Every new advance in science and in technology, every evolution in society, politics and culture brings with it the need to update linguistic resources at different levels in order to be able to talk about them and accommodate new concepts. This leads to the emergence of new representations and new discourses which pertain not only to the specialized domains of science and technology, or to those of sociology or political science, but become part and parcel of public discourses addressing ordinary citizens and affecting everyday life and choices. These public discourses involve the transfer of domain-specific knowledge to various non-specialist audiences and its recontextualization in a type of discourse that is very different from the type of discourse in which it was originally cast, if only because it is aimed at disseminating knowledge and making it more accessible. As the process of transformation requires the conceptual and linguistic processing of knowledge for the benefit of the non-specialist, it can never be neutral.
Even when the writer has the best intentions in terms of accuracy and honesty, what is provided in each case is one version – often simplified or reduced – of the relevant knowledge among the many versions that could be given. The articles in this special issue address the topic of knowledge dissemination as a concept and as a practice, and investigate the discursive representations of a variety of topical issues in contemporary society, ranging from nanotechnologies, to bioethics, and to scientific research findings, also including political discourses – such as Brexit, or the discourse of doping – and academic discourses and practices. The findings suggest that framing, selecting and perspectivising are routinely used in knowledge dissemination and transmission, and indicate that these aspects play a key role in all popularising discourses.

Chapters by:

James Archibald, Paola Catenaccio, Giuliana Garzone
Rita Salvi
Cecilia Lazzeretti, Franca Poppi
Jekaterina Nikitina
Emanuele Brambilla
Ersilia Incelli
Chiara Degano, Annalisa Sandrelli
Denise Milizia, Cinzia Spinzi
Ruth Breeze
Dermot Heaney
Michele Sala
Girolamo Tessuto

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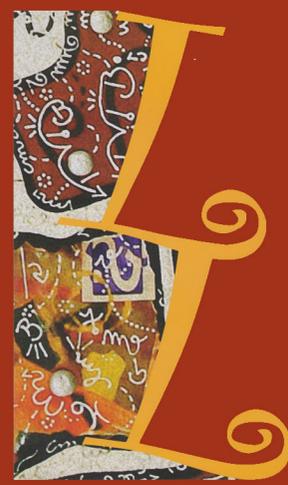
Debating evolutions in science, technology and society:
Ethical and ideological perspectives

edited by
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Debating evolutions in science, technology and society: Ethical and ideological perspectives

a cura di
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Paola Catenaccio
Giuliana Garzone

LINGUE E LINGUAGGI

Indice

CHAPTERS

*L*ingue e
*L*inguaggi

DEBATING EVOLUTIONS IN SCIENCE, TECHNOLOGY AND SOCIETY
Ethical and ideological perspectives. An introduction[1]

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Every new advance in science and in technology, every evolution in society, politics and culture brings with it the need to update linguistic resources at different levels in order to be able to talk about them and accommodate new concepts.

At the lexical level, this is a physiological process, as every development inherently involves the introduction of new vocabulary, which in most cases is created directly by the persons involved (scientists, researchers, politicians). This occurs because of the non-arbitrariness of domain-specific lexicon, which in most cases does not result from the spontaneous or accidental evolution of language, but is deliberately produced to name new discoveries, notions and developments.

The introduction of new words and terms is not the whole story. Advances and evolutionary changes may be far-reaching. They will inevitably have an impact on language and discourse that goes well beyond vocabulary and terminology. Changes in patterns of thinking, reasoning and conceptualizing will lead to new representations and new discourses. One example is the introduction of computer information technologies, which have profoundly changed our understanding of many aspects of human life and experience and the way we represent them. Of course, change occurs in every area of human activity or endeavor, and always has. Yet, the pace of change is unprecedented, and often unsettling. While there is no doubt that scientific and technological progress has opened up endless opportunities, and that social changes, as well as the rise of new discursive paradigms in politics and society, appear to hold the promise of a better future, it is equally

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certain that in many cases this seemingly unstoppable progress has come with strings attached. And these strings often have undertones which belong to the domain of ideology, and in some cases of ethics. The latter in particular is a domain already beset with difficulties that are made even more pressing by the fact that in many cases they arise from issues whose nature and implications are difficult for the layperson to understand. Having as clear a grasp as possible of the issues at stake is therefore of crucial importance if the impact and consequences of scientific, technological and even socio-political changes are to be understood.

In light of the above, it is easy to see why language and discourse play a key role not only in the very conceptualization of scientific, technological and social changes, but also in the way in which these are perceived and become (or, as the case may be, do not become) acceptable to society at large.

The articles in this special issue focus on how evolutionary changes in science, technology, society etc. are represented in various types of texts targeting the general public. In all cases, representation involves the transfer of domain-specific knowledge to various non-specialist audiences and its recontextualization (and often entextualization; Silverstein, Urban 1996) in a type of discourse that is very different from the type of discourse in which it was originally cast, if only because it is aimed at disseminating knowledge and making it more accessible.

The process of transformation requires the conceptual and linguistic processing of knowledge for the benefit of the non-specialist. This is why it can never be neutral. Even when the writer has the best intentions in terms of accuracy and honesty, what is provided in each case is one version – often simplified or reduced – of the relevant knowledge among the many versions that could be given. This is even more problematic when the topics and issues dealt with are sensitive or controversial, and at the centre of public opinion or debates.

