, puede propagarse de persona a persona y provocar un brote o una posible emergencia de salud pública.

Algunas epidemias relativamente recientes como el ébola, el síndrome respiratorio de Oriente Medio (MERS), la gripe aviar, el síndrome respiratorio agudo severo (SARS) y la gripe porcina son ejemplos de enfermedades que se han originado por la transmisión de enfermedades de animales a humanos. Por ejemplo, el virus asiático altamente patógeno de la gripe aviar A (H5N1) o gripe aviar es muy contagioso y se produce cuando los seres humanos entran en contacto cercano o directo con aves de corral infectadas o ya enfermas (CDC, 2018). Por lo tanto, los factores de riesgo significativos para la infección incluyen visitar o mezclar animales en mercados de aves de corral vivas. Del mismo modo, si bien la gripe porcina es esporádica en

humanos, las infecciones suelen ser el resultado de la exposición de cerdos infectados dentro de mercados de animales vivos, de ferias o de la industria porcina (CDC, 2019a).

Lamentablemente, debido a la naturaleza de las infecciones, aún queda mucha información por conocer sobre cómo se originaron algunos de estos brotes. En el caso del ébola y basándose en los análisis de virus similares, los científicos creen que se transmite por animales, siendo la fuente más probable los murciélagos o primates no humanos como simios o chimpancés (CDC, 2019b). Otro ejemplo fue en 2003, cuando se produjo un brote de SRAS en la provincia meridional china de Guangdong. Los expertos creen que este brote es el resultado de un reservorio animal desconocido y algunos han sugerido que se trata de murciélagos y que la propagación se produjo a través de otros animales como las civetas (Organización Mundial de la Salud [OMS], 2020).

Durante su brote inicial, el SRAS provocó más de 8.000 casos en más de 25 países y de forma similar al SRAS, el MERS comenzó como resultado de un virus zoonótico en Arabia Saudí. Pese a que el brote de MERS se debió a diferentes prácticas que no fueron los mercados mojados o los reservorios animales, el método de transferencia fue el mismo: de animal a humano (OMS, 2019). El director Dr. Anthony Fauci del Instituto Nacional de Alergias y Enfermedades Infecciosas insistió en el cierre mundial de los mercados mojados porque la crisis actual es un “resultado directo” de esta práctica (Guzmán, 2020). Tras el brote de SRAS, China intentó instituir una prohibición similar y más estricta sobre el comercio de animales salvajes, pero ésta se ha erosionado con el tiempo (Su, 2020). Además, varios conservacionistas y profesionales médicos, incluidos miembros de la Academia China de Ciencias, esperaban que esta prohibición fuera permanente, pero los mercados y las rutas comerciales volvieron una vez finalizada la crisis (OMS, 2020). No cabe duda de que, si no se aplican políticas cooperativas, exhaustivas y de obligado cumplimiento sobre el comercio de especies silvestres y especies en

peligro de extinción como el pangolín, la propagación de enfermedades continuará a escala mundial y la pérdida de vidas a escala internacional.

### **Posibles soluciones políticas**

La devastación provocada por la propagación del COVID-19 podría servir de advertencia para lo que está por venir, en el caso de que el comercio ilícito de especies silvestres y los mercados mojados se siga permitiendo a escala mundial. Una combinación de factores que van desde la pérdida de hábitat hasta el aumento de las interacciones entre humanos y animales a través del comercio ilícito de animales salvajes ha aumentado la probabilidad de que surjan y se propaguen nuevas enfermedades zoonóticas. Esta pandemia empezó en China, pero no hay razón para que una pandemia similar no pueda empezar en otros lugares del sudeste asiático, el sur de Asia, el África subsahariana o Latinoamérica (Daszak et al., 2020, p. 7). Deben tomarse medidas significativas para garantizar la prevención de este tipo de pandemias en el futuro. Para ello, presentamos una serie de propuestas políticas para abordar el problema de las enfermedades zoonóticas transmitidas por animales procedentes del comercio ilícito.

Estas sugerencias políticas son polifacéticas y no dependen totalmente de las estrategias de aplicación de la ley y sus límites son claros. En el año 2019, los agentes de lucha contra el contrabando de Guangdong interceptaron 21 pangolines vivos y descubrieron que muchos de ellos estaban enfermos por coronavirus (Ridley, 2020). Por su carne y sus escamas, el comercio ilícito de pangolines, supuesto huésped susceptible y posible portador del COVID-19, representa más de 125 millones de dólares en actividades ilegales cada año (Oficina de las Naciones Unidas contra la Droga y el Delito [ONUDD], 2013, p. 86). Aunque el aumento de las operaciones contra el comercio ilícito de especies silvestres es un esfuerzo que merece la pena para debilitar las fuentes de ingresos de los delincuentes transnacionales, para conservar las especies en peligro

de extinción y para luchar contra la corrupción, existen límites en cuanto a su eficacia para detener la propagación de nuevas enfermedades.

### **Cooperación mundial para combatir el tráfico ilícito de especies silvestres**

La aplicación de la ley a escala mundial para hacer frente al comercio ilegal de animales exóticos para su consumo o posesión representa una gran prioridad para prevenir la futura transmisión de enfermedades de animales a humanos. Para hacer frente a este problema, la lucha contra el comercio ilícito de fauna y flora silvestres debe ser una de las principales prioridades de INTERPOL (el organismo policial internacional) y de los organismos regionales y encargados de la aplicación de la ley. Sin embargo, este comercio está muy vinculado a la delincuencia transnacional, que necesita de la corrupción para operar. Por lo tanto, debe prestarse mucha más atención al desmantelamiento de las redes ilícitas transnacionales, a la lucha contra la corrupción y al seguimiento del dinero vinculado a este comercio. Además, hay que prestar mucha más atención al papel de las empresas como parte de la cadena de suministro de este tránsito ilícito. Gran parte del comercio ilícito de especies silvestres fluye a través de zonas de libre comercio en Asia y se les debe exigir mucha más responsabilidad por la carga que pasa por sus puertos (Shelley, 2018, p. 193).

### **Cierre de los mercados mojados que venden animales vivos o carnes exóticas**

Una prohibición selectiva podría ser eficaz y tener menos consecuencias imprevistas que una prohibición total, porque centrarse en los vectores más probables de enfermedades zoonóticas podría proteger la salud pública sin los efectos negativos de una prohibición general. Aunque la prohibición de los mercados de animales salvajes y mojados reduciría el número de oportunidades que tienen los consumidores chinos de entrar en contacto con carne infectada por agentes infecciosos, existe la posibilidad de que aparezcan mercados clandestinos. Por lo tanto, permitir la venta de una categoría limitada de carne en los mercados, como lo está considerando

ahora el gobierno chino, preservaría el acceso de la población a los alimentos. Esto es porque una prohibición generalizada podría destruir los medios de subsistencia de estas personas o incluso dar lugar a un mercado negro facilitado por la corrupción con riesgos aún mayores (Samuel, 2020). Por ende, la aplicación de la normativa es esencial y deben llevarse a cabo inspecciones para garantizar que la carne de animales exóticos no se disfraza de carne de animales domésticos.

Hay ciertos aspectos de esta pandemia que podrían hacer políticamente viable una prohibición total de los mercados mojados. Los mercados en China se cerraron temporalmente tras el brote de SARS en el 2003; no obstante, esta prohibición no duró mucho (Samuel, 2020). Sin embargo, esta vez podría ser diferente porque el brote de SARS causó alrededor de 800 muertes en todo el mundo, mientras que el número de muertos por COVID-19 ha causado más de 432.000 muertes hasta el 15 de junio de 2020. Con las recomendaciones de los expertos y el drástico número de víctimas del COVID-19, el cierre de los mercados mojados puede ser políticamente posible.

### **Fomentar la comprensión de los riesgos sanitarios de la carne vendida en mercados mojados**

Incluso si se prohíben los mercados de animales salvajes, será necesario realizar campañas de divulgación para reducir la demanda de un mercado negro. Además, el consumo de animales salvajes de los mercados mojados está influido por la cultura china y asiática, que sostiene que los animales salvajes y sus subproductos tienen poderes curativos. Comer animales raros también se ha convertido en un símbolo de estatus que significa que el consumidor es rico (Daszak et al., 2020, p. 7). Asimismo, la cultura china da mucha importancia a la “frescura” de los alimentos que se consumen. Este concepto de frescura se extiende a la percepción de la calidad, la salubridad y el sabor de los alimentos. Por ejemplo, los alimentos de una tienda de ultramarinos se consideran menos frescos que los de los mercados mojados. Por ello, algunos

consumidores chinos van todos los días a mercados de productos frescos de fácil acceso (Zhong, Crang y Zeng, 2020, p. 179).

Para acabar con los mercados clandestinos hay que convencer a la población que no deben comprar en ellos. Esto podría hacerse mediante campañas de divulgación de salud pública que informen de los riesgos de las carnes exóticas y los mercados con animales salvajes vivos. De hecho, la investigación ha demostrado que las campañas de divulgación sanitaria pueden funcionar. Por ejemplo, la primera campaña antitabaco financiada con fondos federales por el gobierno de los Estados Unidos mostró unos resultados impresionantes, inspirando a 1,8 millones de fumadores a intentar dejarlo y a 104.000 a dejarlo definitivamente en el año 2014 (CDC, 2016). Aunque existen diferencias cruciales entre los cigarrillos y las carnes de los mercados de animales en términos de adicción y sus lugares en las diferentes culturas, el concepto puede tener aplicabilidad para convencer a las personas de no comprar alimentos de los mercados de animales salvajes.

### **Investigación y análisis**

La investigación futura de la comunidad sanitaria, médica y medioambiental debe combinarse con la investigación sobre el comercio ilícito y la corrupción. Se ha adoptado un enfoque transdisciplinario en la perspectiva de One Health, pero este enfoque no ha salido de la perspectiva científica (Aguirre et al., 2019; Wilcox, Aguirre, De Padua, Siriaroonrat, & Echaubard, 2019). En el futuro, estas barreras entre disciplinas académicas deben superarse para considerar todos los riesgos para la salud pública.

### **Conclusión**

Para afrontar y prevenir las pandemias se requiere un conjunto de investigaciones transdisciplinares. La investigación debe dirigirse a las causas principales de la propagación de

enfermedades zoonóticas, como el comercio ilícito de animales salvajes y los mercados mojados. Además, los estudiosos de la salud pública, la biología de la conservación y el comercio ilícito deben colaborar para abordar las facetas de las cadenas de suministro, la corrupción y el comercio que pueden contribuir a la transmisión de zoonosis. También se necesitará trabajar mucho más con la comunidad empresarial para seguir las cadenas de suministro vinculadas al comercio ilícito de flora y fauna silvestres. Asimismo, los gobiernos tendrán que involucrarse y tomar medidas para reprimir el comercio de especies silvestres con el fin de prevenir futuros brotes.

Quienes forman parte del comercio ilícito de especies silvestres no han descansado durante esta crisis porque las políticas de bloqueo y la dinámica cambiante de los viajes internacionales han provocado múltiples cambios en las cadenas de suministro del comercio ilícito de especies silvestres. El comercio por vía aérea se ha visto frenado por las normas de cuarentena y el transporte por carretera se ha complicado por los bloqueos y los controles, sobre todo en las fronteras; sin embargo, el comercio sigue realizándose por mar. Además, como los gobiernos han cerrado tantos parques nacionales, los cazadores furtivos han aprovechado la oportunidad para cazar animales que no están tan vigilados como antes. Debido a las dificultades de transporte y a la falta de vigilancia de los parques nacionales, los productos se acumulan en el comercio ilícito de especies silvestres y si no se solucionan estos problemas ahora, el comercio podría reavivarse cuando se levanten los cierres (Wildlife Justice Commission, 2020, p. 5).

Este brote se originó por una serie de factores como las condiciones de los mercados mojados, el comercio ilícito de especies silvestres y la destrucción del medio ambiente. Por ello, será necesario un enfoque múltiple para garantizar que esto no vuelva a ocurrir. En cuanto al comercio ilegal, los responsables políticos tendrán que abordar la causa de la demanda de estos productos que son los mercados mojados. Para abordar el problema de las enfermedades

zoonóticas será necesario cerrar estos mercados o, al menos, regularlos estrictamente y prohibir la venta de animales salvajes vivos. Confiamos en que esta pandemia sirva para convencer a los responsables gubernamentales de la necesidad de combatir estos mercados y convencer a los académicos para que estudien la relación entre el comercio ilícito y la salud pública.

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## **Notas**

Conflicto de intereses: Ninguno declarado.

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## 4.2 Translations from Spanish into English

### **Cambio climático. Perspectivas futuras**

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### **RESUMEN**

El presente artículo pretende ofrecer una visión global referente al cambio climático en relación a aspectos tales como su relación con los gases de efecto invernadero, efectos sobre el medioambiente, ser humano, economía, así como las posibles consecuencias futuras y la importancia en la toma de decisiones y políticas encaminadas a mitigar el calentamiento a nivel mundial.

**Palabras clave:** Cambio climático, gases de efecto invernadero y calentamiento global.

### **Climatic change. Future perspectives**

### **ABSTRACT**

The present article aims to offer an overview of climate change in relation to aspects such as their relationship to greenhouse gases (GHG), effects on the environment, human being, economy, possible consequences in a future and the importance in the policies and decision taken and to mitigate global warming.

**Keywords:** Climatic change, greenhouse gases and global warming.

## 1. INTRODUCTION

### 1.1 DEFINITION

According to the National Oceanic and Atmospheric Administration (NOAA), climate change responds to long-term fluctuations in temperature, precipitation, winds, and all other components of the Earth's climate.

The United Nations defines Climate Change as a change in climate that is directly or indirectly caused by human activity, that alters the composition of the global atmosphere, and that is added to the natural climate variability observed over comparable periods of time.

### 1.2. ANTECEDENTS

In 1979, the world's first World Climate Conference was held in Genoa, where climate change was discussed for the first time in the scientific community (WMO, 1979). Moreover, one of the consequences of this conference declaration was the emergence of a series of scientific and political conferences including Villach, Toronto (Conference Statement, 1988), Ottawa, Tata, The Hague, Noordwijk, Cairo and Bergen (1989) and the Second World Climate Conference (1990). In addition, in this year, UNEP (United Nations Environment Programme) and WMO (World Meteorological Organization) created IPCC (Intergovernmental Panel on Climate Change) and the first UN General Assembly on climate change was held where in its first report, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and chlorofluorocarbons (CFCs) were identified as greenhouse gases (GHGs) (IPCC, 1990). This was followed in 1990 by the second World Climate Conference.

The main objective of the 1992 Convention on Climate Change was to prevent anthropogenic interference with the climate system on the one hand, and to enable sustainable development on the other (Convention on Climate Change, 1992).

In 1996, a second IPCC report was published, in which study evidence showed a direct relationship between human influence and climate change (IPCC, 1995). Moreover, the social cost of climate change debate appeared for the first time in this report (IPCC, 1995b).

In 1997, the Kyoto Protocol was developed and among other aspects, it includes on the one hand, energy efficiency policies, afforestation and reforestation, sustainable agriculture, research, and the use of renewable energies, as well as promoting reforms as regards the transportation industry and control of methane emissions (Gupta, 2010). On the other hand, they include mandatory GHG emission objectives for the world's major economies that have accepted them, and they range from -8% to +10% in terms of the emission level of the different countries in 1999 "intending to reduce their total GHG emissions to a level of less than 5% compared to 1990 and for a commitment period between 2008 and 2012.

The IPCC Third Assessment Report confirmed the scientific findings of the previous reports, indicating that most of the global warming witnessed over the last 50 years was likely to be due to increased GHG concentrations (IPCC, 2001).

A decision was taken in Bali in 2007 on the resources needed to keep climate change within safe limits.

The IPCC Fourth Assessment Report states that global GHG concentrations have increased enormously and as a result, the IPCC recommends nuclear power as one of the key technologies for global warming mitigation.

### 1.3. CURRENT STATUS

Currently, plenty of scientific evidence shows that climate change is the major environmental problem in the 21st century (WHO, 2008). In addition, there is an association between climate change and anthropogenic activity (McMichael, Friel, Nyong, and Corvalán, 2008).

The relationship between climate change and anthropogenic activity is direct and consistent. Moreover, the Earth's surface has warmed by more than 0.8°C during the last century and by approximately 0.6°C in the last three decades (Campbell-Lendrum, Corvalán and Neira, 2007).

In Spain, the Spanish Climate Change and Clean Energy Strategy 2007 - 2012 - 2020, approved in October 2007 by the National Climate Council and in November by the Council of Ministers, emphasizes, among other aspects, respecting the commitment acquired by Spain with the ratification of the Kyoto Protocol and the adaptation to climate change as top priorities.

There is a different legislation focused on GHG emissions.

The Royal Decree 837/2002 regulates the information on fuel consumption and CO<sub>2</sub> emissions of new passenger cars offered for sale or leasing in Spain.

The Royal Decree 1866/2004 approves the National Plan for the Allocation of Greenhouse Gas Emission Allowances, 2005-2007.

The Royal Decree 1264/2005, of October 21, 2005, regulates the national registry of greenhouse gas emission allowances.

The Royal Decree 1370/2006 approves the National Plan for the Allocation of Greenhouse Gas Emission Allowances, 2008-2012.

## **2. GREENHOUSE GASES**

Under normal conditions, solar radiation heats the Earth's surface and part of that energy is emitted from the Earth into the atmosphere as infrared radiation. This balance is based on the Earth's energy balance, allowing the Earth's temperature to be maintained within a range of values that are appropriate for life on Earth (Erickson, 1992). Therefore, any change in this balance, whether of natural or anthropogenic origin, will result in a change in the climate.

The so-called GHGs retain part of the infrared radiation emitted from the Earth into the atmosphere, producing a greenhouse effect. This results in an increase in the Earth's surface temperature, producing what is known as global warming. Therefore, the greater the amount of GHGs, the greater the increase in the Earth's surface temperature, and the faster the climate changes, the greater the risk of damage. In addition, the climate system must adjust to the increase in GHGs in order to maintain the energy balance.

GHGs typically include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and chlorofluorocarbons (CFCs).

Except for CFCs, all other components are natural, i.e., they have existed in the atmosphere even before the appearance of human beings. However, since the mid-19th century, which coincided with the industrial revolution and the increased use of fossil fuels derived from industrial and transportation activities, there have been notable increases in emissions of nitrogen oxides and carbon dioxide into the atmosphere. Similarly, methane levels are increasing at the atmospheric level due to anthropogenic reasons.

In addition to this emissions' increase, there are other aspects such as deforestation, which has reduced the amount of carbon dioxide retained in organic matter, contributing indirectly to the anthropogenic increase of the greenhouse effect.

GHGs have a long atmospheric lifetime, meaning that the harmful effects in the atmosphere that their presence can cause do not have an immediate effect (Climate, 2001).

As a consequence, an immediate and drastic reduction of GHG emissions would not prevent the effects of climate change.

### **3. FUTURE CONSEQUENCES**

#### **3.1. POSSIBLE CLIMATE CHANGE EFFECTS: THE ENVIRONMENT**

Climate change consequences take place at a transboundary level and among the various effects that may occur as a result of climate change, particularly under extreme conditions, stands out an increased risk of extreme meteorological events such as floods, heavy, and more frequent torrential storms, long-term changes in drought conditions in many regions, deadly heat waves, etc.

Glacier melting, which supplies fresh water to large population centers, causes sea levels to rise and salinize agricultural and drinking water sources. Similarly, sea levels have risen by 1.8 mm per year since 1961 although in recent years, there has been a much higher rate of increase (3.1 mm) (IPCC, 2007).

Since weather patterns could change as a result of climate change, this could greatly affect world agriculture. For example, a global temperature increase of less than 2.5 °C may not have a noticeable effect on global food production, whereas an increase of more than 2.5 °C could directly reduce food production, leading to increased famine; thus, it would change production patterns (Climate Change, 2004).

Currently, CO<sub>2</sub> emissions continue to increase, and climate models predict that after the 21st century (Climate change, 2007), the average surface temperature will increase in a range from 1.1°C to 6.4°C. In addition, a recent IPCC study estimates that by the year 2100, the average temperature increase will be between 1°C to 3.5°C, with an associated rise in sea level of 15 to 95 cm.

### 3.2. POSSIBLE CLIMATE CHANGE IMPACTS: HUMAN BEINGS

Climate change will affect human health in the long term. Human beings depend on a number of factors, such as sufficient food, clean water, and proper social and environmental conditions for the control of infectious diseases in order to be healthy. Moreover, changes in the climate will affect public health factors.

One of the most important long-term consequences of climate change is an increase in the frequency or intensity of extreme weather events. In addition, extreme heat episodes will lead to cardiovascular and respiratory diseases.

There are other potentially more severe effects that may impact infectious disease dynamics. Thus, from the health perspective, the impact of climate change is potentially enormous, and many of the most important causes of death in humans are very likely to be the result of climate change. Furthermore, it would affect the global distribution of diseases, for example, by affecting their transmission vectors.

Such future consequences are the result of human activity, mainly from industry- and transportation-related activities. In order to mitigate these consequences, an important aspect would be the involvement of society in improving this situation (Galán Madruga, 2009). Citizens play a fundamental and essential role in the construction of social assets that will lead to global policies focused on cultural and productive change regarding the future effects of climate change (Sunyer, 2012).

### 3.3. POSSIBLE CLIMATE CHANGE IMPACTS: ECONOMIC ACTIVITY

As a result of the extreme periods of precipitation and drought, global agricultural food production will be affected, altering both production volumes and production patterns. In addition, food prices could suffer a value increase due to the adverse effect of global warming on crops worldwide (Costello, Abbas, Allen, Ball, Bell, Bellamy, Friel, Groce, Johnson, Kett, Lee, Levy, Maslin, McCoy, McGuire, Montgomery, Napier, Pagel, Patel, Puppim de Oliveira, Redclift, Rees, Rogger, Scott, Stephenson, Twigg, Wolff and Patterson, 2009).

Extreme rainfall events will affect existing infrastructures within human settlements, leading to urban flooding, earthquakes, landslides, etc...

Coastal populations, ports, and industries will be affected by sea level rise.

At the same time, the world population's energy demand will increase enormously as a result, for example, of the occurrence of extreme heat waves.

Figure 1: Schematic view of climate change issues

#### **4. Conclusions**

Climate change has become the major global environmental problem of the 21st century given that the future consequences of global warming on human beings and the environment are not based on state border criteria, but rather a transboundary issue.

In order to control or reduce as much as possible the negative effects derived from this problem, an agreement must be reached, one that should not be subject to the will of the developed countries, focused on accepting far-reaching measures that allow the reduction of GHG emissions that mitigate global warming. Solving this global problem requires an international, state, regional, and local scale strategy, which must be multidisciplinary and multisectoral.

Both humans and the environment will have to adapt to the new climatic conditions. However, vulnerability depends not only on the Earth's susceptibility but also on its capacity to adapt to new climatic conditions.

In order to mitigate global warming, a fundamental aspect involves choosing energy sources to be used by human beings, as well as the need to propose measures to reduce the amount of energy consumed, reflected in energy policies, which will lead to a reduction in GHG emissions and prevent progressive warming of the Earth's surface.

Unless GHG emissions are mitigated, human beings will face new risks and pressures such as environmental, social, and cultural aspects, including direct and indirect effects on human

health on an enormous scale, all of which justify the need to stabilize GHG concentrations at the atmospheric level.

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**THE GLOBAL ECONOMIC CRISIS MECHANISM\***

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*Karl Polanyi*

From a Central European perspective, the entire postwar period, including the eight years of **F**miraculous prosperity in the United States, the sustained economic growth in other countries, and the multiple technical, economic, monetary, and trade policy adventures of this bleak historical era, up to the 1929 collapse and the 1933 world depression, is really a single period of economic crisis that manifests itself in different ways, as it transcends and transforms the world. Nevertheless, during the early postwar years, the economic crisis was not resolved, but postponed. The balance, in one place, was achieved by shifting the burden of adjustment, deliberately or otherwise, to other regions and economic sectors. By the time the unavoidable day of reckoning came, not only the old smoldering fires revived, but the crisis reached depths and dimensions that made all previous experiences fade into the background.

The author has the obligation to explain his methodology and to back it up with concrete evidence if he is to take this argument over and above fearless generalizations inferred from random connections of events over the last 15 years.

**Why is it impossible for the crisis to correct itself?**

What is at the core of the global economic crisis, why has there been no self-correcting solution, how could some economies repeatedly achieve apparent stability by shifting the burden of large and persistent economic deficits in both time and space, and above all, how can such an interpretation shed light on the overall process of the global economic crisis as a whole? In addition, how can such an interpretation clarify the entirety of the overall process in which the global economic crisis is embedded?

We can leave aside the complexities of the economic cycle theory related to the well-known economic fluctuations that visit us from time to time because we are confident that the decisive features of the present crisis stem from a specific historical context. In our opinion, the 1929-1933 joint crisis is only the most dramatic period of a general crisis that had its origins in World War I. The unique political and sociological arrangements associated with the war placed insurmountable obstacles for a self-generated recovery. At the same time, the economic costs of the war were enormous and the general opinion that the financial burden of modern warfare could not be sustained for more than three months was not unreasonable. The fact that the war lasted four years was only possible because enormous social costs were imposed on societies through coercive pressures from overwhelming political-sociological forces. Only instability confined to the strictly economic domain is subject to self-regulatory correction. The actual costs of the war far exceeded the financial capacity of societies as the human and social level of destruction was such that the social structure could not sustain the forces of adjustment for a post-war balance.

The conventional view, by which the problem was seen exclusively in terms of a threat of social revolution, was one-sided, although that danger was real. The political-sociological factors that made rebuilding a new and stable postwar order impossible were almost as complex as the national, social, ideological, and political forces that participated in the war and ended it with a peace imposed by the victors on the defeated.

It was only recently that statistical research revealed the actual costs of the war. Despite a technological revolution and the American economic miracle, in the 1929 peak, industrial production had fallen back significantly from the achievements of the two generations of continuous economic growth prior to 1914. Within twenty years of the war's outbreak, industrial production should have nearly doubled; instead, it increased by only 60% and in 1933, it fell to levels below those of 1914. According to the dynamics of economic growth in previous

generations, the economy's capacity to deliver productive performances in 1933 should have been twice as great. Neither the feverish but unproductive economic activity of the war years, nor the steady growth of agricultural production over the falling prices, were able to compensate for the economic consequences of the war, leading to ten years of lost growth in agriculture and twenty years of lost growth in the industry.

### **THE THREE PLAINTIFFS:**

#### **BONDHOLDERS, WORKERS, AND FARMERS**

It is irrelevant whether the costs of the war were greater or less than previously believed. What is clear is that the political-sociological impact of the war implied the reconstruction of a new economic balance that would take many years to achieve. The social structure could only be sustained if the political leadership could meet the expectations and avoid disillusionment of three major social constituents: the bondholders (rentiers), who had financed the war and without whose confidence in the currencies and without whose credit the capitalist economies could not be rebuilt; the workers, who bore the moral and political burden of the war, and to whom the reward of more rights and more food was offered; and the peasants, who seemed to be the only bulwark against social revolution.

In the defeated countries, the rentier classes were devastated by inflation, while in the victorious countries, policies designed to protect their interests ultimately failed. Moreover, in the defeated countries, workers were not protected from the consequences of the crisis. Abstracting from social factors, a less inflexible protection of the economic interests of bondholders, workers, and peasants might have yielded a more favorable outcome in purely economic terms. However, in the meantime, the social structure would have disintegrated.

On the victorious states, bondholders' interests had priority. It was their financial sacrifices that won the war and their faith in the stability of currencies and credit, laid the

foundation for the reconstruction of the post-war economy. Society could only continue if the war economy could be totally and permanently abolished, and the free market restored. On the other hand, workers had priority in defeated states. Settled where the political power rested, workers (and former soldiers) who bore the brunt of the war demanded the promised rights and food.

In victorious states, democratization of public life reached overwhelming proportions. For example, in England the number of eligible voters rose from 8 million before war to 28 million and the war machine was also fed with promises such as "homes fit for heroes," according to Prime Minister Lloyd George. Logistical production of war material meant for the battle front was accompanied by the production of slogans by this Welsh master of rhetoric. When the war was over, there was no excuse for not keeping promises. In fact, no one in Great Great Britain believed in the need to restrict living standards after the war. By the time the realities of Great Britain's reduced economic capacity began to emerge, it was too late. At the end, the sacrifices imposed on the whole society to defend and increase the income of the rentiers dictated policies that placed the full burden of the adjustment on the working classes.

The third part of this trilogy was the peasants. Post-war, only those who protected their hard-earned plot of land and were used to an adverse market relationship with the city offered reliable protection against Bolshevism. Economic interest and their general Weltanschauung allied them with the conservatism forces. However, the disappointed peasants could behave very differently, which was manifested in Bulgaria and in many other countries of Eastern and Southeastern Europe, where the peasants had no problem in taking part in the division of the large estates. The fact that revolutions do not come exclusively from left-wing politics is a lesson that Europe has only learned from hindsight. Thus, neither the rentiers nor the workers turned out to be as socially unmanageable as the peasants in making their demands.

Any attempt to restore economic stability had to consider three directions in which the claims targeted. The existence of a viable social structure demanded:

- To defend rentier incomes by stabilizing currencies.
- To protect workers' incomes by stabilizing real wages.
- To protect peasants' incomes by stabilizing basic goods prices.

In hindsight, given the economic capacity severely reduced by the war, it is indisputable that it was impossible to meet all these demands. Maintaining a social structure requires something economically impossible, but when the viability of society conflicts with what is economically possible, economic possibilities are stretched one way or another. However, in the long run, this is not sustainable, of course, because violation of the economic laws will sooner or later lead to terrible economic costs. However, in the meantime, society has been saved from disaster.

Moreover, domestic pressures on the social structure were accompanied by external pressures arising from the reconstructed postwar international political order. While we place greater emphasis on policies that attempted to stabilize the national incomes of rentiers, workers, and peasants, there is no doubt that war repairs and debts and excessively autarkic policies aggravated the inability of the system to regain a new balance through self-correcting economic processes. These two sets of problems are interdependent. War reparations and war debts determined the direction of financial and economic efforts, which were as unrealistic as national policies that attempted to maintain living standards beyond the capacity of impoverished economies and war-depleted capital. Although, the final collapse was inevitable and it could be delayed, as it was, for a time through heroic interventions.

## **THE GREAT INTERVENTION: WAR**

It should be understood that, basically, the entire financial and economic history of the last fifteen years has consisted of interventions, whose eventual negative consequences did not fail to manifest themselves. However, these interventions were not the cause of the crisis; instead, their effect -sometimes poorly planned and executed with a lack of foresight- was to postpone the solution to the crisis. Nonetheless, this postponement was not unjustified since the cause of all interventions was the war. Indeed, all post-war interventions were only costly attempts to protect society against the shocks of the brutal destruction of the economic and social balance; however, they created new and unnecessary imbalances that aggravated the consequences of the main and initial intervention, which was the war. It is impossible to understand the function of the post-war interventions without a clear understanding of their origins in the destruction caused by the war.

It is also incorrect to consider as interventionist only those policies that were intended to benefit workers or champions. The conventional interpretation here is that economic measures designed to restore the pre-war order did not require further justification. At the same time, no matter how artificial and draconian, the currency protection of the currency is not considered interventionist. Moreover, the distributive effect on the incomes of rentiers is not explicitly considered. An approach to economic stabilization which that depends exclusively on the formal declaration of the sacredness of contracts is of little value as a practical instrument of economic and financial policy, since it does not answer the decisive question of, what levels of income are ultimately sustainable?

The return of sterling to the pre-war gold parity ten years ago highlights the foolishness of the attempt to restore the pre-war economic order without taking into account the extent to which the war years weakened economic capacity. However, it was also possible here to postpone the consequences of erroneous policies.

### **HOW WAS IT POSSIBLE TO POSTPONE THE CRISIS?**

The excess demand of the three main categories of income recipients (rentiers, workers, and peasants) could only be satisfied by three sources. First, through a national income redistribution in favor of the privileged classes. However, where laborers and peasants were favored, the distributive burden fell on the middle class and industrial capital through property taxes and the most inequitable of all taxes, which was the destruction of savings by inflation. The real incomes of agricultural producers were sustained by external tariffs and other protectionist measures at the expense of urban consumers.

Second, through the consumption of capital. Domestic capital was devoured by inflation and by the sale of assets to foreigners. Third, deficits and debts were financed and refinanced through renewed external borrowing and increased debt, and this happened on a vast scale. Countries financed their deficits through continuous external borrowing, where weaker national economies sought help from stronger ones. Years of apparent stability, an interval of rapid growth, and a deceptive appearance of stability, were marked by new economic and financial difficulties, until suddenly, at the height of the American boom, the elastic band snapped. The interdependent deficit economies went into an irreversible slump and the whole stabilization structure collapsed.

What were the mechanisms of the global economic crisis that determined and facilitated this course of events? The unique flexibility and capacity of the post-war credit mechanisms facilitated geographical displacement and the resulting postponement of the crisis. The nature of these credit mechanisms has not been sufficiently explored. While the war destroyed the world economy, but revived after the war and fell into an uninterrupted decline at the end of 1928, the credit system did not cease to develop since the introduction of financial innovations during the war. This paradoxical phenomenon continued throughout the postwar period. The astonishing

scale and mobility of international credit were accompanied by the intermittent contraction and malfunctioning of the real economy.

Wars give rise to new ways of financing them. The victorious states financed almost all their foreign expenditures through a series of ad hoc arrangements, including the sale of foreign bonds and stocks in the United States, a U.S. backed pound sterling, the securitization of all obligations payable in foreign currency among the Allied powers, and a moratorium on payments until the end of the war. United in a war of life and death, the major powers mobilized their credit weapons until the very last moment and for the first time in the history of modern capital, credits were so politicized. One of the consequences was the closer relationship between the commercial banks and the issuing authorities (the central banks) in London, New York, and Paris. The source of this ultra-modern channel for distributing credit throughout Europe, which brought gold to enrich the parched plains of Central Europe, was the unfathomable wealth of the United States, who was in search of investment using the enormous profits made in the war. The reconstruction of Europe appeared to be an excellent bargain that could not only revive American exports to Europe, but it was also a sign of providential love of mankind. With unparalleled and inexperienced wealth, the investors who then appeared on the scene were only asking that this credit mechanism be fed with their resources.

Nowadays, if it seems incredible to us that the world was so mistaken about the real condition of the financial balance of the war, the explanation lies in part on the financial claims that were considered "good" since the total amount of Allied war debts was estimated at \$25 billion. The Genoa Conference ended with a dispute over the distribution of shares of the Russian petroleum interests. Lloyd George would never have made his famous proposal to create a £25 million public company for the reconstruction of Russia if there had been no hope that the Russian war claims and pre-war debts were safe financial assets. With an estimated value of 35

billion gold francs, they were no small change! However, the value of all these claims today has been readjusted. What is striking is that before the readjustment, the owners of these securities thought they were rich. In 1925, after Great Britain and Germany returned to the gold standard, a repair problem of 16 billion gold marks was being discussed as if it were an ordinary trade deal. The credit mechanism, to which contemporaries attributed an almost mythical power, was for ten years the main cause of the postponement of the crisis.

### **THE GENERAL PROCESS**

With the war's outcome, the geographic course of the crisis was determined from the East to the West. There were defeated states, such as Russia, Austria, Hungary, Bulgaria, and the succession of states nestled in the war regions of the East, such as Romania, Yugoslavia, Czechoslovakia, Poland, Greece, and last but not least, Germany. There were also victorious states including England, France, Belgium, and Italy. Then, in a separate league, there was the super victor, which was the United States.

1918-1924: it began in the East with victors' and United States' support for the reconstruction of the defeated states. The Austrian currency (1923) and the Hungarian currency (1924) were stabilized with the help of the League of Nations. At the same time, Greece, Bulgaria, Finland, and Estonia were structurally adjusted (*saniert*). Romania, Poland, Czechoslovakia, and Yugoslavia received French credits and even Russia was a candidate for economic aid. The climax was the restoration of the gold standard in Germany, originating in the Dawes Plan and financed by Dawes Loans, about half of whose funds came from the United States. However, the restoration of the gold standard stripped the defeated states of the clandestine course of inflationary financing. Their structural deficits were progressively covered by foreign loans; therefore, these debts were transferred to the victorious states, whose currencies were far from being stable or secure at the time.

1925-1928: in addition to the deficits of the defeated states, the victorious states had their own imbalances. From the moment the gold standard was re-established in the victorious states, the defense of the currency had top priority. Through "central bank cooperation," England shifted the economic burden of maintaining the external value of sterling to the United States. The pound's return to prewar gold parity in April 1925 was secured by short-term U.S. credits. Despite the increase in U.S. loans extended to Germany, from then on, the secret purpose of U.S. credit policy was not so much aid to Europe as support for England. The high point was the negotiations between Montague Norman (Governor of the Bank of England) and Benjamin Strong (Governor of the Federal Reserve) in New York in May 1927. In August of that year, the United States adopted a "cheap credit policy" that lasted until February 1928 and paved the way for the Wall Street crash in October 1929. U.S. crypto inflation meant effective support for the European currencies that had returned to the gold standard (fixed exchange rate) through the availability of cheap credit.

1929-1933: the deficits of the victorious and defeated European states were shifted to the United States and were covered by the continued growth of U.S. credits over the last ten years. The United States financed the Dawes Plan, the renegotiation of British and French war debts, the reparation payments of the defeated states, and the servicing of its own loans. In addition to the vain efforts to support British stabilization, the German malinvestments and the accumulation of Eastern European private sector deficits in the financial institutions of Vienna, the United States financed the Dawes Plan, the renegotiation of British and French war debts, the reparation payments of the defeated states, and the servicing of its own loans. The main event was the bankruptcy of the Vienna Creditanstalt on May 12, 1931. The Reichsmark collapsed and the British pound was devalued. On April 19, 1933, the dollar was floated. The contraction of the

world economy and the chaotic instability of currencies resembled the conditions prevailing in the immediate post-war period.

### **POUND STABILIZATION AND ITS CONSEQUENCES**

Viewed in such a light, the policies that contemporary observers considered wrong were the consequence of a course of events with their own logic. Accusations of misguided policies are inconsistent and the allegedly missed opportunities would have been merely alternative paths to the same undesirable outcome. The pound's return to pre-war parity today looks like a textbook example of a misguided policy; however, the repeated excuse that Great Britain did not expect France and Belgium to stabilize their currencies at devalued rates and thus exert pressure against British exports, suggests other alternative policies which fortunately were not executed. We insist that the main purpose of French and Belgian exchange rate policy was not to alter relative export prices, but to move away from the previous levels of these currencies. The essence of the matter was that France was willing to devalue the assets of its rentier class by 80%. If exports came under competitive pressure after 1926, it was because the incomes of the British rentiers were protected (by overvalued exchange rates) and because for political reasons, wages were also very high.

One other example is that for many years, Central Europe refused to acknowledge Great Britain's economic difficulties because it was believed that the bank rate was too low to maintain the value of Great Britain's pound. In fact, the bank rate never fell below 4.5%, which is far above historically prevailing rates. A legislative reduction in the interest rate on government bonds or a wealth tax could have compensated for the problems caused by the overvaluation of the pound. A substantial increase in the bank rate would not only have aggravated the acute economic crisis in England but would have reduced the capital exports that were considered essential to maintain the level of British exports. The fact that England continued to export

capital after 1925 benefited the newly adjusted economies of Eastern Europe and as of 1924, foreign bonds floating in the London market amounted to \$785 million in long-term investments in continental Europe. Increasing difficulties in maintaining the flow of outward investment made it impossible to raise the bank rate. London markets were under strong but unseen pressures. As short-term borrowing matured, City relied on increasing levels of short-term borrowing. The dangers of this situation were spelled out clearly in the MacMillan Report shortly before the currency collapse in 1931.

Foreign loans floating in London amounted to \$651 million in 1927 and by 1928 they were down to \$525 million and in 1929 to only \$228 million, facilitated by inexpensive money flowing from New York. From the beginning, U.S. credits were the elastic band that joined the increasingly fragile balances of the deficit economies; however, the transmission belt that transferred the deficits of even the strongest European economies to the credit accounts of U.S. financial institutions was the reestablishment of the gold standard. Deprived of the clandestine recourse to inflation, European national economies were forced to adjust their weakened economic capacity in compliance with the rigid rules of the gold standard. The resulting increase of their growing indebtedness to U.S. creditors occurred quietly, but no less effectively than that of negotiated loans. While stabilization in Central Europe was sustained by cheap credit available on the London stock markets, the restoration of the pound to its pre-war parity was sustained by nothing less than the silent American inflation from 1926 to 1929, and thus by the eventual collapse of the whole world credit structure.

### **THE UNITED STATES AND THE DUAL ROLE OF CREDIT FACILITIES**

Perhaps, the most misleading aspect of the post-war economic experience was the fabulously high standard of living in the United States during this period. This was only partly due to the real wealth of the United States, but it was also due to two interventions that insulated

the United States from the effects of the crisis in the rest of the world, including high external tariffs and the closing of the doors to immigration. Without these measures, European poverty would have spread to the United States, and the resulting new equilibrium would have been set in a middle ground between the standard of living in the defeated continental states and the high standard in the United States where it could only free itself from European economic pressures by excluding cheap labor and cheap imports. This is the fundamental reason for the unilateral flow of gold to the United States. It was the only means of payment that did not reduce the American standard of living.

There have been countless accusations made against the United States because the short-sighted protectionist policies not only aggravated, but actually also caused the crisis. A creditor state should facilitate repayment of principal and interest by opening its markets to exports from debtor states. The example here was England, but it was a special case because the debtor states' exports were not only aggravated but caused the crisis. British imports of raw materials and semi-manufactured goods for further processing are compatible with economic structures developed over decades. Great Britain's pattern of trade and payments is diversified, and debtors are scattered all over the world. How can the same demands be made of a state that overnight went from being a major debtor to being the world's leading creditor and whose foreign loans are mainly of political origin? American exports from 1914 to 1919, with the consequent war debts of the Allies, involved industrial structures adapted to the demands of the war in Europe. Acceptance of debt repayment as imported goods immediately after the war would have led to an economic crisis in the United States. Again, we believe that the responsibility attributed to the interventionist policies of the United States in the postwar years should more appropriately be attributed to the wartime period. The curse of politically motivated interventions is that eventual adjustments imply new and more painful interventions.

The United States would have been wiser if it had forgiven part of the face value of the \$11 billion war debts of the Allied states although this would have imposed a long-lasting fiscal burden to finance interest payments on domestically issued Liberty bonds. However, the U.S. standard of living would still have been higher than that prevailing before the war. Nonetheless, all this is academic because the United States not only demanded repayment of the full value of the war credits but also greatly increased the level of credits to Europe. Nevertheless, this issue raises important reflections.

First, the U.S. standard of living was higher than was justified and a reduction in the value of the war debts would have lowered it. This would also have occurred if the United States had accepted repayment of war debts in cheap goods and labor. Second, the consumption levels of rentiers, workers, and peasants more than Europe's productive capacity contributed to a higher standard of living in the United States than would have been the case in the absence of U.S. credit. International credit thus served a dual purpose, which is to maintain consumption levels in Europe and in the United States above equilibrium levels.

For years, the Federal Reserve was accused of sterilizing the huge amounts of gold flowing into the United States. While Europe was not able to expand the credit volume due to the continuous outflow of gold, it was said that the United States decided to sterilize the gold inflows and restrict the expansion of the money supply. Europe had to strangle its economy by restricting credit, while the United States refused to extend new credit to Europe. Although, it seems to me that the opposite criticism, that U.S. policies of unrestrained inflation and excessive capital exports were responsible for the crisis, carries more weight. It is clear that these two accusations are mutually exclusive, but today, we know that gold sterilization was based on a misunderstanding of the facts. The increase in gold reserves from 1921 to 1929 was accompanied by an increase in the excess reserves of commercial banks, which averaged \$706 million

(between September 1921 and September 1929). The increase in the effective volume of credit available to the economy was nine to ten times greater.

If the allegations (that the United States was restricting credit) proved anything, it was that no amount of U.S. credit seemed sufficient to meet European demand. The stabilization of several Central and Eastern European currencies, the draconian credit restriction required to maintain the gold value of the Deutschmark, the increasing economic pressure on England resulting from the return of sterling to parity, the need for political bridging credits in the period between the Dawes and Young loans, plus credits for the reconstruction of Germany and other countries, created an almost insatiable demand for U.S. financial aid.

