THE RECEPTION OF THE ANGLO-SAXON METHODS OF SCIENTIFIC JOURNALISM IN THE PERIPHERY: A CASE STUDY IN SPAIN

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ABSTRACT

Scientific journalism is a fundamental tool to guarantee freedom and democracy in a knowledge-based society like this one we live in nowadays. This paper tries to reason the causes and consequences of the phenomenon of the globalisation of scientific journalism in the world, which is every day more and more spread. From the Second World War the Anglo-Saxon model has been the dominant paradigm in the popularisation of sciences and the Anglo-Saxon strategies and methods have caught on all the continents. One of the best examples in continental Europe of this globalising tendency is the journalist of the main Spanish newspaper *El País* Javier Sampedro, whose work is strongly marked by Anglo-Saxon influences. This paper is based on my PhD thesis. It comprises a study of the main schools of scientific popularisation and an analysis of 532 texts of this Spanish journalist.

KEYWORDS: Popularisation of science / Globalisation / Scientific journalism

1. INTRODUCTION

In the complex knowledge-based society we live in nowadays, scientific journalism is an essential tool to guarantee freedom and democracy through an adequate flux of scientific information delivered from specialised circles to the general public. From the second half of the 20th century on, the Anglo-Saxon model has been the main paradigm in the popularisation of sciences. Thus, Anglo-Saxon strategies and popularising methods have penetrated in all continents with great intensity. A good example of this globalising tendency in continental Europe is a journalist from the reference Spanish journal *El País*, Javier Sampedro, whose works are full of Anglo-Saxon influences. This report tries to demonstrate how this journalist from Madrid introduced in a peripheral country like Spain a way to popularise science that connects with the best Anglo-Saxon tradition in this subject.

2. METHODOLOGY AND GOALS

The main goal of this research is to determine Anglo-Saxon influences in the popularising work of the journalist from the Spanish journal *El País*, Javier Sampedro. This goal can contribute to verify the hypothesis affirming the existence of a paradigmatic and dominant Anglo-Saxon form of popularisation which has a range of action more and more global. This powerful school is articulated around two main points: the United States, the main one, and the United Kingdom. In this context, Spain has a peripheral role, worsened by a scarce tradition in fundamental science and science popularisation.

From a methodological point of view, this investigation is a case study corresponding to an analysis of the reception of methods from the Anglo-Saxon school in Spanish scientific journalists at the turn of the 20th century. This work places itself in the stream of social constructivism, basically in its reception paradigm.

Methodology was developed in the following stages: (1) Javier Sampedro's journalist works were catalogued and a corpus of 532 texts was selected as a main work sample; (2) all main characteristics of Sampedro's works were extracted from the study of these texts; and (3) a more reduced sample of 25 texts was selected, these leading to 25 deep interviews to Javier Sampedro. In points (2) and (3) from the methodology, special remarks have been made in the comparison of popularising techniques from reference Anglo-Saxon writers of the 20th century. The main schools of scientific popularisation in the

world have been studied and characterised to carry out this comparison[1], with special attention to the Anglo-Saxon of 19th and 20th centuries[2].

3. JAVIER SAMPEDRO: THE DOCTOR IN MOLECULAR BIOLOGY THAT PUBLISHED IN *NATURE*

The life of *El País*' journalist Javier Sampedro Pleite (Madrid, 1960) has developed between sciences and humanities. Sampedro has devoted a decade (1983-1993) to professional scientific investigation and another decade (from 1993 to nowadays) to journalism.

Degree in Biology (speciality in Molecular Biology) by the Universidad Autónoma de Madrid in 1983, Sampedro did his doctorate thesis in Marta Izquierdo's laboratory, from the department of Molecular Biology of the same university. After taking his doctor's degree in 1988, he joined as a post doctoral in Ginés Morata laboratory, at the Centro de Biología Molecular Severo Ochoa, in Madrid. In this stage he published several scientific articles in the most important research magazines of the world, as *Nature*.[3]

In January 1991, Sampedro got a post doctoral grant from the European Molecular Biology Organization (EMBO) to work at the laboratory of Molecular Biology from the Medical Research Council, in Cambridge (United Kingdom), where he stayed until December 1993. This laboratory, directed by Peter Lawrence, is considered the "Mecca" of modern biology, where Francis Crick, the codiscoverer of the double helix structure of DNA (deoxyribonucleic acid) used to work.