In this respect, an important notion to be relied on is that of *discursive frame*. Frames are cognitive perceptual structures that either subconsciously or strategically influence participants on how to "hear or how to say" something (Bartel 2010, p. 311). In Entman's (1993, p. 52) words,

> to frame is to *elect some aspects of a perceived reality and make them more salient in communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation* for the items described (italics in the original).

Thus, frames can be seen as "schemata of interpretation" (Goffman 1974, p. 21) that determine the way people make sense of phenomena, events, evolutions, and perceive their character, causes and consequences. A crucial

element is *salience*, i.e. the prominence given to certain aspects rather than others. i.e. "what is prominently displayed, what is repressed and especially how observations are classified" (Edelman 1993, p. 232).

Therefore, framing, selecting and perspectivising are inevitable in knowledge dissemination and transmission. Rita Salvi's article, which opens the collection of papers in this special issue, highlights the framing role of language and discourse in this process. Salvi defines knowledge dissemination as the transmission of knowledge, which she then conceptualizes as "knowledge translation". She also considers the ethical and ideological implications of this fact by emphasising researchers' responsibilities in the dissemination of knowledge in various domains. This is particularly true in the scientific, legal and economic sectors, because of the values connected with (1) scientific advances, (2) the conflict between ethics and law and (3) the relationship between ethics and economics.

The other papers included in this special issue address different aspects of knowledge dissemination and transmission. They approach the issue from the perspective of discourse analysis. Consideration is given to differences and variations. Other analytical tools such as corpus linguistics, pragmadialectics and cognitive linguistics are used. All of them ultimately focus on the discursive frames through which the topics they deal with are represented, that is, on the discourses and the linguistic resources that are more or less deliberately deployed for the purpose, on the one hand, of making knowledge about a particular topic manageable and, on the other, of orienting recipients' understanding of it. Because of their function as "definitions of situations" (Goffman 1974, p. 10), the identification of discursive frames serves to promote the understanding of those strategies through which developments are constructed in communication.

The implication is that because discourse frames are so effective, they are a powerful ideological instrument, capable of influencing the public perception of the most crucial issues in society. This is especially cogent in the case of the transfer of specialist knowledge about new developments and breakthroughs, where the selection, summarization, reduction or omission of contents is particularly relevant.

One such case is nanotechnologies. In their study of the ways in which these new technologies are represented in two different sets of documents (European Union webpages and Friends of the Earth's reports), Franca Poppi and Cecilia Lazzeretti discuss the different attitudes towards them that can be retrieved in the two corpora. While the two institutions appear to share a utilitarian view of nanotechnologies (in a true popularizing fashion, which typically places emphasis on the practical relevance of a new invention, discovery or technique), they differ widely on the evaluative component attached to their factual description. Whereas the EU is fairly neutral, Friends

of the Earth employ a risk frame which invites caution in the adoption of this technological advance.

Gene editing is another technology which is frequently featured in the media, often in controversial terms. In her study of reporting about gene editing in British and Italian newspapers, Jekaterina Nikitina identifies similar popularization patterns centred around the metaphorical representation of "the genome as text", albeit with some differences due to the translational nature of much Italian terminology. More interestingly, Nikitina also identifies "a paradigm shift" in the representation of discourse on the genome, compared to earlier instances. While DNA sequencing was often framed in the media as a mystery to be decoded, gene editing is usually framed as a useful and beneficial technique which, however, involves some potential risks to our very existence if placed in the wrong hands. This suggests that once the applications of a new discovery begin to gain salience, utilitarian framings become more prominent, and with them – often – framings which highlight risks, as well as benefits.

In Emanuele Brambilla's paper, the representation of risk regards an environmental issue, and the effort at knowledge dissemination discussed has the ultimate purpose of fostering environmentally friendly behaviours. This study focuses on two reports issued by Greenpeace for their "Toxic Tech campaign", a campaign aimed to expose the presence of toxic chemicals in a variety of electronic devices. Both reports raise environmental ethics and environmental health issues. But one of them targets an expert audience, dealing with relatively complex notions of environmental toxicology and chemistry, while the other addresses a wider public of consumers, avoiding technical considerations, and focuses on ranking different electronic device producers according to their commitment to "greenness". Thus, within an overarching discursive perspective highlighting "our duties to nature", the two reports frame the same issue in two very different ways, one dealing with the scientific merit of the issues involved, and the other orienting people's buying choices to the products of more environmentally friendly companies.

Environmental awareness is also at the heart of Ersilia Incelli's study, which looks at eco-cities and how they are represented through specific rhetorical patterns which legitimize or delegitimize stakeholder claims about how to manage certain environmental issues in eco-city projects. The analysis is based on the comparison of two corpora embodying opposite views, a corpus of texts from eco-city project websites created by architectural and structural consultants, characterised by a dominant discourse of certainty, authority and vision, and a corpus representing the environmental science research community, which tends to present a critical attitude towards the eco-city projects, involving a rhetoric of skepticism and caution. It follows that what really lies at the heart of the controversy is a growing awareness of

the difficulty of integrating environmental policies into institutional settings, which entails the translation of an "environment and nature" discursive frame into an economic and monetary one. This highlights the problems raised by the need to integrate environmental discourses into neoliberal conceptual frames.