This calls for a critical look at the phenomenon of U.S. crypto inflation, which is certainly a valid observation. However, the prevailing view today that the U.S. is thereby responsible for the world's currency collapse is not convincing. The actual sequence indicates the opposite, where currencies remained stable only to the extent that they were supported by U.S. credit, which was accompanied by inflationary financing. When it became impossible to continue these policies, the apparent stability of European currencies disappeared. Only those who have forgotten the European clamor for American help in the long years of repeated financial, economic, and not least political crises can regret the subsequent American refusal to extend credit. However, Americans did not put-up serious resistance to European enthusiasm for unlimited credit expansion. The allegations against Wall Street for excessive and wasteful lending to South America also applied in part to lending to Europe. As in South America, Europe suffers the terrible economic consequences of postponing the crisis by artificially raising consumption and excessive dependence on credit, both from debtors and creditors.

## **THE COURSE OF THE CRISIS**

The decisive connection in the clarification of causes and consequences was the flow of gold to the United States. The outflow of gold did not manifest itself in perceptible pressures on the supply of credit in Europe while currencies were floating. Currencies supported solely by paper are insensitive to the loss of reserves. Serious complaints about the misallocation of gold reserves arose only after England (1925) and France (1926) returned to gold. Repeated U.S. credit restrictions led to the flight of gold to the U.S. and increased the burden on European debtor states. The U.S. experienced the loss of gold reserves in 1925 and France in 1926. Also, the United States experimented twice with "cheap money" policies. In each case (once in 1925 and again in 1928), the flow of gold was reversed. When stabilization of the French franc in the spring of 1927 triggered a huge transfer of gold from the Bank of England to the Bank of France, Norman Montague and Federal Reserve Governor Benjamin Strong met in New York and agreed on a new cheap money policy to save the beleaguered British economy from the painful consequences of a bank rate hike.

From August 1927 to February 1928, the Federal Reserve Bank of New York's discount rate was only 3.5%. The result was an economic boom in the United States and Europe, as the flow of U.S. credit supported European currencies and foreign investment in Germany exceeded \$2 billion in 1927-1928. In July 1928, the New York bank rate was raised to 5% to control a speculative bubble in the stock market and the supply of long-term capital to Europe dried up. In the first half of 1919, the value of European bonds floating in New York was a mere \$101 million, compared to \$449 million in the first half of 1928.

Until 1925, U.S. protectionist and credit policies maintained the standard of living in the U.S. and Europe by accepting gold in payment for imports and extending credit. After the re-establishment of the gold standard in Europe, essentially in England, debtor states could only withstand the pressure on their currencies because the inflationary policies of cheap money in the

United States facilitated the enormous increase in foreign lending to Europe. When U.S. inflationary policies were reversed, the financial pressure on debtor states triggered the world crisis. By mid-1928, the United States and France held 58% of the world's monetary gold. At that time, the United States stopped lending abroad, and there was neither gold nor new credit available to finance country deficits. The debtor states then had no alternative, but to increase the export of goods. From 1928-1929, Europe and the raw material exporting countries overseas flooded the world's export markets at almost any price. The universal trend of falling prices that manifested itself in 1929 was the prelude to the world economic crisis. This was followed by the credit crisis of 1931, the decline of world trade in 1932, and the collapse of currencies in 1933. Geographical displacement and the postponement of economic deficits took their course. Although, inflation succeeded in preserving the social structure, it could not save mankind from a prolonged and painful process of economic adjustment.

## El valor del idioma español en ciencia y tecnología

*The Value of the Spanish Language in Science and Technology*

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**Resumen:** Se analiza el peso específico del español como idioma principal en las revistas científicas editadas en España y en los países latinoamericanos, así como a través de la producción científica mundial recogida en las principales bases de datos bibliográficas de cobertura internacional. El estudio pone de manifiesto la importancia del español como lengua de

comunicación científica en determinados ámbitos disciplinares ligados por una parte a intereses socioeconómicos y territoriales de los países de habla española, como es el caso de la medicina clínica, la geología y medio ambiente y, por otra, a determinados ámbitos científicos propios de las ciencias sociales y las humanidades, como es el caso de la economía regional, la literatura, la historia de los países iberoamericanos, etc. Este estudio pretende contribuir al mejor conocimiento y comprensión del valor real y potencial del español en el mundo científico, de cara a la adecuada utilización de este recurso para el desarrollo de nuestras sociedades, y su proyección cultural y económica a escala internacional.

**Palabras clave:** Idioma español. Investigación científica. Tecnologías. Revistas científicas.

**Abstract:** We analyse the specific weight of the Spanish as a primary language in scientific journals published in Spain and Latin American countries, as well as through the global scientific output covered by the main bibliographic databases of international coverage. The study highlights the importance of the Spanish as a language of scientific communication in certain disciplinary areas linked on the one hand to socio-economic regional interests of Spanish-speaking countries, as it is the case of Clinical medicine, Geology and Environment, and, on the other, to certain scientific fields of the Social sciences and Humanities, as it is the case of the Regional economy, the Literature, the History of Ibero-American countries, etc. This study aims to contribute to the better knowledge and understanding of the real and potential value of the Spanish in the scientific world, with regard to the appropriate use of this resource for the development of our societies, and its cultural and economic projection at the international level.

**Keywords:** SpanishLanguage.ScientificResearch. Technologies. Scientific Journals.

he determination of the economic interest of the Spanish language and its enhancement necessarily entails analyzing the role played by the language in all those key sectors in the socioeconomic development of Spanish-speaking countries (Plaza; Plaza/Bordons). In addition to being closely interrelated, the fields of science and technology are themselves a crossroads where advances in scientific research and the development of technologies constitute the backbone of a knowledge-based society, with obvious implications for strategic sectors such as industry, health, the environment and education, among others (BOE).

The main objective of this study is to determine the specific importance of Spanish in the communication of the scientific research results carried out in the Spanish language through its presence in the international scientific context.

It is intended that the results of this study will contribute to the in-depth analysis of the role played by the Spanish language in different disciplinary fields of science and technology and that the results obtained will make it possible to know the most relevant quantitative and qualitative characteristics that define the role of Spanish as a language of scientific and technological communication (FECYT).

## METHODOLOGY

This study involves, on the one hand, an analysis of the production of scientific journals published in Spain and Latin American countries (Alonso Gamboa/Russell), and on the other hand, an analysis of the scientific production in Spanish and in other languages, collected both in journals published in Spanish-speaking countries and in foreign journals of wide international projection. The expression "scientific production" refers to the set of scientific articles and other contributions published in scientific journals.

Sources of information. For the analysis of scientific journals published in Spain and Latin American countries, data was obtained by consulting the *Latindex Directory*, which is the result of the cooperation of a network of scientific and academic institutions that, in a coordinated manner, gather and distribute bibliographic information on serial scientific publications produced in Latin America, the Caribbean, Spain, and Portugal. The analysis of scientific production in Spanish language has been carried out using the CSIC (Cabinet Satellite Intelligence Center) databases and a series of bibliographic databases with international coverage.

On the one hand, scientific production in Experimental Sciences is analyzed through the ICYT (Information and Communications Technology database, which covers journals on topics of territorial or regional interest in Spain. On the other hand, scientific production with a broad international projection is analyzed through the *Web of Science*, *Scopus*, and *Inspec* databases.

The scientific production in Health Sciences is analyzed using the *WoS-Science Citation Index Expanded* database, produced by Clarivate Analytics (in its *Medicine*, *Pharmacology*, and *Neurology* sections), *Scopus*, produced by Elsevier, and *PubMed* (which includes *Medline*), produced by the *US National Institute of Health*, which provide a very representative view of Spanish in medical and health disciplines with international projection, while the data obtained through the IME (*Spanish Medical Index*) database, produced jointly by the CSIC and the Faculty of Medicine of the University of Valencia, provide a complementary and focused view of clinical research published in Spanish journals of national scope.

The analysis of scientific production in Technological Disciplines is based on the CSIC databases (*ICYT database: Spanish Science and Technology Index*) and the *Inspec* database, with international coverage, produced by *The Institution of Engineering and Technology* of the United Kingdom.

For Social Sciences, the *WoS-Social Sciences Citation Index*, *Scopus*, and the *ISOC* database ( Spanish Index of Social Sciences and the Humanities), produced by the CSIC (Abejón Peña et al.), were used.

For Humanities, *WoS- Arts & Humanities Citation Index*, *Scopus*, and the aforementioned *ISOC* database were used.

The following methodology involves obtaining and analyzing scientific production indicators corresponding to articles published in Spanish and comparing them with scientific production published in English and other languages.

In order to analyze the scientific production for the period 2005-2010, the articles published during this period were considered. On the other hand, the information obtained by consulting *La-tindex* is from January 2014.

## RESULTS

### *The production of scientific journals published in Spain and Latin American countries*

Apart from mainstream journals (indexed in *SCI* and *SCOPUS*), there is a crucial scientific production in Ibero-America that is communicated through other channels and where the Spanish language is of great importance. An important source of information to account for this phenomenon is *Latindex*. This directory represents the result of a regional effort to compile data on scientific journals in all areas of knowledge. The journals covered by *Latindex* are evaluated according to a series of quality criteria (33 for print journals, 36 for electronic journals).

According to the number of criteria the publications comply with, there are two groups of journals. 1) The Directory, with 22,406 publications, and 2) the Catalog, with 7,377. From the latter, which have more rigorous quality control, 6,979 are currently in force. Moreover, about this group, with data obtained in January 2014, this part of the study has been carried out. The current journals in the Directory meet, on average, 91% of the *Latindex* quality criteria.

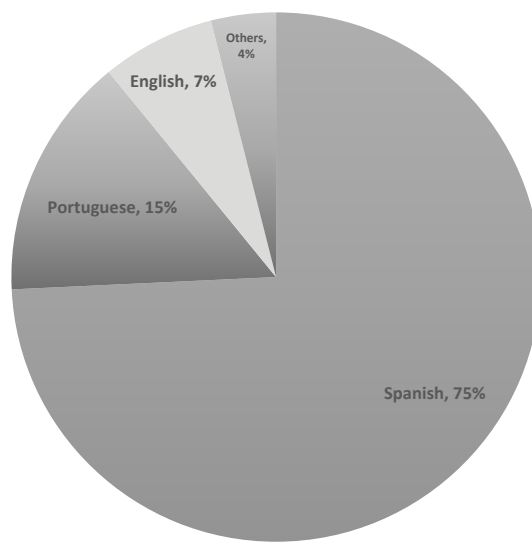


Figure 1. Distribution of percentage of the Latindex Catalog journals according to language of publication

75% percent of the journals covered by *Latindex* are published in Spanish (5203 titles) and 15% in Portuguese (1031 titles). A significant number of journals (459) are published in English, accounting for 7% of the total (Fig. 1). Considering the country of publication of the journals, the majority are Brazilian (1943); Spanish journals form the second group (1878). This is followed by journals published in Mexico (727) and Argentina (524). This distribution is consistent with the relative size of their scientific systems, as measured by other indicators. These four countries account for 73% of the journals registered (Fig. 2).

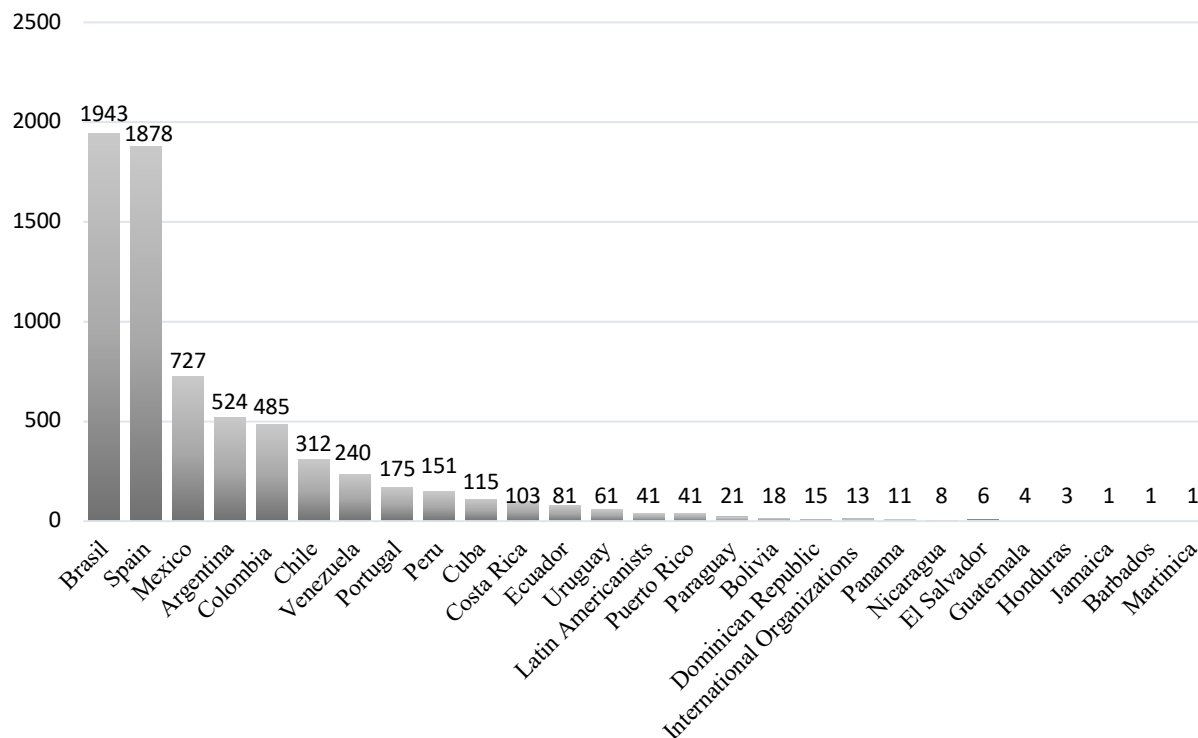


Figure 2. Distribution of *Latindex* Catalog journals by country of publication

Within the *Latindex* Catalog, there is a significant presence of journals from the Social Sciences (36%) and Humanities (24%). This is followed by Medical Sciences (15 %). The Exact and Natural Sciences, better represented in the mainstream databases, group here only 11% of the publications. Agricultural Sciences 4% and Engineering and Technology 3% (Fig. 3).

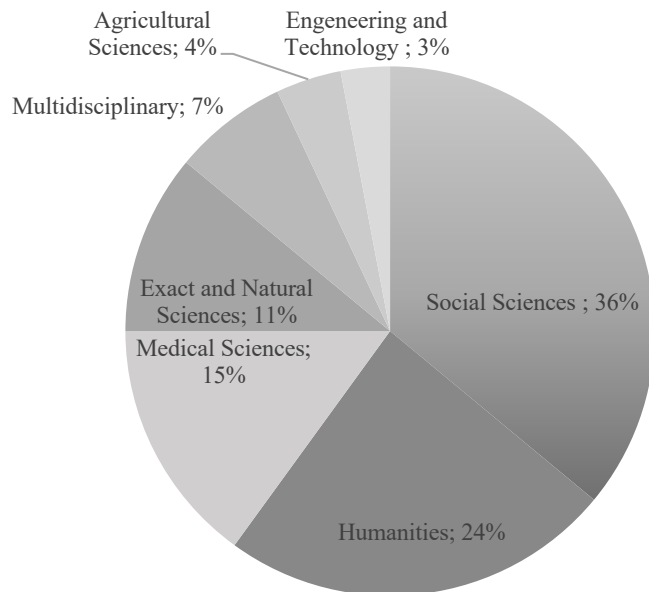


Figure 3. Distribution of *Latindex* Catalog journals by scientific discipline

The presence of the Spanish language distributed by scientific discipline is homogeneous, being slightly above 75 % of the total number of journals in each thematic area. The exception is the multidisciplinary journals, where only 67% of the publications are in Spanish. In Social Sciences and Humanities, only 3 % of publications are in English. This shows that these disciplines have different communication channels in which other languages, such as Portuguese and Spanish, play an essential role as transmitters of scientific knowledge in different regional areas. There is a differentiated pattern in journals published in English, which are significantly more frequent in the Experimental Sciences. In Health Sciences, Exact Sciences and Natural Sciences, Agricultural disciplines, and Engineering and Technology, publication in English accounts for an average of 13% of the journals.

It is interesting to note how the increased presence of English in the Experimental Sciences is detrimental with regard to Portuguese publications. The paradigmatic case is that of the Exact and Natural Sciences, where the presence of Portuguese is only 8% while in the total

number of journals in the *Latindex* Catalog, it is 15%. However, the presence of Spanish is not affected by this slight increase in the use of English as a communication language in these journals (Fig. 4).

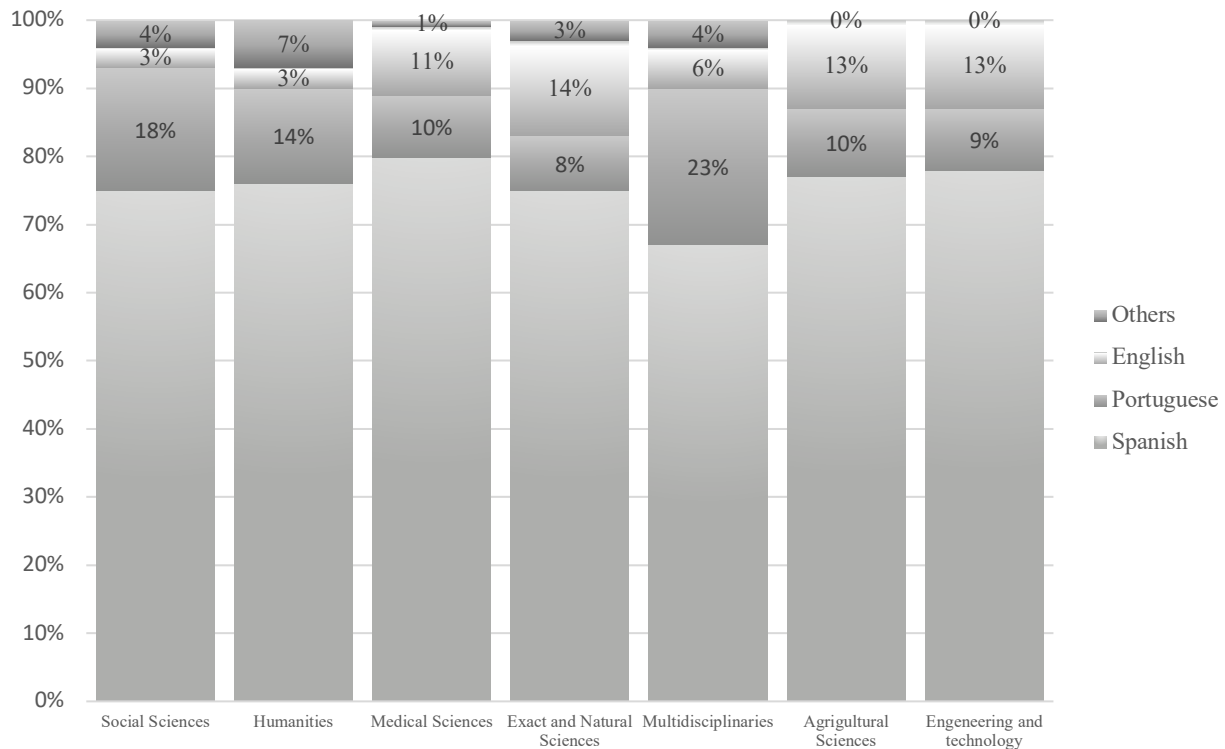


Figure 4. Distribution of *Latindex* Catalog journals by language of publication and discipline

The distribution by countries of the journals published in English confirms this fact (Fig. 5). The case of Portugal stands out, where 29% of the journals registered in the *Latindex* Catalog published in that country are published in English. In Brazil, 16% of the journals (registered in the *Latindex* Catalog) are published in English.

On the other hand, in Spanish-speaking countries, the percentage of journals published in English is much lower. In Spain, it is 3.6%, followed by Chile with 2.9%. In the rest of the countries, the proportion is in all cases below 2 %.

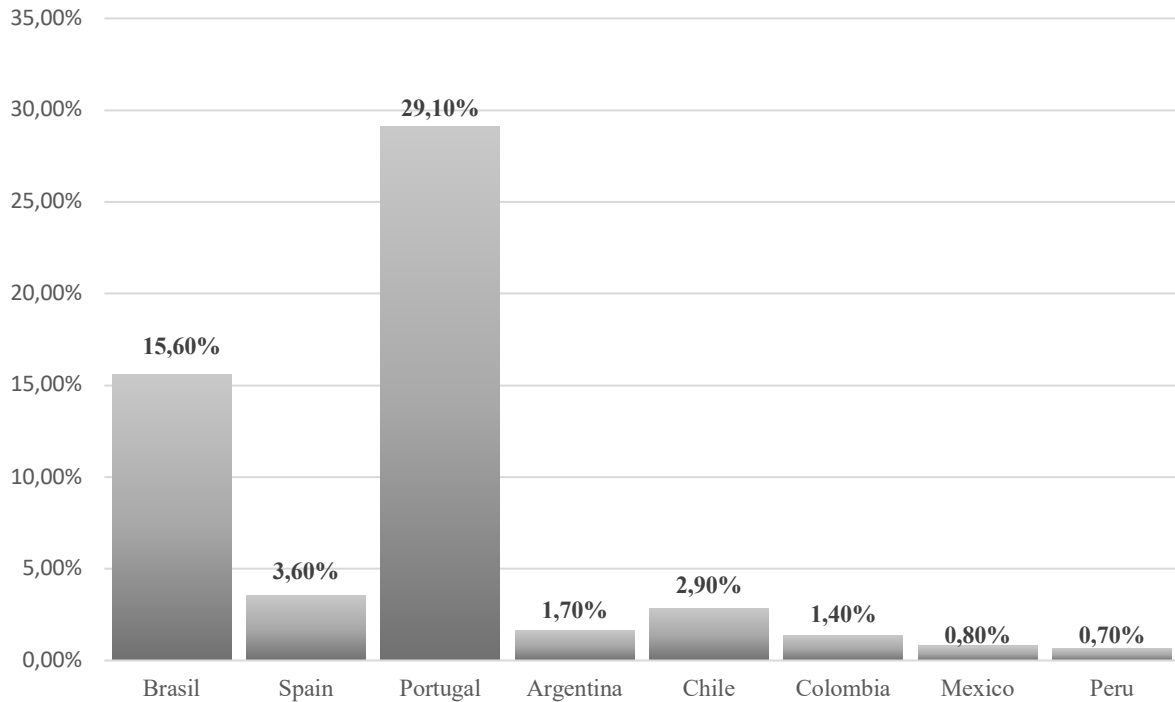


Figure 5. Percentage of English Latindex Catalog journals published in relation to the total number of journals in each country

*Scientific production in Spanish: main indicators at the national level*

This section gathers the indicators of scientific production collected in Spanish journals during the period 2005 to 2010. Scientific production in Experimental Sciences and Technologies during the period analyzed was 31 714 documents (mainly articles), of which 23 112 (72.8 %) were published in Spanish, compared to 7620 (24 %) in English. In Social Sciences and Humanities, scientific production in the same period was 121 434 documents, of which 106 295 (87.5%) were published in Spanish, compared to 5896 (4.8%) in English. In Clinical Medicine and other disciplines of health interest, covered by the IME database, scientific production in the period under study was 35 484 documents, of which 33 804 (95.2 %) were published in Spanish, compared to only 1609 (4.5 %) published in English (Fig. 6).

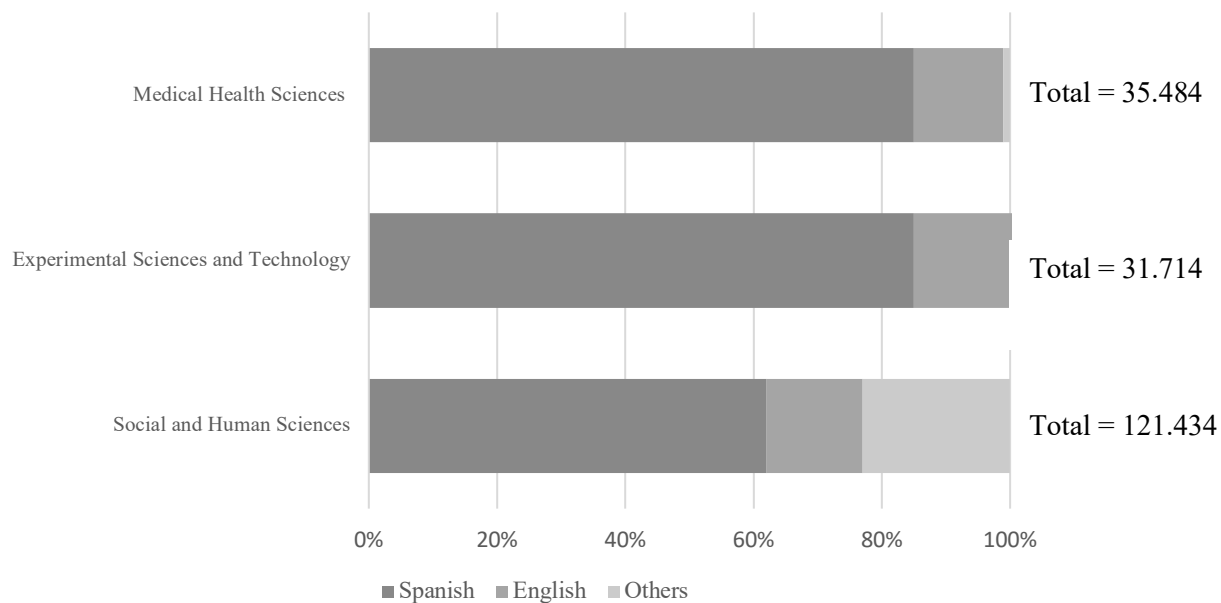


Figure 6. Scientific production in Spanish journals

An analysis of the balance between documents published in Spanish and English over the years shows that, in Experimental Sciences, the percentage of articles in English has been gradually increasing, while Spanish has been decreasing proportionally; although, it is still the language most used by authors publishing in Spanish journals. The same is occurring in the Social Sciences and Humanities, although much less markedly (Fig. 7).

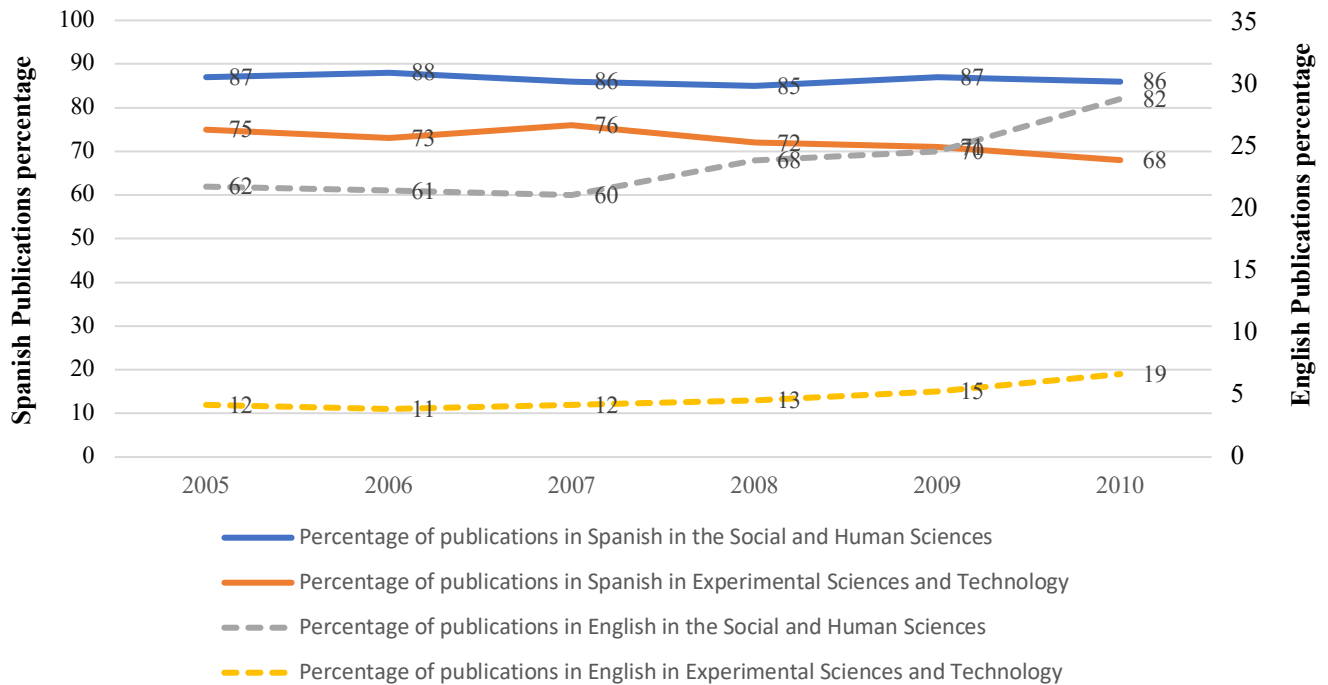


Figure 7. Scientific production evolution in Experimental Sciences and Social Sciences in

#### Spanish and English

The analysis of the information represented in these figures highlights several facts.

Firstly, the marked over-representation of Spanish in the field of Clinical Medicine and Health Sciences. The values shown in the figure confirm that this type of publication is mainly aimed at physicians and health personnel involved in research and clinical practice, environments in which the use of English is not particularly widespread.

Secondly, the expected over-representation of Spanish in publications corresponding to Humanities and Social Sciences in almost all these disciplines, the use of Spanish as the language of publication has been, and still is today, the general pattern among Spanish researchers. Only very recently, influenced by the growing internationalization of research in these disciplines and by the increasing pressure exerted by the mechanisms for evaluating research activity, it has

become visible a change in the trend towards publication in English. The balance between Spanish and English in some disciplines of the Social Sciences is much more balanced and even decidedly oriented towards the use of English, as in the cases of Economics, Sociology, and Scientometric and Bibliometric Studies.

*Scientific production in Spanish: main indicators on an international scale: analysis through the Web of Science.*

The results of the analysis of Spanish presence in the world scientific production collected in the main international bibliographic databases accessible through the Web of Science (WoS) are shown below: Science Citation Index Expanded (SCI-Expanded), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (AHCI). As summarized in the table, Spanish is a language with a very limited presence in these databases, with values that, in percentage terms, range from 0.24% of scientific production in experimental disciplines to 2.4% of scientific production in Arts and Humanities. Considering that these values have been obtained from a collection composed of nearly 9 million bibliographic records, it can be concluded that Spanish is a language of very limited projection among the so-called "mainstream journals", which are those that make up the documentary collections of these databases.

Database	English Documents	Spanish Documents	Total Documents
SCI-Expanded	7 035 877 (96,44%)	17 727 (024%)	7 296 077
SSCI	1 098 972 (94,00%)	11 345 (1,00%)	1 168 420
AHCI	48 992 (72,20%)	16 424 (2,40%)	678 704
<b>Total WOS</b>	<b>10 289 863</b>	<b>47 367</b>	<b>10 838 268</b>

Table 1. Number of documents per *Web of Science* database

*Science Citation Index Expanded (SCI)*

The Science Citation Index Expanded database indexes 8300 journals from 150 scientific disciplines. The language of the 7 296 077 documents collected during the period 2005-2010 was analyzed. Ninety-seven percent of these documents are published in English (Fig. 8). The remaining languages identified represent 3.6 % of the documents, with German being the most used language after English with a percentage of less than 1 %. Spanish is the fifth most used language, accounting for 0.24% of the total number of publications collected during the period analyzed.

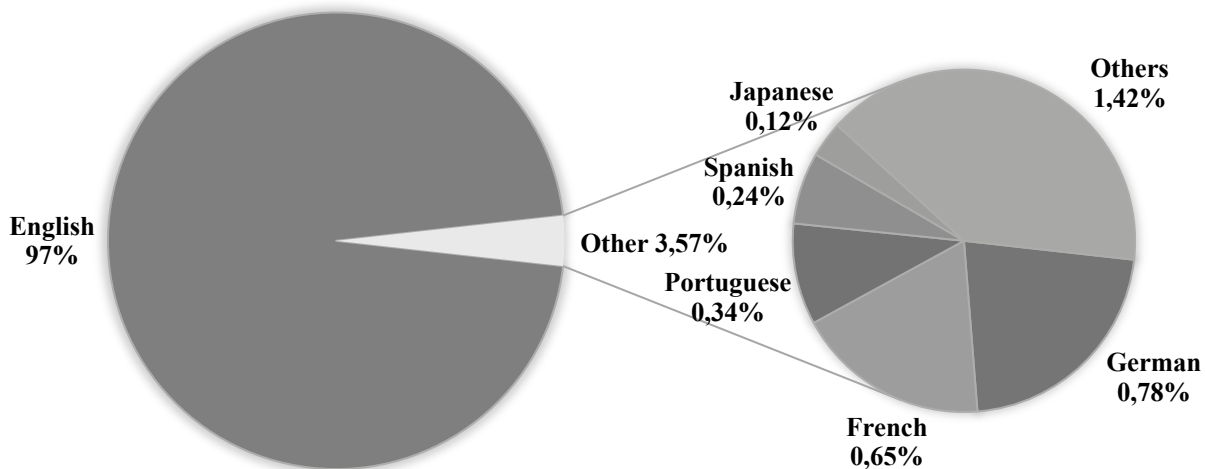


Figure 8. Languages of publication in *Science Citation Index Expanded*. Period 2005-2010

The percentage of Spanish publications in SCI database shows an irregular behavior, with a first stage of growth between 2006 and 2008, followed by another stage of decrease during the period 2008-2010 (Fig. 9). However, the evolution of the percentage of English publications shows a clear negative trend throughout the entire period (Fig. 10).

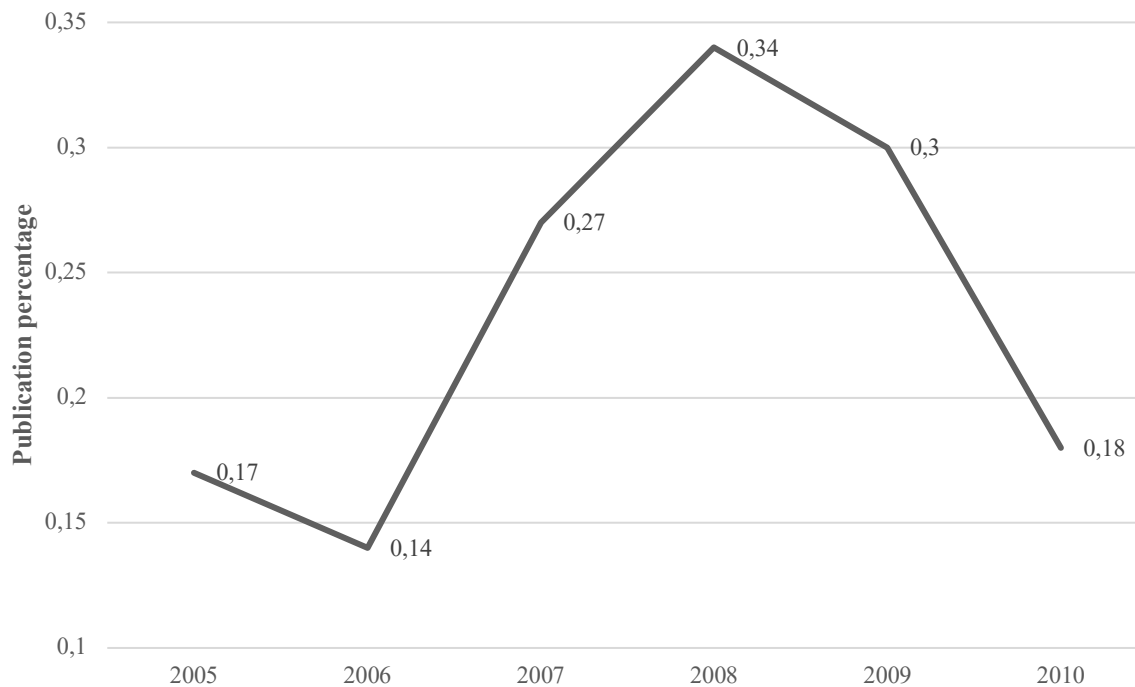


Figure 9. Evolution of the percentage of Spanish publications included in *Science Citation Index*

*Expanded. Period 2005-2010*

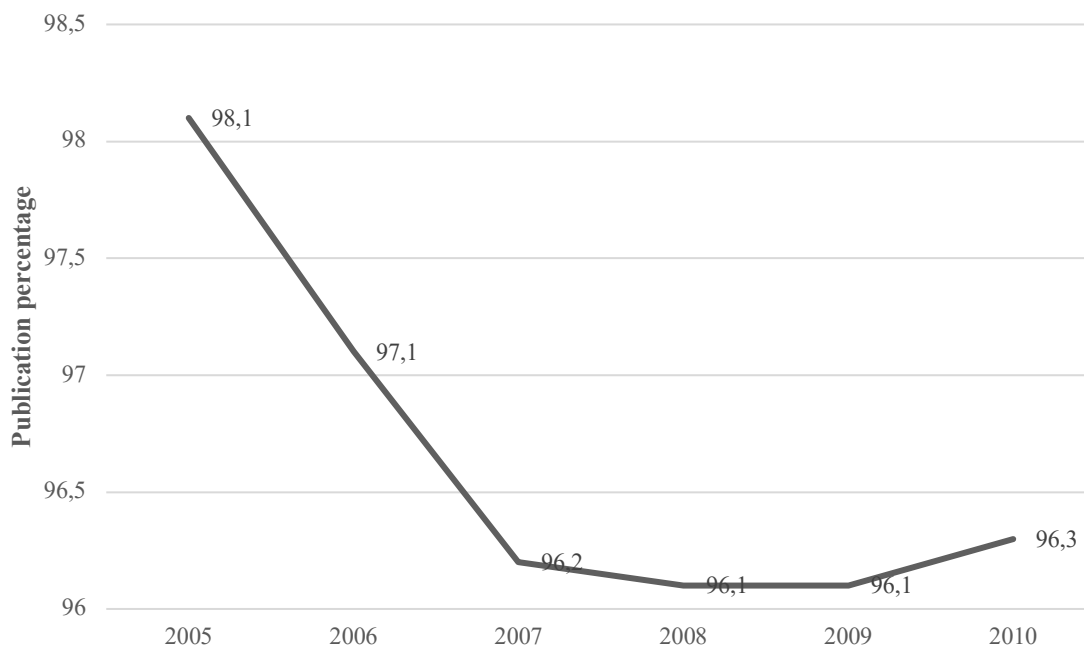


Figure 10. Evolution in the percentage of publications in English included in *Science Citation*

*Index Expanded. Period 2005-2010*

The subject area with the most publications in Spanish is the discipline of Internal Medicine, which represents 19 % of all publications in Spanish in the SCI during this period; it represents 1.7 % of the total number of publications in this discipline. The category in which Spanish is most represented is Music, with 2.87% of the total number of documents collected in SCI. However, the area of Music only represents 0.078% of the documents in Spanish collected in SCI.

#### *Social Sciences Citation Index (SSCI)*

Social Sciences Citation Index database indexes 4,500 journals from 50 disciplines in the Social Sciences. During the period 2005-2010, 1,168,420 documents were indexed, with English being the predominant language, accounting for 94% of the publications. The other languages account for 6 % of the documents. German is the second most used language, with 1.9 % of the documents. In this category, Spanish is the third most used language, with 1.0 % of all documents (Fig. 11).

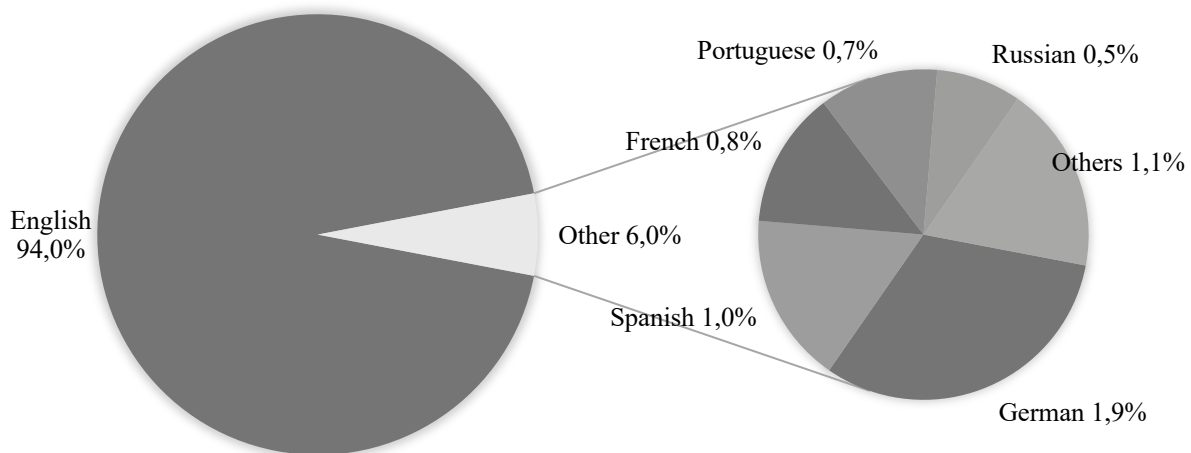


Figure 11. Publication languages in *Social Sciences Citation Index* during the period 2005-2010

The evolution of Spanish in the papers published in the journals covered by the SSCI database is very similar to that observed in the SCI database, with a period of growth until 2008. After that date, a period of decrease is observed. In the case of English language, there is a decreasing trend in the number of publications until 2010, when an increase in the percentage of English publications is observed (Figs. 12 and 13).

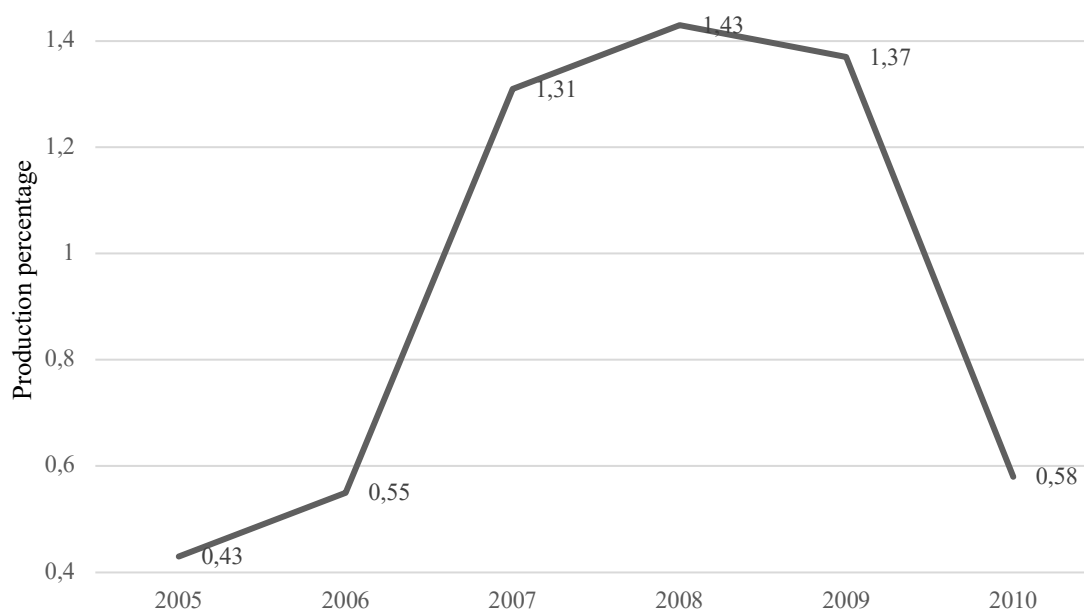


Figure 12. Evolution of the percentage of Spanish publications included in the *Social Science Citation Index*. Period 2005-2010

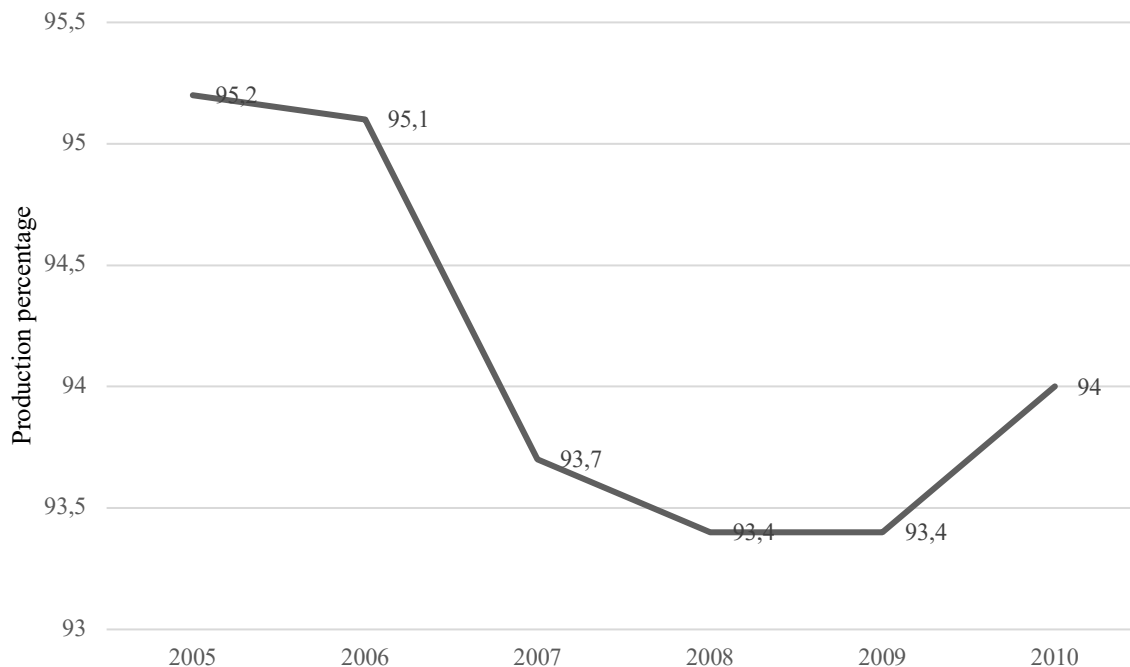


Figure 13. Evolution of the percentage of publications in English included in the Social Science Citation Index. Period 2005-2010

The discipline with the most publications in Spanish is Psychology and represents 16% of all publications in Spanish collected in this database during the period analyzed.