When he returned to Spain, Javier Sampedro took a master degree in journalism organised by *El País* and the Universidad Autónoma de Madrid. From 1995, he writes for *El País*. Sampedro has collaborated in different sections of the journal: economy, home news pages, local news pages (Madrid), local news pages (Sevilla) and, from 1998, society news.

In September 2002, he published his first book, *Deconstructing Darwin*[4], a documented and fluent essay about some of the most current topics of the research in molecular biology and evolution. This work constitutes a revision of Darwinism from the latest findings of genetics.

Javier Sampedro's second book appeared in September 2004, titled *What do flies dream of? (Science without trauma in 62 pills)*[5]. The work is a compilation of 62 texts Sampedro had previously published in the "Revista de Agosto" from *El País* journal, in the summers of 2002 and 2003. These texts, corresponding to his daily column publish in August in «*Ciencia recreativa*» (recreational science), are inspired in recent capital findings and do not require previous knowledge from the reader to understand them.

The whole journalistic work of Javier Sampedro is found in *El País*, reference journal in Spain and the most distributed among the general information ones. Altogether, 532 articles about scientific topics were signed by this author between January the 1st 1998 and August the 31st 2003, when he finished studying.

Most of Sampedro's popularizing texts appeared in the society news pages, whether in ordinary pages or in «Health» or «Future» pages, these last being the names of the two science supplements of the journal that appear a specific day of the week respectively at the end of the society news pages. Exceptionally, some of his texts appeared in the back cover of the journal, in the «Babelia» supplement or in the Sunday magazine, «Domingo».[6] Apart from that, 62 texts of the corpus were published in another supplement of

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[1] There are interesting works comparing Spanish press and other countries' in terms of scientific journalism: see Fernández Muerza, 2004.

[2] The work is based on a part of my own doctoral thesis, still in progress, directed by journalism professor Josep Maria Casasús, from the Universitat Pompeu Fabra.

[3] One of the main research articles by Sampedro is "Unrestricted expression of the Drosophila gene patched allows a normal segment polarity". Sampedro J, Guerrero I. *Nature,* 1991 Sep 12 353:6340 187-90.

[4] *Deconstruyendo a Darwin* (Editorial Crítica, colección Drakontos).

[5] *¿Con qué sueñan las moscas? (Ciencia sin traumas en 62 píldoras)* (Editorial Aguilar).

[6] Sampedro's texts in the Sunday magazine *El País Semanal* are not included in the corpus of the work, as

the journal, «Revista de Agosto» (August magazine). This supplement is published every August and is devoted to «lighter summer topics», as society news, love stories news, crossword, readings, travels, amusements... "Revista de Agosto" is very important when studying the journalistic work of scientific popularisation done by Javier Sampedro, as his daily column "Ciencia recreativa" appeared there from August the 1st to the 31st 2002 and 2003. The group of columns can be considered a unity deserving a special treatment in relation to the rest of his work.

Given his formation, biology is the main topic of Javier Sampedro's popularising writings. We should here understand biology in a wide and interdisciplinary sense, given that this journalist's work is constantly connected to border subjects like biochemistry or medicine. In particular, genetics, this great field of scientific popularisation at the turn of century, and all the aspects deriving from it, were the main topic of his journalistic work from 1998 to August 2003.

Sampedro presented to *El País*' readers the last news in molecular biology and promptly reported the main basic and applied researches in the world. A second topic, less related to the present time but still in the biology field, is evolution. The interest in evolution aspects, mainly in zoology, is basically «due to personal factors», as he assures. Neurosciences constitute the third great field studied in the texts by this journalist. From different perspectives, they undertake news and studies about brain and language.

More related to the everyday of information, medicine in broad sense constitutes a fourth topic usually appearing in Sampedro's work. Research in cancer, AIDS, and cardiovascular diseases, that is, the three great challenges of medicine nowadays, have been the basic axis of this line of popularisation.

Style and innovations

Javier Sampedro's style is founded in four main pillars: clarity, creativity, grace and audacity.

Sampedro writes in a diaphanous and understandable way. His journalistic prose is rhythmical, nimble and dynamic: discourse flows vividly from paragraph to paragraph. Clarity is obtained by using easy words, explaining from the very beginning every technical term and concept, assuming no previous knowledge from the reader.