While the papers examined so far discuss aspects of the dissemination of knowledge on scientific or technological advances and developments, with the following ones attention is shifted from science and technology to sociopolitical change and the way in which it is framed in political and media discourse.

Chiara Degano and Annalisa Sandrelli's paper looks at how regulating decisions made at supra-national level are communicated to the general public in both legal and media discourse. The authors explore the discursive changes occurring in the transposition of EU directives on ethically sensitive issues first into national legislation and then into news reports. In the shift from European-level legal discourse to national transposition measures and, above all, to the press, they notice a change in framing: if in European directives the focus is firmly on technical aspects, and ethical issues are left in the background, in national transposition measures and in news articles the focus is even more clearly on individuals and their existential dimension, leaving legal technicalities aside.

Denise Milizia and Cinzia Spinzi's article focuses on politics and the media highlighting "hot" political change issues in the EU, most notably Brexit. Their study puts an accent on a discursive frame frequently activated in Britain to come to terms with one of the most upsetting and disruptive political changes of the last few years. It points out that, as is often the case with developments that are not easy to grasp and/or to accept, the most widely used discursive frame to represent Brexit is based on metaphor, and specifically in this case on the "divorce" metaphor, which in turn is derived from a more general metaphor, NATION IS A FAMILY. The analysis is based on two corpora, one consisting of political speeches delivered by top level British politicians and another comprised of texts from daily newspapers. While the divorce metaphor is more popular in the media, possibly because of its cognitive value and its potential for moral and ideological reasoning, its use by politicians seems to be more circumspect.

Media discourse is also the topic of Ruth Breeze's article. Breeze investigates the changes occurring in the transfer of scientific knowledge from press releases on scientific advances (which in themselves entail the entextualisation of scientific discourse originally circulated in scientific papers) to news articles. Using an example taken from the domain of science and nutrition, Breeze shows how the vast majority of the media sources she investigates significantly alter the original research on which they are based

by foregrounding selected aspects, typically in the service of a heightened controversial slant. Breeze highlights the ideological implications of these reframing operations, insisting on the importance of media literacy in contemporary society.

In Dermot Heaney's paper the focus shifts to the press coverage of facts and incidents deriving from a recent evolution in sports, that is, the use of allegations of unethical behaviour against certain countries for political purposes, in a context where performance enhancement seems to have evolved from a largely covert activity, practiced by individual athletes and their coaches, into a systemic phenomenon, with the active involvement of the state and national sports federations. Against this background, the framing by the press of doping allegations and related punishing measures plays a crucial role. This is discussed by Heaney with reference to the charges of illegal performance enhancement that led to officially banning Russia from the 2018 Winter Olympics in Pyeongchang. Comparing a corpus of international press coverage and one of articles in English retrieved from the Russian news agency ITAR-TASS, he shows that in the international corpus the events at issue are framed discursively so as to highlight certain stereotypical aspects of Russia's alleged behaviour as opposed to the set of values the international community attributes to itself. In contrast, the analysis of the ITAR-TASS corpus shows that the discursive strategies deployed in the Russian press in English are aimed at reducing the impact of the hostile international campaign on the country's image and repairing damage to its international reputation.

Finally, the last two papers look at discourse framing in research and academic communication.

Michele Sala studies abstracts of research articles in law journals at a time when texts that in the past were explicitly targeted at 'insiders', and particularly at the *esoteric* community (i.e. experts working on similar issues) are now in many cases addressed to the *exoteric* and extended academic community (i.e. scholars in other domains), as well as to a lay audience. Investigating a corpus divided into an esoteric and an exoteric sub-corpus, each in turn divided into two sub-corpora of abstracts dealing respectively with money related and non money related topics, the study shows the important role of reporting verbs as devices for metatextual framing, used to emphasise the authoritativeness of the articles being reported on in terms of research, contribution to the relevant discipline, and argumentative and discursive power. It is also interesting that the reporting verbs are much less frequent in the sub-corpus addressed to insiders, providing evidence that the latter do not need metatextual framing through reporting verbs in order to grasp the validity of their disciplinary contents.

The issue of research and publication ethics is tackled by Girolamo

Tessuto, who looks at a corpus of brief reports on ethically challenging scientific misconduct cases published on the website of the Committee on Publication Ethics, with a focus on their generic structure. In these texts, the misconduct cases are framed with reference to moral and professional standards in social environments of research publishing. The brief account of each case pinpoints responsibilities for the breach of ethical standards and at the same time foregrounds the organisation's ethos, which is aimed not only at sanctioning misconduct, but also at promoting an ethical research and publication culture based on sound moral and professional standards, thus legitimizing the organization's gatekeeping role.

The articles presented in this special issue collectively provide important insights as to the role discourse plays in the dissemination of knowledge about evolutionary changes and developments in a variety of domains, from genetics to nanotechnologies, from European legislation to publication ethics. Through discourse framings, new information, facts and notions circulate within insider communities and are relayed to the general public. The findings presented here confirm that when they go through this process only rarely do they remain totally free from further interpretation, evaluation, or bias; in some cases, the trasmission of value judgements is deliberate, and directed to certain more or less declared aims (e.g. militancy). In others, it may be influenced to a greater or lesser extent by conventional professional practices (as can happen in science popularisation in the press). Invariably, knowledge dissemination is mediated by discourse – and inevitably so. In this scenario, the ethics of communication becomes a top priority, as does the promotion of media and communication literacy among the general public, but also among specialists. Fostering greater awareness of the way in which discourse practices impact on the way knowledge is both created and disseminated is, therefore, a goal that should be pursued by linguists and discourse analysts as a matter of professional ethics.