#### *Arts and Humanities Citation Index*

In the database Arts & Humanities Citation Index, 2300 journals in the area of Arts and Humanities are indexed. The total number of documents collected in the period 2005-2010 is 678 704. In this database, English loses re-representation compared to the SCI and SSCI data in favor of French, which becomes the second most represented language with 11% of the documents. Spanish is in fifth position with 2 % of the documents (Fig. 14).

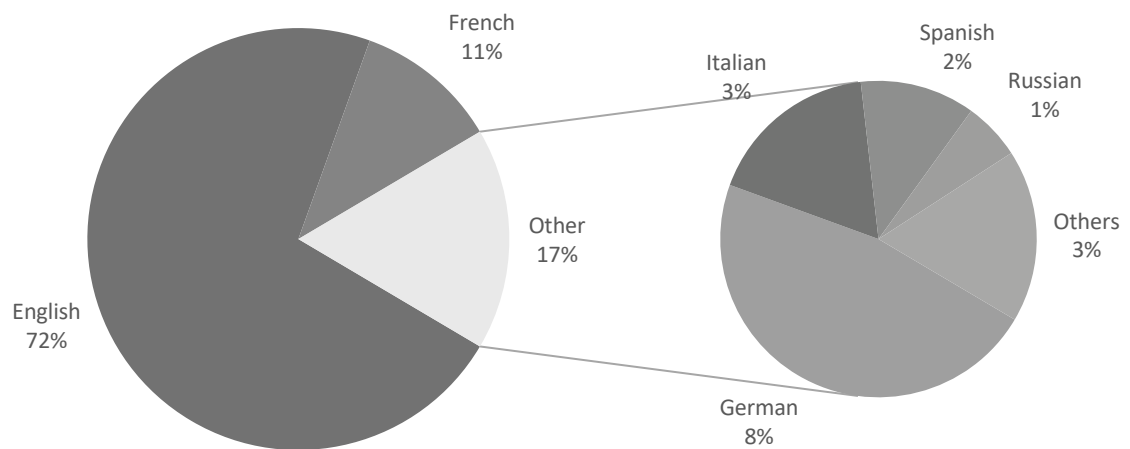


Figure 14. Publication languages in *Arts and Humanities Citation Index*. Period 2005-2010

The evolution of Spanish during the period studied shows an increase in the number of publications until 2010, when it decreases drastically. Spanish shows two distinct stages, where one of decrease during the period 2005-2007 and another of growth from 2008 to the end of the period (Figs. 15 and 16). The discipline with the most publications in Spanish is Literature, which represents 36.2% of all the publications in Spanish collected in this database in the period analyzed.

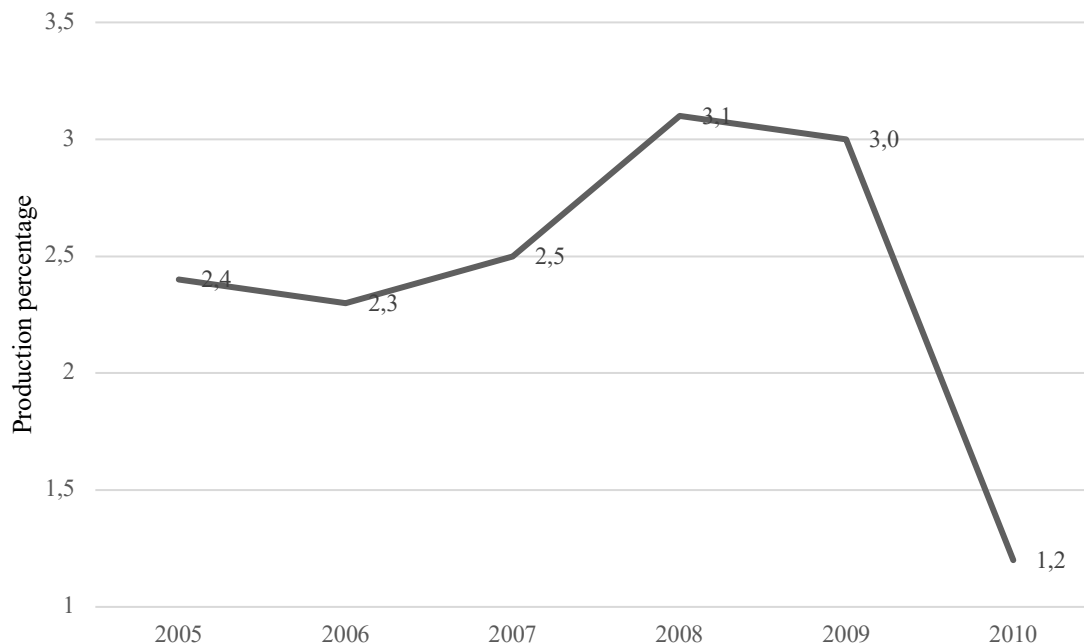


Figure 15. Percentage evolution of Spanish publications included in *Arts and Humanities Citation Index*. Period 2005-2010

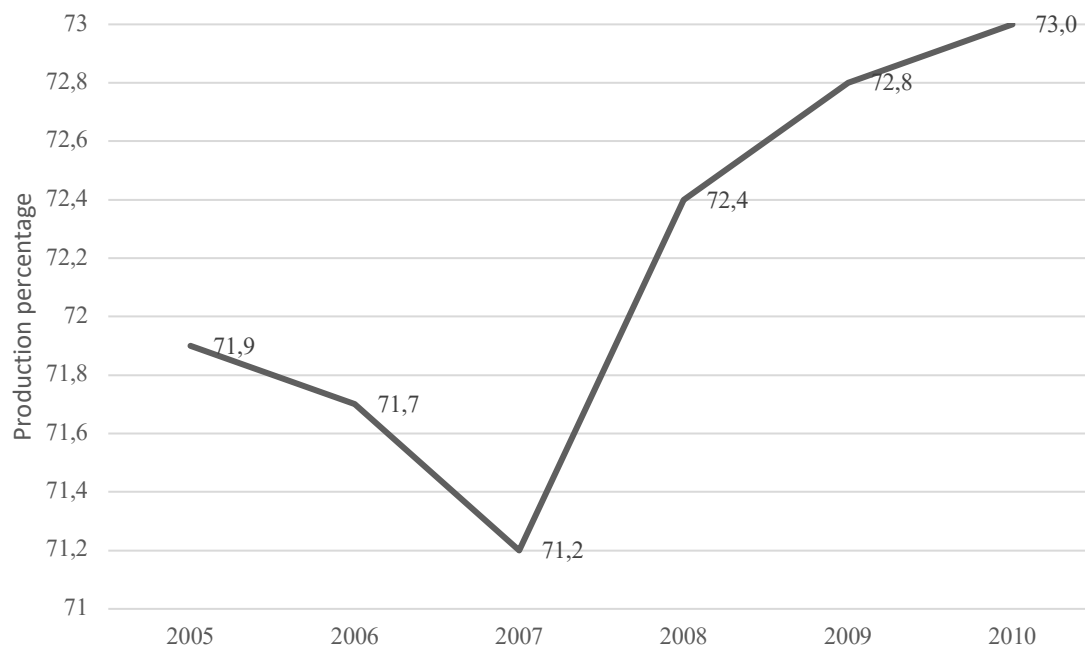


Figure 16. Evolution of the percentage of English publications included in the *Arts and Humanities Citation Index*. Period 2005-2010

*Scientific production in Spanish: main indicators on an international scale: analysis through Scopus.*

*Scopus* is an international database of 18,500 journals. It is divided into four major areas: Life Sciences, Health Sciences, Physical Sciences, and Social Sciences. At the same time, these areas are divided into different disciplines. This database focuses more on publications of European origin than Web of Science, which is more oriented toward publications from the USA and the United Kingdom. This means that English, although it continues to be the most widely used language in the publications included in Scopus during the period 2005-2010, has a lower weight in favor of other languages such as German, French, and even Spanish, which has more than 400% more publications in Spanish than those included in WoS. However, Physical Sciences continues to be practically the only language of publication, with more than 95% of the publications in the Physical Sciences area. The greatest number of publications in Spanish in Scopus is in the area of Health Sciences (Table 2), which accounts for 62% of the publications in Spanish.

AREA	ENGLISH PUBLICATIONS	SPANISH PUBLICATIONS	TOTAL NUMBER OF PUBLICATIONS
Health Science	1 839 808 (79,0%)	302 216 (1,3%)	23 641 055
Life Science	22 107 762 (80,0 %)	314 213 (1,1 %)	27 622 263
Physical Science	5 566 707 (92,5 %)	14 875 (0,3%)	6 016 765
Social Sciences	1 350 808 (87,2 %)	25 032 (1,6%)	1 539 024
<b>Total</b>	<b>12 363 181 (88,6%)</b>	<b>216 106 (1,5%)</b>	<b>13 948 907</b>

Table 2. Number of documents by areas of the Scopus database

The second most used language, after English, is German, which represents more than 5% of the publications in the category of Health and Life Sciences and 1% in Physical Sciences (Figs. 17, 18 and 19). French is the second most used language in Social Sciences, where it represents 3.8% of the publications in this area, and is the third most used in the rest of the three areas (Fig. 20).

Compared to English, the specific importance of Spanish in the publications included in *Scopus* during the period 2005-2010 is very small. In none of the four areas of this database does it exceed 1.6%, and it does not exceed the fifth position in Health Sciences, Life Sciences, and Physical Sciences. In the case of Social Sciences, Spanish reaches its highest re-presentation, with 1.6% of the total publications in this area, and occupies the fourth position behind English, French, and German.

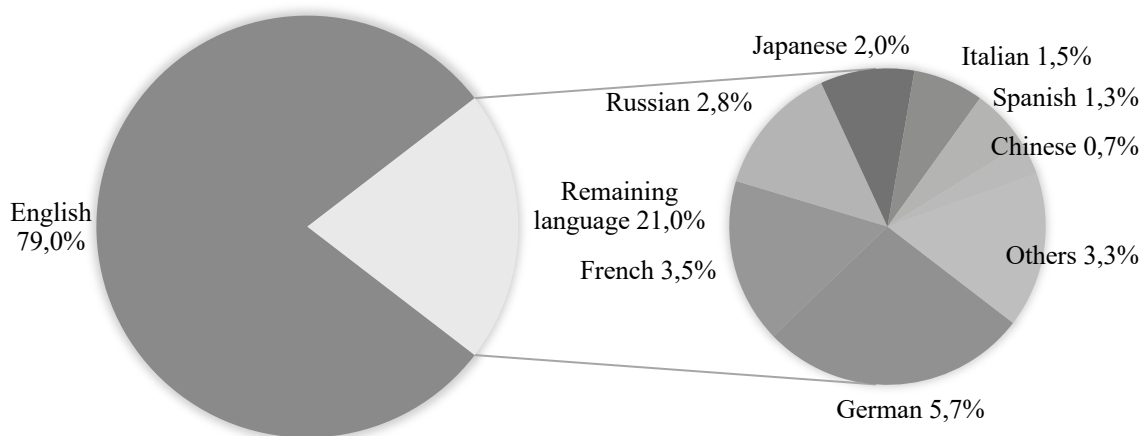


Figure 17. Languages represented in the Health Sciences area of the *Scopus* database.

Period 2005-2010

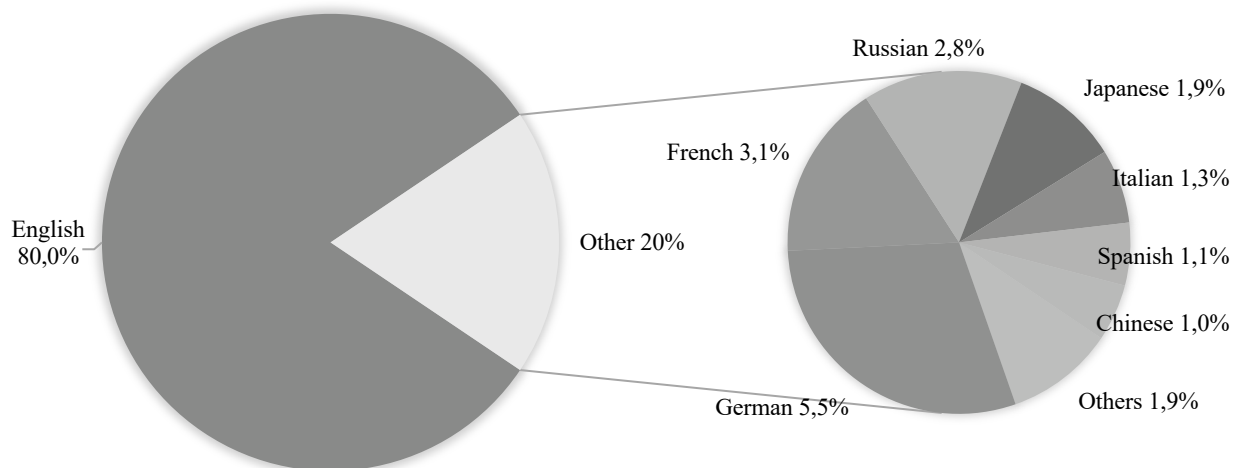


Figure 18. Languages represented in the Life Sciences area of the *Scopus* database. Period 2005-2010

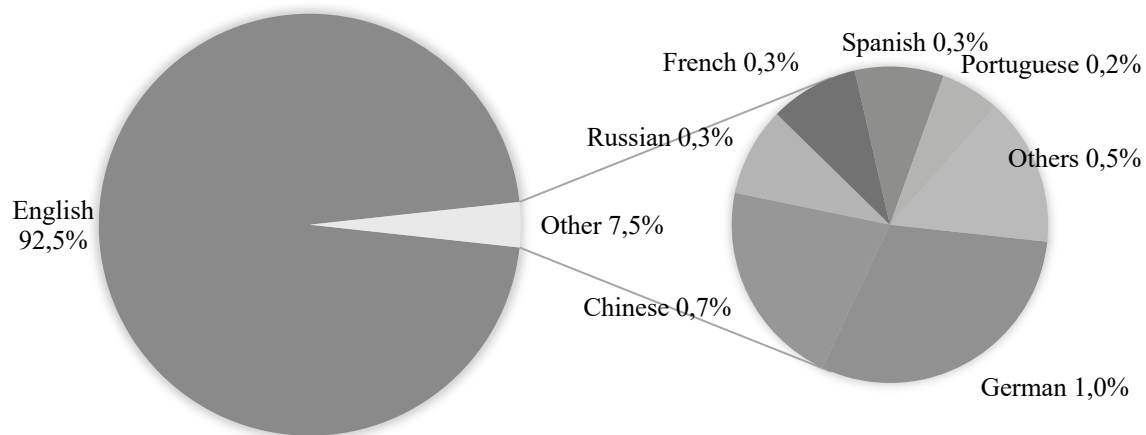


Figure 19. Languages represented in the area of Physical Sciences in the *Scopus* database. Period 2005-2010

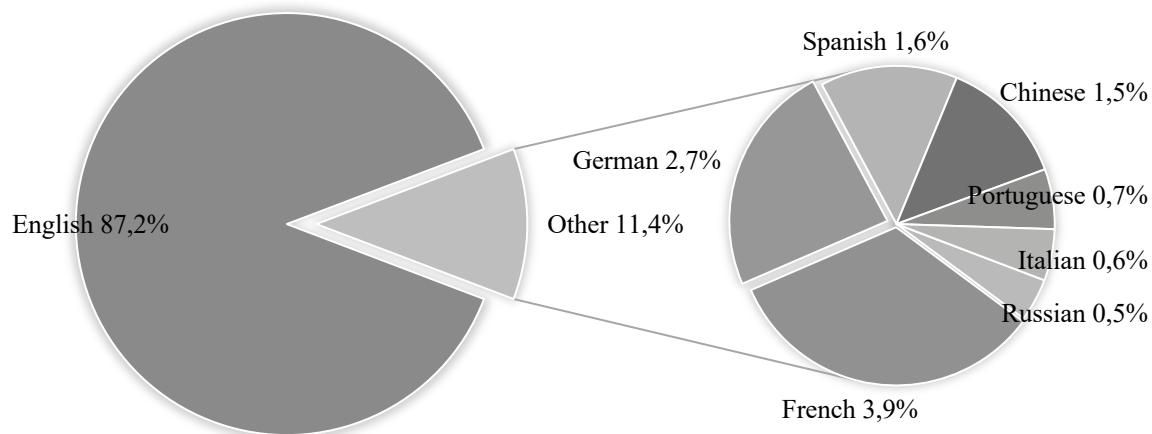


Figure 20. Languages represented in the Social Sciences area of the Scopus database.

Period 2005-2010

During the studied period, publications in Spanish related to Social Sciences increased until 2009, from 1.3% of the total number of publications in this area in 2005 to 2% in 2009 (Fig. 21). Spanish publications in the areas of Health Sciences and Life Sciences remained constant throughout the period studied. It is worth noting the scarce representation of Spanish in the area of Physical Sciences, where it does not exceed 0.3% of all publications worldwide from 2005-2010.

In the case of the evolution of English publications, a slight increase is shown in all areas (Fig. 22). The specific importance of English in Life Sciences area is very high, with an annual average of 92.5%.

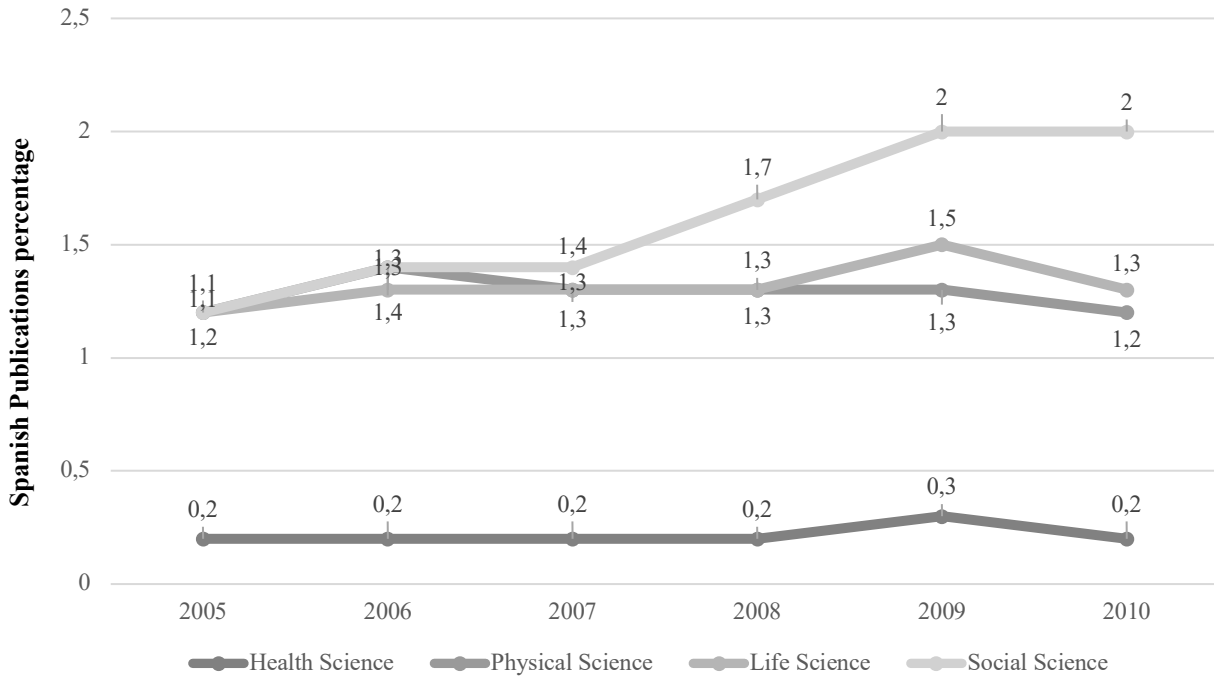


Figure 21. Evolution of publications in Spanish in the four major areas of Scopus. Period 2005-

2010

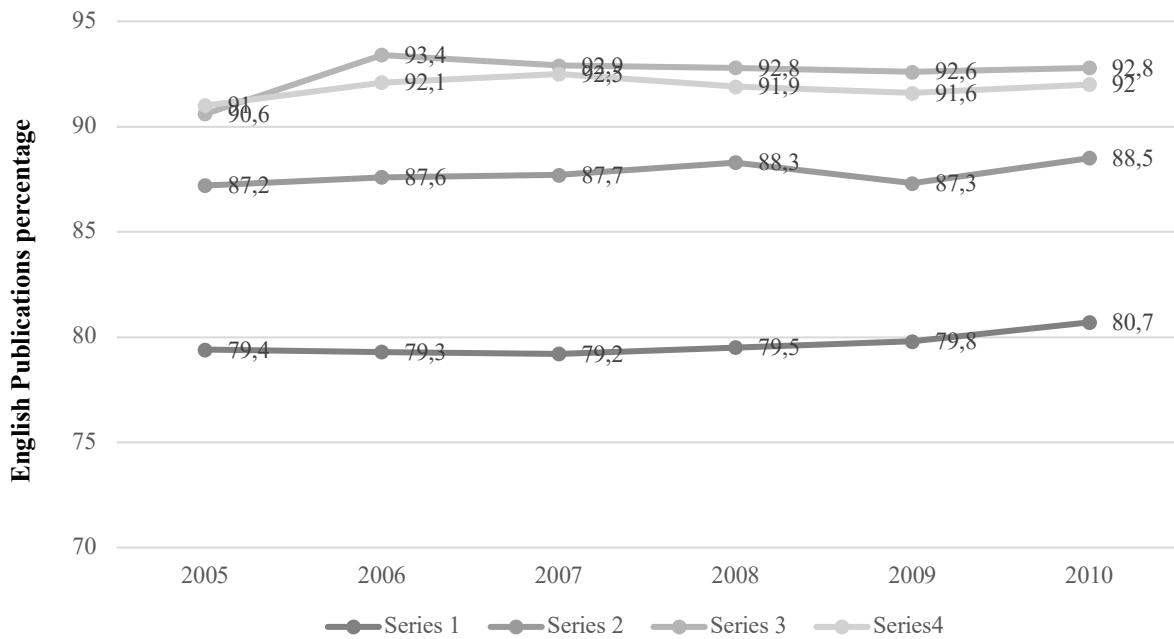


Figure 22. Evolution of English publications in the four main areas of Scopus. Period 2005-2010

The category that represents the highest percentage of publications in Spanish is Medicine. It is included in two different Scopus categories which are Life Sciences and Health Sciences. In Life Sciences, the latter represents 50.4% of publications in Spanish and 0.04% of the total world publications in this area. In the area of Health Sciences, Medicine represents 81.9% of publications in Spanish and 0.7% of the total number of publications in this category. In Physical Sciences, the area with the highest percentage of Spanish publications is Engineering with 20.4%, which represents 1.4% of the total number of publications in this category. In the field of Social Sciences, the best represented category is Social Science, with 36.6% of Spanish publications and 1.3% of the world's publications.

*Scientific production in Spanish: main indicators on an international scale: analysis through Inspec*

*Inspec* is a database that collects specialized publications in Physics, Electronics, Engineering, Computer Science, Production Control, Information Technology and, with special areas covered such as Materials Science, Nanotechnology, Oceanography, Nuclear Engineering, Geophysics, Biomedical Engineering, and Biophysics. This database gathers more than 11 million bibliographic records, including 5000 scientific and technical journals.

The language most used in scientific papers collected in this database is English, which represents 89.7% of the publications (Table 3). It is worth noting the importance of Chinese in this database compared to that observed in other multidisciplinary databases, since it is the second most used language, accounting for 8.2% of the publications in journals covered by *Inspec* during the period 2005-2010 (Fig. 23). Spanish represents 0.06% of the publications, which is much lower than that observed in the other multidisciplinary databases (Fig. 24). The most important area is Informatics, which represents 52% of the publications in Spanish in *Inspec* and 0.09% of the world's publications in this category.

PUBLICATION LANGUAGE	NUMBER OF PUBLICATIONS
English	3 168 375 (89,70 %)
Spanish	2069 (0,06 %)
Total <i>Inspec</i> Publications	<b>3 529 396</b>

Table 3. Percentage of English and Spanish publications by Inspectors

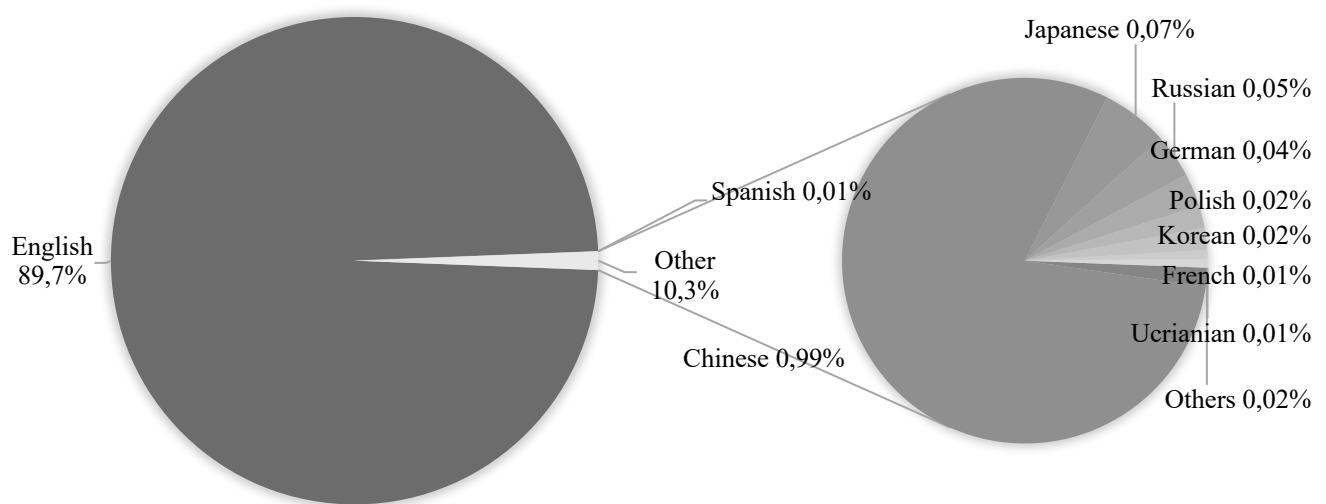


Figure 23. Publication languages of scientific papers collected in Inspec. Period 2005-2010

The evolution of the use of English as a language of publication of scientific articles in Inspec shows a decreasing trend throughout the period studied, from 92.5% in 2005 to 89% of the articles in 2010 (Fig. 24). Spanish shows a positive evolution; however, it does not exceed 1% of all the publications collected in this database.

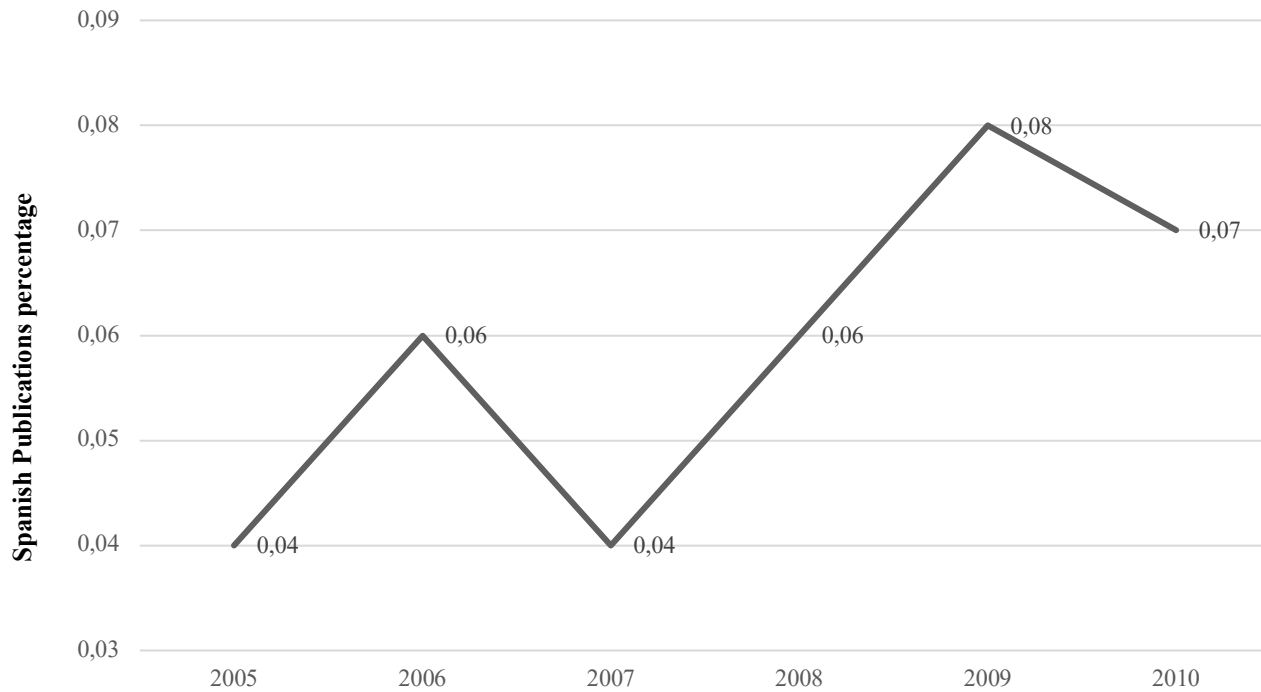


Figure 24. Evolution of the percentage of Spanish publications collected in Inspec. Period 2005-

2010

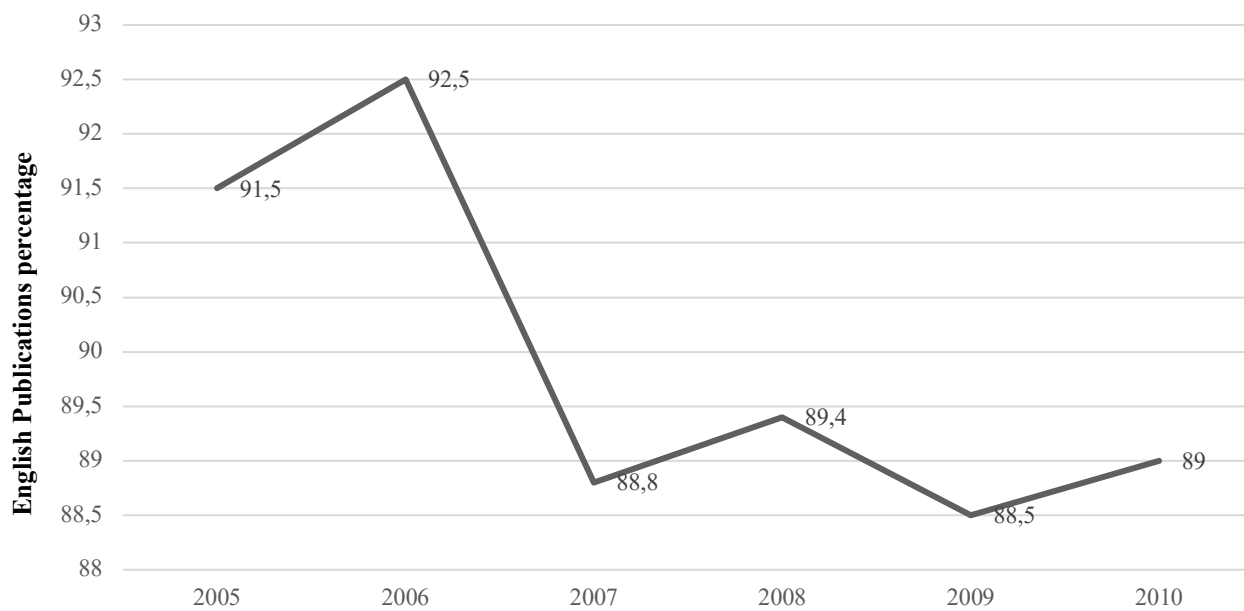


Figure 25. Evolution of the percentage of English publications collected in *Inspec*. Period 2005-

2010

*Scientific production in Spanish: main indicators on an international scale: analysis using PubMed*

*PubMed* is a database of bibliographic records specialized in biomedical literature in areas such as Medicine, Nursing, Dentistry, Veterinary or Preclinical Sciences. During the period 2005-2010, this database has collected 4,821,896 publications.

PUBLICATION LANGUAGE	NUMBER OF PUBLICATIONS
English	4 442 849 (92,10 %)
Spanish	2069 (0,75 %)
Total <i>PubMed</i> publications	<b>4 821 896</b>

Table 4. Number of publications in *PubMed*

The preferred language of publication is English, with 92.1% of the publications collected in PubMed, with a positive evolution during the period 2005-2010. The weight of Spanish is very small, below 1% of the total number of publications, but very similar to that of other languages such as German or French (Fig. 26).

The evolution of the number of publications is irregular, with a drop in the percentage in 2006 to 0.6% of publications in Spanish. From 2006 to 2008, this percentage remained constant; in 2009, it increased to 1% (Fig. 27). The discipline with the highest number of publications in Spanish is Cancer, which represents 27.6% of all publications in Spanish during the period analyzed. In contrast to this evolution of Spanish, English has shown very regular growth throughout the period considered (Fig. 28).

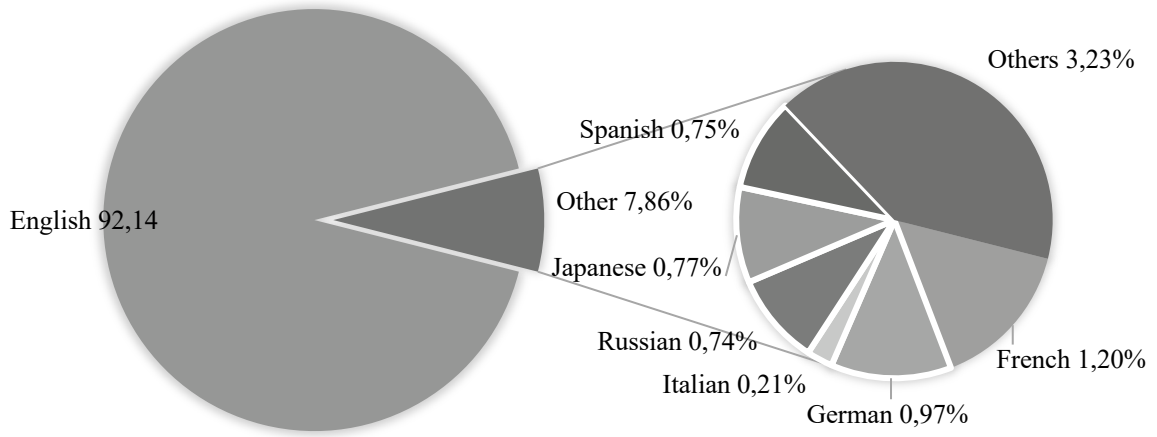


Figure 26. Languages of publication of scientific papers collected in PubMed. Period 2005-2010

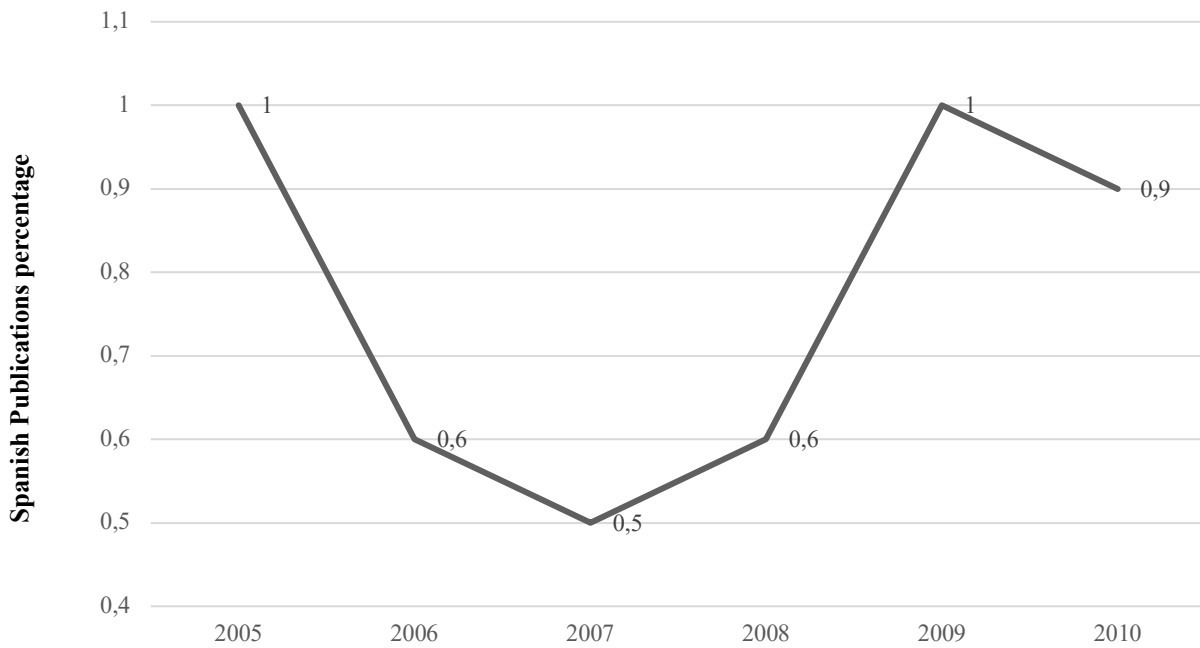


Figure 27. Evolution of the percentage of publications collected in PubMed in Spanish. Period 2005-2010

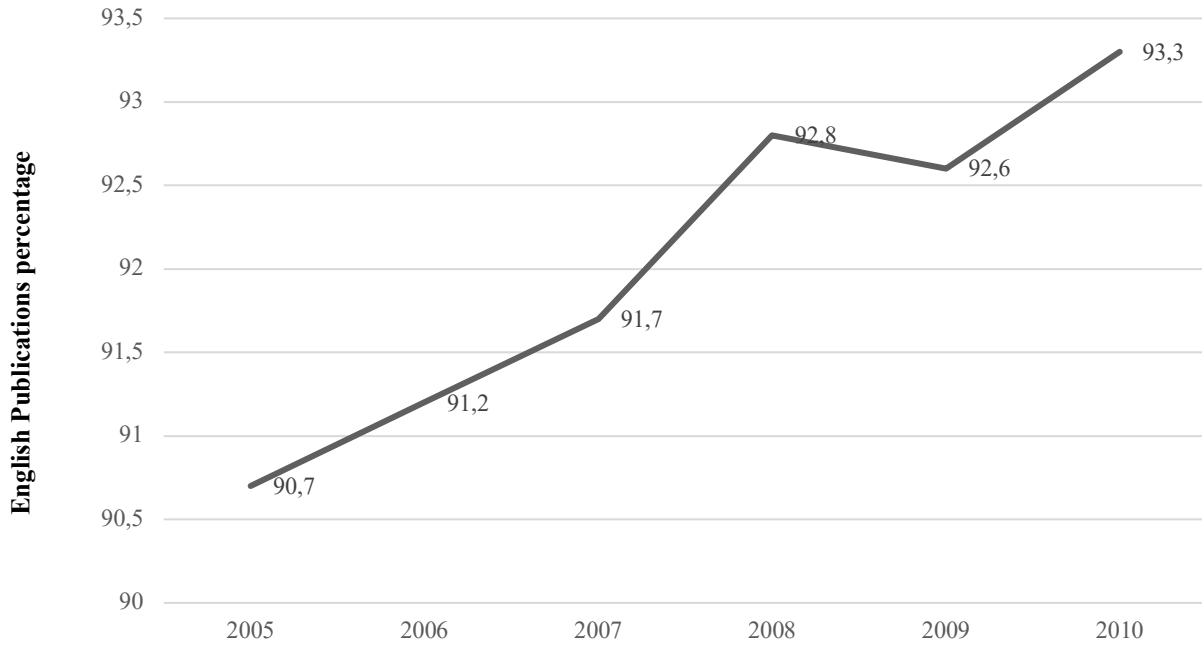


Figure 28. Evolution of the percentage of publications collected in PubMed in English.

Period 2005-2010

## CONCLUSIONS

The indicators of scientific production obtained in this study have made it possible to quantify the extent to which English has spread and consolidated its position as a scientific language on a world scale. Nevertheless, and considering the area of publications as the most representative element of the importance of languages in the scientific community, some aspects of Spanish role in science should be pointed out.

Firstly, it should be noted that using the Spanish public R&D system as an area of analysis, there is a solid scientific publishing sector in which there is an abundance of specialized journals of notable quality (Giménez Toledo). Most of these journals, mainly aimed at Spanish researchers, are strongly oriented to serve as vehicles of communication in scientific disciplines linked to territorial or local interests, as in the case of research on biological or geological aspects of our territory (Rey/Martín/Plaza), as well as other disciplines linked to socioeconomic activities

and interests, as in the case of publications of a technological nature. Practically all the journals that respond to this type of approach are published in Spanish, at least to a large extent (Plaza et al. 2009).

Apart from the local dimension mentioned above, and broadening the perspective of analysis to a global scale, it should be noted that Spanish is, to a certain extent, a particularly important language in some disciplinary fields included among Social Sciences, and especially in some disciplines and sub-disciplines of Humanities. Among the latter, Literature is a discipline in which a good number of contributions in Spanish are counted, understanding that it is precisely the Spanish language and everything that from a scientific point of view concerns literary production in Spanish that makes our language especially relevant. On the other hand, linguistic studies on Spanish also have a large presence among the journals published in Spanish.

Among the studies of a historical, social, and economic nature that relate to the Latin American geopolitical and cultural environment, Spanish, as can be expected, has a very representative value as a vehicular language. Although, this environment is multidisciplinary, and its identification and quantitative assessment would imply a specific analysis that goes beyond the limits established for this study.

In any case, the importance of European studies in Latin America is reflected in the existence of various research networks, as well as in scientific information networks, such as REDIAL (European Network of Information and Documentation on Latin America), whose objective is to follow up research on information systems in the Social and Human Sciences on Latin America in Europe. At the Latin American level, there are also initiatives of great importance for disseminating regional scientific production, published mainly in Spanish. One example is *Latindex*, whose data were analyzed in this article. Another example is Scielo, an electronic library that emerged as an initiative of FAPESP and BIREME in Brazil and which

allows the electronic publication of complete editions of scientific journals. Currently, it has more than a thousand full-text, open-access journals from fifteen Ibero-American countries.

Spanish also has a strong presence in some experimental fields, mainly in health sciences research. In this context, clinical medicine is, for the scientific interests of the Ibero-American countries, an area in which, in addition to having journals published in Spanish, the information is aimed at specialized groups in which Spanish is the usual working language. In this context, there are several sub-disciplines in which, on an international scale, Spanish is very relevant, such as General and Internal Medicine, Medical Ethics, Urology, and Nephrology, research on the respiratory system, Nutrition, Dietetics, and Pediatrics.

On the other hand, and in this same context of Experimental Sciences, Spanish has a significant presence in disciplines such as Paleontology and Mycology. Straddling between Experimental Sciences and Social Sciences, Archeology, insofar as it corresponds to research in Ibero-America, is a discipline with a significant number of articles in Spanish.

In the Technology field and on an international scale, scientific production in Construction Technology and Robotics stands out.

Going beyond the concept of scientific production (understood as a set of works published in scientific journals), Spanish in science is much more significant than what is initially apparent from the indicators obtained in this study (Plaza et al. 1999 and 2013). There are areas of activity where the use of Spanish is decisive, such as teaching activities, science dissemination and ideas exchange and knowledge among researchers from Spanish-speaking countries. In fact, researchers' training in these countries, both during their university studies and after they have completed their doctoral studies, is largely carried out using Spanish as their working language. Daily work in the laboratory or research center, as well as participating in conferences, seminars,

and, in general, in national scientific meetings held in Spanish-speaking countries, is mostly carried out in Spanish.