The research demonstrated that Javier Sampedro has great capacity in creation and transformation of the original technical text. This creative capacity is shown in a generous use of literature's rhetoric resources and other discourse strategies (narration, dialogue, metaphors, comparisons, hyperboles, adjectives, humour, irony, personalisation, anecdotes, authority quotations, etc).

Sampedro stands out for his ability to relate specialised knowledge with less rigid aspects of the earthly world, like music, plastic arts, literature, cinema and everyday life. This ability allows him to low down the abstraction level in his texts, as readers can relate ignored concepts with what they already know.

Just because of this creative ability, Sampedro especially shows up in interpretative journalistic genres, maybe the most adequate for an efficient scientific popularisation. Given its rigidity, genres strictly informative imply two problems: they do not contribute enough to readers' motivation and they do not let the writer develop his own creativity. The effectiveness of popularisation probably improves when the author moves away from language and merely informative structures, as it happens with Sampedro. The rule of decreasing interest or *inverted pyramid* can lead to a cold exposition of facts, which will damage reader's assimilation and comprehension.

Instead, exposing facts in a more flexible structure, in which the writer can freely administrate literary and structural resources, will lead to better results. It does not seem a wise option for the scientific journalist, and Sampedro's work demonstrates it, to underestimate the motivational power of rhetoric resources that literature and classic rhetoric give him to simplify the reception of the message. Analysing Sampedro's texts has resulted in a wide range of samples and examples of intelligent, appealing and captivating popularisation, attached thanks to these principles.

Javier Sampedro's prose shows up for its grace, characteristic that contributes to the good assimilation of a kind of texts that, for the complex subjects they deal with, could be rejected by the general public.

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this magazine is considered an independent part of the journal.

Sampedro also uses to introduce elements of humour and irony. His obsession is to catch reader's interest above all, as he himself has assured. The fourth pillar of Javier Sampedro's style is audacity. This audacity can be seen in appealing presentations, witty comparisons, original metaphors and, above all, frequent ruptures with journalistic standards.

Sampedro can amaze us with texts in the form of a mystery novel, bits that reproduce other authors' works[7], fusions of literature and science, anecdote compilations, unusual journalistic structures, blends of fiction and reality and the use of unclassifiable journalistic genres. Maybe none of Sampedro's texts is so illustrative of these characteristics as the piece of journalistic fiction "*El genoma de un hombre perfecto*" (A perfect man's genome) (*El País*, 18-2-2001). This work constitutes an important innovation in scientific popularisation in Spanish press.

In it, Sampedro infringes the principle of veracity of journalism and tells a fiction story with a mainly popularising purpose and the appearance of interpretative journalistic text. Writing techniques used by Sampedro in this original piece, as well as in many others, are related to some of the basic principles of the New Journalism stream, as shown in the following section of this report.

Placed outside the doctrines of the journalistic style, this piece is pure invention. "El genoma de un hombre perfecto" was born after the sub department of *El País* asked Sampedro a journalistic text about "perspectives of genetic selection", one of the scientific aspects in fashion and more polemic nowadays. When the journalist started working in the text, he thought the best way to transmit the different aspects of the problem was to write a little story. This fiction is placed in April 2047 and two main characters very well characterised: Modesto Plata, one of the first people born in Spain by genetic selection, and doctor Santos, a geneticist from the city of Toledo. Here we can see a representative bit of the dialogues between them:

> Plata went forward with decision, moved away some cables with the end of his shoe and sat in front of doctor Santos showing he knew what he did.
> -Doctor Santos, I want you to correct my genes.
> Santos lighted a Kaiser light and prepared to hear the usual long-winded speech. Modesto Plata started talking:
> -I was born in 2007. My parents were wealthy people, computer scientists from Toledo. Just before conceiving me, in 2006, they read in press an ad from this American company, Celera, and decided to select my genome.
> -And they did it wrong.
> -Not at all. My parents followed very sensible principles, they were well informed people.[8]

As this story goes on, Modesto Plata detests the physical characteristics his parents chose for his body, which brings to debate a series of ethical questions very important in the days this text was published.