Bionotes: James Archibald holds a doctorate from the University of Lille; he currently teaches translation at McGill University. His recent publications include "Managing Translation Quality in Multilingual Settings", *Circuit* 133 (2017), "Principes de mise en œuvre de politiques linguistiques intégrées" (OPALE, 2019) and "D'imaginaire en imaginaire" (*Al-Kimiya*. 2019), "Traduire les droits et responsabilités des citoyennes et des citoyens", *Circuit 14* (2019). A *Chevalier in the Ordre des Palmes académiques*, Mr. Archibald is a member of the Conseil supérieur de la langue française, the International Standards Organization's committee on translation and terminology and the Office des professions du Québec.

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THE PROCESS OF KNOWLEDGE DISSEMINATION

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Abstract – Considering the cognitive nature of knowledge and its dynamic dialogic features, this contribution explores three lines of inquiry: the analysis of models built to visually represent the process of knowledge dissemination, the relationship between knowledge dissemination and discourse, and lastly the interrelation between knowledge dissemination and ethical issues. The models analyzed have been built within disciplines other than linguistics, but evidence is provided that they can be also applied to language analysis and its communicative purposes. Indeed, most of the models include 'language' as the interface between knowledge dissemination and disciplinary contents. On the other hand, linguists are interested in language analysis as a tool to transmit knowledge through appropriate strategies. The need for this cooperative principle and interaction in knowledge exchange, together with the enlargement of communities of practice and discourse, is shown in this contribution. Ethics plays a big role in knowledge dissemination, especially as communication technologies have significantly amplified the risk of developing false information and unethical attitudes. This aspect is discussed with reference to the fields of medicine, law and economics. The concluding reflections lead to underlining contacts and connections between linguistics and other domains, particularly from a methodological point of view. Although a unification of knowledge is unthinkable, interdisciplinarity is necessary to get a broader understanding of some aspects of knowledge and overcome disciplinary fragmentation.

Keywords: knowledge dissemination; transmission models; knowledge dissemination and discourse; interdisciplinarity.

> *I love the freedom of creativity when our*
> *ideas come together to create new ones and*
> *then spread. The knowledge of one becomes*
> *the knowledge of millions.*
> *My name is Tim Berners-Lee.*
> *I invented the World Wide Web.*
> (An Interview – youtube.com)

1. Introduction

In its "What we do" webpage, the *Global Institute for Water, Environment and Health* (GIWEH) defines Knowledge Dissemination (KD) as "the willing transfer of knowledge with the intention that it be used for education or to help implement modified or new practices". Obviously, the process of KD

may have a purely intellectual purpose, but this study focuses in particular on the possible applications. In light of this, two levels of analysis seem appropriate: on the one hand, the empowerment of the individual and, on the other, knowledge management.

Because of its complex nature and its relationship to the features of discourse, knowledge – and consequently knowledge management and transfer – represents a stimulating challenge for researchers in the linguistic sciences. Bondi (2017), in her interview to a highly specialized journal, underlined two fundamental principles:

- Knowledge dissemination is the transfer of knowledge within and across communication settings. The expectation is that the knowledge will be used by the receiver to change practices or viewpoints or for intellectual growth.
- The process of research is that of increasing the stock of available knowledge […] This requires research skills, but also the ability to communicate with other specialists both within and outside one's own field of expertise. (Bondi 2017, pp. 64-66)

In the first principle, a clear definition of knowledge dissemination is given, as 'transfer of knowledge' (which implies both accumulation and saving of knowledge) in peer-to-peer communication inside a specific community of practice, in different cultural contexts or in asymmetrical relationships, for example from expert to laypeople, and also across disciplines. The second principle highlights the importance of enlarging the quantity of knowledge in society today, and refining the 'ability to communicate', that is developing the language used to transmit knowledge, which is what we as linguists are more specifically involved in. It is also important to be aware of possible mechanisms of persuasion and manipulation deriving from both cultural background and ideology.

Given the cognitive nature of knowledge and its dynamic dialogic attitude (Salvi 2019), this contribution develops three main themes: 1. The analysis of models built to represent the process of knowledge dissemination; 2. The relationship between discourse and knowledge dissemination; 3. The interrelation between knowledge dissemination and ethical issues.

Although there is widespread agreement about the fact that no model can be exhaustive in itself, and that very complex models often remain largely unused and unexploited, current literature insists on the need to refer to theoretical models to better understand, plan and evaluate strategies for effective knowledge dissemination. The models analysed here have been built within disciplines and discourse communities other than linguistics (for example, Graham *et al.*'s model, 2006). Indeed, these models are based on the concept of moving knowledge into action, stressing the value of theories and strategies to be learnt and applied, and most of them also consider

'language' as the interface between knowledge dissemination and disciplinary contents.