In addition to communication in science, regardless of the professional community to which the information is addressed, we should not forget the very important role that our language also plays in the social transmission of knowledge and applications of technologies. Fundamentally those whose development is strongly linked to advances in scientific research.

To all of the above, we must add the enormous interest of the Spanish-speaking community in the popularization of science and technology through informative journals and other media. The transmission of highly specialized scientific knowledge and its conversion into a language understandable to the average reader and to any type of public unfamiliar with science languages playing a fundamental role in attracting interest in scientific research and in improving knowledge and social acceptance of the applications of science in practically all fields of activity. The correct use of Spanish in guidelines, standards, legislation, technical, economic, and political reports, patents and other documents of interest in science and technology is essential for adequate information for those agents who actively contribute to the different activities inherent to the research and development systems, both public and private.

Taking into account what has been said in this section, it is necessary to highlight the important role of specialists working in the field of Spanish scientific terminology since this language has serious deficiencies in this field that are partly due to the widespread use of English in science and technology and the constant emergence of new terms in English for which, for the most part, there is no correct translation into Spanish. The use of scientific terms and expressions in English has been common in the different forms of knowledge transmission used by Spanish and Latin American researchers since it is a language spoken by some 450 million people, it is of

the utmost interest to have updated scientific terminology in Spanish with its corresponding equivalents in English (Vera Torres).

## **Chapter V**

### **Data Analysis**

This chapter will analyze the texts and show the results collected after having translated the documents “Illicit Wildlife Trade, Wet Markets, and COVID-19: Preventing Future Pandemics” and “Language and Learning in the Digital Age” from English into Spanish and “Cambio climático. Perspectivas futuras”, “El mecanismo de la crisis económica mundial” and “El valor del idioma español en ciencia y tecnología” from Spanish to English. As stated by Ibrahim (2015), “The word analysis refers to a closely-related operation those are performing to summarize the collected data and organize in such a manner yielding answer to the questions.” (p.1). In order to facilitate analysis and interpretation, this chapter helps break down the complex material by organizing it into simpler data. Such answers will shed light on the research question to evaluate the use of translation procedures and methods in the documents above. Chapter Three mentioned the application of three instruments, which are a text analysis chart, color-coding, and glossary, to obtain the data. These are to help collect or interpret the data collected from the beginning to the end of the process.

#### **5.1 Analysis and interpretation of the results**

Apart from data analysis, interpreting the gathered results using the different instruments is also significant in this project to draw conclusions. According to Dibekulu (2020), qualitative and quantitative are the two approaches by which analysts can interpret data, and regardless of the method, the purpose is to gather useful and usable information for the research. With this, as mentioned in Chapter III, this research uses qualitative data, so the data will be analyzed to be comprehended qualitatively and not quantitatively which involves numbers.

This process, as already explained, consists of using three instruments. The first is the text analysis chart that will ease the translation process by sorting the texts into different factors such as text style, function, scale of formality and difficulty, and lastly, the scale of emotional tone along with the selected translation method. A color-coding instrument will then assign each translation procedure a unique color established by the translator, which will help identify the procedures that have been applied. After finishing the color-coding step, the research will employ the third instrument, a glossary, to register all the difficult terminologies for future readers and translations.

### 5.1.1 Text Analysis

Text analysis aims to help translators classify the material into different factors before translating. This will make the process easier since the translation method, style, function, formality scale, generality and difficulty, and emotional tone are defined beforehand. This can help to save time and ease the translation process because there may be times when translation is almost finished, but suddenly the translator realizes the text function selected is not suitable and, therefore, neither the method nor procedures. Therefore, it must analyze the texts first to avoid these inconveniences that will compromise the product and delay the delivery of an accurate, faithful, and natural work. The chart below shows the analysis made of the five translated texts.

*Table 5*

<b>Text Analysis</b>	<b>Illicit Wildlife Trade, Wet Markets, and Covid-19:</b>	<b>Language and Learning in the Digital Age</b>	<b>Cambio climático. Perspectivas futuras</b>	<b>El mecanismo de la crisis económica mundial</b>	<b>El valor del idioma español en ciencia y tecnología</b>
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	<b>Preventing Future Pandemics</b>				
Text Style	Discussion	Discussion	Discussion	Discussion	Discussion
Text Function	Informative	Informative	Informative	Informative	Informative
Scale of Formality	Formal / Neutral	Neutral	Formal / Neutral	Formal / Neutral	Formal / Neutral
Scale of Generalit y or Difficulty	Technical /Educated	Technical /Educated	Technical /Educated	Technical /Educated	Educated /Neutral
Scale of Emotional Tone	Factual	Factual	Factual	Factual	Factual
Translatio n Method	Communicati ve /Semantic	Communicati ve /Semantic	Communicati ve /Semantic	Communicati ve /Semantic	Communicati ve /Semantic

*Table 5 shows the researcher's instrument to analyze the texts under study. Source: Researcher's creation*

### 5.1.2 Color Coding

The second instrument is color coding, and its objective is to help show readers how many procedures and how they were applied to translate the materials, apart from assessing translators to evaluate the correct use of each procedure. Owing to the fact that a correct application of translation methods and procedures is the key to delivering accurate, faithful, and natural translations, it is crucial to showcase them using a visual representation for better understanding and judgment. Once the text analysis chart was filled, this instrument was used, so the researcher selected 15 paragraphs of around 100-150 words from each text. It is important to highlight that three texts were translated into English, while two were translated into Spanish. With this, the translator selected seven and eight paragraphs from the texts translated into Spanish, whereas, from the texts translated into English, five paragraphs were selected from each text. On the left side of the chart nine different translation procedures are displayed: transposition, modulation, omission, amplification, explicitation, literal translation, compensation, equivalence, and adaptation. Unique colors that match every translation procedure can be visualized on the right side. In addition, to better comprehend the analysis, the original paragraphs will be placed before the color-coded text. If one word has two translation procedures, the translator will use symbols or characters such as parenthesis, brackets, slashes, bars, or underlying to differentiate the multiple procedures employed. The following chart shows the translation procedures with their corresponding colors.

**Table 6**

Translation Procedure	Color Assigned
Transposition	Yellow
Modulation	Brown

Omission	
Amplification	
Explicitation	
Literal translation	
Compensation	
Equivalence	
Adaptation	

*Table 6 shows each technique with corresponding colors in the color-coding systematic procedure. Source: Researcher's creation*

### 5.1.2.1 Color coding of texts from English into Spanish

#### 5.1.2.1.1 “Language and Learning in the Digital Age”

##### Paragraph 1

There is yet another way to view the impact of literacy as a delivery system for language. When humans have a tool, like a gun, a pole vault pole in pole vaulting, or a forklift in an industrial plant, the human being is capable of doing more with the tool than without it (Wertsch 1998). Human ability is so enhanced with tools that we can see the “person-with-tool” as an integrated entity; that is, we can see the actor in pole vaulting as “human-with-pole” (pole-vaulter), the actor using a forklift as “human-with-forklift” (forklift operator), and the actor with a gun as “human-with-gun” (gunman).

Existe otra forma de ver el impacto de la alfabetización como sistema de comunicación del lenguaje. Las personas son capaces de lograr hacer más cuando cuentan con una herramienta como una pistola, una pértiga con pértiga en el salto o una [carretilla elevadora] en una planta

industrial, cuando [no se cuentan] con una (Wertsch 1998). La capacidad humana mejora considerablemente con las herramientas hasta el punto de que podemos ver a la “persona-con-herramienta” como una entidad integrada. Es decir, podemos ver al ejecutante que salta con pértiga como “humano con pértiga” (saltador de pértiga), al ejecutante que utiliza una [carretilla elevadora] como “humano con [carretilla elevadora]” (operador de [carretilla elevadora]) y al ejecutante que lleva una pistola como “humano con pistola” (pistolero).

### Paragraph 2

However, literacy (using writing as a delivery system for language) is, indeed, acquired through socialization (in the family and in school) and through authentic practice and not just, or even mainly, overt instruction (Gee 2004; Heath 1983). Children become members of a “literate culture” (actually one version or another depending on their communities) through enculturation (Gee 2004; Heath 1983; Scollon & Scollon 1981; Street 1984). This is how children learn other cultural skills, like cooking, storytelling, and video gaming. Instruction plays a role, but takes a back seat to being socialized with others as a member of a culturally or at least socially distinctive group of people.

Sin embargo, la alfabetización (el uso de la escritura como sistema de comunicación del lenguaje) se adquiere realmente a través de la socialización (tanto en la familia como en la escuela) y de la práctica auténtica y no sólo o inclusive principalmente de la instrucción explícita (Gee 2004; Heath 1983). Los niños se convierten en miembros de una “cultura alfabetizada” (en realidad una versión u otra dependiendo de sus comunidades) a través de la aculturación (Gee 2004; Heath 1983; Scollon & Scollon 1981; Street 1984). Es así como los niños aprenden otras destrezas culturales como la cocina, la narración de cuentos o los videojuegos. La instrucción desempeña un papel, pero queda en un segundo plano frente a la socialización como miembro de un grupo cultural o, al menos, socialmente distintivo.

### Paragraph 3

Children from homes that **do** not enculturate them early **into** some version of literate culture (and a version that ensures they **do** well **at** school, given **how** schools actually function) come to school in need of **more** practice and immersion **in** literacy activities than the school usually has **the** time or will to provide. Unfortunately, such children typically **are** given large doses of overt instruction and often skill-and-drill. This approach is not optimal for helping children form a deep affiliation with literacy as **an** “identity” (being a literate person, lifelong reader, committed writer, **and so** forth), though it often succeeds **in** preparing children to pass tests.

Los niños que provienen de hogares en los que no se les ha inculcado [desde pequeños] alguna versión de la cultura alfabetizada, (y una versión que les garantice un buen rendimiento escolar, dado el funcionamiento real de las escuelas) llegan a la escuela con la necesidad de practicar y experimentar más actividades de alfabetización de las que la escuela suele tener tiempo o voluntad de proporcionarles. Lamentablemente, estos niños suelen recibir grandes dosis de instrucción explícita y, a menudo, de destrezas y ejercicios. Sin embargo, este enfoque no es óptimo para ayudar a los niños a formar una vinculación profunda con la alfabetización como “identidad” (ser una persona alfabetizada, un lector de por vida, un escritor comprometido, etc.), aunque a menudo, se consigue preparar a los niños para que aprueben los exámenes.

### Paragraph 4

The phrase “written language” can be misleading. It actually means “a written version of oral language.” Written language is, in some sense, “frozen” oral language, though **it** has capabilities that oral language **does** not. English, like many other languages, is written with an alphabet, one of the most ingenious and important inventions of human culture (Havelock 1976;

Olson 1996; Pattison 1982). An alphabet uses letters to represent the sounds of words. English has about 44 “phonemes” (individual speech sounds that distinguish words from each other). The English alphabet uses only 26 letters to represent these 44 sounds. The 26 letters represent thousands and thousands of words, a near miracle of efficiency.

La expresión “lenguaje escrito” puede resultar engañosa, porque en realidad significa “una versión escrita del lenguaje oral”. En cierto sentido, aunque el lenguaje escrito tiene capacidades que el lenguaje oral no, este es un lenguaje oral “paralizado”. El inglés, como muchas otras lenguas, se escribe con un abecedario, lo que es uno de los inventos más ingeniosos e importantes de la cultura humana (Havelock 1976; Olson 1996; Pattison 1982). Un abecedario usa letras para representar los sonidos de las palabras. El inglés tiene unos 44 “fonemas” (sonidos individuales del habla que distingue unas palabras de otras). Sin embargo, el abecedario inglés emplea solamente 26 letras para representar estos 44 sonidos. Las 26 letras representan miles y miles de palabras, lo que resulta prácticamente un milagro de eficacia.

### Paragraph 5

An alphabet is a code for preserving oral language. It is a code by which literate speakers can decipher how to “say” (to others or to themselves) what is being written, though, of course, they do not have to say it, at least not out loud. Such codes can vary quite a bit. For example, there are writing systems that do not use alphabets, but instead use written symbols for syllables, not individual sounds. Thus, a two-syllable word like “wonder” would be represented by two symbols instead of six symbols (letters). Such systems require more symbols than an alphabet, but otherwise they represent words by representing how they are said, just like in alphabetic writing, since syllables are a unit of sound, not meaning.

Un abecedario es un código para preservar el lenguaje oral, ya que les permite a los hablantes alfabetizados descifrar cómo “decir” (a los demás o a [sí mismos]) [lo que] está escrito

sin tener que decirlo en voz alta, claro está. Sin embargo, estos códigos pueden variar bastante. Por ejemplo, hay sistemas de escritura que no usan abecedarios, sino símbolos escritos para sílabas y no para sonidos individuales. Por ende, una palabra de dos sílabas como “sillas” se representaría con dos símbolos en vez de seis símbolos (letras). Dichos sistemas requieren más símbolos que un abecedario, pero por lo demás representan palabras tal y como se dicen en la escritura alfabética, ya que las sílabas son una unidad de sonido, no de significado.

### Paragraph 6

For example, writing in many societies changes the whole nature of contracts (Graff 1979, 1987). In an oral culture, people have to trust each other’s word. If they seek justice in some sort of court, the evidence is primarily based on people’s words and how trustworthy those people are or appear to be. With writing, trust is often placed in documents and institutions like law and lawyers, not people’s words. Oral evidence is often checked by written evidence. In modern societies, oral language has lost some of its role in creating trust and making contracts.

Por ejemplo, en muchas sociedades, la escritura cambia por completo la naturaleza de los contratos (Graff 1979, 1987). En una cultura oral, las personas tienen que confiar en la palabra de los demás y si buscan justicia en algún tipo de tribunal, las pruebas se basan principalmente en las palabras de las personas y en la credibilidad que tienen o parecen tener. Por el contrario, en el caso de la escritura, la confianza se deposita, [a menudo], en documentos e instituciones como la ley y los abogados y no en las palabras de las personas, más que los testimonios orales suelen comprobarse mediante testimonios escritos. Además, en las sociedades modernas, el lenguaje oral ha perdido parte de su función a la hora de crear confianza y establecer contratos.

### Paragraph 7

There is, we would argue, a “human nature” and a “language nature” (a basic core form of human language) that was set in motion by evolution. Human nature is what all humans,

regardless of culture, share. Language nature is what all languages, regardless of culture, share. Culture has allowed humans and language to develop well beyond their “natures,” but their natures still define part (but only part) of what they are, can do, and can be. Culture can lead to developments that so violate the nature of humans (as humans) and language (as language) that they are dangerous and bad for us.

En nuestra [opinión], existe una “naturaleza humana” y una “naturaleza lingüística” (una forma básica del lenguaje humano) que la evolución puso en marcha. La naturaleza humana es lo que comparten todos los seres humanos, independientemente de su cultura, mientras que la naturaleza lingüística es lo que comparten todas las lenguas, independientemente de su cultura. La cultura ha permitido a los seres humanos y al lenguaje desarrollarse mucho más allá de sus “naturalezas”, pero sus naturalezas siguen definiendo parte (pero sólo parte) de lo que son, pueden hacer y pueden ser. La cultura puede conducir a desarrollos que violan de tal modo la naturaleza de los humanos (como humanos) y del lenguaje (como lenguaje) que son peligrosos y malos para nosotros.

### Paragraph 8

Much has been written about literacy and its effects on a society (Gee 2007a; Goody & Watt 1963; Graff 1979, 1987; Olson 1996; Scribner & Cole 1981; Street 1984). People have claimed that literacy leads to more humane and more modern societies and smarter people. In reality, literacy has had quite different effects on different societies. It has no one set of predictable outcomes. It has certain “affordances,” effects that arise if the context is right. Otherwise, literacy’s effects, like those of other technologies such as television and computers, depend on the specific contexts in which different literacy practices occur.

Se ha escrito mucho sobre la alfabetización y sus efectos en una sociedad (Gee 2007a; Goody & Watt 1963; Graff 1979, 1987; Olson 1996; Scribner & Cole 1981; Street 1984) y se ha

afirmado **que** la alfabetización **conduce a sociedades más humanas, más modernas y a personas más inteligentes**. **En realidad, la alfabetización ha tenido efectos muy diferentes en las distintas sociedades porque no tiene una serie de resultados predecibles. Más bien, tiene ciertas “posibilidades”, es decir, efectos que surgen si el contexto es el adecuado. Por lo demás, los efectos de la alfabetización, al igual que los de otras tecnologías como la televisión y las computadoras, dependen de los contextos específicos en los que se producen las diferentes prácticas de alfabetización.**

### Paragraph 9

Our goal is not **to** judge the essay, since **it is**, to **a** certain extent, dying **as** the litmus test of the educated person. What **we** want **to** stress is that the creation of author and reader as fictions (universal, rational, acultural beings) is a way of using language tied to the written form of **the** essay. This way of using language has historically created and influenced new ways of talking and thinking as **well**. When a student gives a science report to **a** classroom or a scientist gives a talk at a conference, the “voice” is the same: the reasoning, unself-interested, unemotional, acultural mind. As **an** example, consider the sentences below (Gee 2004, 2010):

**Nuestro objetivo no es juzgar a los ensayos, dado que, en cierta medida, constituyen la prueba de fuego de una persona con una base académica. Lo que queremos destacar es que la creación de un autor y un lector como ficciones (seres universales, racionales y culturales) es una forma de utilizar el lenguaje vinculada a la forma escrita del ensayo. Históricamente, esta forma de utilizar el lenguaje ha creado e influido también en nuevas formas de hablar y de pensar.**

**Cuando un estudiante presenta un informe científico en clase o un científico da una conferencia en un congreso, la “voz” es la misma: la mente razonadora, desinteresada, sin emociones y acultural. Como ejemplo, considere las frases siguientes (Gee 2004, 2010):**

### Paragraph 10

Oral cultures certainly could **have** one person speak for another. A shaman or a priest might claim **to** speak for God in God’s words. A councilor might speak for a chief or the king. But it was clear that a particular person was speaking. **It** was clear **that** people as **fellow** members of a shared culture **were** being addressed. But a written document issued by the United States Catholic bishops is authored by an institution (“the US Church”) and addressed to the “laity,” that is, an abstract group of people defined by their relationship to that institution. Literacy’s proliferation of fictional authors and readers gave rise to a proliferation of institutions and to institutions as **themselves** actors and “speakers.”

En las culturas orales, ciertamente, una persona podía hablar por otra. Un chamán o un sacerdote pueden pretender hablar en nombre de Dios con las palabras de Dios. Un consejero podía hablar en nombre de un jefe o del rey; pero lo que estaba claro era que una determinada persona estaba hablando. Estaba claro que se dirigía a las personas como miembros de una cultura compartida. Sin embargo, un documento escrito emitido por los obispos católicos de Estados Unidos está escrito por una institución (“la Iglesia de Estados Unidos”) y dirigido a los “laicos”, es decir, a un grupo abstracto de personas definidas por su relación con esa institución. La proliferación de autores y lectores ficticios de la alfabetización dio lugar a una proliferación de instituciones y a las instituciones como actores y “hablantes” en sí mismas.

#### **5.1.2.1.1 “Illicit Wildlife Trade, Wet Markets, and COVID-19: Preventing Future Pandemics”**

##### **Paragraph 11**

Although the exact origin of SARS-CoV-2, the etiologic agent of COVID-19, is currently unknown, **there** is substantial evidence to suggest the source of transmission of **the** virus occurred within the Wuhan wet market. In these markets, bats and wild animals are frequently sold and stored in close contact. During several of the world's past pandemics, bats were essential to the

spread of zoonotic diseases from bat to another animal or to humans directly. Live animal markets create the perfect conditions for novel viruses such as COVID-19 to emerge. This paper suggests that to prevent future pandemics, the sale of exotic animals be banned at wet markets. It also advocates for the integration of the analysis of illicit trade with the study of zoonotic disease transmission and pandemics.

Aunque actualmente se desconoce el origen exacto del SARS-CoV-2 [(Coronavirus 2 de Síndrome Respiratorio Agudo Grave)], que es el agente etiológico del COVID-19, hay pruebas sustanciales que sugieren que la fuente de transmisión del virus se produjo en el mercado mojado de Wuhan, ya que en estos mercados, es frecuente la venta y el almacenamiento en estrecho contacto de murciélagos y animales salvajes. Además, durante varias de las pandemias mundiales pasadas, los murciélagos fueron un factor esencial en la propagación de enfermedades zoonóticas [transmitidas] de un murciélago a otro animal o directamente a los humanos. Por ende, los mercados de animales vivos favorecen la aparición de nuevos virus como el COVID-19. Este artículo sugiere que, para prevenir futuras pandemias, se prohíba la venta de animales exóticos en los mercados mojados. También aboga por la integración del análisis del comercio ilícito con el estudio de la transmisión de enfermedades zoonóticas así como de las pandemias.

### **Paragraph 12**

To explore the connections between bats and COVID-19, we reviewed academic literature and scientific journals on bat ecology and conservation, emerging zoonotic diseases, the COVID-19 outbreak, and wet markets in China. We used websites of authoritative bodies such as the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO). We looked at scholarship and reports addressing the illicit wildlife trade from prominent intergovernmental organizations and non-governmental organizations such as the United Nations

Office on Drugs and Crime (UNODC), and TRAFFIC. We also reviewed reporting from news media outlets such as the New York Times and the Wall Street Journal.

Para explorar las relaciones existentes entre los murciélagos y el COVID-19, hemos revisado la bibliografía académica y las revistas científicas sobre la ecología y la conservación de los murciélagos, las enfermedades zoonóticas emergentes, el brote de COVID-19 y los mercados mojados de China. Asimismo, se utilizaron sitios web de organismos autorizados como los Centros para el Control y la Prevención de Enfermedades (CDC) y la Organización Mundial de la Salud (OMS). También se consultaron estudios e informes sobre el comercio ilícito de especies silvestres de destacadas organizaciones intergubernamentales y no gubernamentales como la Oficina de las Naciones Unidas contra la Droga y el Delito (ONUDD) y TRAFFIC. Hemos consultado también la información de los medios de comunicación, tales como The New York Times y The Wall Street Journal.

### Paragraph 13

As one science writer reports “live meat markets are perfect laboratories for creating new viruses. Stressed animals shed more viruses and are more susceptible to infections, and cages are often stacked on top of each other, facilitating exposure” (Nuwer, 2020). Exotic meats that are traded illegally, such as pangolins, are less likely to be inspected for health risks and may come into contact with bats while in transit. Additionally, because these rare animals are often from remote areas, they may be more likely to carry diseases that humans have never come into contact with (Hemley, 2020). The conditions the live animals are subjected to in wet markets create a petri dish for the spread of diseases.

Tal y como afirma un escritor científico, “los mercados de carne viva son laboratorios perfectos para crear nuevos virus. Los animales estresados excretan más virus y son más susceptibles a las infecciones y las jaulas suelen estar apiladas unas sobre otras, lo que facilita la

exposición” (Nuwer, 2020). Asimismo, las carnes exóticas que se comercializan ilegalmente, como los pangolines, son menos susceptibles de ser inspeccionadas por riesgos sanitarios y pueden entrar en contacto con murciélagos durante el trayecto. Además, como estos animales poco comunes suelen proceder de zonas remotas, es más probable que sean portadores de enfermedades con las que los humanos nunca han estado en contacto (Hemley, 2020). Por otro lado, las condiciones a las que se somete a los animales vivos en los mercados mojados crean una placa de Petri para la propagación de enfermedades.

#### Paragraph 14

Addressing and preventing pandemics requires an array of transdisciplinary research. Research must focus on the central causes of the spread of zoonotic diseases such as illicit wildlife trade and wet markets. Public health, conservation biology, and illicit trade scholars should collaborate on addressing the facets of supply chains, corruption, and trade that may contribute to zoonotic transmission. There will need to be much more work with the business community to follow the supply chains linked to illicit trade in wildlife. Governments will need to get involved as well and take action to suppress the wildlife trade in order to prevent future outbreaks.

Para afrontar y prevenir las pandemias se requiere un conjunto de investigaciones transdisciplinarias. La investigación debe dirigirse a las causas principales de la propagación de enfermedades zoonóticas, como el comercio ilícito de [animales] salvajes y los mercados mojados. Además, los estudiosos de la salud pública, la biología de la conservación y el comercio ilícito deben colaborar para abordar las facetas de las cadenas de suministro, la corrupción y el comercio que pueden contribuir a la transmisión de zoonosis. También se necesitará trabajar mucho más con la comunidad empresarial para seguir las cadenas de suministro vinculadas al comercio ilícito de flora y fauna silvestres. Asimismo, los gobiernos tendrán que involucrarse y

tomar medidas para reprimir el comercio de especies silvestres con el fin de prevenir futuros brotes.

### Paragraph 15

This outbreak was caused by an array of factors, including the conditions of wet markets, the illicit wildlife trade, and environmental destruction. A multipronged approach will be necessary to make sure this never happens again. On the illegal trade aspect, policymakers will need to address the source of demand for these products: the wet markets. Shutting down the wet markets, or at least strictly regulating them and banning the sale of live wild animals, will be necessary to address the problem of zoonotic diseases. Hopefully, this pandemic will convince government officials that these markets need to be dealt with and convince scholars to study the intersection of illicit trade and public health.

Este brote se originó por una serie de factores como las condiciones de los mercados mojados, el comercio ilícito de especies silvestres y la destrucción del medio ambiente. Por ello, será necesario un enfoque múltiple para garantizar que esto no vuelva a ocurrir. En cuanto al comercio ilegal, los responsables políticos tendrán que abordar la causa de la demanda de estos productos que son los mercados mojados. Para abordar el problema de las enfermedades zoonóticas será necesario cerrar estos mercados o, al menos, regularlos estrictamente y prohibir la venta de animales salvajes vivos. Confiamos en que esta pandemia sirva para convencer a los responsables gubernamentales de la necesidad de combatir estos mercados y convencer a los académicos para que estudien la relación entre el comercio ilícito y la salud pública.

### 5.1.2.2 Color coding of texts from Spanish into English

#### 5.1.2.2.1 “Cambio climático. Perspectivas futuras”

#### Paragraph 1

La primera Conferencia Mundial sobre el Clima en el mundo tuvo lugar en Génova en 1979, donde por primera vez se debatió el problema del cambio climático en la comunidad científica (WMO, 1979). Una de las consecuencias de dicha declaración fue la posterior aparición de una serie de conferencias científicas y políticas: Villach, Toronto, (Conference Statement, 1988), Ottawa, Tata, La Haya, Noordwijk, El Cairo y Bergen (1989) y la Segunda Conferencia Mundial sobre el Clima (1990). En este año se creó el IPCC, Grupo Intergubernamental de Expertos sobre el Cambio Climático, y tuvo lugar la primera Asamblea General de la ONU sobre cambio climático. El IPCC fue creado por el PNUMA (Programa de las Naciones Unidas para el Medio Ambiente) y la OMM (Organización Meteorológica Mundial). En su primer informe, el IPCC identificó como gases de efecto invernadero (GEI) el dióxido de carbono (CO<sub>2</sub>), metano (CH<sub>4</sub>), óxido nitroso (N<sub>2</sub>O) y los compuestos clorofluorocarbonos (CFC) (IPCC, 1990). En 1990 tuvo lugar la segunda Conferencia Mundial sobre el Clima.

In 1979, the world's first World Climate Conference was held in Genoa, where climate change was discussed for the first time in the scientific community (WMO, 1979). Moreover, one of the consequences of this conference declaration was the subsequent emergence of a series of scientific and political conferences including Villach, Toronto (Conference Statement, 1988), Ottawa, Tata, The Hague, Noordwijk, Cairo and Bergen (1989) and the Second World Climate Conference (1990). In addition, in this year, UNEP (United Nations Environment Programme) and WMO (World Meteorological Organization) created IPCC (Intergovernmental Panel on Climate Change) and the first UN General Assembly on climate change was held where in its first report, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and chlorofluorocarbons (CFCs) [were identified] as greenhouse gases (GHGs) (IPCC, 1990). [This was followed] in 1990 by the second World Climate Conference.

### 5.1.2.2.2 El Mecanismo de la Crisis Económica Mundial

#### Paragraph 2

Desde una perspectiva centroeuropea, todo el periodo de posguerra –incluidos los ocho años de milagrosa prosperidad en Estados Unidos, el crecimiento económico sostenido en otros países y las multifacéticas aventuras técnicas, económicas, monetarias y de política comercial de esta sombría época histórica, hasta el colapso de 1929 y la depresión mundial de 1933– es en realidad un solo periodo de crisis económica que se manifiesta de diferentes maneras a medida que atraviesa y transforma el mundo. La crisis económica de los primeros años de posguerra no se resolvió, solo se pospuso. El equilibrio en un lugar se logró trasladando la carga del ajuste, en forma deliberada o de otro modo, a otras regiones y sectores económicos. Cuando llegó el día inevitable del ajuste de cuentas, no solo revivieron los viejos fuegos latentes sino que la crisis asumió profundidades y dimensiones que hicieron palidecer toda experiencia anterior.

From a Central European perspective, the entire postwar period, including the eight years of miraculous prosperity in the United States, the sustained economic growth in other countries, and the multiple technical, economic, monetary, and trade policy adventures of this bleak historical era, up to the 1929 collapse and the 1933 world depression, is really a single period of economic crisis that manifests itself in different ways as it transcends and transforms the world.

Nevertheless, during the early postwar years, the economic crisis was not resolved, but postponed. The balance in one place was achieved by shifting the burden of adjustment, deliberately or otherwise, to other regions and economic sectors. By the time the unavoidable day of reckoning came, not only the old smoldering fires revived, but the crisis reached depths and dimensions that made all previous experiences [fade into the background].

#### Paragraph 3

Solo hace poco la investigación estadística reveló los costos reales la guerra. A pesar de una revolución tecnológica y del milagro económico estadounidense, la producción industrial en el punto culminante de 1929 había retrocedido notablemente frente a los logros de las dos generaciones de crecimiento económico ininterrumpido anteriores a 1914. En los veinte años transcurridos desde el estallido de la guerra, la producción industrial debería haber sido casi el doble. En cambio, solo aumentó en un 60%. En 1933 cayó a niveles inferiores a los de 1914. De acuerdo con la dinámica del crecimiento económico de las generaciones anteriores, la capacidad de la economía para proporcionar rendimientos productivos en 1933 debería haber sido dos veces mayor. Ni la febril pero improductiva actividad económica de los años de guerra, ni el aumento continuo de la producción agrícola frente a la caída de los precios compensaron las consecuencias económicas de la guerra: diez años de crecimiento perdido en la agricultura y veinte años en la industria.

It was only recently that statistical research revealed the actual costs of the war. Despite a technological revolution and the American economic miracle, in the 1929 peak, industrial production had fallen back significantly from the achievements of the two generations of continuous economic growth prior to 1914. Within twenty years of the war's outbreak, industrial production should have nearly doubled; instead, it increased by only 60% and in 1933, it fell to levels below those of 1914. According to the dynamics of economic growth in previous generations, the economy's capacity to deliver productive performances in 1933 should have been twice as great. Neither the feverish but unproductive economic activity of the war years nor the steady growth of agricultural production over the falling prices were able to compensate for the economic consequences of the war, leading to ten years of lost growth in agriculture and twenty years of lost growth in the industry.

#### Paragraph 4

Es irrelevante si los costos de la guerra fueron mayores o menores de lo que se creía anteriormente. Lo que es claro es que el choque político-sociológico de la guerra implicó la reconstrucción de un nuevo equilibrio económico que tomaría muchos años conseguir. La estructura social solo se podía sostener si la dirigencia política podía satisfacer las expectativas – y evitar la desilusión– de tres grandes demandantes sociales: los tenedores de bonos (rentistas) que financiaron la guerra, y sin cuya confianza en las monedas y sin cuyo crédito las economías capitalistas no se podían reconstruir; los trabajadores que soportaron la carga moral y política de la guerra, y a quienes se prometió la recompensa de más derechos y más pan; y los campesinos, que parecían ser el único baluarte contra la revolución social.

It is irrelevant whether the costs of the war were greater or less than previously believed. What is clear is that the political-sociological impact of the war implied the reconstruction of a new economic balance that would take many years to achieve. The social structure could only be sustained if the political leadership could meet the expectations and avoid disillusionment of three major social constituents: the bondholders (rentiers) who had financed the war and without whose confidence in the currencies and without whose credit the capitalist economies could not be rebuilt; the workers who bore the moral and political burden of the war, and to whom the reward of more rights and more food was offered; and the peasants, who seemed to be the only bulwark against social revolution.

### Paragraph 5

En los Estados victoriosos, la democratización de la vida pública asumió proporciones arrolladoras. En Inglaterra, el número de votantes elegibles aumentó de 8 millones antes de la guerra a 28 millones. Aquí también la máquina de guerra se alimentó con promesas: “hogares dignos de héroes”, según el primer ministro Lloyd George. La producción logística de material bélico para el frente de batalla estuvo acompañada de la producción de eslóganes de este maestro

galés de la retórica. Cuando la guerra terminó, no había excusas para no cumplir las promesas. En realidad, nadie en Gran Bretaña creía en la necesidad de restringir el nivel de vida después de la guerra. Cuando las realidades de la reducción de la capacidad económica de Gran Bretaña empezaron a aparecer ya era muy tarde. Los sacrificios impuestos a toda la sociedad para defender –y aumentar– el ingreso de los rentistas dictaron políticas que descargaron todo el peso del ajuste sobre las clases trabajadoras.

In victorious states, democratization of public life reached overwhelming proportions. For example, in England, the number of eligible voters rose from 8 million before war to 28 million and the war machine was also fed with promises such as “homes fit for heroes,” according to Prime Minister Lloyd George. Logistical production of war material meant for the battle front was accompanied by the production of slogans by this Welsh master of rhetoric. When the war was over, there was no excuse for not keeping promises. In fact, no one in Great Britain believed in the need to restrict living standards after the war. By the time the realities of Great Britain's reduced economic capacity began to emerge it was too late. At the end, the sacrifices imposed on the whole society to defend and increase the income of the rentiers dictated policies that placed the full burden of the adjustment on the working classes.

### Paragraph 6

La tercera parte de esta trilogía eran los campesinos. Después de la guerra, solo ellos –que protegían su parcela de tierra conseguida a duras penas y estaban acostumbrados a una adversa relación de mercado con la ciudad– ofrecían una protección segura contra el bolchevismo. El interés económico y su *Weltanschauung* general los aliaron con las fuerzas del conservatismo. Pero los campesinos desilusionados podían tener un comportamiento muy diferente, que se manifestó en Bulgaria y en muchos otros países del Este y el Sureste europeo, donde los campesinos no tuvieron problemas para participar en la división de los grandes latifundios. El

hecho de que las revoluciones no provengan exclusivamente de la izquierda política es una lección que Europa solo ha aprendido en retrospectiva. Ni los rentistas ni los trabajadores resultaron ser tan socialmente inmanejables como los campesinos al exigir sus demandas.

The third part of this trilogy was the peasants. Post-war, only those who protected their hard-earned plot of land and were used to an adverse market relationship with the city offered reliable protection against Bolshevism. Economic interest and their general Weltanschauung allied them with the conservatism forces; however, the disappointed peasants could behave very differently, which was manifested in Bulgaria and in many other countries of Eastern and Southeastern Europe, where the peasants had no problem taking part in the division of the large estates. The fact that revolutions do not come exclusively from left-wing politics is a lesson that Europe has only learned from hindsight. Thus, neither the rentiers nor the workers turned out to be as socially unmanageable as the peasants in making their demands.

### Paragraph 7

Además, las presiones nacionales sobre la estructura social estuvieron acompañadas de presiones externas suscitadas por el orden político internacional reconstruido de posguerra. Si bien hacemos mayor énfasis en las políticas que intentaron estabilizar los ingresos nacionales de rentistas, trabajadores y campesinos, no hay duda de que las reparaciones y deudas de guerra y las políticas excesivamente autárquicas agravaron la incapacidad del sistema para recobrar un nuevo equilibrio mediante procesos económicos de autocorrección. Esos dos conjuntos de problemas son interdependientes. Las reparaciones y deudas de guerra determinaron la dirección de los esfuerzos financieros y económicos, que eran tan poco realistas como las políticas nacionales que intentaban mantener el nivel de vida más allá de la capacidad de las economías empobrecidas y de un capital agotado por la guerra. Aunque el colapso final era inevitable, se podía retrasar —y fue retrasado— por un tiempo, mediante intervenciones heroicas.

Moreover, domestic pressures on the social structure were accompanied by external pressures arising from the reconstructed postwar international political order. While we place greater emphasis on policies that attempted to stabilize the national incomes of rentiers, workers, and peasants, there is no doubt that war repairs and debts and excessively autarkic policies aggravated the inability of the system to regain a new balance through self-correcting economic processes. These two sets of problems are interdependent. War reparations and war debts determined the direction of financial and economic efforts, which were as unrealistic as national policies that attempted to maintain living standards beyond the capacity of impoverished economies and war-depleted capital. Although the final collapse was inevitable, it could be and was delayed for a time by heroic interventions.

### Paragraph 8

Es necesario reconocer que prácticamente toda la historia financiera y económica de los últimos quince años consiste en intervenciones, cuyas eventuales consecuencias negativas no dejaron de manifestarse. Pero estas intervenciones no fueron la *causa* de la crisis. El efecto de las intervenciones —a veces mal concebidas y ejecutadas con miopía— fue posponer la solución a la crisis. Pero esa postergación no carecía de justificación: la madre de todas las intervenciones fue la guerra. Todas las intervenciones de posguerra solo fueron costosos intentos de proteger a la sociedad contra los choques de la brutal destrucción del equilibrio económico y social. Pero crearon nuevos e innecesarios desequilibrios que agravaron las consecuencias de la intervención principal e inicial: la guerra. Es imposible entender la función de las intervenciones de la era de posguerra sin una clara comprensión de sus orígenes en la destrucción causada por la guerra.

It should be understood that, basically, the entire financial and economic history of the last fifteen years has consisted of interventions whose eventual negative consequences did not fail to manifest themselves. However, these interventions were not the cause of the crisis; instead,

their effect -sometimes poorly planned and executed with a lack of foresight- was to postpone the solution to the crisis. Nonetheless, this postponement was not unjustified since the cause of all interventions was the war. Indeed, all post-war interventions were only costly attempts to protect society against the shocks of the brutal destruction of the economic and social balance; however, they created new and unnecessary imbalances that aggravated the consequences of the main and initial intervention, which was the war. It is impossible to understand the function of the post-war interventions without a clear understanding of their origins in the destruction caused by the war.

### Paragraph 9

1918-1924: el proceso comienza en el Este, con la reconstrucción de los Estados derrotados, con ayuda de los vencedores y de Estados Unidos. La moneda austriaca (1923) y la moneda húngara (1924) se estabilizaron con ayuda de la Liga de las Naciones. Al mismo tiempo, Grecia, Bulgaria, Finlandia y Estonia se ajustaron estructuralmente (*saniert*). Rumania, Polonia, Checoslovaquia y Yugoslavia recibieron créditos franceses; incluso Rusia fue candidata para la ayuda económica. El punto culminante fue la restauración del patrón oro en Alemania, originada en el Plan Dawes y financiada por Dawes Loans, cerca de la mitad de cuyos fondos provenían de Estados Unidos. La restauración del patrón oro despojó a los Estados derrotados del recurso clandestino a una financiación inflacionaria. Sus déficits estructurales se cubrieron progresivamente mediante préstamos extranjeros; la carga de estas deudas se transfirió así a los Estados victoriosos, cuyas monedas estaban muy lejos de ser estables o seguras en ese momento.

1918-1924: it began in the East with victors' and United States' support for the reconstruction of the defeated states. The Austrian currency (1923) and the Hungarian currency (1924) were stabilized with the help of the League of Nations. At the same time, Greece, Bulgaria, Finland, and Estonia were structurally adjusted (*saniert*). Romania, Poland, Czechoslovakia, and Yugoslavia received French credits and even Russia was a candidate for

economic aid. The climax was the restoration of the gold standard in Germany, originating in the Dawes Plan and financed by Dawes Loans, about half of whose funds came from the United States. However, the restoration of the gold standard stripped the defeated states of the clandestine course of inflationary financing. Their structural deficits were progressively covered by foreign loans; therefore, these debts were transferred to the victorious states, whose currencies were far from being stable or secure at the time.

### Paragraph 10

Quizá el aspecto más engañoso de la experiencia económica de pos- guerra fue el fabuloso alto nivel de vida en Estados Unidos durante este periodo. Este solo se debió en parte a la riqueza real de Estados Unidos. Se debió también a dos intervenciones que aislaron a Estados Unidos de los efectos de la crisis en el resto del mundo: los elevados aranceles externos y el cierre de las puertas a la inmigración. Sin estas medidas, la pobreza europea se habría extendido a Estados Unidos, y el nuevo equilibrio resultante se habría establecido en un punto inter medio entre el nivel de vida en los Estados continentales derrotados y el alto nivel en Estados Unidos. Estados Unidos solo se podía liberar de las presiones económicas europeas excluyendo la mano de obra barata y las importaciones baratas. Esta es la razón fundamental del flujo unilateral de oro hacia Estados Unidos. Era el único medio de pago que no reducía el nivel de vida estadounidense.

Perhaps the most misleading aspect of the post-war economic experience was the fabulously high standard of living in the United States during this period. This was only partly due to the real wealth of the United States, but it was also due to two interventions that insulated the United States from the effects of the crisis in the rest of the world, including high external tariffs and the closing of the doors to immigration. Without these measures, European poverty would have spread to the United States, and the resulting new equilibrium would have been set at

a middle ground between the standard of living in the defeated continental states and the high standard in the United States where it could only free itself from European economic pressures by excluding cheap labor and cheap imports. This is the fundamental reason for the unilateral flow of gold to the United States. It was the only means of payment that did not reduce the American standard of living.

### 5.1.2.2.3 El Valor del Idioma Español en Ciencia y Tecnología

#### Paragraph 11

A continuación, se muestran los resultados del análisis de presencia del español en la producción científica mundial recogidos en las principales bases de datos bibliográficas internacionales accesibles a través de la *Web of Science (WoS): Science Citation Index Expanded (SCI-Expanded)*, *Social Sciences Citation Index (SSCI)* y *Arts and Humanities Citation Index (AHCI)*. Como se resume en la tabla, el español es una lengua de muy limitada presencia en estas bases de datos, con valores que, en términos porcentuales, van desde el 0,24 % de la producción científica en disciplinas experimentales, al 2,4 % de la producción científica en Artes y Humanidades. Considerando que estos valores se han obtenido a partir de una colección compuesta por cerca de 9 millones de registros bibliográficos, cabe concluir que el español es una lengua de muy limitada proyección entre las denominadas “revistas de corriente principal”, que son las que componen los fondos documentales de estas bases de datos.

The results of the analysis of Spanish [presence] in the world scientific production collected in the main international bibliographic databases accessible through the Web of Science (WoS) are shown [below]: Science Citation Index Expanded (SCI-Expanded), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (AHCI). As summarized in the table, Spanish is a language with a very limited presence in these databases, with values that, in percentage terms, range from 0.24% of scientific production in experimental disciplines to 2.4%

of scientific production in Arts and Humanities. Considering that these values have been obtained from a collection composed of nearly 9 million bibliographic records, it can be concluded that Spanish is a language of very limited projection among the so-called “mainstream journals”, which are those that make up the documentary collections of these databases.

### Paragraph 12

En primer lugar, conviene señalar que, utilizando el sistema público español de I+D como área de análisis, existe un sólido sector editorial científico en el que abunda la edición y distribución de revistas especializadas de notable calidad (Giménez Toledo). Estas revistas, mayoritariamente dirigidas a investigadores españoles, están fuertemente orientadas a servir de vehículos de comunicación en disciplinas científicas ligadas a intereses territoriales o locales, como es el caso de la investigación sobre aspectos biológicos o geológicos de nuestro territorio (Rey/Martín/Plaza), así como a otras disciplinas vinculadas a actividades e intereses socioeconómicos, como es el caso de las publicaciones de carácter tecnológico. Prácticamente todas las revistas que responden a este tipo de planteamientos son editadas en lengua española, al menos en gran parte (Plaza y otros 2009).

Firstly, it should be noted that using the Spanish public R&D system as an area of analysis, there is a solid scientific publishing sector in which there is an abundance of specialized journals of notable quality (Giménez Toledo). Most of these journals, mainly aimed at Spanish researchers, are strongly oriented to serve as vehicles of communication in scientific disciplines linked to territorial or local interests, as in the case of research on biological or geological aspects of our territory (Rey/Martín/Plaza), as well as other disciplines linked to socioeconomic activities and interests, as in the case of publications of a technological nature. Practically all the journals that respond to this type of approach are published in Spanish, at least to a large extent (Plaza et al. 2009).