4. INFLUENCES IN JAVIER SAMPEDRO'S WORK

Evidence of an influence from Anglo-Saxon scientific writers from the 20th century has been found in Javier Sampedro's prose. This was the main starting hypothesis of this research and has been validated by comparing the sample of Javier Sampedro's the journalistic works and the way of writing of reference Anglo-Saxon scientific writers. The influences detected have been corroborated and/or widened afterwards by Sampedro himself by a whole of 25 deep personal interviews done by the author of this research.

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7 In this sense, it is interesting Sampedro's text "Una idea digna de Uqbar" (*El País*, 11-8-03). Its form of writing is an imprinting, sometimes literal, of the story "Tlön, Uqbar, Orbis Tertius" by Jorge Luis Borges (1899-1986) published in *Ficciones* (1944), one of the books better representing the Argentinean writer's style. Sampedro's text, belonging to the genre of science column, is at the same time an emotive fusion of vanguard science and best literature.

8 Piece from "*El genoma de un hombre perfecto*", 18-2-2001, society news pages, *El País*.

The real genesis of this journalist's style is located in the United Kingdom, at a laboratory of Molecular Biology in Cambridge. There he learns writing according to the principles of what we could call "Francis Crick's school". At the beginning of 1990s, Sampedro works as a researcher at Peter Lawrence's laboratory, in Cambridge, surrounded by scientists worried in writing technical texts as clear and graceful as possible.

To understand the style of Javier Sampedro's journalistic prose it is necessary to travel in time. In Sampedro's own words: "My boss in Cambridge, Peter Lawrence, instilled me some principles to write the texts we afterwards published in science magazines". Peter Lawrence (1941), a well known British researcher, had collaborated with Francis Crick.

According to Sampedro, Crick's scientific articles are "marvellous", to the extent that his expositive style influenced him "remarkably". Crick's philosophy was that the text needed to be understood by everybody. It needed to be clear, clean, right to the focus of problems. Sampedro summarises this last idea with a metaphor: "A scientist is not meant to be like an insect which flies all the time around a light bulb, he must not wander; a scientist must burn against the bulb, must crash into it, must go inside the bulb".

To understand Sampedro's way of writing it is relevant to distinguish "the Anglo-Saxon" from "the continental European". In his texts we can perceive this unmistakable anglophile scent. "My nature has always been very British", assures Javier Sampedro. "French or German scientific writings and popularising writings have never moved me much". He defends it with a personal experience: "I tried every single way to understand the structuralism principles of the Slav origin linguist Roman Jakobson. When I was around 20 years old, I wanted to read his works in Latin languages and there was no one to understand a single thing. When I lived in the United Kingdom, one day at a bookshop I saw a text by David Lodge, a British writer and literary critic from *The Independent*, about Jakobson's theories. I bought the book, I read it and then I understood everything. Jakobson's ideas turned out to be fascinating, but I had to learn about them thanks to a British man".

In this clear division between Anglo-Saxon people and the rest of Europe in their way of popularising science, Sampedro must be lined among the first ones. Sampedro's anglophile tendency can be seen not only in his way of writing but in lots of more important aspects. It is like a way of understanding life itself. "I think it's a question of mental structure and also of character. I really love the Anglo-Saxon way of life. From a popularising point of view, French people, for instance, do not use their knowledge to explain things to ignorant people; instead, they furnish their style with flourishes to bright themselves. When I got to the United Kingdom, where I lived for three years, I found my natural space, I found my place", explains Sampedro.

In the context of this generic influence of Anglo-Saxon writers, and according to the comparative study of his texts, Stepehen Jay Gould has been, along with Francis Crick, the scientific writer that most influenced Sampedro's way of writing. Javier Sampedro's texts have a lot of the colourist, passionate and full of detail style of the American master. As Gould, the Spanish journalist knows how to locate science in a wide sociocultural context, not circumscribed to its strict fields of work.

Gould's style in *Panda's Thumb* is similar to Sampedro's in journalistic texts like "*El monstruo del Río Tinto*" (The monster of Tinto River) (*El País*, 9-5-2002) or "Las hormigas argentinas firman la paz en Europa" (Argentinean ants sign peace in Europe) (*El País*, 1-5-2002). Gould and Sampedro coincide in escaping from the asepsis of informative texts: both of them develop in their works a spectacular arsenal of resources full of grace and intelligence. Sampedro, as Gould had done before, uses generously artifices like for instance explaining anecdotes and personal experiences of the writer, or generalizing from details apparently insignificant. These popularising strategies are always used keeping in mind the main goal: to optimize the clarity of exposition.