On their part, linguists recognize that discourse is "a form of knowledge and memory" (Wodak 2002, p. 8) and it represents "the flow of knowledge – and/or all societal knowledge stored – throughout all time" (Jäger 2004, p. 129). Discourse, therefore, guarantees knowledge dissemination through appropriate techniques which are the object of investigation by linguists. The relationship between knowledge and ideology, as well as the intertwining between knowledge dissemination and ethical issues are also discussed in this contribution, as modern communication technologies have significantly amplified the risk of false information and unethical attitudes developing. All these broad themes represent a challenge for linguists to enlarge their investigations into an increasingly interdisciplinary perspective.

2. Methods and models in knowledge dissemination

The description of knowledge dissemination as a process has been a fundamental area of interest in the studies carried out in national research projects and widely explored in workshops, panels and conferences in recent years, from both a theoretical and an applied approach. For instance, the PRIN/CLAVIER Workshop held in Rome-Sapienza in 2015 developed insights from sociology, science and linguistics (Salvi, Bowker 2015). The same interdisciplinary approach has been adopted to study the discursive construction, maintenance and repairing of trust, a typical element in knowledge dissemination (Salvi, Turnbull 2017).

In the following excerpt *The Economist* aptly illustrates the difficulties researchers face in the process of the growth and enlargement of knowledge as well as in knowledge management, especially in an interdisciplinary aggregation. Moreover, the creation and diffusion of knowledge, in its transformation from being a mere repository of information to becoming a form of transmissible knowledge, is achieved through complex discursive processes.

> The accumulation of knowledge is in some ways a burden. The more is known, the more researchers must absorb before they can add to the stock of human knowledge – or the more they must collaborate with other researchers to combine their areas of expertise. (*The Economist* Sept. 30, 2017, p. 70)

Therefore, this contribution starts with an analysis of some KD models built within disciplines and discourse communities other than linguistics, which

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can, nevertheless, represent the flow of the knowledge transfer process and the relevant steps and strategies.

An overwhelming number of models have been proposed, "[…] as many as 63 different theories or models of knowledge transfer across fields" (Ward *et al.* 2009, p. 157). One of the most influential models was constructed by Ian D. Graham, Professor at the School of Epidemiology, Public Health and Preventive Medicine, University of Ottawa, together with a group of scholars who elaborated the concept of moving knowledge into action. In the first part of their paper Graham *et al.* (2006, pp. 15-16) report basic definitions of multiple terms which are often used interchangeably, such as:

- knowledge translation: "the exchange, synthesis and ethically-sound application of knowledge within a complex system of interactions among researchers and users […]";
- knowledge transfer: "a systematic approach to capture, collect and share tacit knowledge in order for it to become explicit knowledge. By doing so, this process allows for individuals and/or organizations to access and utilize essential information, which previously was known intrinsically to only one or a small group of people";
- knowledge exchange: "collaborative problem-solving between researchers and decision makers that happens through linkage and exchange. Effective knowledge exchange involves interaction between decision makers and researchers and results in mutual learning through the process of planning, producing, disseminating, and applying existing or new research in decision-making";
- knowledge dissemination: "the spreading of knowledge or research, such as is done in scientific journals and at scientific conferences";
- knowledge diffusion: "the process by which an innovation is communicated through certain channels over time among members of a social system".

In these definitions there are many concepts which can be usefully applied to linguistic studies, as for example the enlargement of communities of practice and discourse, the diffusion of knowledge together with skills, the cooperative principle and interaction in knowledge exchange, the use of specific channels, the role of scientific press and conventions, as well as the ethical perspective in the transfer and translation of knowledge. They are all pre-requisites in developing knowledge, transferring research results between universities, organizations and wider communities with a positive attitude.

The model shown later in the article (Graham *et al.* 2006, p. 19, see Figure 1) deserves attention for three reasons. First of all, although it comes from the medical community, it has nothing to do with the discourse of medicine, as it is built in an organizational perspective to improve a health

care system, one of the most complex areas of management. Second, in their paper the Authors equate 'knowledge dissemination' with 'knowledge translation', which raises the question of the meaning of 'translation'.

Apart from the process of translating words or texts from one language into another, the *Oxford Dictionary* shows other interesting entries, such as the one in the domain of Mathematics where translation is "the movement of a body from one point of space to another such that every point of the body moves in the same direction and over the same distance, without any rotation, reflection, or change in size." Hence, if we adopt this denotation, we reject the temptation to alter in any way the quality of the knowledge we want to transmit, clearly adopting an ethical perspective.
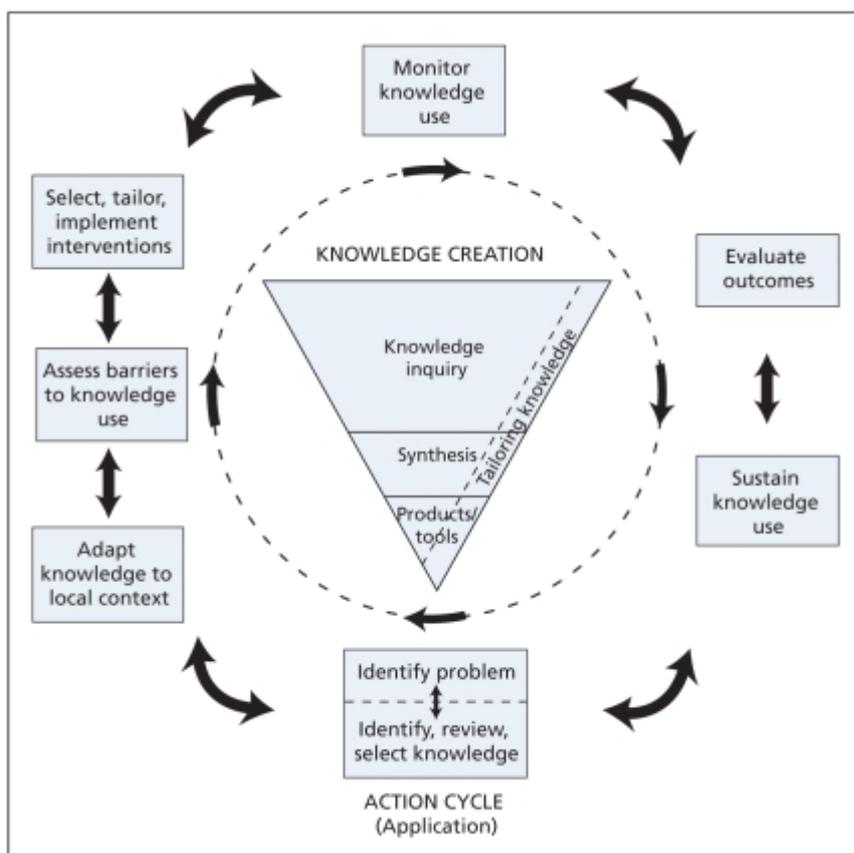
Figure 1
The knowledge-to-action framework (Graham *et al.* 2006, p. 19).