**Paragraph 13**

En cualquier caso, la importancia de los estudios europeos sobre América Latina se ve reflejada en la existencia de diversas redes de investigación, así como en redes de información científica que, como es el caso de REDIAL (Red Europea de Información y Documentación sobre América Latina), tiene como objetivo dar seguimiento a la investigación sobre los sistemas de Información en Ciencias Sociales y Humanas sobre América Latina en Europa. A nivel latinoamericano también existen iniciativas de gran importancia para la difusión de la producción científica regional, publicada principalmente en idioma español. Un ejemplo es *Latindex*, cuyos datos se analizaron en este artículo. Otro ejemplo es *SciELO*, una biblioteca electrónica que surgió como iniciativa de FAPESP y BIREME en Brasil y que permite la publicación electrónica de ediciones completas de revistas científicas. Hoy en día cuenta con más de mil revistas a texto completo y de acceso abierto, procedentes de quince países iberoamericanos.

In any case, the importance of European studies in Latin America is reflected in the existence of various research networks, as well as in scientific information networks, such as REDIAL (European Network of Information and Documentation on Latin America), whose objective is to follow up research on information systems in the Social and Human Sciences on Latin America in Europe. At the Latin American level, there are also initiatives of great importance for disseminating regional scientific production, published mainly in Spanish. One example is *Latindex*, whose data were analyzed in this article. Another example is *SciELO*, an electronic library that emerged as an initiative of FAPESP and BIREME in Brazil and which allows the electronic publication of complete editions of scientific journals. Currently, it has more than a thousand full-text, open-access journals from fifteen Ibero-American countries.

**Paragraph 14**

Superando el concepto de producción científica (entendido como conjunto de trabajos publicados en revistas científicas), el peso del español en ciencia es mucho más importante de lo que en una primera lectura se deriva de los indicadores obtenidos en este estudio (Plaza y otros 1999 y 2013). Existen ámbitos de actividad donde el uso del español es determinante, como son las actividades docentes, la divulgación de la ciencia y el intercambio de ideas y conocimientos entre investigadores de países de habla española. De hecho, la formación de los investigadores en estos países, tanto en su etapa universitaria como en etapas posteriores a la realización de estudios de doctorado, se realiza en gran medida usando el español como lengua de trabajo. La labor diaria en el laboratorio o en el centro de investigación, así como la participación en congresos, seminarios y en general en reuniones científicas nacionales celebradas en países de lengua española se realizan mayoritariamente en este idioma.

Going beyond the concept of scientific production (understood as a set of works published in scientific journals), Spanish in science is much more significant than what is initially apparent from the indicators obtained in this study (Plaza et al. 1999 and 2013). There are areas of activity where the use of Spanish is decisive, such as teaching activities, science dissemination and ideas exchange and knowledge among researchers from Spanish-speaking countries. In fact, researchers' training in these countries, both during their university studies and after they have completed their doctoral studies, is largely [carried out] using Spanish as their working language. Daily work in the laboratory or research center, as well as participating in conferences, seminars, and, in general, in national scientific meetings held in Spanish-speaking countries, is mostly [carried out] in Spanish.

### Paragraph 15

Teniendo en cuenta lo anteriormente expuesto en este apartado, resulta obligado destacar el importante papel de los especialistas que trabajan en el ámbito de la terminología científica en

español, ya **que** este idioma presenta serias carencias en el ámbito **de la terminología científica**, **carencias** que **en** parte **se** deben a la utilización generalizada del inglés en ciencia y tecnología y a la cons- tante irrupción de nuevos términos en inglés para los **que**, en su mayoría, no existe **una** correcta traducción al español. El uso de términos y expresiones cien- tíficas en inglés viene siendo habitual en las diferentes formas de transmisión **del** conocimiento utilizadas por investigadores españoles e iberoamericanos. Siendo **el español** una lengua hablada por unos 450 millones **de** personas, es del má- ximo interés disponer **de una** terminología científica **en** español, actualizada **y** con sus correspondientes equivalencias en **lengua** inglesa (Vera Torres).

Taking into account what [has been] said in this section, it is necessary to highlight the important role of specialists working in the field of **Spanish scientific terminology** since this language has serious deficiencies in this field **that are partly** due to the **widespread use** of English in science and technology and the constant emergence of new terms in English for which, **for the most part**, there is no correct translation into Spanish. The use of **scientific terms and expressions** in English has been common in the different forms of **knowledge transmission** used by **Spanish and Latin American researchers** since **it is** a language spoken by some 450 million people, **it is of the** utmost interest to have updated scientific terminology in Spanish with its corresponding equivalents in English (Vera Torres).

### 5.1.3 Glossary

Glossaries are the last instrument, and they are used to register complex terminologies from each text. The terminologies selected are the ones that readers may find difficult to read or terms that the translator deems necessary to store for future translation references. This will make the translation process easier by saving the translator's time when encountering some complex terms that have already been researched and translated in the past. With the aid of a chart, one glossary of 25 terms was composed for each language that shows the equivalence of the term in

the target language as well as the grammatical category and the definition. Important to mention that since there were several documents for each language, the researcher arranged the terms in only one glossary per language. It means that the glossary is displayed downwards, and the titles of the texts will be inside the glossary for better understanding and guidance. The final product will be an index with all the terms ready to be used as a reference. The charts below show glossaries in Spanish and English with their factors.

### 5.1.3.1 Glossary from English into Spanish

*Table 7*

<b>Comercio ilícito de especies silvestres, mercados mojados y COVID-19: prevención de futuras pandemias</b>			
<b>Término en el idioma de partida</b>	<b>Término en el idioma de llegada</b>	<b>Categoría gramatical</b>	<b>Definición</b>
<b>Betacoronavirus</b>	Betacoronavirus	Sustantivo	Género de la familia CORONAVIRIDAE que causa enfermedades respiratorias o gastrointestinales en una variedad de mamíferos en su mayoría
<b>Civet cats</b>	Civetas	Sustantivo	Gato de algalia
<b>Herd immunity</b>	Inmunidad colectiva	Sustantivo	Se refiere a la protección indirecta contra una enfermedad infecciosa que se consigue cuando una población se vuelve inmune, ya sea como resultado de la vacunación o de haber presentado la infección con anterioridad

<b>Newcastle disease</b>	Enfermedad de Newcastle	Sustantivo	Es una infección altamente contagiosa causada por un virus de la familia Paramyxoviridae y que puede afectar a todas las aves
<b>Pangolins</b>	Pangolines	Sustantivo	Mamífero del orden de los desdentados, cubierto todo, desde la cabeza hasta los pies y la cola, de escamas duras y puntiagudas, que el animal puede erizar, sobre todo al arrollarse en bola, como lo hace para defenderse
<b>Petri dish</b>	Placa de Petri	Sustantivo	Es un recipiente de vidrio o plástico en forma de disco poco profundo, con una tapa que lo cubre
<b>Reservoirs</b>	Reservorios	Sustantivo	Población de seres vivos que aloja de forma crónica el germen de una enfermedad, la cual puede propagarse como epidemia
<b>Reye syndrome</b>	Síndrome de reye	Sustantivo	Se caracteriza por un daño cerebral súbito (agudo) y problemas con la actividad hepática
<b>Simian foamy virus</b>	Virus espumoso de los simios	Sustantivo	Especie de SPUMAVIRUS que causa infecciones no patógenas en chimpancés y seres humanos

<b>Sporadic</b>	Esporádica	Adjetivo	Dicho de una enfermedad que no tiene carácter epidémico ni endémico
<b>Unheeded</b>	Ignorada	Verbo	No hacer caso de algo o de alguien, o tratarlos como si no merecieran atención
<b>Wet markets</b>	Mercados mojados	Sustantivo	Son grandes concentraciones de puestos al aire libre donde se venden productos frescos, como alimentos del mar, carne, frutas y verduras
<b>Zoonotic</b>	Zoonóticas	Adjetivo	Es una enfermedad que puede transmitirse entre animales y seres humanos

### Lenguaje y aprendizaje en la era digital

<b>Término en el idioma de partida</b>	<b>Término en el idioma de llegada</b>	<b>Categoría gramatical</b>	<b>Definición</b>
<b>Affiliation</b>	Vinculación	Sustantivo	Acción y efecto de vincular
<b>Arbitrary</b>	Arbitrario	Sustantivo	Sujeto a la libre voluntad o al capricho antes que a la ley o a la razón
<b>Duping</b>	Engañar	Verbo	Hacer creer a alguien que algo falso es verdadero
<b>Enculturation</b>	Aculturación	Sustantivo	Propagación y desarrollo del saber
<b>Homily</b>	Homilía	Sustantivo	Razonamiento o plática que se hace para explicar al pueblo las materias de religión

<b>Immersion</b>	Inmersión	Sustantivo	Acción y efecto de introducir o introducirse en un ámbito real o imaginario, en particular en el conocimiento de una lengua determinada
<b>Quiescent</b>	Inactivas	Sustantivo	Carente de actividad o movimiento
<b>Sick</b>	Increíble	Adjetivo	Que no puede creerse
<b>Silos</b>	Secciones	Sustantivo	Cada una de las partes en que se divide o considera dividido un objeto, un conjunto de objetos, una empresa, una organización
<b>Continuum</b>	Continuo	Sustantivo	Dicho de dos o más cosas que tienen unión entre sí
<b>Trivial</b>	Trivial	Adjetivo	Que no sobresale de lo ordinario y común, que carece de toda importancia y novedad
<b>Greases</b>	Enriquecen	Verbo	Adornar, engrandecer

*Table 7 shows the chart with the factors used to categorize and classify the terms to create the Spanish glossary. Source: Researcher's creation*

### 5.1.3.2 Glossary from Spanish into English

*Table 8*

<b>Climatic change. Future perspectives</b>			
<b>Term in Source Language</b>	<b>Term in Target Language</b>	<b>Grammatical Category</b>	<b>Definition</b>
<b>Antropogénica</b>	Anthropogenic	Adjective	Caused by humans or their activities
<b>Salinización</b>	Salinize	Verb	To treat or impregnate with salt

<b>Transfronterizo</b>	Transboundary	Adjective	Crossing the border between two or more countries or areas and affecting both or all areas
The Global Economic Crisis Mechanism			
<b>Term in Source Language</b>	<b>Term in Target Language</b>	<b>Grammatical Category</b>	<b>Definition</b>
<b>Abstrayendo</b>	Abstracting	Verb	To remove or separate someone or something from a place or context
<b>Ad hoc</b>	Ad hoc	Adjective	Made or happening only for a particular purpose or need, not planned before it happens
<b>Ajuste de cuentas</b>	Reckoning	Noun	A settling of accounts
<b>Arrolladoras</b>	Overwhelming	Adjective	Very great or very large
<b>Asediada</b>	Beleaguered	Adjective	In great financial difficulty
<b>Autárquicas</b>	Autarkic	Noun	Economic independence
<b>Baluarte</b>	Bulwark	Noun	Something that protects you from dangerous or unpleasant situations
<b>Coercitivas</b>	Coercive	Adjective	Using force to persuade people to do things that they are unwilling to do
<b>Consumción</b>	Consumption	Noun	Consumption is the using of goods and services in an economy, or the amount of goods and services used
<b>Desmesuradas</b>	Excessive	Adjective	Too much or too many

<b>Draconiana</b>	Draconian	Adjective	Draconian laws, government actions, etc. Are extremely severe, or go further than what is right or necessary
<b>Febril</b>	Feverish	Adjective	Unnaturally excited or active
<b>Insondable</b>	Unfathomable	Adjective	Impossible to understand
<b>Irrigar</b>	Enrich	Verb	To improve the quality of something by adding something else
<b>Izquierda política</b>	Left-wing politics	Adjective	Supporting the political left; relating to the belief that wealth and power should be shared between all parts of society
<b>Palidecer</b>	Fade	Verb	A gradual loss of strength or importance
<b>Paridad</b>	Parity	Noun	Equality, especially of pay or position
<b>Tenedores de bonos</b>	Bondholders	Noun	A person or organization that owns a bond

### El valor del idioma español en ciencia y tecnología

<b>Term in Source Language</b>	<b>Term in Target Language</b>	<b>Grammatical Category</b>	<b>Definition</b>
<b>A caballo entre</b>	Straddling between	Verb	To be unable to decide which of two opinions about a subject is better and so partly support both opinions

<b>Alusión</b>	Refers	Verb	If writing or information refers to someone or something, it relates to that person or thing
<b>Micología</b>	Mycology	Noun	The scientific study of fungi (= organisms that get their food from decaying material or other living things)
<b>Paleontología</b>	Paleontology	Noun	The study of fossils as a way of getting information about the history of life on Earth and the structure of rocks

*Table 8 shows the chart with the factors used to categorize and classify the terms to create the English glossary. Source: Researcher's creation*

## **Chapter VI**

### **Conclusions and Recommendations**

The objective of the chapter Conclusions and Recommendations is meant to bring back the research question along with its objectives to reevaluate their achievements and show if they were accomplished in the intended way or if unexpected results were found instead. From this, it will showcase all the significant outcomes found during the process and how they were analyzed and compared during the data analysis and interpretation step. Therefore, an analysis of the results gathered by using the different instruments will be shown. Lastly, by the end of the chapter, some recommendations and directions will be presented for future students enrolled in similar research evaluating translation procedures' effects.

#### **6.1 Purpose of the Conclusion**

The conclusions already mentioned are intended to show the readers whether the objectives proposed for this research have been successfully attained. Simply put, this chapter is essential as it narrows down the key points and results of the project. The findings of this research are based on the translation process and the application of the instruments to two texts translated from English to Spanish and three from Spanish to English. With this, it attempts to show the readers how to achieve accurate, faithful, and natural translations and navigate through forthcoming studies and research.

#### **6.2 Conclusions**

**6.2.1 To translate the documents “Cambio climático. Perspectivas futuras”, “El mecanismo de la crisis económica mundial”, and “El valor del idioma español en ciencia y tecnología” from Spanish into English and “Language and learning in the digital age” and “Illicit Wildlife Trade, Wet Markets, and COVID-19: Preventing Future Pandemics” from English into Spanish for a public university library**

After learning that technology came to stay after the global pandemic spread, it became clear that digital material would be essential. Thus, the drive to provide different digital texts arose, and the library chosen was Joaquín García Monge from Universidad Nacional. The translator chose texts concerning current issues such as pandemic outbreaks, economy, language, and technology. From this, three texts were given to translate from Spanish into English and two from English into Spanish. They are intended to be available digitally in the library platform by students, professors, and even outsiders interested in either of the fields.

General and close reading were performed before engaging in translation to familiarize themselves with the texts since translators must understand what they are translating so they can serve as the communication bridge between the languages. With the first type of reading, the researcher could grasp the general meaning of the materials, realizing they are all informative texts covering different subject areas. There were two English texts, and one of them covered content related to how language and learning behave in a digital age. In contrast, the other was concerned about future pandemics, discussing illicit wildlife, wet markets, COVID-19, and their prevention solutions. On the other hand, three Spanish texts were selected, and the topics revolve around climate change, the global economic crisis, and how Spanish behave around technology and science—the subject fields are chosen to deal with current issues that are also relevant to the future. As part of the close reading, the translator examined the materials in detail and analyzed them to determine which styles of function, formality, generality or difficulty, emotional tone,

and translation methods or procedures were most suitable for the translation process. In addition, it helped find possible barriers, such as the different names of diseases, acronyms of viruses or chemical and scientific elements, as well as other terms specific to the world of economics and languages.

Close reading determined the factors for the chart of text analysis, which was the first instrument used. Regarding text style, discussion was selected for all five texts since ideas, viewpoints, and arguments were presented. Then, as mentioned before, the texts are informative; therefore, the informative function was chosen because all five texts aim to inform the audience about a specific subject. Regarding the scale of formality, formal and neutral scale were selected for most of the texts. For the scale of generality or difficulty, technical and educated were chosen for most of the texts since specific jargon concerning science, economics, and language were present throughout, along with the use of an explanatory vocabulary for education purposes. Only the text dealing with Spanish language and its value in technology and science is educated but neutral because there were no technical terms. In terms of emotional tone scale, factual scale was chosen for all five texts because they all address facts, information, and neither of them either intensifiers or gentle tones. Lastly, both semantic and communicative methods were selected for all texts due to the presence of specific jargons the translator must convey them accurately, but without overlooking the purpose of informing and communicating the readers (students, professors, and possible outsiders) about certain topic. Following rigorously both readings, the translation process was easier since all possible difficulties were pointed out while defining the factors of the text analysis chart.

### **6.2.2 To apply various translation techniques to the documents to achieve natural, cohesive, and accurate texts**

With elements such as the different scales and translation methods established in the translation process, appropriate translation techniques must be selected to accurately convey the smaller units of content. According to Newmark (1988), translation procedures or techniques target smaller text units rather than the entire text, as in translation methods. Yet, despite working on smaller units, each unit is not analyzed separately as it mentioned in Chapter 4, where Vinay and Darbelnet (1958) affirmed that it must convey ideas and feelings, not just words. The translation of the five texts in this project involved using nine techniques including transposition, modulation, omission, amplification, explicitation, literal translation, compensation, equivalence, and adaptation.

The first translation technique, transposition, served at the grammatical level to show the grammatical differences between English and Spanish. Next, modulation acts on the content of the texts, and it was used to find equivalences in the TL causing changes in categories of thoughts from the SL. The next procedure is omission, and it was employed because when constructing ideas in Spanish, they are usually longer than when producing ideas in English. Hence, when translating Spanish into English, it was used to show the elements that were not required in English.

Regarding amplification, it was used to showcase the extra grammatical elements added to the target text because they were required to fill grammatical gaps between languages. Then, explicitation was applied to show the additional ideas that the translator added so the target audience can understand better the message since it was more explicitly. Following, when the SL grammatical constructions find their nearest equivalences in the TL, literal translation is the procedure used show those constructions. Next, compensation is a translation procedure used to

make up for semantic loss or loss of stylistic elements such punctuation differences between languages. Then, equivalence was used to translate situations using different style structure or words in which the connotation is preserved. Lastly, adaptation deals with culture where a source cultural element is conveyed using another cultural element from the target language to fill in the gaps of cultural loss. All in all, by using these techniques, both texts were translated to their full potential, and the translator managed to complete the translation process and make every effort to produce natural, cohesive, and accurate translations for future readers.

### **6.2.3 To evaluate the effect of the translation techniques applied on the documents**

For the analysis of how the translation techniques were used in the texts whether appropriately or not as well as their frequency, the systematic color-coding procedure was carried out. As already mentioned, two texts have been chosen to be translated from English into Spanish and three texts from English into Spanish. Most of them are technical in nature and although the researcher expected to use all nine translation procedures, when applying the colors to the utterances, for all the texts translated into Spanish, literal translation, transposition, amplification, and modulation were the most frequent used procedures. Literal translation is at the top of the list because nearly all the grammatical structures of the English texts have their correspondences when translating into Spanish. In doing so, the translator achieved one of the goals of semantic translation, which is to translate as close as possible to the original text and still be natural and acceptable to the audience.

Transposition was the second most used technique, and it was used because one of the notable grammatical differences between English and Spanish is that English tends to place the adjective first and then the noun when it is the opposite in Spanish. This word order was prevailing in addition to the changes of grammatical categories such as verbs into nouns. In addition, another grammatical change that was found during the analysis was in English. It is

common that predicates come before the subject, but many sentences were inverted after translation using sentence inversion and compensation. This procedure was also widely used for amplification because, as some may already know, English tends to be more direct, so the messages are often shorter.

On the other hand, due to the Spanish grammatical constructions, Spanish sentences tend to be longer since they often need more articles, prepositions, and other complements when building sentences. Lastly, the modulation was also frequent in terms of content changes. There were categories of thoughts that conveyed the message in English, yet when translating it into Spanish, the results were not clear enough, so the translator used different vocabulary to convey the unity of the message. The perspective's point of view may be different, but it does deliver the same intention of the text.

Now, for all the texts that were translated from Spanish into English, the procedures of literal translation, transposition, omission, and modulation were used. Just as in the Spanish texts, literal translation was predominant since most Spanish structures encounter their near-equivalent when translated into English. In transposition, word ordering and changes in grammatical categories were the most encountered once. Modulation was used more to change the passive voice with the pronoun "she," which is widely used in Spanish, into a normal passive voice in English. Lastly, amplification prevailed in Spanish texts, but it was omitted here because, as mentioned earlier, English is a more straightforward language; thus, many Spanish grammatical elements were unnecessary in the translation process. However, it is also worth mentioning that in Spanish, nouns and pronouns can be omitted, and the sentence is still understandable and correct, whereas in English, this is not workable. To sum up, although there were nine techniques and only some were widely used throughout the texts, the translators learned that a good translation only needs a few techniques. Quality equals a well-translated text using only two or

three translation techniques rather than one that needs to be better done but uses more than a dozen procedures.

#### **6.2.4 To create a glossary with the most relevant terminology found in both texts**

Unknown vocabulary or complex terminologies can be identified during general and close reading. In addition, words can have different meanings under diverse contexts and cultural varieties between languages. Due to this, translators must research and establish the corresponding definitions for the terms to be used and stick to them to be consistent throughout the translation process. Doing this will make future translation processes easier because there will be a database with all the terms stored. It also benefits the audience because even though they do not belong to the field dealt in a text and find specific jargon, they can inquire about them in the glossary, allowing them to enjoy reading without disruption.

Since most of the materials dealt with technical terms, the researcher realized that readers need to specialize in the field to comprehend the message fully. Therefore, the researcher gathered 25 terms from each language and designed two glossaries. Each glossary has three columns, including the word in the source and target language, the grammatical category, and the definition. Although the translation process involved five texts, the translator only built two glossaries. For better guidance, the glossaries are meant to be read downward with the text titles on top of the tables. Furthermore, as mentioned previously, the texts are semantic but communicative, so the translator focused on correctly equating the specific technical words. With these glossaries, readers will understand the complex terms accurately and effectively while translators will speed up future translation processes.

### 6.3 Restatement of the Research Question

What is the effect of the procedures and methods used to translate several documents from Spanish into English and several documents from English into Spanish for a public university library during the 1<sup>st</sup> of 2024?

According to the type of text and the audience, the translator must use appropriate translation methods and procedures. In doing so, translators achieve the goal of translation, which is to serve as a bridge between languages so people can gain new knowledge and communicate between different cultures. As stated earlier, semantic was the method selected for all five translations since technical words are present in most of the texts; however, communicative translation was also considered since the purpose is to communicate information to students, professors, and possible outsiders of a library. Further, nine translation procedures were applied to the texts to achieve accurate, faithful, and natural translations. All definitions regarding translation methods, procedures, and instruments were developed in-depth in the theoretical and methodological framework.

To conclude, these definitions have been in contact with the researcher during several courses, and she has also been involved in translation practices. However, it was only when she became involved in this project that she realized the importance of correctly using any translation methods and techniques, as with the help of these tools, the texts would have been translated in a vague and directionless way. On the contrary, the translator carefully studied the different methods and procedures and rigorously analyzed the texts by applying the correct translation steps to select the best methods and techniques for each text. Furthermore, only then, with the professional guidance of the tutor and the correction of a philologist, did the translator compose five accurate, faithful, and natural translations for the future readership.

#### **6.4 Recommendations**

Amateur researchers may feel flooded by the amount of work and somewhat lost at the beginning of a graduation project and if no further guidance is given, it may affect the final product. This means that the research could be unsound, affecting the delivery span and the researcher's well-being due to the amount of stress caused by wandering in the process.

Notwithstanding, researchers can assist each other. This project gathered some recommendations from the graduation workshop and seminar that can be useful for future students enrolled in a similar investigation and even for outsiders. Such suggestions include findings based on the events experienced from the beginning to the end of the research.

From the graduation workshop, the researcher learned that it is important to think of the topic ahead of time and look for the translation material and sources to use. The topic will be requested at the beginning of the workshop, and it is best to have it handy and already approved by the tutor. It is important to have translation material beforehand since students need to request a presentation letter from the university, which takes time. In addition, not all institutions are willing to provide material even if given a presentation letter. However, they need time to look for the material and send it out if they are.

Further, once the material is ready, it is wise to start translating them, although they are not needed until the graduation seminar. Plus, a philologist must revise the documents after being examined by the tutor at the beginning of the seminar. Finally, it is crucial to search in advance for the sources to be used to support the theory of each chapter since only for Chapter 2, the researcher was asked to have 17 books that were from 2017, and many classmates were struggling to find them when they were a few days away from turning in their chapters.

Once the workshop is completed, the researcher must enroll in the graduation seminar and discuss with the tutor to see if there are any aspects of the thesis that the researcher can complete

in advance. During this stage, it is best to send out the chapters to the grammar reader and the Spanish translation to the philologist as soon as the tutor approves because, as a personal experience, it takes quite some time for them to return the work. In addition, when it comes to using data collection instruments such as color-coding, students can set the goal of having two paragraphs analyzed daily. This technique helps develop more discipline since the person will commit to achieving the objective. Then, when applying the colors to the words, students often work with one procedure at a time by looking for all the words that have used that technique. However, in doing so, researchers may overlook words that should be analyzed together with the adjacent word, being a phrase rather than an utterance. Therefore, it is better to analyze the paragraphs continuously.

Finally, while time management, planning, organization, and discipline are the keys to completing this project, students are not alone. In the process, tutors and many professionals can be consulted when experiencing challenges. All these recommendations are given based on the researcher's experience, as each person works at a different pace and will be surrounded by different circumstances. However, these recommendations are genuinely intended to help future university colleagues on their graduation journey by reducing the hassle and making it lighter and simpler.

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Annexes

“Language and Learning in the Digital Age”

Literacy 15

may skip the response or engage in an internal dialogue, but language is built to be interactive and to invite certain sorts of responses or dialogue.

Speaking is just one way to express language. Thinking is another way and signing is yet another way. Speech, thinking, and signing are different delivery systems for language. They are not themselves language. Literacy is yet another delivery system for language. It, too, is not itself language. So what is “language,” this thing that can be delivered orally, through thinking, by signing, or in writing?

Language is a set of social conventions about how to combine words, phrases, clauses, and sentences to communicate meanings. These grammatical combinations of words (“grammatical sentences”) are delivered or expressed via speech, thought, signing, or writing. Language is a “system” of conventions about how to make meaning that can be expressed or delivered in different ways.

For human beings, the original and primary form of language is language spoken (or signed) to others (Gee 2004, 2008a; Parker 1994). Writing is a latecomer on the scene and exists to deliver language that is or can be oral, thought, or signed (Bohla & Knight 2009; Gee 2004; Goody 1986, 1988; Olson 1996; Snow 1991).

Note all spoken language can be expressed through writing systems. For example, the rise and fall in the pitch of the voice that characterizes intonation contours in English have no systematic symbols in the English writing system. Nor do the changes in stress that distinguish a word like “recess” (I kept a record of our conversation) and “recess” (I will not record our conversation). No writing system can capture all of the features of speech (or thought or signing) that are relevant to communication and meaning.

Writing is a secondary delivery system, delivering language that can be spoken, thought, or signed. For the rest of this book, we will use the term “oral language” to mean language that is delivered by speech, thinking, or signing, and the term “written language” to be language that is delivered by writing. To say writing is secondary does not mean literacy is not important, but it does mean that oral language is more foundational for literacy and literacy learning than many people realize (Gee 2004; Hart & Risley 1995; Heath 1983; Scollon & Scollon 1981).

Stating that literacy is a delivery system for oral language, and a secondary one at that, may seem to downplay its significance. But, in reality, it does not. Consider automobiles, which are a “delivery system” for human beings. Cars are not themselves human beings, but they have radically changed how humans act, interact, think, plan, and value. The impact they have had on our cities and on the world economically, culturally, and environmentally is massive. For them being trivial, since they are “only” a delivery system, automobiles are transformative. Literacy, too, has been transformative of both language and human beings.

There is yet another way to view the impact of literacy as a delivery system for language. When humans have a tool, like a gun, a pole vault pole in pole vaulting, or a forklift in an industrial plant, the human being is capable of doing more with the tool than without it (Witlich 1998). Human ability is so enhanced with tools that we can see the “person-with-tool” as an integrated entity, that is, we can see the actor in pole vaulting as “human with pole” (pole-vaulter), the actor using a

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Gee, James Paul, and Elizabeth K. Hayes. Language and Learning in the Digital Age. Taylor & Francis Group, 2011. ProQuest Ebook Central. [http://dx.doi.org/10.4296/9780203081466\\_chapter\\_15](http://dx.doi.org/10.4296/9780203081466_chapter_15). Created from electronic edition on 2021-05-21 20:12:35.

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and often skill-and-tool. This approach is not optimal for helping children form a deep affiliation with literacy as an “identity” (being a literate person, being reader, committed writer, and so forth), though it often succeeds in preparing children to pass tests.

Certain parts of the human brain are used for both oral language and literacy. For example, many parts of the brain devoted to comprehension are involved with the use of language as well as literacy. These parts of the brain are used, as well, to comprehend things and activities in the world. Comprehension is a multi-purpose process not tied to language or literacy alone (Boruck 1999; Boruck 1996).

What makes oral language distinctive is that it has been shaped for face-to-face communication and thought, for example, for internal dialogue with ourselves (Damasio 1995). This is also its deepest limitation. Oral language fades as soon as it is spoken or thought. It leaves no record. Even if so thin, we remember what we have previously thought or said to ourselves, we cannot be sure our memory is correct since there is no independent way to check it. We will see below how technologies are called on to make up for this limitation.

What makes literacy distinctive is that, as a code or delivery system for oral language, it can transmit messages far beyond face-to-face contacts. It also can serve as a record that can be checked by multiple people. But this is literacy’s deepest limitation as well: it can be used in ways the author never intended or wished.

The phrase “written language” can be misleading. It actually means “a written version of oral language.” Written language is, in some sense, “written” oral language, though it has capabilities that oral language does not. English, like many other languages, is written with an alphabet, one of the most impressive and important inventions of human culture (Braudel 1976; Olson 1996; Peterson 1982). An alphabet uses letters to represent the sounds of words. English has about 44 “phonemes” (included speech sounds that distinguish words from each other). The English alphabet uses only 26 letters to represent these 44 sounds. The 26 letters represent thousands and thousands of words, a true miracle of efficiency.

An alphabet is a code for preserving oral language. It is a code by which literate speakers can decipher how to “say” (to others or to themselves) what is being written, though, of course, they do not have to say it, at least not out loud. Such codes can vary quite a bit. For example, there are writing systems that do not use alphabets, but instead use written symbols for syllables, not individual sounds. Thus, a two-syllable word like “broccoli” would be represented by two symbols instead of six symbols (letters). Such systems require more symbols than an alphabet, but otherwise they represent words by representing how they are said, just like an alphabetic writing, since syllables are a unit of sound, not meaning.

There are also writing systems that represent meaning (fully the complexities of a language) directly and not sounds or syllables. For example, a record symbol could stand for a circle or the sun (if the system is not some, an arbitrary symbol could be used for “sun” and another for “not”). Such writing systems are not codes for oral language. They do not tell speakers how to say what is written. However, such systems are not very efficient either, since they need thousands of symbols for

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forklift as “human-with-forklift” (forklift operator), and the actor with a gun as “human-with-gun” (gunman).

So, too, when we think about literacy, we could see the “actor” as “human-with-writing” or, even, in a sense, as “human-with-language-with-literacy.” Human beings and language are both capable of different things with literacy than without it (Braudel 1976, 1986; Olson 1996; Ong 1982; Street 1984).

Literacy

In many countries, reading is seen as an essential skill for an educated person. In the United States we have had, over the years, a number of “reading wars,” and some other countries have had them as well (Coles 2000; National Reading Panel 2000). These wars have been conflicts over how to teach reading to young children in school.

One side of the war (see Gee 2009b for a discussion of both sides) says that oral language and literacy are both “language.” Since children learn oral language through immersion in communication and socialization early on in life, they do not need any overt teaching; it is argued that children should learn literacy the same way. They should be immersed in meaningful practice where they use literacy for authentic communication.

The other side argues that oral language and literacy are different things. Oral language arose long ago in the course of human evolution, while literacy arose relatively recently as a cultural invention. This side argues that, unlike oral language, literacy needs to be overtly taught as a skill that is not “natural” to children in the way oral language is.

Both sides of the reading wars are wrong and right. Literacy is not “language” in the sense that oral language is. It is a delivery system for oral language (or thought language or sign language, remember). There is a role for overt teaching in literacy (and more in the acquisition of one’s native language, though this does not stop some parents from trying).

However, literacy (using writing as a delivery system for language) is, indeed, acquired through socialization (in the family and in school) and through authentic practice and not just, or even mainly, overt instruction (Gee 2004; Heath 1983). Children become members of a “literate culture” (actually one version or another depending on their community) through socialization (Gee 2004; Heath 1983; Scollon & Scollon 1981; Street 1984). This is how children learn other cultural skills, like cooking, storytelling, and video gaming. Instruction plays a role, but takes a back seat to being socialized with others as a member of a culturally or at least socially distinctive group of people.

Children from homes that do not socialize them early into some version of literate culture (and a version that ensures they do well at school, given how schools actually function) come to school in need of more practice and immersion in literacy activities than the school usually has the time or will to provide. Unfortunately, such children typically are given large doses of overt instruction

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Literacy

thousands of different meanings, while an alphabet needs only a couple of dozen symbols or so.

Such writing systems usually change over time to incorporate symbols that signal, at least some of the time, the word in the oral language the meaning associated with. Even those meaning-driven, rather than sound-driven, writing systems encode meanings that speakers of the language can say in words. In fact, speakers of different languages can say things in their different languages, even the symbols stand for meanings and not the sounds of words in any one language. Oral language remains primary even in these systems.

For the remainder of this book we will mean alphabetic writing systems when we talk about written language. What we say will also apply for the most part, to languages that are written via symbols for syllables rather than phonemes (included speech sounds), since syllables are units of sound. Most languages that have writing systems keyed more directly to meaning rather than sound also use some symbols that signal words in the oral language. Nonetheless, for this book, we will restrict ourselves to alphabets when we talk about written language.

When we discuss learning later, we will point out that the best predictor of a child’s success in school, including learning to read, is the child’s oral vocabulary around the age of five (Dickinson & Neuman 2008; Gee 2004; Hart & Risley 1995). Oral language development is the foundation for success in school and in school-based literacy.

We have already mentioned that a person with a tool (e.g., a hammer, gun, forklift, flying gun) is often more powerful than one without a tool. Literacy is a tool, but it is a special tool. It is a tool for delivering oral language. Oral language plus literacy is a different thing than language without literacy, just as a human with a gun is a different thing than a human without a gun. When humans put their leg in a car they can go many places that they cannot go using their leg alone. So, too, when humans combine language with literacy they can do things and “go places” they could not with just language itself.

Here is one example. Before literacy language was used in “oral cultures,” that is, cultures without literacy or with very little literacy (Braudel 1976, 1986; Ong 1982). People used language in oral cultures to retain and pass down memories. This was pretty much the only way they could do it, so they used oral language a good deal for memory purposes. Ultimately they developed special uses of language for memory and the transmission of learning. For instance, oral cultures developed epic stories like Homer’s *Iliad* and *Odyssey* that preserved the culture’s history and knowledge and passed them down through the generations by repeated retelling. Homeric Greek was particularly suited for such stories in the sense that it developed structures and forms (e.g. formulaic phrases, poetic phrasing, and repetitions that enhanced memory and set narrative devices) that aided recollection and retelling (Parry 1971). This is a good example of culture changing, enhancing, and developing language beyond its original forms.

When Greece developed literacy, after Homer’s time, human memory could be enhanced in a whole new way. Literacy was a special tool indeed when it came to

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memory. Now memories (history and knowledge) could be stored (physically) in books and not minds. History and knowledge could be passed down by reading and not telling. Furthermore, knowledge could now be divided into discrete files or categories like philosophy, diplomacy, biology, cooking, warfare, and so forth. In an oral culture, all knowledge or a good deal of it had to be integrated and stored together in the same highly memorable stories. Separating it into different categories would have meant knowledge had to be memorized in too many different heads and passed down in too many different channels and in non-highly memorable forms like the oral equivalent of an encyclopedia entry.

In a literate culture, oral language has enhanced old capacities and some new ones. For example, when I report an experience to a friend, I can write it down when it is fresh and report it based on what I wrote. I can also check the accuracy of what I said by re-reading the text. The old skill of memory reporting, even when memories are being reported orally, is greatly enhanced.

Language also gains new capacities when literacy arises. In an oral culture, as we have said, it was too memory-intensive to store every different type or branch of knowledge separately. Indeed, it was hard to create and develop different types and branches of knowledge, since there were grave limits on human memory and the ability of humans to put everything into, and remember everything from, oral language that vanished the moment it was spoken.

Once a culture has literacy, however, it can develop different branches of knowledge separately and deeply, well past what any one person could remember or recount. It can also begin to create different styles of language for different branches of knowledge, for example, language for mathematics, language for biology, language for carpentry, language for military affairs, and so forth. Now language has an important property: people can speak (and write) in different varieties of language associated with different branches of knowledge. This skill, however, would soon disappear if we lost all literacy, since, once again, all knowledge would have to be stored in heads and passed down orally.

Language in oral cultures was already multiple. There were different varieties for example, oral language, oral epic stories, everyday language, and sometimes, different varieties of language for men and women. But the multiplicity of language has been greatly enhanced by literacy.

Literacy, in respect to memory (storing, accessing and passing down down) and to multiplicity (multiple styles of speaking and writing), was a new tool that allowed language to be "levelled up" enhanced for some purposes. In time, the human mind and human activity were enhanced, as well.

As we said before, with tools and technologies there are always both gains and losses. Where people change language to do new things, as they did and do with literacy, some old capacities get lost, change radically or lessen in importance. Thus, the skill of constructing epic stories for passing down history and memories is greatly attenuated in modern literate cultures. We have lost a good deal of the art of using, and many of the language devices for telling, epic oral stories, devices like formulae phrases, repetitions and poetic devices, and dramatic narrative devices.

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These skills and devices are still found in many people and cultures, but they are largely attenuated or weakened. We still find them in poetry, but they have nothing like the vibrant and central place they had in oral cultures when language compared with the likes of Homer.

People at the transition between an oral culture and a literate one in transition which is normally relatively slow and uneven) can sense the loss of the old ways with words. Today few of us are even aware of the loss of epic oral storytelling as a way of passing down knowledge and binding a culture together. On the other hand, we are acutely aware of some losses caused by digital media since digital media are newer, the losses are more recent, and we stand at the transition between literate culture and digital culture (with literacy located in a new ecology of practices).

This theme of loss looms large when people discuss technology. We often focus on what is lost (e.g. family dinners and spontaneous conversations in the face of television), but there are gains as well, and we need to discuss losses and gains in relationship to each other and in relationship to how losses may be compensated in other quarters. We will return to this theme several times in this book.

When language is regularly delivered by writing in a culture there are not just gains and losses in terms of how we use language. There are also gains and losses for other aspects of the culture and how people act and interact in it, because language is central to what humans do in society and culture.

For example, writing in many societies changes the whole nature of contracts (Goff 1979, 1987). In an oral culture, people have to trust each other's word. If they work justice in some sort of court, the evidence is primarily based on people's words and how trustworthy those people are or appear to be. With writing, trust is often placed in documents and institutions like law and lawyers, not people's words. Oral evidence is often checked by written evidence. In modern societies, oral language has lost some of its role in creating trust and making contracts.

Literacy as technology

Literacy is a technology just like cars, tapes and tape recorders, television, and digital cameras. Like other technologies, it exists to help us do work that was done without the technology, but less efficiently or less well (or, at least, differently). It also allows people to do new things. Like cars, literacy has remade the world.

As a technology literacy has changed over time. It started as inscriptions made by the human hand with a writing implement. Later humans used printing presses, typewriters, and computers to write with. Today, there are technologies that allow speech to be made directly into print. No need for typing. Quite likely in the future, people will speak into computers in order to write documents and letters and will have the choice to read a document or just have the computer read out loud. This sort of technology shows clearly that writing is a device for conveying oral (thought, sign) language.

However, this new technology is different from print as we now know it. When we write (compose a written piece) we usually move from silent language in our

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heads to writing. We do not usually say out loud what we want to write. We just write it. The new technology moves from silent language in our heads to spoken language to writing. Composition will be different—there will be gains and losses. The "old" way of composing will survive, but in a changed ecology. Voicing for the computer what we, silently in our heads, have decided to write will certainly change the composition process. It may make it better in some ways (hearing what we want to say may make us revise it) and worse in others (people may compose "off the top of their heads" by just talking away without much forethought).

Our concern in this book is with literacy as we currently know it, but, it is with written language in books, signs, letters, and documents, as well as in ads and alongside images in so-called "multimedial texts" (where images and words are both present). Today, many people tend to view this technology (literacy) as old, traditional, and nowhere near as timely as newer, often digital, technologies like social media, video games, and digital photography and movies.

Many people also fear that reading and writing are "dying" in the face of new digital media. What they really fear is not that reading and writing are actually dying, but that some of our previously favored ways of reading and writing are dying or becoming much less prevalent (for example, reading a novel quietly by oneself). Reading and writing are, if anything, increasing in the digital world, but they are also changing.

Our argument is that literacy is a technology for delivering language, in many ways enhanced and empowered language ("levelled up" and "powered up" language to use video-game speak). It gave language new skills (properties, powers) and enhanced old ones. It also attenuated some of language's capacities or changed where, how, why, and when they are applied or used. We will make a similar argument about today's digital media. They too "level up" or "power up" language, with losses and gains, but more gains than losses.

There is, we would argue, a "human nature" and a "language nature" (a basic core form of human language) that was set in motion by evolution. Human nature is what all humans, regardless of culture, share. Language nature is what all languages, regardless of culture, share. Culture has allowed humans and language to develop well beyond their "natures," but their natures still define part (but not only part) of what they are, can do, and can be. Culture can lead to developments that so violate the nature of humans (as humans) and language (as language) that they are dangerous and bad for us.

It is not popular today in the social sciences to talk about human nature or language nature. The modern social sciences tend to stress and value cultural variety over what humans and languages share, but they do share important qualities. While their "natures" are very flexible and capable of great modification, they can be violated or broken.

There are specific literacy practices that have violated human nature and language nature. For example, there was a time (which still continues in some places, such) when deaf children in the United States were punished for signing and denied the opportunity to learn American Sign Language. This was done in the

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service of teaching them oral English (which is hard for them, since, of course, they cannot hear) and English literacy, when it is easier to learn English literacy if one has a native language, and a sign language is often the only native language a deaf (from birth) person can acquire.

Humans by nature want and need to express themselves through language. This policy with deaf children violates that nature. Language by nature is interactive and a deaf person can often engage in linguistic interaction a lot better through signing than speaking. The policy also violates the nature of language.

Literacy in modern societies has often so restricted who can publicly express themselves, who can publish and who cannot, and who can produce knowledge and who can only consume it, that the deep desire humans have to express themselves, produce and not just consume, and to be vital parts of and contributors to their societies is often stunted or frustrated. Digital media, today, as we will see, are correcting this deep problem in some important ways.

Effects of literacy

Much has been written about literacy and its effects on a society (Gre 2007a; Goodby & Witz 1963; Goff 1979, 1987; Olson 1996; Scribner & Cole 1981; Snow 1984). People have claimed that literacy leads to more humane and more modern societies and smarter people. In reality, literacy has had quite different effects on different societies. It has no one set of predictable outcomes. It has certain "affordances," effects that arise if the context is right. Otherwise, literacy's effects, like those of other technologies such as television and computers, depend on the specific contexts in which different literacy practices occur.

The effects of literacy depend on what people actually do with it. In some cases, more literate and educated people are more politically quiet and accepting of the status quo (because they tend to benefit from the status quo). In other cases, people have used their literacy skills to challenge the status quo and engage in political activism. The same is true of digital media and other technologies. Literacy and digital media can be tools for duping people, controlling them, or supervising them or they can be tools for informing people, liberating them, and giving them a sense of control and self-worth.

In this book we focus both on literacy practices (what people do with others using literacy and other tools and technologies) and the "affordances" of literacy; that is, what literacy tends to lead to, all things being equal, and when other factors do not countermand those affordances. Literacy has affordances in the way a hammer does. A hammer is designed to be useful and good at certain things, but there is no guarantee it will be used in those ways. There are also novel and unexpected uses for hammers. So, too, with literacy. So, too, with digital media.

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## 4

## LANGUAGE AND INTERACTION

## The bonding-distancing and the content-social interaction continua of language

Consider the two texts below. The first is from a 15-year-old fan-fiction writer communicating on the Internet with her fan (Vice & Hayes 2010: 135). The second is from a high school science textbook (Marrin 1990: 93).

I can FINALLY edit my picture! My cover 4 LH L7 looks SICK! I am sooo excited to release it!!! Check her 4 it! Should b our ether this weekend or next!

The destruction of a land surface by the combined effects of ablation and removal of weathered material by transporting agents is called *erosion*.