The journalist from *El País* acknowledges he read with avidity Stephen Jay Gould, who he considers "a highly relevant scientific writer". "I started reading Gould long before devoting myself to journalism. I have read almost everything he has published, as a scientist as well as a writer." Sampedro also underlines the fact that Gould speaks in first person in several of his popularising texts: "He shows his own points of view, he's very subjective, but he gives the text a perspective and a tone of essay so appropriate for popularisation. I'm impressed by this fact, as it is a rare fact in scientists' language, always so cold and impersonal". "In my opinion, Gould reinvented scientific writing", he explains. This writer from Madrid

holds that Gould introduced a new way of writing in technical texts, through what Sampedro calls "a style closer to essay".

At a second level of influence in the work of this journalist we find Carl Sagan, one of Sampedro's readings since he was "a child". The connection points between the works of Sagan and Sampedro are similar to the ones pointed out with Gould. Sagan divulged science with great clarity also using the so called "essay techniques". Reading Sagan's texts, one reaches an evident conclusion: any non-specialised reader would understand them, because Sagan understood so deeply the concepts he divulged. Something similar happens with the Spanish author. Sampedro argues: "I began admiring this author after reading *Cosmos*, a classic scientific popularisation of all times and *The Dragons of Eden*. I also believe it is fundamental the TV series "Cosmos".

The third author in scientific popularisation found to have influenced Sampedro's prose is Richard Dawkins. Dawkins' prose is clear, diaphanous and bright. Some similarities exist between Sampedro and Dawkins in terms of their purpose to approach as much as possible to the reader through examples and especially throught elegant metaphors. Dawkins gets to the bottom of all the aspects in research, and he does so through different ways. On the one hand, he uses convenient and appropriate examples all the time, examples that throw light on darkness. On the other hand, he uses unsurpassable metaphors. As Sampedro acknowledges, "all scientific writers try to imitate Dawinks' metaphors, as in his texts he demonstrates he soundly knows the topics he writes about, even if he just reveals a small part of it". Some of Sampedro's metaphors are significant for their effectiveness and beautifulness. It is famous his explanation of DNA's structure and replication using a metaphor based on a stepladder (Cortiñas, 2005).

Steven Pinker, again an illustrious Anglo-Saxon writer, is pointed out by Sampedro as his latest most admired and influencing author. Sampedro interviewed Pinker for professional purposes, and he is interested in him for his "sense of humour and the great didactics of his texts". As Sampedro explains, "The beauty of these texts consists on the deep intelligence the author spreads and transmits through them. The same happens with Borges' poetry, where beauty is found in the intelligence of the writer. Furthermore, he writes about subjects of vanguard science, topics he sometimes studies himself." Sampedro goes on: "Pinker confessed me his secret was to know he is addressing to intelligent people. A scientist has to lower the level when he is popularising, but just to a certain extent. He must not adapt to the level of a rather poor reader, but to those people's who just do not understand specialised and technical terms. Non-specialised public do not know certain specific terms, but that does not mean they are not intelligent."

Another unavoidable reference when determining the universe of authors that most influenced Javier Sampedro is Isaac Asimov. Sampedro confesses having read Asimov mainly "as a child and adolescent". Given his prodigality, Asimov is the best prove that a writer popularising science must be insatiably curious about all the subjects. "This author helped me to get a panoramic vision of science along history and to establish a kind of state of the question", argues *El País*' journalist. "I don't like Asimov's style: his prose has no salt, no pepper, is too flat, but his scientists' biographies are excellent. I read the book *Asimov's guide to science* when I was an adolescent and I was very impressed by his enormous erudition." Sampedro's texts show up for a well defined story-line, the concepts appear in the text in the right moment. The same happens in the prose of Asimov, whose ability to build the scientific plot, the ways to find out, is also admirable. Sampedro remembers with pleasure the physics books from this American author, in which it was obvious Asimov's ability to explain how Newton had made his theories, how Newton had reached those conclusions.