The third reason of interest is that the model is based on the concept of moving knowledge into action. In other words, the process of knowledge translation integrates knowledge creation and knowledge application, so it is a process based on the value of learning – both theories and strategies – and putting into practice. The process is described as dynamic and iterative; it is also flexible because, although it is drawn as a cycle, specialists may need to use the phases out of sequence, depending on the project. Moreover, it takes

into account the end-users of the knowledge (*adapt knowledge to local context*, for example) to ensure that knowledge and its subsequent implementation are relevant to their needs. This corresponds exactly to the objectives to be pursued by linguists, particularly the active use of knowledge by the receiver and the ability to communicate, which can be related to one of the 'barriers to knowledge use' indicated in Graham's model.

The same model has been adopted and adapted by the *Canadian Institutes of Health Research* to promote the application of research and for the process of knowledge translation. The global knowledge translation model proposed by *CIHR* (Sudsawad 2007) results in the following Figure 2.
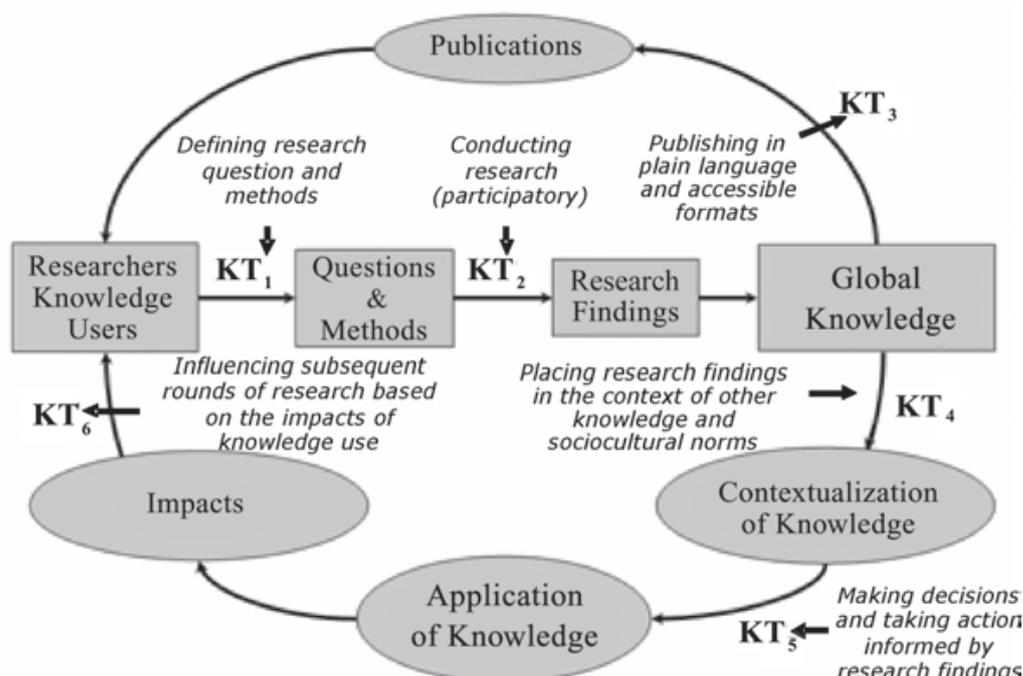
Figure 2
CIHR research cycle and the six opportunities to facilitate KT.

In the figure we can observe the introduction of six opportunities within the research cycle when helpful interactions can take place. These opportunities are:

- KT1: Defining research questions and methodologies;
- KT2: Conducting research (as in the case of participatory research);
- KT3: Publishing research findings in plain language and accessible formats;
- KT4: Placing research findings in the context of other knowledge and sociocultural norms;
- KT5: Making decisions and taking action informed by research findings;

- KT6: Influencing subsequent rounds of research based on the impacts of knowledge use.