These texts represent two poles of language (Levinson 1980; Milroy & Milroy 1985; Tannen 1985). The first is informal and socially bonding language. The second is formal and distancing language. We need to be clear here what "distancing" means. Such academic language is not necessarily distancing to scientists who use it to get their work done. But it is distancing to people not familiar with it. And, more important, it is distancing in the sense that it is designed to be "rational" and not emotional. It is designed to be effective for argumentation and not to project emotion within socially bonding relationships (Florescu 1988; Myers 1990).

The two examples above are both written texts, though many people (perhaps because of school) associate writing more with the second sort of example than the first. The same poles exist in speech. Compare "It is really nice out today, isn't it?" with "The weather today is well within statistical norms for this season."

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The informal/bonding-formal/distancing poles are poles of a continuum. We can use language that lies between these poles. Nonetheless, these poles are an important property of human languages in the world. They are also quickly changing under the influence of digital media in ways we will discuss later.

Many educated people tend to think about language as a tool for exchanging information. They tend to stress the content of what is said over the social relationship that is communicated as well. Yet there is always a social dimension to language, and any use of language lies somewhere on the continuum between informal/bonding language and formal/distancing language (Labov 1972).

Language is, and always has been, both a social tool and an information tool. Speakers construct their utterances with an eye both on content (information) and on social relationships. When we use more formal/distancing language as opposed to more informal/bonding language it implies something about our relationship to the people with whom we are communicating.

Content and social interaction are also on a continuum. In some talk, content is (or appears to be) more important than the social interaction. This language tends to be more formal and distancing. For example, this is often true of a classroom lecture, though social interaction is important here too. Professors usually want to make sure students are awake and alert. In other talk, the social interaction is more important than the content, such as when we talk about the weather to be cordial and friendly to our next-door neighbor. In yet other cases, the importance of content and social interaction are more balanced.

When, in talk, content is much less important than social interaction, we tend to think that the content is "trivial" or "meaningless." Sometimes we call such talk "small talk." However, the point of such talk is not to convey information, but to build or sustain particular kinds of social interaction and relationships, which can be just as important (Rampton 1982a, 1982b).

We always construct our utterances both to say "something" and to shape a social relationship with our interlocutor. Consider the following utterances. Each one communicates similar content, but expresses different sorts of social relationships with and attitudes toward the person to whom we are speaking:

- 1 I will be at your party tonight.
- 2 Can't wait till the party tonight.
- 3 Let's party hard tonight, bro.
- 4 I guess I've got to go to your party tonight.
- 5 It is my privilege to attend your party tonight.
- 6 If you really want me, I will come to your party tonight.
- 7 You're lucky I am coming to your party tonight.

These utterances all convey that I will be at the party, though they communicate different things as well. Each utterance also conveys something about the relationship I have with the listener and the attitude I have toward the listener. There is

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no "neutral" way to communicate. Being neutral or non-committal is just another type of relationship and attitude.

When we study communication in language, we always have to ask what is being said and how it is being said to express a particular type of social relationship and set of attitudes toward that relationship (Gumperz 1982a, 1982b). To coin a few new terms, we have to ask, where a particular utterance is on a continuum from "small talk" (where the social interaction/relationship is more important than the content) to "middle talk" (where the social interaction/relationship and content are of more equal importance) to "big talk" (where the content is more important than the social interaction/relationship).

It is important to realize that "small talk" is not always trivial and "big talk" is not always important. Chat that before a business meeting about the weather or people's personalities and their attitudes toward each other. It can be "hidden work."

On the other hand, many college lectures are full of information as it might be, but important to either the professor (who wants to go home and write) or the students (who want to go home and socialize). We cannot tell whether a given form of talk is trivial or significant unless we understand the full context in which the talk occurs.

In one sense there are really no trivial interactions for humans. Even the most mundane small talk "greases" social interactions and relationships and sustains them. Even lectures that no one cares about are connected to certificates (degrees) and salaries people do care about. Talk is about achieving purposes and goals that are not always what they seem.

## Literacy and the content-social interaction continuum

We said earlier that writing is a delivery system for oral language. It is a delivery system in which spoken words and face-to-face interaction disappear. It is easy to assume that writing conveys just the content, not social relationships and attitudes as oral language does. But this is not true.

The content-social interaction continuum exists for writing just as it does for speech. It must, since writing delivers oral language and oral language is designed to simultaneously communicate content and express social relationships and attitudes. These purposes cannot be separated in human language.

Letters (when they were common) often were used for small talk, though they could also be used for big talk (as when a wife tells her soldier husband that she is pregnant). Many popular magazines are devoted to celebrity gossip (often not even true), a form of small talk. More interestingly, written texts express attitudes and relationships toward their readers, but in different ways than face-to-face talk does.

Writing allows what we will call "ritualized relationships" (Gordon & Swales 1981). In writing, the "person" who communicates and the "people" being communicated to can, at times, both be fictions. This is much harder to accomplish in speech. In speech, fictional relationships often require deception of a sort that in some cases can lead to a jail term.

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When the writer (the "speaker" in writing) and the reader (the "listener" in writing) are fictional, interesting things can happen in the social dimension of language. While we tend to think that content is paramount in writing, writing as a technology allows for changes (from face-to-face communication) in how social interaction and relationships, as well as content, are handled.

Consider the warning on a bottle of medicine (Gee 2010):

Keep this and all drugs out of the reach of children. In case of accidental overdose, seek professional assistance or contact a poison control center immediately. As with any drug, if you are pregnant or nursing a baby, seek the advice of a health professional before using this product.

This warning was probably produced by a team of lawyers and business people. Who is the author of the warning? Who is "speaking"? The business that produces the medicine? A committee? The law? No one individual or institution is the author or writer.

Who is the warning addressed to? Not to us as individuals, and maybe not directly to users of the medicine at all, since many of us don't read the small print on such bottles. Perhaps it is meant to address lawyers or courts if a legal action arises, or, perhaps, it is meant to address "consumers" in either an economic or legal sense.

In regard to the warning, we see that the author (writer) and reader are rather vague or unspecified. We will call them "fictions" (though, in this case, we could just as well call them "abstractions"). What we mean by calling them "fictions" is that we treat the warning as if it were addressed by someone to someone, when it is not really clear who these "someones" actually are.

However, the warning as a piece of institutionalized language still has a "voice" and an "attitude" and creates a certain sort of relationship with the reader, however vague or unclear the intended reader is. This label sounds official but caring. It is much like a homily on drugs, not a direct statement about aspirin. It assumes the reader is knowledgeable, since it assumes one knows how to seek professional assistance, find poison control, and knows what a health professional is. Finally, it seems to assume the reader is a woman.

On more recent aspirin bottle labels, the following was added to the warning above (Gee 2010):

Children and teenagers should not use this medication for chicken pox or its symptoms before a doctor is consulted about Reye Syndrome, a rare but serious illness reported to be associated with aspirin. IT IS ESPECIALLY IMPORTANT NOT TO USE ASPIRIN DURING THE LAST 3 MONTHS OF PREGNANCY UNLESS SPECIFICALLY DIRECTED TO DO SO BY A DOCTOR BECAUSE IT MAY CAUSE PROBLEMS IN THE UNBORN CHILD OR COMPLICATIONS DURING DELIVERY.

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The instructions are now much more direct, using specific terms such as “children and teenagers,” “this medication,” “chicken pox or flu,” “doctor,” “Raye Syndrome,” “aspirin,” and “pregnancy,” rather than “all drugs,” “any drug,” and vague “health professionals.” This is a more authoritative voice and more intimidating. The reader is directed to care for and protect their children. The message assumes that the reader does not already know all this, while the earlier warning treated its content as common sense.

The warning on the aspirin bottle, as writing, is a way to deliver oral language. It “speaks” and someone listens (reads). But what this written warning does could not be achieved in speech. Abstractions or fictions cannot, in reality, talk and they cannot listen. Writing gives rise to a whole host of new voices, new speakers, and new listeners.

Another example of authors and readers as fictions or abstractions is the *essay*. The *essay* is a written form (or genre) that arose in the seventeenth century (Blumen 1988). By the twentieth century it had become the major written language form used in school, especially in the higher levels of school (high school and college). Being able to write and read *essays* was taken as a sign of a cultured and educated person. It was a major gateway to obtaining a “good education” and graduating from college. Currently, however, *essays* do not play the same role and we will discuss this more fully later.

*Essays* were so central to our twentieth century idea of an educated person that the form of literacy central to schooling has been called “*essayist* literacy” (Scollon & Scollon 1981). Expository writing and scientific writing are forms of *essayist* literacy in this broad sense of “*essay*.”

Who is the author of an *essay*? It would seem that if Joe Doe wrote the *essay*, Joe Doe is the author. But *essays* are not supposed to be written with any specific identity or voice connected to Joe as a unique individual. They must be written with the “voice of reason” by the “rational person,” unswayed by passion, self-interest, or idiosyncratic properties, using rational argument alone. Furthermore, the *essay* is not supposed to reflect the specific culture of the author, but the argument of a rational and, thus, universal mind.

Who is the reader of an *essay*? It is not really Sally Doe, at least as Sally Doe herself. The *essay* is addressed to the same sort of person who is supposed to be its author: a rational, universal, acultural, unemotional intellect focused on argument and evidence.

With *essays* the writer and reader are fictions or abstractions. Real writers and real readers have to write and read as if they were universal, rational, acultural, unemotionally invested, unembodied entities. This was never really possible in reality, but it certainly was a stance authors and readers had to adopt if they wanted to be seen as educated.

There is something good about the *essayist* stance: surely we can applaud when people try to rise above self-interest, cultural conflict, and emotional involvement to find common ground. But there is something bad as well: people do not exist without culture, self-interest can often be cloaked in seemingly rational and neutral

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Oral cultures certainly could have one person speak for another. A shaman or a priest might claim to speak for God as God’s words. A counselor might speak for a client or the king. But it was clear that a particular person was speaking. It was clear that people in a fellow members of a shared culture were being addressed. But a written document issued by the United States Catholic Bishops is authored by an institution (“the US Church”), and addressed to the “laity,” that is, an abstract group of people defined by their relationship to that institution. Literacy’s proliferation of fictional authors and readers gave rise to a proliferation of institutions and to institutions as themselves actors and “speakers.”

#### The origins of authors and readers as fictions

The origin of authors and readers as fictions, developed so extensively by literacy, resides in the long human past when we first learned to be (Smith 2007). What would it be like to be a human-like creature that could not talk? Lying may have even led to the expansion of the human brain (Byrne & Whiten 1988). Lian gain a massive advantage in society; other people have to get smarter to catch them and then have to get smarter to be better.

With lying, people could in conversation claim to be something other than they really were. This would not work in a small village, but it will certainly work in a bigger town or city. A person can pretend to be a shaman when he is not, to speak for God when he doesn’t, to be an expert when he is not, or to be single when he is married. Jane Austen’s novels are replete with women who have to figure out whether the marriageable men they meet are who they claim to be in terms of truth, wealth, and moral character.

Lying and metaphor are closely related. In metaphor we take one thing to be another. When I say that Sue is a “real soldier” or “soldiered on” because she worked so hard through difficulties, I am treating Sue, who is not really a soldier, as if she were a soldier. Metaphors are fictions and in most cases we know it and do not take them literally.

When the United States legal system treats a corporation as a “person” with rights, this is based on a metaphor and is a fiction. A corporation is not really a person. But once this metaphor becomes the law, and society treats corporations as people (for example, says they have “free speech rights”) and, thus, can make financial donations to politicians of their choice just like any “other” person, then we can wonder whether it really is a fiction. Have we been deceived by a metaphor that we take too seriously or has the law made a fiction a reality? It is very hard to say.

Literacy allows all sorts of fictional actors to act in ways that have impacts on the world that we don’t expect fictions to have. Lying and metaphor were, of course, possible in an oral culture, but literacy allows them to be taken much farther.

It is common in modern society to meet institutions as actors who can communicate. We are used to “hearing from” and “talking to” the phone company, the bank, the school, governments, Greenpeace, or media outlets like CNN. We hear

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language, and emotion is not really the opposite of reason but often required for its application (it is hard to write about what you do not care about).

Our goal is not to judge the emergence of it, to a certain extent, lying is the litmus test of the educated person. What we want to stress is that the creation of author and reader as fictions (universal, rational, acultural beings) is a way of using language tied to the written form of the *essay*. This way of using language has historically created and influenced new ways of talking and thinking as well. When a student gives a science report to a classroom or a scientist gives a talk at a conference, the “voice” is the same: the reasoning, self-interested, unemotional, acultural mind.

As an example, consider the sentences below (Gee 2004, 2010):

- 1 Horsemens sure vary a lot in how well they grow.
- 2 Horsemens growth exhibits a significant amount of variation.
- 3 Horsemens growth size exhibits a significant amount of variation.

Sentence 1 represents what we could call “everyday language,” what linguists call “the vernacular.” It is the kind of language that can be spoken and written, but it is not likely to appear in an *essay* or a scientific report. Sentence 2 represents a variety of language that we associate with university professors and other scholars. Such language is sometimes called “academic language” (Schleppegrell 2004). This type of language can be spoken or written, but we associate it more with *essayist* or expository prose than with speech, especially not with “everyday language.”

Sentence 3 is interesting. There is something wrong with it; it sounds “odd” or even humorous. It is not the sort of language we expect to hear or read. Why? Academic language such as in sentence 2—a variety of *essayist* literacy—is supposed to be written (or spoken) from the voice of reason and argument. “Sum” is an adverb that shows emotional involvement, it shows the speaker (or writer) is impressed or cares. Such emotion is not supposed to be mixed into the academic language in sentence 2.

A different sort of person utters sentence 1 (which we associate more with speech) than writes sentence 2 (which we associate more with academic writing). The person who utters sentence 1 is an emotionally involved person speaking as an everyday person and stating his or her views about horsemens based on what he or she has seen and done. The person who writes sentence 2 is a rational, argument-oriented person speaking as a specialist, stating not his or her own personal views, but the viewpoint of a field or discipline based on scientific evidence (like statistical tests of significance) developed by that field or discipline.

Literacy (written language) gave rise to many other fictional authors and readers. Who authors an ad? The ad agency? The business that paid for it? Whom is it addressing? Comment? A certain demographic (e.g. young professionals under 40)? Anyone with money?

Who authors a political speech? The politician who gave it? The speech-writer who wrote it? The political party line that dictates what it must contain? Whom is it addressing? Voters? Fellow party members? Swing voters? Citizens?

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them and speak to these institutions in speech and writing, but writing enabled them to write, grow, and communicate in the first place.

Institutions like a state government, the US Catholic Church, Microsoft Corporation, and Harvard University could not exist without literacy. Writing allows institutions to organize people across time and space, to communicate at a distance, and to set up fictional authors and readers that make the institution an actor and the people to whom it communicates functionaries of the institution.

#### Bonding and distance

We have been discussing one continuum in talk (talk at content versus talk at social interaction). Let us return to the related continuum we discussed at the outset of this chapter: talking to achieve social solidarity and bonding with others versus talking in ways that express more social distance and less solidarity and bonding. This is, of course, a divide relevant to the social interaction side of talk. However, it affects the content side, not so much in what we say, but in how we say it, for example, informally or more formally, and how we establish our authority in relation to the content.

When we talk to someone, we can talk in ways that express (or seek to achieve) closeness, solidarity, and bonding with them. We can also talk in ways that express (or seek to achieve) more social distance and less closeness and bonding. We may express such distance because we want to express respect and deference to a listener we assume to be higher in status than ourselves. We may express such distance because we see the listener as lower in status than ourselves (as, for example, happens sometimes when some people are talking to service workers). Finally, we may express such distance because we do not know the listener well—the listener is a stranger.

There are basically four types of talk from this social point of view. We can talk to one another as intimates. Let’s call this intimate talk. This is how spouses, parents and children, and close friends often talk with each other. We can talk to one another as peers; by a “peer” we mean not a close friend, but an equal whom we know but with whom we are not intimate (or do not wish at the time to treat as an intimate; for example, when talking to one’s spouse in a shared workplace). Let’s call this peer talk. We can talk to another person in ways that indicate he or she is higher status or lower status than we are. Let’s call this status talk and further divide status talk into “up-status talk” (to a person of higher status or whom we want to treat as higher status) and “down-status talk” (to a person of lower status or whom we want to treat as lower in status). Finally, there is talk between strangers—and different cultures have quite different rules about how to treat strangers. Let’s call this stranger talk.

Intimate talk is usually highly informal. Up-status talk is usually highly or at least fairly formal. Peer talk is somewhere in-between. These features of different kinds of social talk are true across many cultures and cultural groups. How people talk when they are engaged in down-status talk and stranger talk is more variable across

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cultures. In some cultures, people don't talk to strangers at all, in others they do. In some cultures people talk very respectfully to strangers, in some they talk to them like peers, and in others they are milder. And, of course, talk varies by how we assess the stranger (for example, in terms of social class). The same is true of down-status talk, which can be respectful, fairly formal, peer-like, or informal—and sometimes brusque and rude.

There is such variability around down-status talk and stranger talk because all languages and cultures have distinctive ways to show politeness or withhold it. Politeness is a core property of language (Brown & Levinson 1987; Levinson 1983). When we speak, we must choose how polite to be. In almost all cultures, people do not engage in elaborate politeness with intimates or peers. With intimates, dropping markers of politeness can be a sign of bonding and intimacy. With peers, a medium of politeness is usually required, though not elaborate politeness. In talking to higher status people, more or less elaborate politeness is usually required. Of course, different cultures and different languages show politeness in different ways.

In talking to strangers and lower status people, cultures differ in how much or little politeness to apply. This is because they differ on how they view things like being a stranger (i.e. an "outsider") or being low in status. In some instances and societies, strangers and lower status people are, in a sense, "less human." In other instances and societies, they are not.

The trouble with strangers and people whom we think are lower in status is that we often care somewhat less how they feel and respond to us because we do not think any important consequences will arise. The stranger we may never see again and the lower status person may have less power. In a sense, we care—but this does not mean we do—take such people for granted. With peers and people higher in status we worry about their responses and most not take them for granted.

Oddly enough, intimates are people whom we often take for granted as well (Wilson 1989). We assume they will excuse, ignore, or forgive our lapses in behavior. We often feel we don't need to worry too much about how they react to what we say and do, either because we think we know their feelings and reactions pretty thoroughly (and take for granted they won't change) or we have become so comfortable with them that we do not any longer reflect on their responses. For this reason humans sometimes treat strangers and intimates less respectfully and carefully—because they take them for granted—than they do peers and people higher in status, whose feelings and reactions they have to monitor and worry about. We are often at "our best" or "on our best behavior" with peers and higher status people.

Writing created a dilemma around the social and politeness aspects of oral language. Some forms of writing, most especially essayist writing, are written to "strangers." As writers of such prose we are supposed to write for a generalized rational reader, not specific people we know. How do we treat such a reader? This is, in fact, a cultural dilemma for some people. Some Native American groups, for instance, tend not to talk to people they do not know, because they avoid interfering in other people's affairs or otherwise imposing on people unless they have

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# “Illicit Wildlife Trade, Wet Markets, and COVID-19: Preventing Future Pandemics”



## Illicit Wildlife Trade, Wet Markets, and COVID-19: Preventing Future Pandemics

A. Almira Aguirre, Richard Catterina, Haley Frye, and Louise Shetley

Although the exact origin of SARS-CoV-2, the etiologic agent of COVID-19, is currently unknown, there is substantial evidence to suggest the source of transmission of the virus occurred within the Wuhan wet market. In these markets, bats and wild animals are frequently sold and stored in close contact. During several of the world's past pandemics, bats were essential to the spread of zoonotic diseases from bat to another animal or to humans directly. Live animal markets create the perfect conditions for novel viruses such as COVID-19 to emerge. This paper suggests that to prevent future pandemics, the sale of exotic animals be banned at wet markets. It also advocates for the integration of the analysis of illicit trade with the study of zoonotic disease transmission and pandemics.

**KEY WORDS:** COVID-19, Illicit Wildlife Trade, SARS-CoV-2, Zoonotic diseases

### Introduction

As the world continues to struggle with the unprecedented ramifications of COVID-19, two critical questions are being asked: Where did this novel virus come from and how can we prevent future pandemics? Although there is no definitive answer as to the origins of the virus, specialists in the field of immunology and microbiology have suggested that COVID-19 occurred naturally (Chowdhury, 2020). There is significant evidence to suggest that live animal markets or wet markets in Wuhan, China are the original source of transmission of the virus. A major indication is that some of the first patients to test positive for COVID-19 had connections to the wet markets in Wuhan (Brook, 2020, p. 3). Additionally, the causative virus known as SARS-CoV-2 is a betacoronavirus that originated in bats, much like SARS and MERS diseases (Centers for Disease Control and Prevention [CDC], 2020). An examination into these forms of contagion supports the hypothesis that COVID-19 potentially transmitted from bats to another susceptible animal, such as a pangolin, and then to a human (Chowdhury, 2020). Transmission may have occurred at the wildlife market, or while en route to the wildlife market where illicitly traded wildlife may be sold. It is currently unknown as to precisely how the virus was transmitted from animals to humans but the threat of bats spreading disease has been a long-held concern for public health officials and biological researchers. Viruses that are transmitted from animals to humans are very dangerous to human life due to the absence of herd immunity among the population. This article will explore the connections among the

current pandemic, live-animal markets, the spread of animal-related diseases, and the illicit wildlife trade and will include a set of policy recommendations prescribed to prevent future outbreaks stemming from these issues.

### Materials and Methods

To explore the connections between bats and COVID-19, we reviewed academic literature and scientific journals on bat ecology and conservation, emerging zoonotic diseases, the COVID-19 outbreak, and wet markets in China. We used websites of authoritative bodies such as the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO). We looked at scholarship and reports addressing the illicit wildlife trade from prominent intergovernmental organizations and non-governmental organizations such as the United Nations Office on Drugs and Crime (UNODC) and TRAFFIC. We also reviewed reporting from news media outlets such as the New York Times and the Wall Street Journal.

### The Role of Bats and Diseases Related to COVID-19

Although it could be several years before any final conclusions are drawn on the origins of the COVID-19 outbreak, there is still substantial evidence that it originated in bats. Biological and epidemiological research indicates that different species of bats may potentially carry multiple strands of the virus very similar to that of the current coronavirus. The Los Angeles Times stated “scientists estimate that 3 out of 4 new or emerging infectious diseases in people come from animals” (Su, 2020).

At the Institute of Virology in China, a horseshoe bat (*Rhinolophus affinis*) identified as RaTG13, was discovered to be carrying a form of coronavirus, which shared 96% of its DNA with SARS-CoV-2 (Bielley, 2020). Although this information provides compelling circumstantial evidence, it does not prove that this particular species of bat contributed to or assisted in the spread of COVID-19. However, this does not mean that another species of bat does not carry this form of coronavirus that can then be shared with humans. In perspective, humans share 96% of our genome with chimpanzees (Bat Conservation Trust, 2020). Experts are not certain as to how SARS-CoV-2 was transmitted to humans, it may have been transmitted through another susceptible animal such as a pangolin, the most illegally traded mammal in the world (Conditore, 2019).

Past research has shown that bats are central to the dissemination of COVID-like diseases among animals and humans. Although rodents bear the responsibility for spreading the bubonic plague during the fourteenth century, bats present a unique danger as reservoirs for zoonotic viruses, hosting even more bacteria and diseases than rodents (Luis et al., 2013, p. 3). Therefore, bats have been much studied as transmitters of viruses to humans through close contact or direct consumption. Humans cause harm to bats not only through consumption but also by contributing to their loss of habitat. As a consequence of environmental destruction, bats seek new areas to feed, sometimes causing them to come into contact with

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livestock that will be eventually sold in open markets (Flouris et al., 2015, pp. 3–4). Additionally, habitat destruction can cause bats to shed and contract more viruses, further increasing the likelihood that they will transmit disease (Olival, 2016, p. 7). Bats are frequently stored and sold in wet markets and are often transported alongside large groups of uncommon and illicitly traded animals that are consumed by humans. This form of transportation and storage allows the spread of pathogens between bats and different, sometimes exotic, and rare creatures that can carry and advance diseases under severe, stressful situations.

The concern over pathogens being transferred from bats to humans is widespread; not only among public health professionals but also has been much studied by academics. The American Society for Microbiology published a report entitled *Identification of a Novel Coronavirus in Bats*, which stated “the recent emergence of severe acute respiratory syndrome-associated coronavirus (SARS-CoV) highlights the importance of virus surveillance in wild animals” (Poon et al., 2005, p. 2001). It further explains “the identification of severe acute respiratory syndrome-associated coronavirus (SARS-CoV) in civet cats and other wild animals in live animal markets suggests that this novel human pathogen emerged as a result of an interspecies transmission” (Poon et al., 2005, p. 2001). This report illustrates how other coronavirus-like illnesses in animals have been previously identified as potential sources of transmission to humans. In fact, this is not a recent discovery and concerns existed already in 2007 that there was a serious danger to human life. A University of Hong Kong study at that time found that “the presence of a large reservoir of SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a time bomb” (Cheng, Lau, Woo, & Yuen, 2007, p. 638). Indeed, this warning was unheeded and the failure to act on this insight has contributed to the most serious global pandemic in a century.

#### The History of Health Risks Relevant to Wildlife Trade Practices

This global health crisis originating from zoonotic transmission is not novel; in fact, over the last 20 years, several deadly diseases are thought to have originated from live animal or wet markets. Wet markets are where fresh meats, produce, and animals are often stored to be sold in open-air environments, in close proximity, with little to no health safety precautions or sanitation measures. These wet markets exist across the world and in China, they often contain foreign, rare, and sometimes endangered species that are sold, among other goods, by traveling suppliers. Wet markets facilitate and heavily contribute to the practice of illicit wildlife trade and in turn, this practice has led to the spread of zoonotic diseases among the animals and to customers at markets. Transportation and storage of animals for wildlife trade at these markets enables the spread of diseases from animals to other animals.

As one scientist writer reports “live meat markets are perfect laboratories for creating new viruses. Stressed animals shed more viruses and are more susceptible to infections, and cages are often stacked on top of each other, facilitating exposure” (Nusser, 2020). Exotic meats that are traded illegally, such as pangolins, are less

likely to be inspected for health risks and may come into contact with bats while in transit. Additionally, because these rare animals are often from remote areas, they may be more likely to carry diseases that humans have never come into contact with (Hemley, 2020). The conditions the live animals are subjected to in wet markets create a petri dish for the spread of diseases.

In China and in some other Asian countries, these markets are prevalent because consumers view wet markets as fresher, not expensive, and providing rare types of creatures that serve as status symbols or are believed to possess unique healing elements (Daszak, Olival, & Li, 2020, p. 7). Yet the spread of disease from the live and exotic animals represents the biggest threat.

For instance, wild carnivores, birds, reptiles, and primates that are traded in these markets carry pathogens from every taxonomic order. Therefore, pathogens such as Newcastle disease can jump from wild to domestic birds, and pathogens such as simian foamy virus and *Chlamydia psittaci* can be transmitted from wild animals to humans (Gómez & Aguiar, 2008, p. 17). There is a well-documented history of regional and even global pandemics originating from the transmission of diseases from animals to humans due to the practice of wet markets and illegal wildlife trafficking.

In April 2020, the United Nations (UN) acting Head of Biodiversity stated, “countries should move to prevent future pandemics by banning wet markets that sell live and dead animals for human consumption but cautioned against unintended consequences” (Greenfield, 2020). Public health officials in the United States and around the world have pointed to wet markets and illegal wildlife trading as conduits for the transfer of disease. The transference of diseases from animals to humans may transpire through the consumption, proximity, or mixing of animals or their by-products. Typically, animals are susceptible to different types of diseases. Once a strand is introduced into the human population, it can be spread from human to human and cause an outbreak or potential public health emergency. Relatively recent epidemics such as Ebola, Middle East respiratory syndrome (MERS), bird flu, severe acute respiratory syndrome (SARS), and swine flu are all examples of diseases that have originated through the transfer of disease to humans from animals. For example, the highly pathogenic Asian avian influenza A (H5N1) virus or bird flu is highly contagious, and it occurs when humans come into direct or close contact with infected or already diseased poultry (CDC, 2018). Therefore, the significant risk factors for infection include visiting or mixing animals in live poultry markets. Similarly, while the swine flu is sporadic in humans, infections are typically the result of exposure to infected pigs within live markets, fairs, or the pork industry (CDC, 2019a).

Unfortunately, due to the nature of infections, there is still a lot of information left unknown about how some of these outbreaks originated. In the case of Ebola and based on the analyses of similar viruses, scientists believe it is animal-borne, with bats or nonhuman primates such as apes or chimpanzees being the most likely source (CDC, 2019b). Another example would be in 2003, when SARS broke out in the southern province of Guangdong in China. Experts believe this outbreak is the result of an unknown animal reservoir,

some experts have suggested bats, and the spread occurred through other animals such as civet cats (World Health Organization [WHO], 2020). During its initial outbreak, SARS resulted in more than 8,000 cases in over 25 countries. Similar to SARS, MERS began as the result of a zoonotic virus in Saudi Arabia. Although different practices other than wet markets or animal reservoirs led to the outbreak of MERS, the method of transfer is the same: animal to human (WHO, 2019). The Director of the National Institute of Allergy and Infectious Diseases, Dr. Anthony Fauci, insisted on a global closure of wet markets because the current crisis is a “direct result” of this practice (Guzman, 2020). After the SARS outbreak, China attempted to institute a similar, more stringent ban on wildlife trade but this has ended over time (Su, 2020). Several conservationists and medical professionals, including members of the Chinese Academy of Sciences, hoped this ban would be permanent, but the markets and trade routes returned after the crisis ended (WHO, 2020). It is certain that without cooperative, comprehensive, and enforced policies on wildlife trade and of endangered species, such as the pangolin, in place there will continue to be a spread of global sickness and intentional loss of life.

#### Potential Policy Solutions

The devastation resulting from the spread of COVID-19 could potentially serve as a future warning for what is to come, if practices such as illicit wildlife trade and wet markets are allowed to continue on a global scale. A combination of factors ranging from loss of habitat to increased human-animal interactions through the illicit wildlife trade have increased the likelihood of novel zoonotic diseases emerging and spreading. This pandemic began in China, but there is no reason a similar pandemic could not begin elsewhere in Southeast Asia, South Asia, sub-Saharan Africa, or Latin America (Daszak et al., 2020, p. 7). Significant actions must be taken to ensure this type of pandemic is prevented in the future. Here, we outline policy proposals to address the issue of zoonotic diseases spread by illicitly traded animals.

These policy suggestions are multifaceted and do not depend entirely on law enforcement strategies. The limits of law enforcement are clear. In 2019, anti-smuggling officers in Guangdong intercepted 21 live pangolins and discovered many of them were sick with coronaviruses (Gudley, 2020). The illicit trade of pangolins, a suspected susceptible host and potential carrier of COVID-19, for their meat and scales represents over \$125 million in illegal activity each year (United Nations Office on Drugs and Crime [UNODC], 2013, p. 86). Although increasing operations targeting the illicit wildlife trade is a worthwhile endeavor for weakening revenue sources for transnational criminals, conserving endangered species, and fighting corruption, these are limits to how effective it alone would be in stopping the spread of novel diseases.

#### Global Enforcement Cooperation to Crack Down on Illicit Wildlife Trade

Global law enforcement to address the illegal trading in exotic animals for consumption or possession represents a high priority in preventing future animal to human disease transmission. To address this problem, countering illicit wildlife trade must be a higher priority of INTERPOL (the international police body) and of regional and law enforcement bodies. But this trade is highly linked to transnational crime that requires corruption to operate. Therefore, there needs to be much more attention paid to dismantling cross-national illicit networks, addressing corruption, and following the money linked to this trade. Moreover, the role of corporate actors as part of the supply chain for this illicit transit needs much more attention. Much illicit wildlife trade flows through free-trade zones in Asia, and they must be held much more responsible for the cargo that goes through their ports (Shelley, 2018, p. 193).

#### Shut Down Wet Markets That Sell Live Animals or Exotic Meats

A targeted ban could be effective and have fewer unintended consequences than an outright ban. Focusing on the most likely vectors of zoonotic diseases could protect public health without the negative effects of a blanket ban. Although a ban on wild animal and wet markets would lower the number of opportunities for Chinese consumers to come into contact with meat infected with infectious agents, there is the chance that underground markets will pop up. Therefore, allowing the sale of a limited category of meat in markets as the Chinese government is now considering would preserve people's access to food. As overreaching ban could destroy these people's livelihoods or even lead to a black market facilitated by corruption with even greater risks (Samuel, 2020). Enforcement of regulations are essential and inspections must be carried out to ensure that meat from exotic animals is not disguised as meat from domestic animals.

There are certain aspects of this pandemic that might make a total ban on wet markets politically viable. The markets in China were closed temporarily after the SARS outbreak in 2003, though this ban did not last long (Samuel, 2020). This time might be different, however. The SARS outbreak resulted in around 800 deaths worldwide, while the death toll from COVID-19 has caused over 432,000 deaths as of June 15, 2020. With the recommendations of experts and the drastic toll of COVID-19, shutting down the wet markets may be politically possible.

#### Promote Understanding of Health Risks of Meat Sold in Wet Markets

Even if wildlife markets are banned, outreach will be necessary to drive down demand for a black market. Consumption of wild animals from wet markets is influenced by Chinese and Asian culture, which holds that wild animals and their by-products have healing powers. Eating rare animals has also become a status symbol signifying that the consumer is wealthy (Daszak et al., 2020, p. 7). In addition, Chinese culture places a great deal of emphasis on the “freshness” of the

food being consumed. This concept of freshness extends to perceptions of food quality, healthiness, and taste, with fresher always being better. Food from a grocery store is seen as less fresh than food from wet markets. Some Chinese consumers will make trips to easily accessible wet markets every day (Zhong, Craig, & Zeng, 2020, p. 179).

Dealing with the underground markets will require convincing people that they should not buy from underground wet markets. This could be done through public health outreach campaigns that inform people of the dangers of exotic meats and markets that have live wild animals. Research has shown that public health outreach campaigns can work. The first anti-smoking campaign given federal funds by the United States government showed impressive results, inspiring 1.8 million smokers to attempt to quit and 134,000 to quit for good in 2014 (CDC, 2016). Although there are crucial differences between cigarettes and meats from animal markets in terms of addiction and their places in different cultures, the concept may have applicability in convincing people not to buy food from wild animal markets.

#### Research and Analysis

Future research by the health, medical, and environmental community must be combined with research on illicit trade and corruption. A transdisciplinary approach has been taken in the One Health perspective but this approach has not gone outside the scientific perspective (Aguirre et al., 2019; Wilcox, Aguirre, De Padua, Sriratanarat, & Eshardad, 2019). Going forward, these barriers among academic disciplines must be bridged to consider all the risks to public health.

#### Conclusion

Addressing and preventing pandemics requires an array of transdisciplinary research. Research must focus on the central causes of the spread of zoonotic diseases such as illicit wildlife trade and wet markets. Public health, conservation biology, and illicit trade scholars should collaborate on addressing the facets of supply chains, corruption, and trade that may contribute to zoonotic transmission. There will need to be much more work with the business community to follow the supply chains linked to illicit trade in wildlife. Governments will need to get involved as well and take action to suppress the wildlife trade in order to prevent future outbreaks.

Those who are part of the illicit wildlife trade have not taken off days during this crisis. Lockdown policies and the changing dynamics of international travel have resulted in multiple changes to the supply chains for illicit wildlife trade. Trade by air has been slowed due to quarantine regulations and transportation by road has been complicated by roadblocks and checkpoints, particularly at borders. The trade is still happening by sea, however. Additionally, because governments have closed so many national parks, poachers have taken the opportunity to go after animals that are not being as closely guarded as before. The combination of transportation difficulties and unwatched national parks has led to

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stockpiling of products in the illicit wildlife trade. Without addressing these issues now, the trade could come roaring back as lockdowns are lifted (Wildlife Justice Commission, 2020, p. 5).

This outbreak was caused by an array of factors, including the conditions of wet markets, the illicit wildlife trade, and environmental destruction. A multi-pronged approach will be necessary to make sure this never happens again. On the illegal trade aspect, policymakers will need to address the source of demand for these products: the wet markets. Shutting down the wet markets, or at least strictly regulating them and banning the sale of live wild animals, will be necessary to address the problem of zoonotic diseases. Hopefully, this pandemic will convince government officials that these markets need to be dealt with and convince scholars to study the intersection of illicit trade and public health.

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#### Notes

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## “Cambio climático. Perspectivas futuras”

### Cambio climático. Perspectivas futuras

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#### RESUMEN

El presente artículo pretende ofrecer una visión global referente al cambio climático en relación a aspectos tales como su relación con los gases de efecto invernadero, efectos sobre el medioambiente, ser humano, economía, así como las posibles consecuencias futuras y la importancia en la toma de decisiones y políticas encaminadas a mitigar el calentamiento a nivel mundial.

**Palabras clave:** Cambio climático, gases de efecto invernadero y calentamiento global.

#### Climatic change. Future perspectives

#### ABSTRACT

The present article aims to offer an overview of climate change in relation to aspects such as their relationship to greenhouse gases (GHG), effects on the environment, human being, economy, possible consequences in a future and the importance in the policies and decision taken and to mitigate global warming.

**Keywords:** Climatic change, greenhouse gases and global warming.

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inferior al 5% con respecto al de 1990, y para un período de compromiso comprendido entre el año 2008 y el 2012.

El Tercer Informe de Evaluación de IPCC confirmó los resultados científicos de los informes anteriores, indicando que la mayor parte del calentamiento global observado durante los últimos 50 años era probable se debiera al aumento de las concentraciones de GEI (IPCC, 2008).

En 2007, en Bali, se adopta una decisión sobre los recursos necesarios para mantener el cambio climático dentro de los límites de seguridad.

El Cuarto Informe de Evaluación de IPCC afirma que las concentraciones globales de GEI han aumentado enormemente. El IPCC recomienda la energía nuclear como una de las tecnologías clave para la mitigación del calentamiento global.

#### 1.3. ESTADO ACTUAL.

Actualmente, existen suficientes evidencias científicas que sitúan al cambio climático como el principal problema medioambiental del siglo XXI (WBGU, 2008). Existe una asociación entre el cambio climático y la actividad antropogénica (McMichael, Frie, Nyberg y Corvalán, 2008).

La reflexión entre cambio climático y actividad antropogénica es directa y convincente. La superficie de la Tierra se ha calentado más de 0,8 °C durante el siglo pasado, y en aproximadamente 0,6 °C en las últimas tres décadas (Campbell-Lendrum, Corvalán y Neira, 2007).

En España, la Estrategia Española de Cambio Climático y Energía Limpia en el horizonte 2007 – 2012 – 2020, aprobada en octubre de 2007 por el Consejo Nacional del Clima y en noviembre en el Consejo de Ministros, pone de manifiesto, entre otros aspectos, respecto al compromiso adquirido por España con la ratificación del Protocolo de Kyoto y la adaptación al cambio climático como máximas prioridades.

Existe diferente legislación enfocada a las emisiones de GEI.

El Real Decreto 837/2002 regula la información relativa al consumo de combustible y a las emisiones de CO<sub>2</sub> de los turismos nuevos que se pongan a la venta o se ofrezcan en arrendamiento financiero en territorio español.

El Real Decreto 1866/2004 aprueba el Plan Nacional de Asignación de derechos de emisión de gases de efecto invernadero, 2005-2007.

El Real Decreto 1264/2005, de 21 de octubre, por el que se regula el registro nacional de derechos de emisión de gases de efecto invernadero.

El Real Decreto 1370/2006 aprueba el Plan Nacional de Asignación de derechos de emisión de gases de efecto invernadero, 2006-2012.

#### 2. GASES DE EFECTO INVERNADERO

En condiciones normales, la radiación solar calienta la superficie de la Tierra y parte de esa energía es emitida desde la Tierra hacia la atmósfera en forma de radiación infrarroja. Este equilibrio se basa en el balance energético de la Tierra, permitiendo mantener la temperatura terrestre en un margen de valores aptos para la vida

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#### 1. INTRODUCCIÓN

##### 1.1. DEFINICIÓN

Según la National Oceanic and Atmospheric Administration (NOAA) el cambio climático responde a fluctuaciones a largo plazo de la temperatura, las precipitaciones, los vientos y todos los demás componentes del clima en la Tierra.

Naciones Unidas define el Cambio Climático como un cambio en el clima, atribuible directa o indirectamente a la actividad humana, que altera la composición de la atmósfera mundial y que se suma a la variabilidad climática natural observada durante períodos de tiempo comparables.

##### 1.2. ANTECEDENTES

La primera Conferencia Mundial sobre el Clima en el mundo tuvo lugar en Ginebra en 1979, donde por primera vez se debatió el problema del cambio climático en la comunidad científica (WMO, 1979). Una de las consecuencias de dicha declaración fue la posterior aparición de una serie de conferencias científicas y políticas: Villach, Toronto, (Conference Statement, 1988), Ottawa, Tait, La Haya, Noerdyk, El Cairo y Bergen (1989) y la Segunda Conferencia Mundial sobre el Clima (1996). En este año se creó el IPCC, Grupo Intergubernamental de Expertos sobre el Cambio Climático, y tuvo lugar la primera Asamblea General de la ONU sobre cambio climático. El IPCC fue creado por el PNUMA (Programa de las Naciones Unidas para el Medio Ambiente) y la OMM (Organización Meteorológica Mundial). En su primer informe, el IPCC identificó como gases de efecto invernadero (GEI) el dióxido de carbono (CO<sub>2</sub>), metano (CH<sub>4</sub>), óxido nítrico (N<sub>2</sub>O) y los compuestos clorofluorocarbonos (CFC) (IPCC, 1990). En 1990 tuvo lugar la segunda Conferencia Mundial sobre el Clima.

La Convención del cambio climático de 1992 tenía por objetivo principal, por un lado, prevenir la interferencia antropogénica en el sistema climático y, por otro lado, permitir el desarrollo sostenible (Convention on climate change, 1992).

En 1996, se publicó el segundo informe de IPCC, donde las evidencias del estudio ponían de manifiesto una relación directa entre la influencia humana y el cambio climático (IPCC, 1995). En dicho informe apareció por primera vez el debate coste social – cambio climático (IPCC, 1995b).

En 1997, se desarrolló el Protocolo de Kyoto. Entre otros aspectos, dicho protocolo incluye, por un lado, políticas de eficiencia energética, forestación y reforestación, agricultura sostenible, la investigación y el uso de energías renovables, así como fomentar reformas en el sector transporte y control de las emisiones de metano (Gupta, 2010). Por otro lado, incluyen objetivos obligatorios relativos a las emisiones de GEI para las principales economías mundiales que lo hayan aceptado. Estos objetivos van desde -8% hasta +10% del nivel de emisión de los diferentes países en 1990 “con miras a reducir el total de sus emisiones, para esos gases, a un nivel

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(Ericsson, 1992). Por tanto, toda variación de dicho equilibrio, ya sea de origen natural o antropogénico, supone un cambio en el clima.

Los denominados GEI actúan parte de la radiación infrarroja emitida desde la Tierra a la atmósfera, produciendo un efecto invernadero. Como consecuencia se produce un aumento de la temperatura en la superficie de la Tierra, produciendo el denominado calentamiento global. Por tanto, a mayor cantidad de GEI mayor será el aumento de temperatura superficial en la Tierra. Así, cuanto más rápido cambie el clima, mayor será el riesgo de daños. El sistema climático debe ajustarse al aumento de los GEI para así mantener el equilibrio de energía.

Como GEI, normalmente se engloban el dióxido de carbono (CO<sub>2</sub>), metano (CH<sub>4</sub>), óxido nítrico (N<sub>2</sub>O) y los compuestos clorofluorocarbonos (CFC).

A excepción de los compuestos CFC, el resto de compuestos son naturales, es decir, existen en la atmósfera desde antes de la aparición de los seres humanos. Sin embargo, a partir de mediados del siglo XIX, coincidiendo con la revolución industrial y con el aumento del uso de combustibles fósiles derivado de las actividades industriales y de transporte, se han producido notables incrementos en las emisiones de óxido de nitrógeno y dióxido de carbono a la atmósfera. En igual medida, los niveles de metano están aumentando a nivel atmosférico debido a razones antropogénicas.

Además, a este incremento de emisiones, existen otros aspectos como la deforestación, que han reducido la cantidad de dióxido de carbono retenida en materia orgánica, contribuyendo así indirectamente al aumento antropogénico del efecto invernadero.

Los GEI presentan una larga permanencia en la atmósfera, como consecuencia de ello los efectos nocivos que su presencia en la atmósfera pueden provocar no son de efecto inmediato (Clima, 2001).

Como consecuencia, una reducción inmodesta y drástica de las emisiones de GEI no impediría los efectos del cambio climático.