Among the Anglo-Saxon writers that popularise science and that most influence Sampedro, we must mention Daniel Dennett, an author that "doesn't hang you up, but illuminates you, in the sense that the reader can understand things that always seemed confusing to him"[9], and Charles Darwin himself, given that he is a model to any good writer popularising science: all his basic texts are written to be read by any one, even the ordinary reader of his own time.

In the same way, Sampedro's humour has proved to have Anglo-Saxon connections, although not just in a strictly scientific context. Sampedro's humour is influenced by American cinema, particularly by filmmakers like Billy Wilder, Woody Allen and Groucho Marx, as well as other actors from Hollywood.

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[9] Quotation marks correspond to textual words by Javier Sampedro, who also adds that "*Darwin's Dangerous Idea* (1995), by Daniel Dennett, is a great popularising book".

"They all contributed with a special and intelligent way of making humour", argues this journalist from Madrid.

Influences from Anglo-Saxon journalism

Anglo-Saxon journalists occupy an outstanding place in Javier Sampedro's influences. In his works we can find two kinds of imprints: the style of the American journalism of 1960s and 1970s, gathered under the New Journalism stream and, more recently, the Anglo-Saxon scientific journalism of the last three decades, particularly the one developed after the success of certain models of daily press, like the supplement "Science Times" of *The New York Times.*

Sampedro approaches the techniques of the New Journalism trough what Tom Wolfe proposed in his manual about this genre between informative journalism and novel. The authors of this stream had an unmistakable style: journalistic articles were full of onomatopoeic expressions, linguistic turns, a mad punctuation, sarcastic, poisoned and malicious comments and digressions. Sometimes the story progressed like a tale, with dialogues and peculiar characters. The key was in using the techniques from literary fiction in the journalistic texts (Yusti, 2001).

The new style was consolidated as a literary genre when Tom Wolfe published *The New Journalism* in 1973, an essay where he sets the characteristics and the theoretical basis of this modality as well as he presents a compilation of selected texts from different authors that fulfilled these characteristics. In that work, Wolfe explained this new style like follows:

> "It consisted of making possible a journalism that… could be read as a novel. As a novel, I want you to understand me. It was the most sincere form of tribute to The Novel and to those giants, novelists, of course. Not even journalists that adventured first in that direction doubted for a moment that the writer was the sovereign artist in literature, now and ever. All they demanded was the privilege to possess their own ceremonial robes... [...]" (Wolfe, 1988: 18)

There are plenty of connection points between Wolfe's ideas and Sampedro's text "El genoma de un hombre perfecto". Sampedro assures the *New Journalism* stream always interested him: "Journalists who wrote this way influenced me more than the genre theorists. I have not read Tom Wolfe, but I have read Truman Capote, who is an excellent author to me".

More intense and current is the impact of nowadays' Anglo-Saxon scientific journalists on the work of Sampedro. The forms of this type of journalism had a great repercussion around the world, after the good acceptation of "Science Times", one of the best products in scientific popularisation ever.

"Science Times" had its origin in a problem: the estimated average space for science news in a general information journal was only of a 5% (Friedman *et al*, 1986). The creation of science supplements mitigated this situation and contributed to guarantee a weekly space for science news. *The New York Times*, which had already been offering rigorous scientific information from a long time ago, was the first journal to take into action this initiative, that meant a great step in scientific popularisation in press (De Semir and Revuelta, 2002).

More exactly, it was journalist John Noble Wilford who, in 1978, leaded in this American journal the start of "Science Times". In it, science information could be treated in a wider and deeper way, with more time and escaping from the perversion of immediateness and from the typical hurries of journalistic *praxis*. All these factors originated more creative journalistic texts, less tied to current importance and, essentially, less innovative.

Furthermore, the supplement benefited from technological improves in production and impression, it was conceived as a way to "open new markets of publicity" and to "make it easier to establish a faithful relationship with the public" in a moment when sells where falling down (De Semir and Revuelta, 2002). Every Tuesday from November the 14th 1978 until today, "Science Times" has turned out to be a referent in scientific journalism around the world. After that, other informative-interpretative journals in the world started to insert the idea of a weekly science supplement in their pages. *The New York Times*'s

supplement has survived until our days with an amazing drive and has been imitated, in a higher or lower degree, in most of western countries.