They can be easily applied to linguistic studies as well. Both figures show the importance of language, either in terms of language/plain language used or in view of the sociocultural settings involved in knowledge dissemination. In this specific context, all these knowledge translation capabilities go in the direction of an application of knowledge to some practical tasks.

3. Knowledge dissemination and discourse

So far, we have considered how we, as linguists, can approach methods and models originally belonging to other disciplines. However, the models can be suitable to the analysis of many linguistic encounters, such as those concerning English for Specific Purposes, or multimedia communication. This paragraph will first show how other disciplines position language in their specific domains, and then give an example of how other disciplines adopt linguistic tools to treat knowledge issues, particularly knowledge dissemination and management.
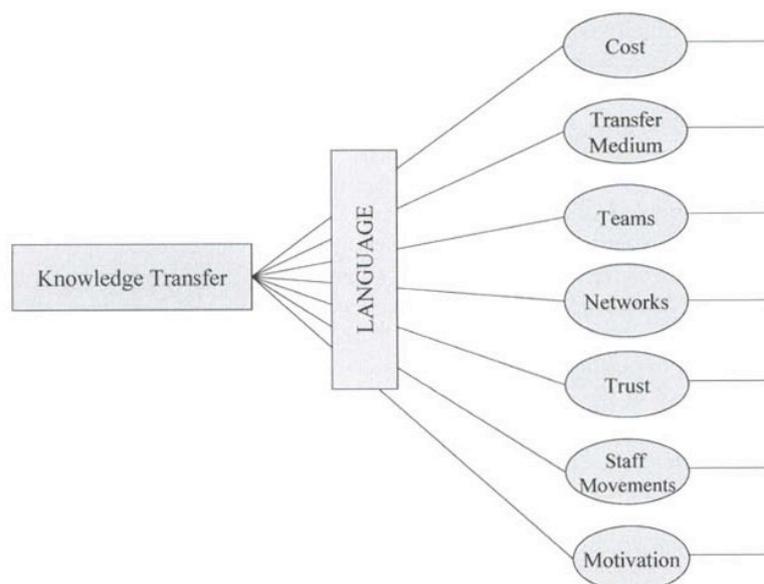
Figure 3
Language Lens on International Knowledge Transfer (Welch, Welch 2008, p. 346).

As far as the first point is concerned, Figure 3 shows the relevance of language as the interface between knowledge transfer and the seven factors which are identified as the most influential in the international knowledge transfer process within multinational companies. In the article the Authors state that "[…] in and of itself, language is a mental model, framing activity and behaviour; it is part of the mindscape" (Welch, Welch 2008, p. 341):

therefore, they argue that language is sufficiently important in its own right to warrant a focused treatment. Their perspective is to understand language not just as a simple vehicle for carrying meaning, but rather as a medium that activates cultural meaning systems. In their contribution, "language" is equated with "English", although the Authors recognize that the rise of China as a global economic power will define different scenarios in future. Therefore, given English as a *lingua franca* in their fields of international business and marketing, they outline the ways in which multinationals tend to move towards the use of a common corporate language in cross-cultural communication to facilitate knowledge transfer and avoid barriers and distortions. They emphasize also the relationship between language and context, as well as the role of language in establishing a level of trust to encourage the exchange of knowledge (Welch, Welch 2008, p. 348; see also Salvi, Turnbull 2017).

They go even further, however, in developing the concept of a "reconfiguration agent" to convey the sense of how language affects the total system within which knowledge transfer takes place.

> By commencing with the fundamental communication model [the relationship between sender and receiver, and the process of encoding/decoding], we have shown how language impinges in a direct fashion on the basic international knowledge transfer act. However, the impact of language goes beyond that. It determines aspects such as who has the information and knowledge, whether and how it is articulated, when and if it is shared, and in what form. We have demonstrated how language may affect sender transfer capacity, recipient absorptive capacity, and operative influences [as shown in the figure]. Through reconfiguring these various elements, language generates ongoing impacts beyond a simple one-off knowledge transfer act – for example, through its contribution to the development of social capital. That is, language is simultaneously an active agent in the knowledge transfer process itself, as well as influencing the background set of determinants. (Welch, Welch 2008, pp. 353-54).

The dynamic influence of language on the whole knowledge transfer system can also be observed in the second point in this paragraph, that is the use of linguistic tools to treat knowledge issues, particularly knowledge dissemination and management, in view of improving learning.

Another key issue in knowledge dissemination studies is the notion of 'Community of Practice'. Indeed, in an article written by Hafeez and Alghatas (2007), professors at the School of Management at Bradford University (UK), the Authors first describe the features of a Community of Practice in order to identify the devices necessary for knowledge management and transfer. Following previous studies, they assume that Communities of Practice represent an intrinsic condition for the existence of knowledge and the main tool for converting implicit knowledge into an

explicit form of knowledge. Research in this field is not irrelevant to linguistics. Moreover, their knowledge transfer model includes four modes, all related to linguistic activities (Hafeez, Alghatas 2007, p. 30): socialization (the acquisition of tacit knowledge directly from others through shared experience, observation, imitation); externalisation (realized by meaningful dialogues or reflections); combination (the diffusion of explicit knowledge in context); internalisation (the process of "learning by doing" through a verbalisation and documentation of experiences). To better understand the concepts and their connections in their field, the Authors adopt Spradley's model (1980) shown below (Table 1):

Level of investigation	Description
Domain analysis	This means capturing the parts or elements of cultural meaning that occur in the conversation by identifying the discrete set of moves used by the participants.
Taxonomic analysis	This is a search for the way that the cultural domains are organised. It usually involves drawing a graphical interpretation of the ways in which the individual participants move, form groups and patterns that structure the conversation.
Componential analysis	This means searching for the attributes of the terms in each domain, the characteristic phrases or sentences that tend to recur within each category of moves.
Theme analysis	The last and final step is to search for patterns or recurrent relationships among domains. If certain moves or language functions tend to enhance learning, then these patterns need to be identified.