#### 3. CONSECUENCIAS FUTURAS

##### 3.1. POSIBLES EFECTOS DERIVADOS DEL CAMBIO CLIMÁTICO: MEDIOAMBIENTE

Las consecuencias derivadas del cambio climático se producen a nivel transfronterizo. Entre los diferentes efectos que pueden aparecer como consecuencia del cambio climático, en condiciones extremas, destaca un mayor riesgo de fenómenos meteorológicos extremos, tales como inundaciones, tormentas torrenciales de gran intensidad y con mayor frecuencia, cambios en las condiciones de sequía a largo plazo en muchas regiones, olas de calor mortales, etc.

El derretimiento de los glaciares, que abastecen de agua dulce a grandes centros de población, provoca un aumento del nivel del mar que conduce a la salinización de las fuentes de la agricultura y el agua potable. En igual medida, el nivel del mar ha aumentado 1,8 mm por año desde 1961, aunque en los últimos años la tasa de aumento es mucho mayor (3,1 mm) (IPCC, 2007).

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Dado que las pautas climáticas podrían variar como consecuencia del cambio climático, la agricultura mundial se vería afectada enormemente por los cambios de dichas pautas. Un aumento de la temperatura mundial inferior a 2,5 °C podría no tener efectos notables sobre la producción de alimentos a nivel mundial, un aumento superior a 2,5 °C podría disminuir directamente la producción alimentaria, produciendo un aumento de hambruna. Por ello, cambiarían las pautas de producción (Cambio climático, 2004).

Actualmente, las emisiones de CO<sub>2</sub> siguen aumentando, y los modelos climáticos proyectan, pasado el siglo XXI (Climate change, 2007), que la temperatura media de la superficie se incremente en un intervalo que abarca desde 1,1 °C a 6,4 °C. Un estudio reciente del IPCC estima que para el año 2100 la temperatura superficial aumentará en un valor promedio de entre 1 °C y 3,5 °C, con una elevación asociada del nivel del mar de 15 a 95 cm.

### 3.2. POSIBLES EFECTOS DERIVADOS DEL CAMBIO CLIMÁTICO: SER HUMANO

La salud humana se verá afectada a largo plazo por los efectos del cambio climático. El ser humano necesita de una serie de factores, tales como suficientes alimentos, agua potable, unas correctas condiciones sociales y ambientales para el control de enfermedades infecciosas, para disponer de una correcta salud. Los cambios en el clima afectarán a los factores de salud pública.

Unas de las consecuencias más importantes del cambio climático a largo plazo es el aumento en la frecuencia o intensidad de episodios meteorológicos extremos. Episodios de calor extremo provocarán enfermedades cardiovasculares y respiratorias.

Existen otros efectos potencialmente más graves que pueden afectar en la dinámica de enfermedades infecciosas. Desde el punto de vista sanitario, las repercusiones del cambio climático son potencialmente enormes. Muchas de las causas de muerte más importantes en el hombre son muy sensibles a las condiciones climáticas, tales como la malaria y la diarrea (WHO, 2004). El cambio climático afectará a la distribución de las enfermedades a nivel mundial, afectando por ejemplo a los vectores de transmisión de dichas enfermedades.

Estas consecuencias futuras son consecuencia de la actividad humana, principalmente de actividades relacionadas con la industria y el transporte. Un aspecto importante para la mitigación de estas consecuencias sería la implicación de la sociedad para la mejora de esta situación (Galán Madruga, 2009). El papel del ciudadano resulta básico y esencial en la construcción del capital social que desemboque en políticas globales enfocadas a un cambio cultural y productivo respecto a los futuros efectos del cambio climático (Smyer, 2012).

### 3.3. POSIBLES EFECTOS DERIVADOS DEL CAMBIO CLIMÁTICO: ACTIVIDAD ECONÓMICA

Como consecuencia de la aparición de periodos de precipitación y sequía extremos, la producción agrícola de alimentos a nivel mundial se verá afectada, cambian-

do tanto el volumen de producción como la pauta de producción. El precio de los alimentos podría sufrir un aumento de valor dada el efecto adverso del calentamiento global sobre los cultivos a nivel mundial (Costello, Abbas, Allen, Ball, Bell, Bellamy, Friel, Groce, Johnson, Kett, Lee, Levy, Mainil, McCoy, McGuire, Montgomery, Napier, Pagel, Patel, Pappas de Oliveira, Redclift, Rees, Rogger, Scott, Stephenson, Twigg, Wolff y Patterson, 2009).

Las infraestructuras existentes dentro de los asentamientos humanos se verán afectados por episodios de precipitaciones extremas, dando lugar a inundaciones urbanas, a terremotos, dando lugar a deslizamientos de terrenos, etc...

Las poblaciones costeras, puertos, industria, se verán afectados por el aumento del nivel del mar.

En igual medida, la demanda energética por parte de la población mundial se verá aumentada enormemente, como consecuencia, por ejemplo, de la aparición de olas de calor extremo.

Figura 1: Visión esquemática de la problemática del cambio climático



A continuación, en la **Figura 1**, se muestra una visión global del efecto del cambio climático.

## 4. CONCLUSIONES

El cambio climático se ha convertido en el gran problema ambiental del siglo XXI a nivel mundial, puesto que las consecuencias futuras, derivadas del calentamiento global, sobre el ser humano y el medioambiente no responden a criterios de fronteras de Estados, sino que se trata de un problema transfronterizo.

Para controlar o reducir en lo posible los efectos negativos derivados de dicho problema, es necesario llegar a un acuerdo, que no debe estar sujeto a la voluntad de los Países desarrollados, enfocado a aceptar medidas de largo alcance que permitan la reducción de emisiones de GEI que mitiguen el calentamiento global. La solución, a este problema Global, requiere una estrategia de dimensión internacional, a nivel estatal, regional y local y deben ser estrategias multidisciplinares y multisectoriales.

El hombre y el medioambiente deberán adaptarse a las nuevas condiciones climáticas. La vulnerabilidad no sólo depende de la sensibilidad de la Tierra, sino también de su capacidad para adaptarse a nuevas condiciones climáticas.

Un aspecto básico, en la mitigación de la velocidad de calentamiento de la Tierra, es la elección de las energías a utilizar por parte del ser humano, así como la necesidad de proponer medidas que impliquen la reducción de la cantidad de energía consumida, traducidas en políticas energéticas, lo que propiciaría en una reducción de los denominados GEI y se evitara el progresivo calentamiento de la superficie de la Tierra.

De no mitigar las emisiones de GEI la ser humana tendrá que hacer frente a nuevos riesgos y presiones. Aspectos económicos, ambientales, sociales y culturales, así como la salud humana experimentarán efectos directos e indirectos de una enorme magnitud, lo cual justifica la necesidad de estabilizar las concentraciones de GEI a nivel atmosférico.

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## “El mecanismo de la crisis económica mundial\*”

EL MECANISMO DE LA CRISIS  
ECONÓMICA MUNDIAL\*

Karl Polanyi

Desde una perspectiva centro-europea, todo el período de posguerra—incluidos los ocho años de milagrosa prosperidad en Estados Unidos, el crecimiento económico sostenido en otros países y las multifacéticas aventuras técnicas, económicas, monetarias y de política comercial de esta sombría época histórica, hasta el colapso de 1929 y la depresión mundial de 1933—es en realidad un solo período de crisis económica que se manifiesta de diferentes maneras a medida que atraviesa y transforma el mundo. La crisis económica de los primeros años de posguerra no se resolvió, sólo se pospuso. El equilibrio en un lugar se logró trasladando la carga del ajuste, en forma deliberada o de otro modo, a otras regiones y sectores económicos. Cuando llegó el día inevitable del ajuste de cuentas, no solo revivieron los viejos fuegos latentes sino que la crisis asumió profundidades y dimensiones que hicieron palidecer toda experiencia anterior.

Para llevar este argumento más allá de generalizaciones anodinas inferidas a partir de conexiones aleatorias de los acontecimientos de los últimos 15 años, el autor está obligado a explicar su metodología, y a respaldarla con pruebas concretas.

\* DOI: <https://doi.org/10.18601/01245996.v20n38.13>. Publicado originalmente en *Der Österreichische Wirtschaft*, 1933, y traducido al inglés por Karl Polanyi Levin, febrero de 1998. Traducción de Alberto Supelano. Recepción: 07-09-2017, aceptación: 19-02-2018. Significancia de citación: Polanyi, K. (2018). El mecanismo de la crisis económica mundial. *Revista de Economía Institucional*, 20(38), 305-320.

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la producción industrial debería haber sido casi el doble. En cambio, sólo aumentó en un 60%. En 1933 cayó a niveles inferiores a los de 1914. De acuerdo con la dinámica del crecimiento económico de las generaciones anteriores, la capacidad de la economía para proporcionar rendimientos productivos en 1933 debería haber sido dos veces mayor. Ni la febril pero improductiva actividad económica de los años de guerra, ni el aumento continuo de la producción agrícola frente a la caída de los precios compensaron las consecuencias económicas de la guerra: diez años de crecimiento perdido en la agricultura y veinte años en la industria.

#### LOS TRES DEMANDANTES: TENEDORES DE BONOS, TRABAJADORES Y CAMPESINOS

Es irrelevante si los costos de la guerra fueron mayores o menores de lo que se creía anteriormente. Lo que es claro es que el choque político-sociológico de la guerra implicó la reconstrucción de un nuevo equilibrio económico que tomaría muchos años conseguir. La estructura social sólo se podía sostener si la dirigencia política podía satisfacer las expectativas—y evitar la desilusión—de tres grandes demandantes sociales: los tenedores de bonos (rentistas) que financiaron la guerra, y sin cuya confianza en las monedas y sin cuyo crédito las economías capitalistas no se podían reconstruir; los trabajadores que soportaron la carga moral y política de la guerra, y a quienes se prometió la recompensa de más derechos y más paz; y los campesinos, que parecían ser el único baluarte contra la revolución social.

En los países derrotados, las clases rentistas fueron devastadas por la inflación; en los países victoriosos, las políticas diseñadas para proteger sus intereses finalmente fracasaron. En los países derrotados tampoco se protegió a los trabajadores de las consecuencias de la crisis. Abstrayendo los factores sociales, una protección menos inflexible de los intereses económicos de los tenedores de bonos, los trabajadores y los campesinos podría haber arrojado un resultado más favorable en términos puramente económicos. Pero, entre tanto, la estructura social se había desintegrado.

En los Estados victoriosos tenían prioridad los intereses de los tenedores de bonos. Sus sacrificios financieros ganaron la guerra; su fe en la estabilidad de las monedas y el crédito fue la base de la reconstrucción de la economía de posguerra. La sociedad sólo podía continuar si se podía desmantelar total y permanentemente el comando de la economía de guerra, y restaurar el mercado libre.

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#### ¿POR QUÉ ES IMPOSIBLE QUE LA CRISIS SE CORRIJA A SÍ MISMA?

¿Cuál es la esencia de la crisis económica mundial? ¿Por qué no ha habido una solución autocorrectiva? ¿Cómo podrían lograr repetidamente algunas economías la estabilidad aparente trasladando la carga de los grandes y persistentes déficits económicos en el espacio y el tiempo? Y ante todo: ¿cómo tal interpretación puede arrojar luz sobre la totalidad del proceso general en el que está inscrita la crisis económica mundial?

Podemos dejar de lado las complejidades de la teoría del ciclo económico relacionadas con las fluctuaciones económicas conocidas que nos visitan de vez en cuando, porque estamos convencidos de que las características decisivas de la crisis actual provienen de un contexto histórico específico. En nuestra opinión, la crisis coyuntural de 1929 a 1933 es sólo la fase más dramática de una crisis general que tuvo origen en la Primera Guerra Mundial. Las configuraciones políticas y sociológicas únicas asociadas a la guerra pusieron obstáculos insuperables para una recuperación autogenerada. Los costos económicos de la guerra fueron enormes. La opinión general de que la carga económica de la guerra moderna no podía mantenerse durante más de tres meses no estaba fuera de lo razonable. El hecho de que la guerra durara cuatro años solo fue posible porque se impusieron enormes costos sociales a las sociedades mediante presiones coercitivas de abumadoras fuerzas político-sociológicas. Únicamente los desequilibrios confinados a la esfera estrictamente económica son susceptibles de corrección autorreguladora. Los costos reales de la guerra superaron de lejos la capacidad económica de las sociedades; la escala de destrucción humana y social fue de tal magnitud que la estructura social no podía sostener las fuerzas del ajuste para un equilibrio de posguerra.

La visión convencional, que veía el problema exclusivamente en términos de la amenaza de revolución social, era unilateral, aunque ese peligro era real. Los factores político-sociológicos que hicieron imposible reconstruir un nuevo y estable orden de posguerra eran casi tan complejos como las fuerzas nacionales, sociales, ideológicas y políticas que participaron en la guerra, y la terminaron con una paz impuesta por los vencedores a los derrotados.

Sólo hace poco la investigación estadística reveló los costos reales de la guerra. A pesar de una revolución tecnológica y del milagro económico estadounidense, la producción industrial en el punto culminante de 1929 había retrocedido notablemente frente a los logros de las dos generaciones de crecimiento económico ininterrumpido anteriores a 1914. En los veinte años transcurridos desde el estallido de la guerra,

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En los Estados derrotados tenían prioridad los trabajadores. Instalados en la sede del poder político, los trabajadores (y ex soldados) que soportaron la mayor carga de la guerra exigían los derechos y el pan prometidos.

En los Estados victoriosos, la democratización de la vida pública asumió proporciones avoralladoras. En Inglaterra, el número de votantes elegibles aumentó de 8 millones antes de la guerra a 28 millones. Aquí también la máquina de guerra se alimentó con promesas: “hogares dignos de héroes”, según el primer ministro Lloyd George. La producción logística de material bélico para el frente de batalla estuvo acompañada de la producción de esloganes de este maestro galés de la retórica. Cuando la guerra terminó, no había excusas para no cumplir las promesas. En realidad, nadie en Gran Bretaña creía en la necesidad de restringir el nivel de vida después de la guerra. Cuando las realidades de la reducción de la capacidad económica de Gran Bretaña empezaron a aparecer ya era muy tarde. Los sacrificios impuestos a toda la sociedad para defender—y aumentar—el ingreso de los rentistas dictaron políticas que descargaron todo el peso del ajuste sobre las clases trabajadoras.

La tercera parte de esta trilogía eran los campesinos. Después de la guerra, solo ellos—que protegían su parcela de tierra conseguida a duras penas y estaban acostumbrados a una adversa relación de mercado con la ciudad—ofrecían una protección segura contra el bolchevismo. El interés económico y su *Wirtschaftsbauung* general los aliaron con las fuerzas del conservadurismo. Pero los campesinos desilusionados podían tener un comportamiento muy diferente, que se manifestó en Bulgaria y en muchos otros países del Este y el Suroeste europeo, donde los campesinos no tuvieron problemas para participar en la división de los grandes latifundios. El hecho de que las revoluciones no proveyeran exclusivamente de la izquierda política es una lección que Europa solo ha aprendido en retrospectiva. Ni los rentistas ni los trabajadores resultaron ser tan socialmente inmanejables como los campesinos al exigir sus demandas.

Cualquier intento de restaurar el equilibrio económico debía tener en cuenta tres direcciones en las que apuntaban las reclamaciones. La existencia de una estructura social viable exigía:

- Defender los ingresos de los rentistas estabilizando las monedas.
- Proteger los ingresos de los trabajadores estabilizando los salarios reales.
- Proteger los ingresos de los campesinos estabilizando los precios de los bienes básicos.

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En retrospectiva, es indiscutible que era imposible satisfacer todas estas demandas, dada la capacidad económica gravemente reducida por la guerra. Mantener una estructura social requería algo económicamente imposible. Pero cuando la viabilidad de la sociedad entra en conflicto con lo que es económicamente posible, las posibilidades económicas se estiran de un modo u otro. En el largo plazo esto no es sostenible, por supuesto. La violación de las leyes de la economía tarde o temprano tendrá terribles costos económicos. Pero, entre tanto, la sociedad se ha salvado del desastre.

Además, las presiones nacionales sobre la estructura social estuvieron acompañadas de presiones externas suscitadas por el orden político internacional reconstruido de posguerra. Si bien hacemos mayor énfasis en las políticas que intentaron estabilizar los ingresos nacionales de rentistas, trabajadores y campesinos, no hay duda de que las reparaciones y deudas de guerra y las políticas excesivamente antinómicas agravaron la incapacidad del sistema para recobrar un nuevo equilibrio mediante procesos económicos de autocorrección. Estos dos conjuntos de problemas son interdependientes. Las reparaciones y deudas de guerra determinaron la dirección de los esfuerzos financieros y económicos, que eran tan poco realistas como las políticas nacionales que intentaban mantener el nivel de vida más allá de la capacidad de las economías empobrecidas y de un capital agotado por la guerra. Aunque el colapso final era inevitable, se podía retrasar —y fue retrasado— por un tiempo, mediante intervenciones heroicas.

#### LA GRAN INTERVENCIÓN: LA GUERRA

Es necesario reconocer que prácticamente toda la historia financiera y económica de los últimos quince años consiste en intervenciones, cuyas eventuales consecuencias negativas no dejaron de manifestarse. Pero estas intervenciones no fueron la causa de la crisis. El efecto de las intervenciones —a veces mal concebidas y ejecutadas con miseria— fue posponer la solución a la crisis. Pero esa postergación no carecía de justificación: la madre de todas las intervenciones fue la guerra. Todas las intervenciones de posguerra solo fueron costosos intentos de proteger a la sociedad contra los choques de la brutal destrucción del equilibrio económico y social. Pero crearon nuevos e innecesarios desequilibrios que agravaron las consecuencias de la intervención principal e iniciada: la guerra. Es imposible entender la función de las intervenciones de la era de posguerra sin una clara comprensión de sus orígenes en la destrucción causada por la guerra.

Es además incorrecto considerar intervencionistas solo aquellas políticas que pretendían beneficiar a los trabajadores o a los campesinos. La interpretación convencional aquí es que las medidas económicas diseñadas para restaurar el orden de posguerra no requerían mayor justificación. La protección de la moneda, no importa cuán artificial y draconiana, no se considera intervencionista; el efecto distributivo sobre los ingresos de los rentistas no se toma en cuenta de modo explícito. Un enfoque de la estabilización económica que depende exclusivamente de la declaración formal de la sanidad de los contratos es de poco valor como instrumento práctico de política económica y financiera. Pues no responde la pregunta decisiva: ¿qué niveles de ingreso son en últimas sostenibles?

El retorno de la libra esterlina a la paridad oro de posguerra diez años atrás pone en evidencia la estupidez del intento de restaurar el orden económico de posguerra sin tener en cuenta hasta qué punto los años de guerra debilitaron la capacidad económica. Pero aquí también era posible posponer las consecuencias de políticas erróneas.

#### ¿CÓMO FUE POSIBLE POSTERGAR LA CRISIS?

El exceso de demanda de las tres principales categorías de receptores de ingresos —rentistas, trabajadores y campesinos— solo se podía satisfacer mediante tres fuentes.

En primer lugar, mediante una redistribución nacional del ingreso en favor de las clases privilegiadas. Desde se favoreció a los trabajadores y campesinos, la carga distributiva recayó sobre la clase media y el capital industrial a través de impuestos a la propiedad y del más injusto de todos los impuestos: la destrucción de los ahorros por la inflación. Los ingresos reales de los productores agrícolas se sustituyeron mediante aranceles externos y otras medidas proteccionistas, a costa de los consumidores urbanos.

En segundo lugar, mediante la consunción del capital. El capital doméstico fue devorado por la inflación y por la venta de activos a extranjeros.

En tercer lugar, los déficits y las deudas se financiaron y refinanciaron mediante la renovación del endeudamiento externo y el aumento de la deuda. Esto sucedió a vasta escala. Los países financiaron sus déficits mediante un endeudamiento externo perpetuo. Las economías nacionales más débiles buscaron ayuda de las más fuertes. Los años de estabilidad aparente, un intervalo de rápido crecimiento y una apariencia engañosa de equilibrio fueron marcados por nuevas dificultades económicas y financieras, hasta que, de repente, en lo más

alto del *Asem* estadounidense, se rompió la banda elástica que había sostenido las economías deficitarias interdependientes entraron en una caída irreversible, y toda la estructura de estabilización colapsó.

¿Cuáles fueron los mecanismos de la crisis económica mundial que determinaron y facilitaron este curso de los acontecimientos?

El desplazamiento geográfico y la consiguiente postergación de la crisis fueron facilitados por la flexibilidad y la capacidad únicas de los mecanismos de crédito de posguerra.

La naturaleza de estos mecanismos de crédito no se ha investigado lo suficiente. Mientras que la guerra destruyó la economía mundial, resucitó después de la guerra y cayó en un declive ininterumpido a finales de 1928, el sistema de crédito no dejó de desarrollarse desde que se introdujeron las innovaciones financieras durante la guerra. Este fenómeno paradójico continuó durante todo el período de posguerra. La magnitud y la movilidad sorprendentes del crédito internacional estuvieron acompañadas por la contracción y el mal funcionamiento intermitentes de la economía real.

Las guerras dan origen a nuevas maneras de financiarlas. Los Estados victoriosos financiaron casi todos sus gastos en el exterior mediante una serie de acuerdos *ad hoc*: la venta de bonos extranjeros y acciones en Estados Unidos, una libra esterlina respaldada por Estados Unidos, la titularización de todas las obligaciones pagaderas en moneda extranjera entre las potencias aliadas y una moratoria de pagos hasta el final de la guerra. Unidas en una guerra de vida y muerte, las principales potencias movilizaron las armas del crédito hasta el último momento. Nunca en la historia del capitalismo moderno el crédito fue tan politizado. Una de las consecuencias fue la relación más estrecha entre los bancos comerciales y las autoridades emisoras (los bancos centrales) de Londres, Nueva York y París. La fuente de este ultra moderno canal para distribuir crédito a toda Europa, que llevó oro para irrigar las raras llanuras de Europa Central, fue la insondable riqueza de Estados Unidos. Las enormes ganancias que Estados Unidos obtuvo en la guerra estaban en busca de inversiones. La reconstrucción de Europa apareció como un excelente negocio que no solo podía revivir las exportaciones estadounidenses a Europa sino que era muestra de un providencial amor a la humanidad. Con una riqueza sin igual —y sin experiencia—, los inversionistas que entonces aparecieron en escena solo pedían que este mecanismo de crédito se alimentara con sus recursos.

Si hoy nos parece increíble que el mundo se haya equivocado tanto sobre el estado real del balance financiero de la guerra, la explicación

reside en parte en las reclamaciones financieras que se consideraban "buenas". La suma total de deudas de guerra de los Aliados se estimó en 25 mil millones de dólares. La Conferencia de Ginebra terminó con una disputa sobre la distribución de cuotas de los intereses petroleros rusos. Lloyd George nunca habría hecho su famosa propuesta de crear una compañía pública de 25 millones de libras esterlinas para la reconstrucción de Rusia si no hubiese habido esperanzas de que las reclamaciones sobre la guerra rusa y las deudas de posguerra eran activos financieros seguros. ¿Con un valor estimado de 35 mil millones de francos oro, no eran cambios pequeños? El valor de todas estas reclamaciones hoy se ha reajustado. Lo llamativo es que antes del reajuste, los propietarios de esos títulos creían que eran ricos. En 1925, después de que Gran Bretaña y Alemania retornaron al patrón oro, se hablaba de un problema de reparaciones de 16 mil millones de marcos oro como si fuese un trato comercial normal. El mecanismo de crédito, al que los contemporáneos atribuían un poder prácticamente mítico, fue durante diez años la principal causa de postergación de la crisis<sup>1</sup>.

#### EL PROCESO GENERAL

El resultado de la guerra determinó el curso geográfico de la crisis: del Este al Oeste.

Hubo *Estados derrotados*, como Rusia, Austria, Hungría, Bulgaria y la sucesión de Estados enclavados en las regiones de la guerra del Este, como Rumanía, Yugoslavia, Checoslovaquia, Polonia y Grecia; por último, pero no menos importante, allí estaba Alemania. Y hubo *Estados victoriosos*: Inglaterra, Francia, Bélgica e Italia. Y en una clase aparte, el *super vencedor*: Estados Unidos.

1918-1924: el proceso comienza en el Este, con la reconstrucción de los Estados derrotados, con ayuda de los vencedores y de Estados Unidos. La moneda austriaca (1923) y la moneda húngara (1924) se estabilizaron con ayuda de la Liga de las Naciones. Al mismo tiempo, Grecia, Bulgaria, Finlandia y Estonia se ajustaron estructuralmente (*sanear*). Rumanía, Polonia, Checoslovaquia y Yugoslavia recibieron créditos franceses; incluso Rusia fue candidata para la ayuda económica. El punto culminante fue la restauración del patrón oro en

<sup>1</sup> Somary, F. (1931). *Kapitalüberschuss und Kapitalmangelgebiete, mechanizmas und wirkungen internationalen Kapitalbewegungen. Kapital und Kapitalismus*. Berlin, p. 483. Comparar también los artículos de W. Feders escritos antes del colapso del Crodin-Kardit, en los números 8, 9, 10, 16, 17, 19 y 20 de la *Österreichische Volkswirtschaft*, 22 y 29 de noviembre de 1930, y los números 3, 17 y 24, 7 de enero y 14 de febrero de 1931.

Alemania, originada en el Plan Dawes y financiada por Dawes Loans, cerca de la mitad de cuyos fondos provenían de Estados Unidos. La restauración del patrón oro despojó a los Estados derrotados del recurso clandestino a una financiación inflacionaria. Sus déficits estructurales se cubrieron progresivamente mediante préstamos extranjeros; la carga de estas deudas se transfirió así a los Estados victoriosos, cuyas monedas estaban muy lejos de ser estables o seguras en ese momento.

1925-1928: además de los déficits de los Estados vencedores, los Estados victoriosos tenían sus propios desequilibrios. Desde el momento en que se restableció el patrón oro en los Estados vencedores, la defensa de la moneda tuvo máxima prioridad. Mediante la "cooperación de la banca central", Inglaterra trasladó a Estados Unidos la carga económica de mantener el valor externo de la libra esterlina. El retorno de la libra a la paridad oro de preguerra en abril de 1925 se aseguró mediante créditos estadounidenses de corto plazo. A pesar del aumento de los préstamos que Estados Unidos extendió a Alemania, desde entonces el propósito secreto de la política crediticia estadounidense no fue tanto la ayuda a Europa como el apoyo a Inglaterra. El punto más alto fueron las negociaciones entre Montagu Noeman (gobernador del Banco de Inglaterra) y Benjamin Strong (gobernador de la Reserva Federal) en Nueva York, en mayo de 1927. En agosto de ese año, Estados Unidos adoptó una "política de créditos baratos" que duró hasta febrero de 1928 y abrió el camino para el derrumbe de Wall Street en octubre de 1929. La crypto-inflación estadounidense significó el apoyo efectivo a las monedas europeas que habían retornado al patrón oro (de cambio fijo) mediante la disponibilidad de crédito barato.

1929-1933: los déficits de los Estados europeos victoriosos y derrotados se trasladaron a Estados Unidos y fueron cubiertos mediante el crecimiento continuo de los créditos estadounidenses en los últimos diez años. Estados Unidos financió al Plan Dawes, la renegociación de las deudas de guerra británicas y francesas, los pagos de reparación de los Estados derrotados y el servicio de sus propios préstamos; además de los vastos esfuerzos para apoyar la estabilización inglesa, las malas inversiones alemanas y la acumulación de déficits del sector privado de Europa Oriental en las instituciones financieras de Viena. Acontecimiento principal: la quiebra del Creditanstalt de Viena el 12 de mayo de 1931. El Reichsmark se desplomó y la libra inglesa se devaluó. El 19 de abril de 1933 se dejó flotar el dólar. La contracción de la economía mundial y la caótica inestabilidad de las monedas se asemejan a las condiciones prevalentes en el período inmediatamente posterior a la guerra.

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invisibles presiones. A medida que vencían los préstamos de corto plazo, la City dependía de niveles crecientes de préstamos de corto plazo. Los peligros de esta situación se explicaron claramente en el Informe MacMillan poco antes del colapso de la moneda en 1931<sup>3</sup>.

Los préstamos extranjeros que flotaban en Londres ascendían a 651 millones de dólares en 1927, en 1928 se redujeron a 525 millones y en 1929 a solo 228 millones, facilitados por el dinero barato que fluía desde Nueva York. Desde el principio, la banda elástica que unía los equilibrios cada vez más frágiles de las economías deficitarias fueron los créditos estadounidenses. Pero la correa de transmisión que trasladó los déficits de las economías europeas, incluso de las más fuertes, a las cuentas de crédito de las entidades financieras estadounidenses fue el restablecimiento del patrón oro. Despojadas del recurso clandestino a la inflación, las economías nacionales europeas se vieron forzadas a ajustar su debilitada capacidad económica cumpliendo las rígidas normas del patrón oro. El creciente aumento resultante de su endeudamiento con acreedores estadounidenses ocurrió silenciosamente pero no menos eficazmente que el de los préstamos negociados. Mientras que en Europa Central la estabilización fue sostenida por crédito barato disponible en los mercados de valores londinenses, la restauración de la libra a la paridad de preguerra fue sostenida nada menos que por la silenciosa inflación estadounidense de 1926 a 1929 y, por tanto, con el eventual colapso del conjunto de la estructura mundial del crédito.

#### ESTADOS UNIDOS Y LA DOBLE FUNCIÓN DE LOS MECANISMOS DE CRÉDITO

Quizá el aspecto más engañoso de la experiencia económica de posguerra fue el fabuloso alto nivel de vida en Estados Unidos durante este período. Este solo se debió en parte a la riqueza real de Estados Unidos. Se debió también a dos intervenciones que aislaron a Estados Unidos de los efectos de la crisis en el resto del mundo: los elevados aranceles externos y el cierre de las puertas a la inmigración. Sin estas medidas, la pobreza europea se habría extendido a Estados Unidos, y el nuevo equilibrio resultante se habría establecido en un punto inter-

<sup>3</sup> "Nada es más significativo para las consecuencias de la guerra que la coexistencia de una recuperación económica inusualmente larga en Estados Unidos con una depresión inusualmente larga en Inglaterra. El retorno de la libra a la paridad de preguerra —que distinguió a Inglaterra de todas las demás potencias europeas— junto con el fuerte endeudamiento europeo con Estados Unidos son las dos razones fundamentales de la Depresión". Somary, F. (1928). *Manufacturing and Business since the War*. Tubinga, p. 11.

#### LA ESTABILIZACIÓN DE LA LIBRA Y SUS CONSECUENCIAS

Vistas bajo esta luz, las políticas que los observadores contemporáneos consideran erróneas fueron consecuencia de un curso de acontecimientos con su propia lógica. Las acusaciones de políticas erróneas son inconsistentes y las oportunidades supuestamente perdidas habrían sido simples caminos alternativos al mismo resultado indeseable. El retorno de la libra a la paridad de preguerra hoy parece un ejemplo de texto de una política errónea. Pero la repetida excusa de que Inglaterra no esperaba que Francia y Bélgica estabilizaran sus monedas a tasas devaluadas y que, por tanto, ejercieran presión contra las exportaciones inglesas, sugiere otras políticas alternativas que por fortuna no se ejecutaron. Insistimos en que el principal propósito de la política cambiaria francesa y belga no fue alterar los precios relativos de exportación, sino alejarse de los niveles anteriores de estas monedas. La esencia del asunto era que Francia estaba dispuesta a devaluar los activos de su clase realista en un 80%. Si después de 1926 las exportaciones se vieron sometidas a una presión competitiva, se debió a que los ingresos de los realistas ingleses estaban protegidos (por tasas de cambio sobreevaluadas) y a que, por razones políticas, los salarios también eran muy altos.

Otro ejemplo. Durante muchos años, Europa Central se negó a reconocer las dificultades económicas de Inglaterra porque se creía que la tasa bancaria era demasiado baja para mantener el valor de la libra. En realidad, la tasa bancaria nunca cayó por debajo del 4,5%, muy superior a las tasas históricamente prevalentes. Una reducción legislativa de la tasa de interés de los bonos del gobierno o un impuesto a la riqueza podrían haber compensado los problemas causados por la sobrevaluación de la libra. Un aumento sustancial de la tasa bancaria no solo habría agravado la aguda crisis económica en Inglaterra, sino que habría reducido la exportación de capital que se consideraba esencial para mantener el nivel de exportaciones británicas<sup>4</sup>. El hecho de que Inglaterra siguiera exportando capital después de 1925 benefició a las economías recién ajustadas de Europa del Este. Desde 1924, los bonos extranjeros que flotaban en el mercado londinense ascendían a 785 millones de dólares en inversiones de largo plazo en Europa continental. Las crecientes dificultades para mantener el flujo de inversión hacia el exterior hicieron imposible aumentar la tasa bancaria. Los mercados de Londres estaban bajo fuertes pero

<sup>4</sup> J. B. Condliffe explicó estas exportaciones de capital como "movimientos ocasionales normales del orden económico internacional de progreso", en *World Economic Survey, 1930-1931*, p. 48.

medio entre el nivel de vida en los Estados continentales derrotados y el alto nivel en Estados Unidos. Estados Unidos solo se podía liberar de las presiones económicas europeas excluyendo la mano de obra barata y las importaciones baratas. Esta es la razón fundamental del flujo unilateral de oro hacia Estados Unidos. Era el único medio de pago que no reducía el nivel de vida estadounidense.

Se han hecho innumerables acusaciones contra Estados Unidos porque las políticas proteccionistas miopes no solo agravaron sino que en realidad causaron la crisis. Un Estado acreedor debe facilitar el reembolso del principal y de los intereses abriendo sus mercados a las exportaciones de los Estados deudores. El ejemplo aquí fue Inglaterra. Pero Inglaterra fue un caso especial porque los activos externos británicos se acumularon durante generaciones, y los reembolsos se tuvieron en cuenta en los ajustes económicos de largo plazo a las nuevas circunstancias. Las importaciones británicas de materias primas y de bienes semimanufacturados para su procesamiento posterior son compatibles con estructuras económicas desarrolladas durante décadas. El patrón de comercio y de pagos de Gran Bretaña es diversificado, y los deudores están dispersos por todo el mundo. ¿Cómo se pueden hacer las mismas exigencias a un Estado que de la noche a la mañana pasó de ser un gran deudor a ser el principal acreedor del mundo, y cuyos préstamos al extranjero tienen principalmente un origen político? Las exportaciones estadounidenses de 1914 a 1919, con las consiguientes deudas de guerra de los Aliados, implicaban estructuras industriales adaptadas a las exigencias de la guerra en Europa. La aceptación del pago de la deuda en forma de bienes importados, inmediatamente después de la guerra, habría provocado una crisis económica en Estados Unidos. De nuevo, creemos que la responsabilidad atribuida a las políticas intervencionistas de Estados Unidos en los años de posguerra se debería atribuir más apropiadamente a la época de la guerra. La maldición de las intervenciones motivadas políticamente es que los eventuales ajustes implican nuevos y más dolorosas intervenciones.

Estados Unidos habría sido más prudente si hubiese condonado parte del valor nominal de los 11 mil millones de dólares de deudas de guerra de los Estados aliados, aunque esto habría impuesto una carga fiscal de larga duración para financiar los pagos de intereses de los bonos Liberty emitidos domésticamente. Pero el nivel de vida estadounidense aún habría sido más alto que el que prevalecía antes de la guerra. Sin embargo, todo esto es académico, porque Estados Unidos no solo exigió el reembolso del valor total de los créditos de

guerra sino que aumentó fuertemente el nivel de créditos a Europa. No obstante, este asunto suscita importantes reflexiones.

En primer lugar, que el nivel de vida estadounidense era más alto que el que se justificaba, y una rebaja del valor de las deudas de guerra lo habría reducido. Esto también habría ocurrido si Estados Unidos hubiese aceptado el reembolso de las deudas de guerra en bienes y mano de obra baratos. En segundo lugar, los niveles de consumo de rentistas, trabajadores y campesinos superiores a la capacidad productiva de Europa contribuyeron a un estancamiento de vida en Estados Unidos mayor que el que habría alcanzado en ausencia de créditos estadounidenses. El crédito internacional cumplió entonces un doble propósito: mantener niveles de consumo en Europa y también en Estados Unidos superiores a los niveles de equilibrio.

Durante años, la Reserva Federal fue acusada de esterilizar las enormes cantidades de oro que flotan hacia Estados Unidos.<sup>4</sup> Mientras que Europa no podía ampliar el volumen de crédito debido a la salida continua de oro, se decía que Estados Unidos decidió esterilizar las entradas de oro y restringir la expansión de la oferta monetaria. Europa tuvo que estrangular su economía restringiendo créditos, mientras que Estados Unidos se negó a otorgar nuevos créditos a Europa. Pero me parece que la crítica opuesta —que las políticas estadounidenses de inflación desenfrenada y expectativas de capital desmesuradas fueron responsables de la crisis— tiene más peso. Es claro que estas dos acusaciones son mutuamente excluyentes. Pero hoy sabemos que la esterilización de oro se basó en una mala comprensión de los hechos. El aumento de las reservas de oro de 1921 a 1929 estuvo acompañado de un incremento del exceso de reservas de los bancos comerciales, que promedió 706 millones de dólares (entre septiembre de 1921 y septiembre de 1929). El aumento del volumen efectivo de crédito disponible para la economía era nueve o diez veces mayor.

Si las acusaciones (que Estados Unidos restringía el crédito) probaban algo, era que ninguna cantidad de crédito estadounidense parecía suficiente para satisfacer la demanda europea. La estabilización de una serie de monedas de Europa Central y Oriental, la draconiana restricción de crédito requerida para mantener el valor del marco alemán, la creciente presión económica sobre Inglaterra resultante del retorno de la libra esterlina a la paridad, la necesidad de créditos puente políticos en el período transcurrido entre los préstamos Dawes y Young, además de los créditos para la reconstrucción de Alemania y

<sup>4</sup> Esta revista no se refirió a los críticos. Ver Federn, W. *Die Sterilisierung des Goldes*, n.º 16 y 17, 17 y 24 de enero.

otros países, crearon una demanda casi insaciable de ayuda financiera estadounidense.

Esto invita a una mirada crítica del fenómeno de la crypto-inflación estadounidense, sin duda una observación válida. Pero la opinión hoy predominante de que Estados Unidos es por ello responsable del colapso de las monedas del mundo no es convincente. La seguridad real indica lo contrario: las monedas se mantuvieron estables solo en la medida en que fueron respaldadas con créditos estadounidenses, que fueron acompañados de una financiación inflacionaria. Cuando se hizo imposible continuar estas políticas, la estabilidad aparente de las monedas europeas desapareció. Solo quienes han olvidado el clamor europeo por la ayuda estadounidense en los largos años de repetidas crisis financieras, económicas y —no menos importantes— políticas pueden lamentar la posterior negativa estadounidense a conceder crédito. Sin embargo, los estadounidenses no presentaron seria resistencia al entusiasmo europeo por la expansión ilimitada de crédito. Las acusaciones contra Wall Street por los excesivos y derrochadores préstamos a Suramérica también se aplicaban en parte a los créditos a Europa. Igual que Suramérica, Europa sufrió las terribles consecuencias económicas de la postergación de la crisis mediante una elevación artificial del consumo, y la excesiva dependencia del crédito, tanto de los deudores como de los acreedores.

#### EL CURSO DE LA CRISIS

La conexión decisiva en la aclaración de causas y consecuencias fue el flujo de oro hacia Estados Unidos. La salida de oro no se manifestó en presiones perceptibles sobre la oferta de crédito en Europa mientras que las monedas estuvieron flotando.<sup>5</sup> Las monedas respaldadas únicamente por papel son insensibles a la pérdida de reservas de oro. Las quejas serias por la mala distribución de las reservas de oro solo surgieron después de que Inglaterra (1925) y Francia (1926) retornaron al oro. Las repetidas restricciones estadounidenses del crédito provocaron la fuga de oro a Estados Unidos y aumentaron la carga sobre los Estados deudores europeos.<sup>6</sup> Estados Unidos experimentó dos veces con políticas de "dinero barato". En cada caso —una vez en 1925 y otra vez en 1928— el flujo de oro se invirtió.<sup>7</sup> Cuando la

<sup>5</sup> Cordliffe, J. B. *World Economic Survey, 1931-1932*, p. 48.

<sup>6</sup> Institute for International Affairs. (1933). *Monetary policies and the depression*. Oxford, p. 8.

<sup>7</sup> Ohlin, B. (1931). *The causes and the phase of the Depression*. *Economique Mondiale*, Ginebra, p. 110.

estabilización del franco francés en la primavera de 1927 provocó una enorme transferencia de oro del Banco de Inglaterra al Banco de Francia, Norman Montague y el gobernador de la Reserva Federal, Benjamin Strong, se reunieron en Nueva York y acordaron una nueva política de dinero barato para salvar a la asediada economía británica de las dolorosas consecuencias de un aumento de la tasa bancaria.

Desde agosto de 1927 hasta febrero de 1928, la tasa de descuento del Banco de la Reserva Federal de Nueva York fue de solo el 3,5%. El resultado fue un auge económico en Estados Unidos y Europa, ya que el flujo de crédito estadounidense respaldaba las monedas europeas y la inversión extranjera en Alemania superó los 2 mil millones de dólares en 1927-1928. En julio de 1928, la tasa bancaria de Nueva York se elevó al 5% para controlar una burbuja especulativa en el mercado bursátil. La oferta de capital de largo plazo a Europa se secó. En la primera mitad de 1919, el valor de los bonos europeos que flotaban en Nueva York era de apenas 101 millones de dólares, en comparación con los 449 millones de la primera mitad de 1928.

Hasta 1925, las políticas proteccionistas y crediticias estadounidenses mantuvieron el nivel de vida en Estados Unidos y en Europa aceptando oro por el pago de importaciones, y extendiendo créditos. Después del restablecimiento del patrón oro en Europa, esencialmente en Inglaterra, los Estados deudores solo podían soportar la presión sobre sus monedas porque las políticas inflacionarias de dinero barato de Estados Unidos facilitaron el enorme aumento de los préstamos externos a Europa. Cuando reversionaron las políticas inflacionarias estadounidenses, la presión financiera sobre los Estados deudores desencadenó la crisis mundial. A mediados de 1928, Estados Unidos y Francia poseían el 58% del oro monetario del mundo. Estados Unidos dejó de prestar al extranjero. No había oro ni nuevos créditos disponibles para financiar los déficits de pagos. Los Estados deudores entonces no tenían más alternativa que aumentar la exportación de bienes. Desde 1928-1929, Europa y los países exportadores de materias primas de ultramar inundaron los mercados mundiales de exportaciones casi a cualquier precio.<sup>8</sup> La tendencia universal a la caída de precios que se manifestó en 1929 fue el preludio de la crisis económica mundial. Luego llegaron la crisis crediticia de 1931, el declive del comercio mundial en 1932 y el desplome de las monedas en 1933. El desplazamiento geográfico

<sup>8</sup> Cordliffe, J. B. *World Economic Survey, 1931-1932*, p. 43, y en *Sinclair Economic Monthly*, 1932-1933, p. 171; Ohlin (1931, p. 211).

y el aplazamiento de los déficits económicos siguieron su curso. Aunque la inflación consiguió preservar la estructura social no podía salvar a la humanidad de un prolongado y doloroso proceso de ajuste económico.<sup>9</sup>

<sup>9</sup> El profesor J. B. Cordliffe, editor de los dos últimos Anuarios Económicos de la Liga de las Naciones dio apoyo a nuestra opinión en el último Anuario publicado de 1932-1933: "Las dificultades reales no se manifestaron mientras que las monedas de la mayoría de los Estados deudores eran independientes entre sí, las tasas de cambio eran flexibles y las deudas intergubernamentales no estaban reguladas. Pero cuando las monedas retornaron al patrón oro, las tasas de cambio eran fijas y los pagos de la deuda se negociaban oficialmente, aumentaron las tensiones de los mecanismos financieros internacionales recién reconstruidos. Durante algunos años, de 1925 a 1929, el servicio de la deuda se efectuó sin un ajuste radical de la economía nacional mediante grandes flujos de capital nuevo a los Estados deudores, principalmente desde Estados Unidos. Desde 1928, y continuando en 1929, los flujos de capital disminuyeron. Cuando aumentaron las presiones sobre los Estados deudores, los precios disminuyeron y los créditos se agotaron, las dificultades del ajuste internacional precipitaron el derrumbe de toda la estructura de pagos internacionales". *Sinclair Economic Monthly*, 1932-1933, p. 277.