El País, sprang up in the Spanish media in May the 4th 1976[10], created its weekly science supplement, "Futuro", in October the 16th 1985. Nowadays this supplement is published every Wednesday in the Society news pages, while health topics are gathered together in another similar supplement called "Salud". No doubt, "Futuro" and "Salud" –as all the other science supplements appeared in other points of Europe and the world– were direct consequences of that initial project started by *The New York Times'* press company and a first prove of the imminent globalisation of scientific journalism, thesis upon which this work is based. A lot of Sampedro's popularising texts could be read precisely in "Futuro" and "Salud", where interpretative genres are given more space.

As it has already been said, Sampedro was not unaware to the impact of all these Anglo-Saxon models in press. This journalist assures to be "in love" with the way *The New York Times* popularises science, whether in its ordinary pages or in "Science Times". When he lived in the United Kingdom, a fundamental period in his genesis as a scientific journalist, the journal that most interested Sampedro from the point of view of popularising sciences was *The Independent*. Among the scientific journalists of our days, Sampedro especially points up the American journalist from *The New York Times* Natalie Angier, who he follows and admires. Figure C shows a sum-up chart of the main Anglo-Saxon influences in Javier Sampedro's work, as just developed.

SUM-UP OF THE MAIN INFLUENCES IN JAVIER SAMPEDRO'S WORKS

- *School of Lawrence and Crick*
- Stepehen Jay Gould
- Carl Sagan
- Richard Dawkins
- Steven Pinker
- Isaac Asimov
- Daniel Dennett
- Charles Darwin
- *The New York Times*' scientific journalists
- *New Journalism* stream's journalists
- Groucho Marx, Woody Allen and Billy Wilder's humour

5. AS A CONCLUSION

In the 20th century, popularisation and scientific journalism changed their paradigm in Spain. If last century began under the influence of the French school scientific journalists, it ended with an obvious alignment with Anglo-Saxon models. At the beginning of the century, very good journalists like the Catalan Josep Comas i Solà had taken the best French tradition as a reference: Camille Flammarion, the great master of astronomic popularisation. In general, that was part of an old tradition: Spanish scientific journalists had always looked at France. From the second half of the 20th century on, and particularly in the last years, Anglo-Saxon models were the mirror where their successors wanted to be reflected on.

According to this tendency, the basic conclusion of this research is that there is a definite and visible influence from Anglo-Saxon journalists and writers in the work of the Spanish journalist from *El País* Javier Sampedro. The main influences found in this work are the following: the philosophy of what we could call *the school of Lawrence and Crick*, Stepehen Jay Gould, Carl Sagan, Richard Dawkins, Steven

[10] In its *Style manual (Libro de estilo)* (2002), *El País* defines itself as an independent, national journal, of general information and defending a pluralist democracy according to liberal and social principles. Regarding the information coming from the scientific field, *El País* covers news on science, medicine and technology from the very moment it was born, in 1976.

Pinker, Isaac Asimov, Daniel Dennett, Charles Darwin, *The New York Times* scientific journalists and the *New Journalism* stream's journalists.

In this context, Sampedro started in Spain a new way of introducing science to the public, more appealing and uninhibited, with a clear and daring way of writing. It is a creative explosion of Anglo-Saxon roots with an outstanding precedent in the diverse science and medicine supplements published in the Catalan journal *La Vanguardia* from the end of the 1980s until half the 1990s, driven by Vladimir de Semir and Antonio Salgado (Ribas, 1997).

Javier Sampedro used a great variety of resources and strategies to bring top science to the general public. This journalist from Madrid revitalised the diffusion of technical aspects especially through interpretative genres, with colourful, humoristic and intelligent plain texts. This doctor in Molecular Biology trained in the United Kingdom sometimes broke the traditional journalistic *praxis* by using unconventional structures, literary fictions and unclassifiable genres. The objective of these controversial proceedings was to look for new popularising forms in a professional panorama which was a bit reluctant to break the old doctrines. Furthermore, with the series "Ciencia Recreativa", Sampedro materialised a journalistic challenge with few precedents: to publish a daily column (argumentative or opinion genre) about science in August of 2002, 2003 and 2004.

All this was possible thanks to an exquisite academic education that made him deeply understand the technical concepts he had to popularise. Javier Sampedro's professional career is the perfect one for a writer popularising science, as it is just half way between sciences and humanities. This multidisciplinary and ambivalent education situates him in a privileged position as an intermediary between scientists and the general public, which, by definition, is wide, heterogeneous and non-specialised. Sampedro's profile connects with an open mentality educated in humanities and science almost at the same level.

Sampedro's genesis as a writer popularising science was curiously marked by his stay in top laboratories. As a scientific journalist, Sampedro applied the principles he learned and continued his career as a researcher in Molecular Biology in Great Britain, where he did a post doctoral at the beginning of the 1990s. These principles, from *the school of Lawrence and Crick*, are summed-up in one: the scientific text must be written to be understood by any citizen ignorant to the area of expertise. That is an extraordinary paradox: Javier Sampedro travelled to Cambridge to get an education as a researcher in Molecular Biology and, three years later, returned to Madrid as an expert in scientific popularisation.

Sampedro's case indicates we attend to a slow but perceptible process of adoption, in peripheral countries like Spain, of the Anglo-Saxon popularising methods. This phenomenon is enhanced by American dominion in basic and applied science and by the role of English as *lingua franca* of science and scientific journalism. Spain, as a good part of continental Europe, walks towards a way of popularising science in press day by day more globalised around those patterns. Javier Sampedro's example, maybe one of the most outstanding for the quality and the originality of his works, must not be considered an isolated episode. It is more a part of these new times where the possibility of interaction among different cultures is no longer determined by physical proximity, but by informative and technological abilities. These times where idiomatic and cultural barriers no longer exist, where everybody can reach the world.

6. BIBLIOGRAPHY

-Cassany, Daniel. "Fer entendre la ciència als qui ho necessitin", *Treballs de la Societat Catalana de Biologia*, volume 51, 2001.
-Cortiñas, Sergi "La divulgació de la molècula d'ADN", *Revista de la Societat Catalana de Química*, num. 6, 2005.
-De Semir, Vladimir and Revuelta, Gemma. "Ciencia y Medicina en *La Vanguardia* y *The New York Times*", *Quark*, num. 26, 2002.
-Fayard, Pierre. *La communication scientifique publique. De la vulgarisation à la médiatisation.* Chronique Sociale, Paris, 1988.
-Friedman, S. M., Dunwoody S. and Rogers, C. L. (eds). *Scientists and Journalists: Reporting Science as News*. Free Press, New York, 1986.
-Gould, Stephen J. *El pulgar del panda*. RBA, Barcelona, 1994. (Title of the original version: *Panda's Thumb*).
-Gould, Stephen J. *The Structure of Evolutionary Theory.* Harvard Univ. P., Cambridge, 2002.
-Griera, Maria del Mar and Urgell, Ferran. *Un análisis del consumo de productos con connotaciones espirituales entre la población juvenil*. Fundació "La Caixa", Barcelona, 2001.
-Laszlo, Pierre. *La vulgarisation scientifique*. Presses Universitaries de France, Paris, 1993.
-Lightman, Bernard (ed). *Victorian Science in Context*. University of Chicago Press, Chicago, 1997.

-Locke, David. *La ciencia como escritura.* Cátedra, Madrid, 1997 (Title of the original version: *Science as writing*, Yale University, New Haven, 1992)
-Nelkin, Dorothy. *Selling Science: How the Press Covers Science and Technology.* Freeman, New York, 1997.
-Raichvarg, Daniel and Jacques, Jean. *Savants et Ignorants. Une histoire de la vulgarisation des sciences.* Seuil, Paris, 1991
-Ribas, Cristina. "Les pràctiques professionals del Periodisme Científic. Estudi del tractament periodístic de la Biotecnologia", Academical research UPF, Barcelona, 1997
-Sheets-Pyenson, S. "Popular science periodicals in Paris and London: the emergence of a low scientific culture, 1820-1875", in *Annals of Science,* 42 (6), 1985 pp. 549-572.
-Wolfe, Tom. *El Nuevo Periodismo*. Anagrama, Barcelona, 1988.
-Yusti, Carlos. "Tom Wolfe: de punta en blanco para escribir", en *Venezuela Analítica,* Venezuela Analítica Ediciones, Caracas, 27-9-01 [On-line publication, http://www.analitica.com/va/arte/tendencias/1285709.asp (Consultation 14-11-04).