## “El valor del idioma español en ciencia y tecnología”

### El valor del idioma español en ciencia y tecnología

#### *The Value of the Spanish Language in Science and Technology*

LUIS M. PLAZA, BEGOÑA GRANADO Y ESTHER GARCÍA-CARPINTERO

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**Resumen.** Se analiza el peso específico del español como idioma principal en las revistas científicas editadas en España y en los países latinoamericanos, así como a través de la producción científica mundial recogida en las principales bases de datos bibliográficas de cobertura internacional. El estudio pone de manifiesto la importancia del español como lengua de comunicación científica en determinados ámbitos disciplinares ligados por una parte a intereses socioeconómicos y culturales de los países de habla española, como es el caso de la medicina clínica, la genética y medio ambiente, por otra, a intereses

de ámbitos científicos propios de las ciencias sociales y de las humanidades, como es el caso de la economía regional, la literatura, la historia de los países iberoamericanos, etc. Este estudio pretende contribuir al mejor conocimiento y comprensión del valor real y potencial del español en el mundo científico, de cara a la adecuada utilización de este recurso para el desarrollo de nuestras sociedades, y su proyección cultural y económica a escala internacional.

**Palabras clave.** idioma español, investigación científica, Tecnología, Revistas científicas.

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otras lenguas, recogida tanto en revistas editadas en países de habla española como en revistas extranjeras de amplia proyección internacional. La expresión “producción científica” hace alusión al conjunto de artículos científicos y otras contribuciones publicadas en revistas científicas.

Fuentes de información. Para el análisis de revistas científicas editadas en España y en los países de América Latina, la obtención de datos se ha realizado mediante consulta al *Directorio Latino*, que es fruto de la cooperación de una red de instituciones científicas y académicas que de manera coordinada recogen y difunden información bibliográfica sobre las publicaciones científicas serias producidas en América Latina, Caribe, España y Portugal. El análisis de la producción científica en lengua española se ha llevado a cabo utilizando las bases de datos del CSIC y una serie de bases de datos bibliográficas de cobertura internacional.

La producción científica en Ciencias Experimentales se analiza, por una parte, a través de la base de datos ICYT, que cubre revistas sobre temáticas de interés territorial o regional español. Por otra parte, la producción científica de amplia proyección internacional se analiza a través de las bases de datos *Web of Science*, *Scopus* e *Inspec*.

El análisis de la producción científica en Ciencias de la Salud se lleva a cabo a partir de bases de datos *IBIS-Science Citation Index Español*, producida por Clarivate Analytics (en sus apartados de *Medicine*, *Pharmacology*, *Nursery*), *Scopus*, producida por Elsevier y *PubMed* (que incluye *Medline*), producida por el *US National Institute of Health*, las cuales permiten obtener una visión muy representativa del español en disciplinas médicas y sanitarias de proyección internacional, mientras que los datos obtenidos a través de la base de datos *ICIT (Índice Médico Español)*, producida conjuntamente por el CSIC y la Facultad de Medicina de la Universidad de Valencia, permiten obtener una visión complementaria y focalizada en la investigación de carácter clínico publicada en revistas españolas de alcance nacional.

El análisis de la producción científica en Disciplinas Tecnológicas se realiza a partir de las bases de datos del CSIC (*base de datos ICYT: Índice Español de Ciencia y Tecnología*) y de la base de datos *Inspec*, de cobertura internacional, producida por *The Institution of Engineering and Technology* del Reino Unido.

Para Ciencias Sociales se han utilizado el *IBIS-Social Science Citation Index*, *Scopus*, y la base de datos *IBIC (Índice Español de Ciencias Sociales y Humanidades)*, producida por el CSIC (Abejón Peña y otros).

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**Abstract:** We analyze the specific weight of the Spanish as a primary language in scientific journals published in Spain and Latin American countries, as well as through the global scientific output covered by the main bibliographic databases of international coverage. The study highlights the importance of the Spanish as a language of scientific communication in certain disciplinary areas linked on the one hand to socio-economic regional interests of Spanish-speaking countries, as it is the case of Clinical medicine, Genetic and Environment, and, on the other, to certain scientific fields of the Social

sciences and Humanities, as it is the case of the Regional economy, the Literature, the History of Ibero-American countries, etc. This study aims to contribute to the better knowledge and understanding of the real and potential value of the Spanish in the scientific world, with regard to the appropriate use of this resource for the development of our societies, and its cultural and economic projection at the international level.

**Keywords:** Spanish-Language Scientific Research, Technologies, Scientific Journals

#### INTRODUCCIÓN Y OBJETIVOS

La determinación del interés económico de la lengua española y su puesta en valor conlleva necesariamente el análisis del papel desempeñado por esta en todos aquellos sectores clave en el desarrollo socioeconómico de los países de habla española (Plaza, Plaza/Borjén). Los ámbitos de la ciencia y la tecnología, además de estar íntimamente interrelacionados, son en sí mismos un cruce de caminos donde los avances de la investigación científica y el desarrollo de las tecnologías constituyen el eje vertebral de la sociedad basada en el conocimiento, con las implicaciones que son evidentes en sectores estratégicos, como el industrial, sanitario, medioambiental y educativo, entre otros (IBIC).

Este estudio tiene por objetivo fundamental determinar el peso específico del español en la comunicación de los resultados de la investigación científica realizada en lengua española, a través de su presencia en el contexto científico internacional.

Se pretende que los resultados de este estudio contribuyan al análisis en profundidad del papel que desempeña la lengua española en distintos ámbitos disciplinares de la ciencia y la tecnología y que los resultados obtenidos permitan conocer las características cuantitativas y cualitativas más relevantes que definen el papel del español como lengua de comunicación científica y tecnológica (ICYT).

#### METODOLOGÍA

Este estudio conlleva, por una parte, un análisis de la producción de revistas científicas editadas en España y en países latinoamericanos (Abejón Gumbau/Russell), y por otra un análisis de la producción científica, en español y en

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Para el caso de las Humanidades se han utilizado las bases de datos *IBIS-Arts & Humanities Citation Index*, *Scopus* y la mencionada base de datos *IBIC*.

La metodología seguida conlleva la obtención y análisis de indicadores de producción científica correspondientes a artículos publicados en español y su comparación frente a la producción científica publicada en inglés y en otras lenguas.

El análisis de producción científica comprende el periodo 2005-2010, por lo que se consideran los artículos que han sido publicados en dicho intervalo de tiempo. Por otra parte, la información obtenida mediante consulta a *Latindex* corresponde a enero de 2014.

#### RESULTADOS

##### *La producción de revistas científicas editadas en España y en países latinoamericanos*

Al margen de las revistas de orientación principal (indexadas en ISI y SCOPUS), existe una importante producción científica en Iberoamérica que se comunica mediante otros canales y donde el idioma español tiene una gran importancia. *Latindex* es una fuente de información clave para dar cuenta de este fenómeno. Este directorio es fruto de un esfuerzo regional que recopila datos sobre revistas científicas en todos los ámbitos del conocimiento. Las revistas cubiertas por *Latindex* son evaluadas según una serie de criterios de calidad (33 para revistas impresas, 16 para revistas electrónicas). Según el número de criterios

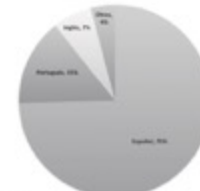


Figura 1. Distribución porcentual de las revistas en el Catálogo de *Latindex* según idioma de publicación

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que las publicaciones cumplen, se constituyen dos grupos de revistas. El Directorio, con 22 406 publicaciones, y el Catálogo, con 7377. De estas últimas, que cuentan con un control de calidad más riguroso, 6979 están actualmente vigentes. Sobre ese grupo, con datos obtenidos en enero de 2014, se ha realizado esta parte del estudio. Las revistas vigentes del Directorio cumplen, en promedio, con el 91 % de los criterios de calidad *Latindex*.

Un 75 % de las revistas cubiertas por *Latindex* se editan en español (5203 títulos) y un 15 % en portugués (1031 títulos). Un número significativo de revistas (459) se publica en inglés, lo que supone un 7 % del total (fig. 1).

Considerando el país de edición de las revistas, la mayor parte son brasileñas (1943), las españolas forman el segundo grupo (1878). A continuación aparecen las revistas editadas en México (727) y Argentina (524). Esta distribución resulta consistente con el tamaño relativo de sus sistemas científicos, medidos a través de otros indicadores. Estos cuatro países reúnen el 73 % de las revistas registradas (fig. 2).

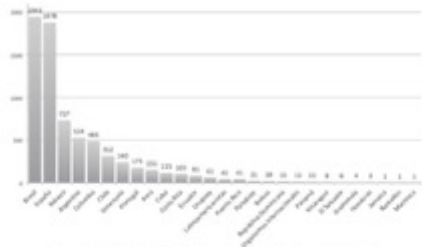


Figura 2. Distribución de las revistas del Catálogo de *Latindex* por país de edición

Dentro del Catálogo de *Latindex* existe una fuerte presencia de revistas de Ciencias Sociales (36 %) y de Humanidades (24 %). Luego aparecen las Ciencias Médicas (15 %). Las Ciencias Exactas y Naturales, mejor representadas

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en las bases de corriente principal, agrupan aquí solo el 11 % de las publicaciones. Las Ciencias Agrícolas un 4 % y las Ingenierías y Tecnologías el 3 % (fig. 3).

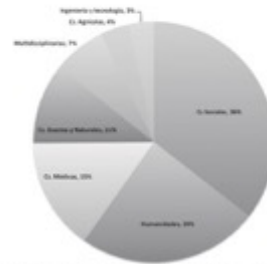


Figura 3. Distribución de las revistas del Catálogo de *Latindex* por disciplina científica

La presencia del idioma español distribuido por disciplinas científicas es homogénea, situándose ligeramente por encima del 75 % del total de las revistas de cada área temática. La excepción son las revistas multidisciplinares, donde solo el 67 % de las publicaciones se editan en español. En las Ciencias Sociales y Humanidades la publicación en inglés solo alcanza el 3 %. Esto pone en evidencia que estas disciplinas tienen canales diferentes de comunicación, en los que otros idiomas, como el portugués y el español, tienen un papel importante como transmisores de conocimiento científico en los distintos ámbitos regionales. Si existe un patrón diferenciado en las revistas editadas en inglés, que son significativamente más frecuentes en las Ciencias Experimentales. En las Ciencias de la Salud, las Ciencias Exactas y las Ciencias Naturales, las disciplinas Agrícolas y las Ingenierías y Tecnologías, la publicación en inglés alcanza «en promedio» el 15 % de las revistas.

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Es interesante observar cómo el incremento de la presencia del inglés en las Ciencias Experimentales va en detrimento de la publicación en portugués. El caso paradigmático es el de las Ciencias Exactas y Naturales, donde la presencia del portugués es de tan solo un 8 % cuando en el total de las revistas del Catálogo de *Latindex* es del 15 %. Sin embargo, la presencia del idioma español no se ve afectada por este leve incremento del uso del inglés como idioma de comunicación en estas revistas (fig. 4).

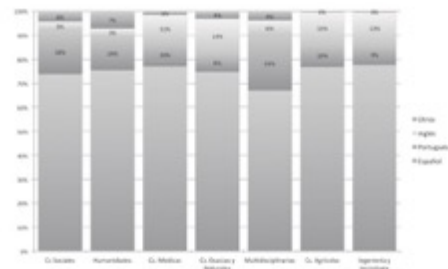


Figura 4. Distribución de las revistas del Catálogo de *Latindex* por idioma de publicación y disciplina

La distribución por países de las revistas editadas en inglés confirma este dato (fig. 5). Destaca el caso de Portugal, donde el 29 % de las revistas registradas en el Catálogo de *Latindex* editadas en ese país se publica en inglés. En Brasil el 16 % de las revistas que se editan (registradas en el Catálogo de *Latindex*) se publica en inglés.

En los países hispanoparlantes, en cambio, el porcentaje de revistas editadas en inglés es mucho menor. En España alcanza el 3,6 %, seguido de Chile con el 2,9 %. En el resto de los países, la proporción está en todos los casos por debajo del 2 %.

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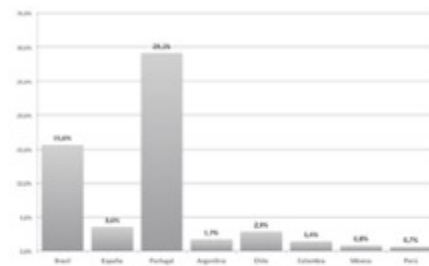


Figura 5. Porcentaje de las revistas del Catálogo de *Latindex* editadas en inglés en relación con el total de revistas de cada país

La producción científica en español: principales indicadores a escala nacional

Este apartado recoge los indicadores de producción científica recopilados en revistas españolas durante el periodo 2005 a 2010.

La producción científica en Ciencias Experimentales y Tecnologías durante el periodo analizado es de 31 714 documentos (fundamentalmente artículos), de los cuales 23 112 (72,8 %) han sido publicados en español, frente a 7620 (24 %) en inglés. En Ciencias Sociales y Humanidades, la producción científica en este mismo periodo es de 121 414 documentos, de los que 106 295 (87,5 %) han sido publicados en español, frente a 5896 (4,8 %) en inglés. En Medicina Clínica y otras disciplinas de interés sanitario, cubiertas por la base de datos ISI, la producción científica en el periodo objeto de estudio es de 35 484 documentos, de los que 33 804 (95,2 %) han sido publicados en español, frente a tan solo 1609 (4,5 %) publicados en inglés (fig. 6).

Un análisis del balance entre los documentos publicados en español e inglés a lo largo de estos años permite afirmar que, en Ciencias Experimentales, se ha ido incrementando de forma gradual el porcentaje de artículos en inglés,

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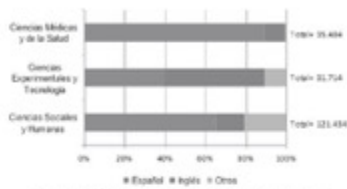


Figura 6. Producción científica en revistas españolas

mientras que el español ha ido disminuyendo proporcionalmente, aunque en la actualidad siga siendo la lengua más utilizada por los autores que publican en las revistas españolas. Este mismo hecho se está produciendo en el ámbito de las Ciencias Sociales y las Humanidades, aunque de forma mucho menos acusada (fig. 7).

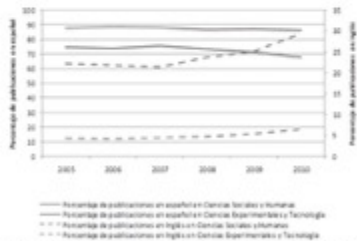


Figura 7. Evolución de la producción científica en Ciencias experimentales y Ciencias Sociales en español e inglés

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El análisis de la información representada en estas figuras pone de relieve varios hechos. En primer lugar, la acusada sobre-representación del español en el ámbito de la Medicina Clínica y Ciencias de la Salud. Los valores representados en la figura vienen a confirmar que este tipo de publicaciones están mayoritariamente dirigidas a médicos y personal sanitario ligado a la investigación y a la práctica clínica, entornos en los que el uso del inglés no está particularmente extendido.

En segundo lugar, la también esperada sobre-representación del español en las publicaciones correspondientes al ámbito de las Humanidades y las Ciencias Sociales. En casi todos estos ámbitos disciplinares, el uso del español como lengua de publicación ha venido siendo, y es así hoy en día, la pauta general entre los investigadores españoles. Solo muy recientemente, influenciado por una creciente internacionalización de la investigación en estas disciplinas y por la creciente presión que ejercen los mecanismos de evaluación de la actividad investigadora, se empieza a hacer viable un cambio de tendencia hacia la publicación en inglés. El balance entre español e inglés en algunas disciplinas de las Ciencias Sociales es mucho más equilibrado, e incluso decididamente orientado al uso del inglés, como en los casos de la Economía, la Sociología y los Estudios cibernéticos y bibliométricos.

La producción científica en español: principales indicadores a escala internacional: análisis a través de la Web of Science

A continuación, se muestran los resultados del análisis de presencia del español en la producción científica mundial recogidos en las principales bases de datos bibliográficas internacionales accesibles a través de la *Web of Science (wos)*: *Science Citation Index Expanded (sci-Expanded)*, *Social Science Citation Index (ssci)* y *Arts and Humanities Citation Index (ahci)*. Como se resume en la tabla, el español es una lengua de muy limitada presencia en estas bases de datos, con valores que, en términos porcentuales, van desde el 0,24 % de la producción científica en disciplinas experimentales, al 2,4 % de la producción científica en Artes y Humanidades. Considerando que estos valores se han obtenido a partir de una colección compuesta por cerca de 9 millones de registros bibliográficos, cabe concluir que el español es una lengua de muy limitada proyección entre los denominados "revistas de corriente principal", que son las que componen los fondos documentales de estas bases de datos.

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Base de datos	DOCUMENTOS EN ESPAÑOL	DOCUMENTOS EN INGLÉS	DOCUMENTOS TOTALES
sci-Expanded	7.035.877 (96,44%)	17.727 (0,24%)	7.296.077
ssci	1.098.872 (94,00%)	11.345 (1,00%)	1.168.420
ahci	48.992 (72,20%)	18.424 (2,40%)	678.704
Total wos	10.289.863	47.367	10.838.268

Tabla 1. Número de documentos por base de datos de la *Web of Science*

Science Citation Index Expanded (SCI)

La base de datos *Science Citation Index Expanded* indiza 8300 revistas de 150 disciplinas científicas. Se ha analizado el idioma de los 7.296.077 documentos recogidos durante el periodo 2005-2010. El 97 % de estos documentos están publicados en inglés (fig. 8). El resto de los idiomas identificados representa un 3,6 % de los documentos, siendo el alemán el idioma más utilizado después del inglés con un porcentaje inferior al 1 %. El español es el quinto idioma más utilizado lo que supone un 0,24 % del total de las publicaciones recogidas en el periodo analizado.

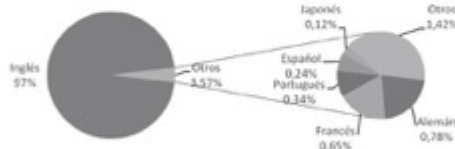


Figura 8. Idiomas de publicación en *Science Citation Index Expanded*. Periodo 2005-2010

El porcentaje de publicaciones en español en la base de datos *SCI* muestra un comportamiento irregular, con una primera etapa de crecimiento entre 2006 y el 2008, seguida por otra etapa de decrecimiento durante el periodo 2008-2010 (fig. 9). Sin embargo, la evolución del porcentaje de publicaciones en inglés muestra una clara tendencia negativa a lo largo de todo el periodo (fig. 10).

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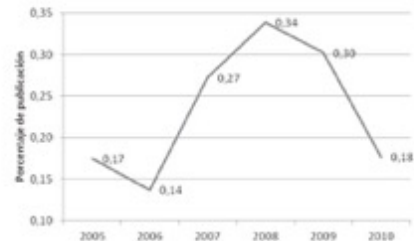


Figura 9. Evolución del porcentaje de publicaciones en español recogidas en *Science Citation Index Expanded*. Periodo 2005-2010

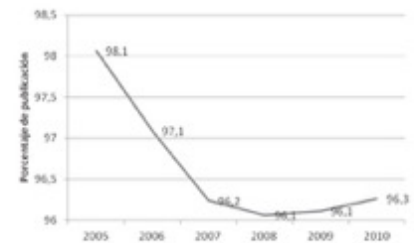


Figura 10. Evolución en el porcentaje de publicaciones en inglés recogidas en *Science Citation Index Expanded*. Periodo 2005-2010

El área temática con más publicaciones en español es la disciplina de Medicina Interna, que representa un 19 % de todas las publicaciones en español recogidas en el *SCI* en este periodo; representa un 1,7 % del total de las publicaciones en esta disciplina. La categoría donde el español alcanza un mayor por-

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centaje de representación es Música, con un 2,87 % del total de documentos recogidos en SCI. Sin embargo, el área de Música solo representa un 0,078 % de los documentos en español recogidos en SCI.

Social Science Citation Index (SSCI)

La base de datos *Social Science Citation Index* indita 4500 revistas de 50 disciplinas de las Ciencias Sociales. Durante el periodo 2005-2010 se indizaron 1 168 420 documentos, siendo el inglés el idioma predominante, con un 94 % de las publicaciones. El resto de idiomas representan un 6 % de los documentos. El alemán es el segundo idioma más utilizado, con un 1,9 % de los documentos. En esta categoría el español adquiere un mayor peso pasando a ser el tercer idioma, con un 1,0 % de todos los documentos (fig. 11).

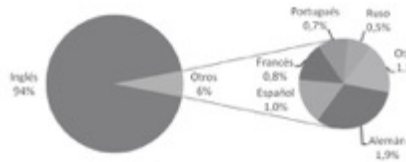


Figura 11. Idiomas de publicación en *Social Science Citation Index* durante el periodo 2005-2010

La evolución del español en los trabajos publicados en las revistas cubiertas por la base de datos SSCI es muy parecida a la observada en la base de datos SCI, con un periodo de crecimiento hasta el 2008. A partir de esa fecha, se observa un periodo de decrecimiento. En el caso del idioma inglés se observa una tendencia de decrecimiento en el número de publicaciones hasta 2010, cuando se observa un aumento en el porcentaje de publicaciones en inglés (figs. 12 y 13).

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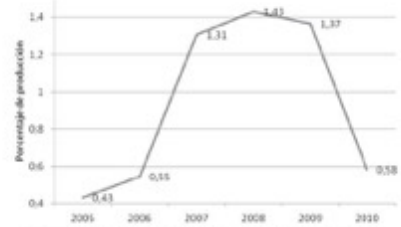


Figura 12. Evolución del porcentaje de publicaciones en español recogidas en *Social Science Citation Index*. Periodo 2005-2010

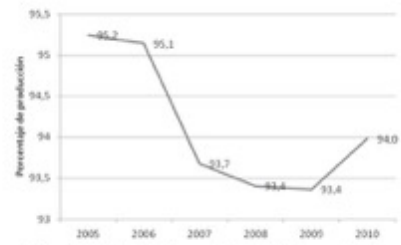


Figura 13. Evolución del porcentaje de publicaciones en inglés recogidas en *Social Science Citation Index*. Periodo 2005-2010

La disciplina con más publicaciones en español es la Psicología y representa un 16 % de todas las publicaciones en español recogidas en esta base de datos durante el periodo analizado.

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Arts and Humanities Citation Index

En la base de datos *Arts & Humanities Citation Index* se indizan 2500 revistas del área del Arte y las Humanidades. El total de documentos recogidos en el periodo 2005-2010 es de 678 704. En esta base de datos el inglés pierde representación comparado con los datos del SCI y SSCI a favor del francés, que pasa a ser el segundo idioma con mayor representación con un 11 % de los documentos. El español ocupa la quinta posición con un 2 % de los documentos (fig. 14).



Figura 14. Idiomas de publicación en *Arts and Humanities Citation Index*. Periodo 2005-2010

La evolución del español durante el periodo estudiado muestra un aumento en el número de publicaciones hasta 2010, cuando decrece drásticamente. El inglés muestra dos etapas diferenciadas, una de decrecimiento durante el periodo 2005-2007 y otra de crecimiento desde el 2008 hasta el final del periodo (figs. 15 y 16). La disciplina con más publicaciones en español es la Literatura, que representa un 36,2 % de todas las publicaciones en español recogidas en esta base de datos en el periodo analizado.

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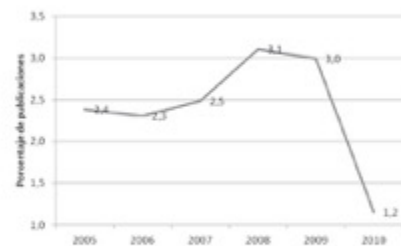


Figura 15. Evolución del porcentaje de publicaciones en español recogidas en *Arts and Humanities Citation Index*. Periodo 2005-2010

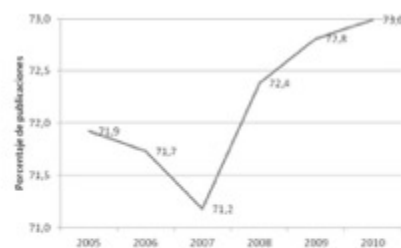


Figura 16. Evolución del porcentaje de publicaciones en inglés recogidas en *Arts and Humanities Citation Index*. Periodo 2005-2010

*La producción científica en español: principales indicadores a escala internacional: análisis a través de Scopus*

Scopus es una base de datos internacional que recoge 18 500 revistas. Está dividida en cuatro grandes áreas: Ciencias de la Vida, Ciencias de la Salud, Ciencias Físicas y Ciencias Sociales. A su vez, estas áreas se dividen en distintas disciplinas. Esta base de datos está más centrada en publicaciones de origen europeo frente a *Web of Science* más orientada hacia publicaciones de EE.UU. y Reino Unido. Esto hace que el inglés, aunque sigue siendo el idioma más utilizado en las publicaciones recogidas en Scopus durante el periodo 2005-2010, tenga un menor peso a favor de otros idiomas como el alemán, el francés e incluso el español, que llega a superar hasta en más de un 400 % las publicaciones en español recogidas en *WOS*. Sin embargo, en el área de Ciencias Físicas sigue siendo prácticamente el único idioma de publicación, con más de un 95 % de las publicaciones. El mayor número de publicaciones en español recogidas en Scopus corresponde al área de Ciencias de la Salud (tabla 2), que supone un 62 % de las publicaciones en español.

Área	PUBLICACIONES EN INGLÉS	PUBLICACIONES EN ESPAÑOL	NÚMERO TOTAL DE PUBLICACIONES
Ciencias de la Salud	1 839 808 (79,0%)	302 216 (1,3%)	23 641 055
Ciencias de la Vida	22 107 762 (80,0%)	33 421,3 (1,1%)	27 622 263
Ciencias Físicas	5 566 707 (92,5%)	14 875 (0,3%)	6 016 765
Ciencias Sociales	1 350 808 (87,2%)	25 032 (1,6%)	1 539 024
<b>Total</b>	<b>12 363 181 (88,6%)</b>	<b>216 106 (1,5%)</b>	<b>13 948 907</b>

Tabla 2. Número de documentos por áreas de la base de datos Scopus

El segundo idioma más utilizado, después del inglés, es el alemán, que representa más del 5 % de las publicaciones en la categoría de Ciencias de la Salud y de la Vida y un 1 % en Ciencias Físicas (figs. 17, 18 y 19). El francés es el segundo idioma más utilizado en Ciencias Sociales, donde representa un 3,8 % de las publicaciones recogidas en esta área, y es el tercero más utilizado en el resto de las tres áreas (fig. 20).

El peso específico del español, con respecto al inglés, en las publicaciones recogidas en Scopus durante el periodo 2005-2010 es muy pequeño. En ninguna de las cuatro áreas de esta base de datos llega a superar el 1,6 % y no

supera la quinta posición en Ciencias de la Salud, Ciencias de la Vida y Ciencias Físicas. En el caso de Ciencias Sociales, el español alcanza su mayor representación, con un 1,6 % de las publicaciones totales en esta área, y ocupa la cuarta posición por detrás del inglés, francés y alemán.



Figura 17. Idiomas representados en el área de Ciencias de la Salud de la base de datos Scopus. Periodo 2005-2010

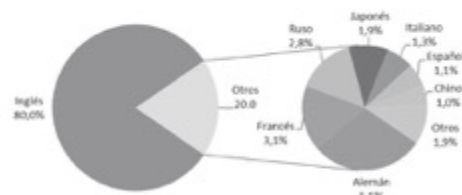


Figura 18. Idiomas representados en el área de Ciencias de la Vida de la base de datos Scopus. Periodo 2005-2010

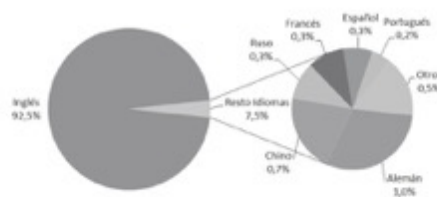


Figura 19. Idiomas representados en el área de Ciencias Físicas de la base de datos Scopus. Periodo 2005-2010

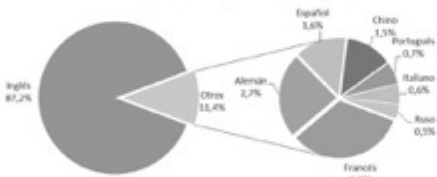


Figura 20. Idiomas representados en el área de Ciencias Sociales de la base de datos Scopus. Periodo 2005-2010

A lo largo del periodo estudiado, las publicaciones en español relacionadas con Ciencias Sociales experimentaron un aumento hasta 2009, pasando de representar un 1,3 % del total de publicaciones en esta área en 2005 hasta un 2 % en 2009 (fig. 21). Las publicaciones en español en las áreas de Ciencias de la Salud y Ciencias de la Vida permanecen constantes a lo largo de todo el periodo estudiado. Cabe destacar la escasa representación del español en el área de Ciencias Físicas, donde no llega a superar el 0,3 % de todas las publicaciones mundiales durante el periodo 2005-2010.

En el caso de la evolución de las publicaciones en inglés, se observa un ligero aumento en todas las áreas (fig. 22). El peso específico del inglés en el área de Ciencias de la Vida es muy alto, con una media anual del 92,5 %.

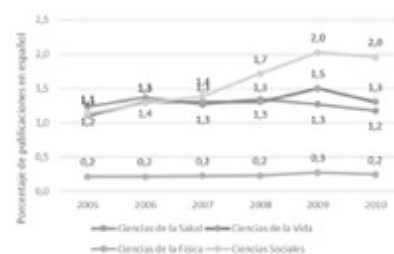


Figura 21. Evolución de las publicaciones en español en las cuatro grandes áreas de Scopus. Periodo 2005-2010

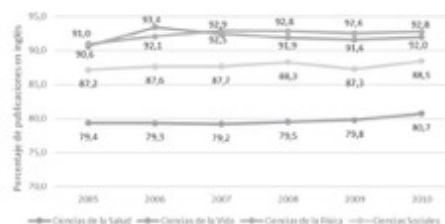


Figura 22. Evolución de las publicaciones en inglés en las cuatro grandes áreas de Scopus. Periodo 2005-2010

La categoría que representa el mayor porcentaje de publicaciones en español es Medicina. Está recogida en dos distintos de Scopus: Ciencias de la Vida y Ciencias de la Salud. En Ciencias de la Vida esta última representa un 50,4 %

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de las publicaciones en español y un 0,04 % del total de publicaciones mundiales en esta área. En el área de Ciencias de la Salud, Medicina representa un 81,9 % de las publicaciones en español y un 0,7 % del total de publicaciones en esta categoría. En el área de Ciencias Físicas la de mayor porcentaje de publicaciones en español es Ingeniería con un 20,4 % de las publicaciones, que representa un 1,4 % del total de publicaciones en esta categoría.

En el ámbito de las Ciencias Sociales, la categoría mejor representada es la denominada Ciencia Social, con un 36,6 % de las publicaciones en español y un 1,3 % de las publicaciones mundiales.

La producción científica en español: principales indicadores a escala internacional: análisis a través de Inspec

Inspec es una base de datos que recoge publicaciones especializadas en Física, Electrónica, Ingeniería, Informática, Control de producción, Tecnologías de la Información y con una cobertura especial de áreas como Ciencias de los Materiales, Nanotecnología, Oceanografía, Ingeniería Nuclear, Geofísica, Ingeniería Biomédica y Biofísica. Esta base de datos recoge más de 11 millones de registros bibliográficos, incluidos en 5000 revistas científicas y técnicas.

El idioma más utilizado en trabajos científicos recogidos en esta base de datos es el inglés, que representa el 89,7 % de las publicaciones (tabla 3). Hay que destacar la importancia que en esta base de datos toma el chino frente a lo observado en otras bases de datos multidisciplinares, ya que se convierte en el segundo idioma más utilizado, llegando a representar un 8,2 % de las publicaciones en revistas cubiertas por Inspec durante el periodo 2005-2010 (fig. 23). El español representa un 0,06 % de las publicaciones, dato muy inferior a lo observado en las otras bases de datos multidisciplinares (fig. 24). El área más importante es Informática, que representa el 52 % de las publicaciones en español en Inspec y un 0,09 % de las publicaciones mundiales en esta categoría.

IDIOMA DE PUBLICACIÓN	NÚMERO DE PUBLICACIONES
Inglés	3 168 375 (89,70%)
Español	2069 (0,06%)
Publicaciones totales en Inspec	3 529 390

Tabla 3. Porcentaje de publicación en idioma inglés y español en Inspec

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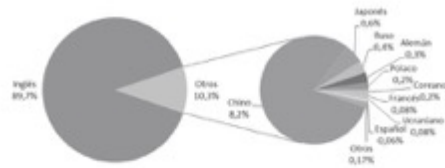


Figura 23. Idiomas de publicación de los trabajos científicos recogidos en Inspec. Periodo 2005-2010

La evolución del uso del inglés como idioma de publicación de artículos científicos en Inspec muestra una tendencia decreciente a lo largo de todo el periodo estudiado, pasando de un 92,5 % en 2005 a un 89 % de los artículos en 2010 (fig. 24). El español muestra una evolución positiva; sin embargo, no llega a superar el 1 % de todas las publicaciones recogidas en esta base de datos.

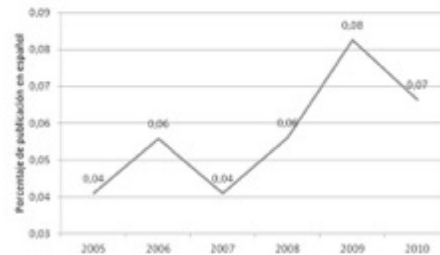


Figura 24. Evolución del porcentaje de publicaciones en español recogidas en Inspec. Periodo 2005-2010

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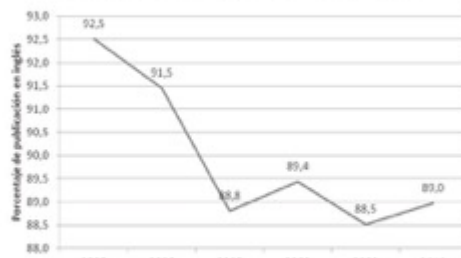


Figura 25. Evolución del porcentaje de publicaciones en inglés recogidas en Inspec. Periodo 2005-2010

La producción científica en español: principales indicadores a escala internacional: análisis a través de PubMed

PubMed es una base de datos de registros bibliográficos especializada en literatura biomédica de áreas como Medicina, Enfermería, Odontología, Veterinaria o Ciencias Preclínicas. Durante el periodo 2005-2010, esta base de datos ha recogido 4 821 896 publicaciones.

IDIOMA DE PUBLICACIÓN	NÚMERO DE PUBLICACIONES
Inglés	4 442 849 (92,10%)
Español	2069 (0,05%)
Publicaciones totales en PubMed	4 821 896

Tabla 4. Número de publicaciones en PubMed

El idioma de publicación preferente es el inglés, con un 92,1 % de las publicaciones recogidas en PubMed, con una evolución positiva durante el periodo 2005-2010. El peso del español es muy pequeño, por debajo del 1 % del total de publicaciones, pero muy parecido al de otros idiomas como el alemán o el francés (fig. 26).

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La evolución del número de publicaciones es irregular, con un descenso del porcentaje en 2006 hasta el 0,6 % de publicaciones en español. Desde 2006 hasta 2008, este porcentaje permanece constante; en 2009, aumenta hasta el 1 % (fig. 27). La disciplina con mayor número de publicaciones en español es la relacionada con el Cáncer, que representa el 27,6 % de todas las publicaciones en español durante el periodo analizado. Frente a esta evolución del español, el inglés muestra un crecimiento muy regular a lo largo del periodo considerado (fig. 28).

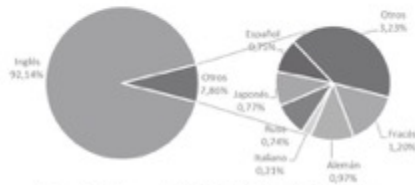


Figura 26. Idiomas de publicación de los trabajos científicos recogidos en PubMed. Periodo 2005-2010

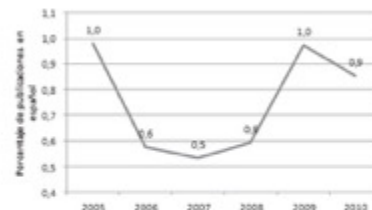


Figura 27. Evolución del porcentaje de publicaciones recogidas en PubMed en español. Periodo 2005-2010



Figura 28. Evolución del porcentaje de publicaciones recogidas en PubMed en inglés. Periodo 2005-2010

#### CONCLUSIONES

Los indicadores de producción científica obtenidos en este estudio han permitido cuantificar hasta qué punto el inglés se ha extendido y consolidado como idioma científico a escala mundial. Sin embargo, y considerando el ámbito de las publicaciones como el elemento más representativo de la importancia de las lenguas en la comunidad científica, cabe señalar algunos aspectos sobre el papel del español en la ciencia.

En primer lugar, conviene señalar que, utilizando el sistema público español de I+D como área de análisis, existe un sólido sector editorial científico en el que abunda la edición y distribución de revistas especializadas de notable calidad (Giménez Toledo). Estas revistas, mayoritariamente dirigidas a investigadores españoles, están fuertemente orientadas a servir de vehículos de comunicación en disciplinas científicas ligadas a intereses territoriales o locales, como es el caso de la investigación sobre aspectos biológicos o geológicos de nuestro territorio (Rey/Martin/Plaza), así como a otras disciplinas vinculadas a actividades e intereses socioeconómicos, como es el caso de las publicaciones de carácter tecnológico. Prácticamente todas las revistas que responden a este tipo de planteamientos son editadas en lengua española, al menos en gran parte (Plaza y otros 2009).

Al margen de la dimensión local antes aludida y ampliando la perspectiva de análisis a una escala global, conviene destacar que el español es, en cien-

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ta medida, un idioma especialmente importante en algunos ámbitos disciplinares incluidos entre las Ciencias Sociales, y más especialmente en algunas disciplinas y subdisciplinas propias de las Humanidades. Entre estas últimas, la Literatura es una disciplina en la que se contabiliza un buen número de contribuciones en español, entendiendo que es precisamente la lengua española y todo lo que desde un punto de vista científico añade a la producción literaria en español lo que hace especialmente relevante a nuestro idioma. Por otra parte, los estudios lingüísticos sobre el español también tienen una amplia presencia entre las revistas editadas en lengua española.

Entre los estudios de carácter histórico, social y económico, que comienzan al ámbito geopolítico y cultural latinoamericano, el español, como cabe suponer, tiene un valor muy representativo como lengua vehicular, si bien este entorno es multidisciplinar y su identificación y valoración cuantitativa implicaría un análisis específico que desborda los límites establecidos para este estudio.

En cualquier caso, la importancia de los estudios europeos sobre América Latina se ve reflejada en la existencia de diversas redes de investigación, así como en redes de información científica que, como es el caso de REDAT (Red Europea de Información y Documentación sobre América Latina), tiene como objetivo dar seguimiento a la investigación sobre los sistemas de Información en Ciencias Sociales y Humanas sobre América Latina en Europa. A nivel latinoamericano también existen iniciativas de gran importancia para la difusión de la producción científica regional, publicada principalmente en idioma español. Un ejemplo es *Latindex*, cuyos datos se analizaron en este artículo. Otro ejemplo es *SciELO*, una biblioteca electrónica que surgió como iniciativa de FAPESP y BRFME en Brasil y que permite la publicación electrónica de ediciones completas de revistas científicas. Hoy en día cuenta con más de mil revistas a texto completo y de acceso abierto, procedentes de quince países iberoamericanos.

El español también tiene una fuerte presencia en algunas disciplinas de carácter experimental, fundamentalmente en el ámbito de la investigación en Ciencias de la Salud. En este contexto, la medicina clínica es, para los intereses científicos de los países iberoamericanos, un ámbito en el que, además de contar con revistas editadas en español, la información va dirigida a unos colectivos especializados en los que esta es la lengua de trabajo habitual. En este contexto, hay una serie de subdisciplinas en las que, a escala internacional, el español es muy relevante, como es el caso de la Medicina General e Interna,

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la Ética Médica, la Urología y Nefrología, la investigación sobre el sistema respiratorio, la Nutrición, la Dietética y la Psoriasis.

Por otra parte, y en este mismo contexto de las Ciencias Experimentales, el español tiene una significativa presencia en disciplinas tales como Paleontología y Micología. A caballo entre las Ciencias Experimentales y las Ciencias Sociales, la Arqueología, por cuanto corresponde a la investigación en Iberoamérica, es una disciplina con un significativo número de artículos en español.

En el ámbito de las Tecnologías, y a escala internacional, destaca la producción científica en tecnologías de la Construcción y Robótica.

Superando el concepto de producción científica (entendido como conjunto de trabajos publicados en revistas científicas), el peso del español en ciencia es mucho más importante de lo que en una primera lectura se deriva de los indicadores obtenidos en este estudio (Plaza y otros 1999 y 2013). Existen ámbitos de actividad donde el uso del español es determinante, como son las actividades docentes, la divulgación de la ciencia y el intercambio de ideas y conocimientos entre investigadores de países de habla española. De hecho, la formación de los investigadores en estos países, tanto en su etapa universitaria como en etapas posteriores a la realización de estudios de doctorado, se realiza en gran medida usando el español como lengua de trabajo. La labor diaria en el laboratorio o en el centro de investigación, así como la participación en congresos, seminarios y en general en reuniones científicas nacionales celebradas en países de lengua española se realizan mayoritariamente en este idioma.

Junto a la comunicación en ciencia, independientemente de la comunidad profesional a la que va dirigida la información, no conviene olvidar el importantísimo papel que también juega nuestra lengua en la transmisión social de conocimientos y aplicaciones de las tecnologías. Fundamentalmente de aquellas cuyo desarrollo está fuertemente ligado a los avances de la investigación científica.

A todo lo anterior, hay que añadir el enorme interés que, para la comunidad de habla española, tiene la divulgación de la ciencia y la tecnología a través de revistas divulgativas y otros medios de comunicación. La transmisión de conocimientos científicos altamente especializados y su conversión en un lenguaje comprensible para el lector medio y para cualquier tipo de público no familiarizado con los lenguajes de la ciencia juega un papel fundamental en la captación del interés por la investigación científica y por un mejor conocimiento y aceptación social de las aplicaciones de la ciencia en prácticamente todos los ámbitos de actividad.

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El correcto uso del español en directrices, normas, legislación, informes técnicos, económicos y políticos, patentes y otros documentos de interés en ciencia y tecnología es esencial por parte de una adecuada información por parte de aquellos agentes que contribuyen activamente en las distintas actividades inherentes a los sistemas de investigación y desarrollo, tanto en su vertiente pública como privada.

Teniendo en cuenta lo anteriormente expuesto en este apartado, resulta obligado destacar el importante papel de los especialistas que trabajan en el ámbito de la terminología científica en español, ya que este idioma presenta serias carencias en el ámbito de la terminología científica, carencias que en parte se deben a la utilización generalizada del inglés para los que, en su mayoría, no existe una correcta traducción al español. El uso de términos y expresiones científicas en inglés viene siendo habitual en las diferentes formas de transmisión del conocimiento utilizadas por investigadores españoles e iberoamericanos. Siendo el español una lengua hablada por unos 450 millones de personas, es del máximo interés disponer de una terminología científica en español, actualizada y con sus correspondientes equivalencias en lengua inglesa (Vera Torres).

Por último, es de capital importancia reconocer el muy importante papel que juegan los especialistas en información y documentación científica en actividades tales como la puesta a punto y distribución de productos y servicios documentales donde el uso del español es un factor común y de interés específico para la comunidad investigadora de habla española y para otros demandantes de información científica y tecnológica en español. Entre estos productos y servicios, que en gran medida tienen una significativa variable de mercado, destacan las bibliotecas, las bases de datos y los repositorios de bibliografía y documentación científica, las redes *sof* y sus correspondientes contenidos en lengua española, los herramientas informáticas, los tesauros, vocabularios, índices y otros lenguajes documentales.

Como se ha señalado antes, pese al limitado peso del español en la arena científica internacional, son muchas las actividades científicas que se vehiculan en lengua española. Su interés económico trasciende al valor que pueda estimarse para las operaciones económicas ligadas a las tareas de investigación científica en España y países hispanoamericanos: adquisición y mantenimiento de infraestructuras, formación de nuevos investigadores, costes de personal científico, financiación de proyectos, redes y centros, etc. La investigación científica y el desarrollo de nuevas tecnologías son, si no los únicos, los prin-

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cípules activos con que se cuenta para el futuro. Las sociedades basadas en el conocimiento científico deben aprovecharse de este en todas sus posibilidades y formas de expresión. La lengua en ciencia, y en particular el español, pese a su dimensión transversal, no puede dejar de ser percibida como una variable social y económica de primer orden.

El objetivo final que ha servido de guía para este estudio ha sido el de contribuir, aunque sea a una escala limitada, al mejor conocimiento y comprensión del valor real y potencial del español en el mundo científico, para la adecuada utilización de este recurso para el desarrollo de nuestras sociedades, la correcta explotación de los recursos naturales y culturales y la conveniente protección de nuestro entorno.

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