Table 1
Investigation levels for discourse analysis (Hafeez, Alghatas 2007; Spradley 1980).

Furthermore, the Authors consider storytelling an effective communicative strategy for transmitting knowledge, as this communication tool serves a number of different purposes, such as explaining complex concepts and expressing personal experiences in an informal way, which can be helpful for converting knowledge into a form that is easier for others to understand. Aren't we, as linguists, close to this?

4. The role of linguistics in knowledge dissemination

We have seen scientific communities acknowledge that language and discourse represent an important condition in the process of knowledge dissemination, so much so that discourse analysis is of fundamental significance in every academic, professional or institutional encounter, together with all the virtual contacts on the web in any sector of human communication. These have all been the objects of research in many

conferences and meetings organized within the framework of national and international projects, and most of the findings have already been published.

As linguists, we can agree that knowledge means all types of content which is consciously acquired and used to interpret and shape the surrounding reality. Everyday knowledge transmitted in schools, families and the media as well as specialized knowledge produced and conveyed by the various sciences equally deserve interest and give us a great deal to think about.

Knowledge is recognized as a cognitive activity. This point is underlined, for example, in an article written by an economist, Joanne Roberts, who draws a distinction between knowledge, information and data (Roberts 2000, p. 430). She states that data is "a series of observations, measurements, or facts"; information is "data that have been arranged into a meaningful pattern"; knowledge is "the application and productive use of information […]; it involves an awareness or understanding gained through experience, familiarity or learning". They are not developed in a linear hierarchy of process, and language features can also be intertwined.

Discourse analysis literature amply remarks on the cognitive nature of knowledge, to such a great degree that just a few examples suffice. As already mentioned, Ruth Wodak views "discourse as a form of knowledge and memory" (2002, p. 8), whilst Siegfried Jäger defines discourse "as the flow of knowledge – and/or all societal knowledge stored – throughout all time" (2004, p. 129), thus almost identifying discourse and knowledge in their social perspective. Lastly, van Dijk (2014) traces the cognitive processes related to the linguistic and discursive management of knowledge, and paves the way for epistemic discourse analysis (EDA). Unsurprisingly, however, these three language analysts agree on the cognitive dimension of knowledge, and also connect 'knowledge' to 'ideology'. Indeed, the word 'ideology' has often been associated with a negative meaning in terms of misguided beliefs and biases. But it is not always so. For instance, if we think of very simple forms of communication, such as proverbs and sayings, which originate from popular traditions, we immediately perceive that the shared knowledge and wisdom of a community and the whole belief system of a group of people are transmitted in short sentences, from one generation to the next, keeping the original meaning. However, van Dijk states that – although our socially shared knowledge cannot possibly 'escape' its ideological boundedness – we cannot assume that all our knowledge is ideologically biased (van Dijk 2008, p. 6; see also Garzone, Catenaccio 2008). Therefore, if we really want to overcome the old opposition and dualism between knowledge and ideology, where knowledge is simply true belief and ideology false belief, we have to take a step forward including the analysis of language in expressing ethical issues. At the present time communication technologies have significantly

amplified the risk of developing false information and unethical attitudes. The very concept of 'ethics' has become manifold and deserves attention, both if we consider ethics as a system of moral principles from a theoretical viewpoint, and if we look on it as the correct behaviour of individuals and institutions.

Ethical principles are inherent in our academic activity, either in the discovery of knowledge through research or in its dissemination through teaching. Once again, an interdisciplinary approach seems to be appropriate to encompass both contents and verbal behaviour. In recent years, the field of medicine has been a gold mine of statements about ethical principles and definitions of moral behaviour in both the treatment of diseases and the management of heath care. Many issues have caused serious disputes all over the world, which have contributed to the spreading and popularization of specific lexicon (such as *stem cell cloning*, *elective abortion*, *organ grafting*, and so on) on the one side, on the other they have also provided fuel for argumentation strategies and new media where the debate on cultural norms and values has broad scope. The publication of specialized journals, such as *Ethics and Medicine*, is a confirmation. The same is happening in the legal field, where the binding body of rules set by a government is often compared to or contrasting with ethical positions adopted by people: in this case we know how the linguistic boundaries between, for example, deontic and epistemic modality can be altered and modified. An updated vision of the contemporary scenario can be found in a recent book, *Ethics and Law*, by W. Bradley Wendel (2014). The legal conflict between corporate and personal knowledge is discussed, for instance, in a paper written by Baskerville and Dulipovici (2006) in which the Authors discuss whether a company "owns" the knowledge of its employees or their knowledge falls under the personal privacy jurisdiction. The image below (Figure 4) shows that individual rights can collide with the interests of a company on the basis of a defence of human rights, framed by cultural values that belong to local/national realities, which can be in contrast with organizational norms.
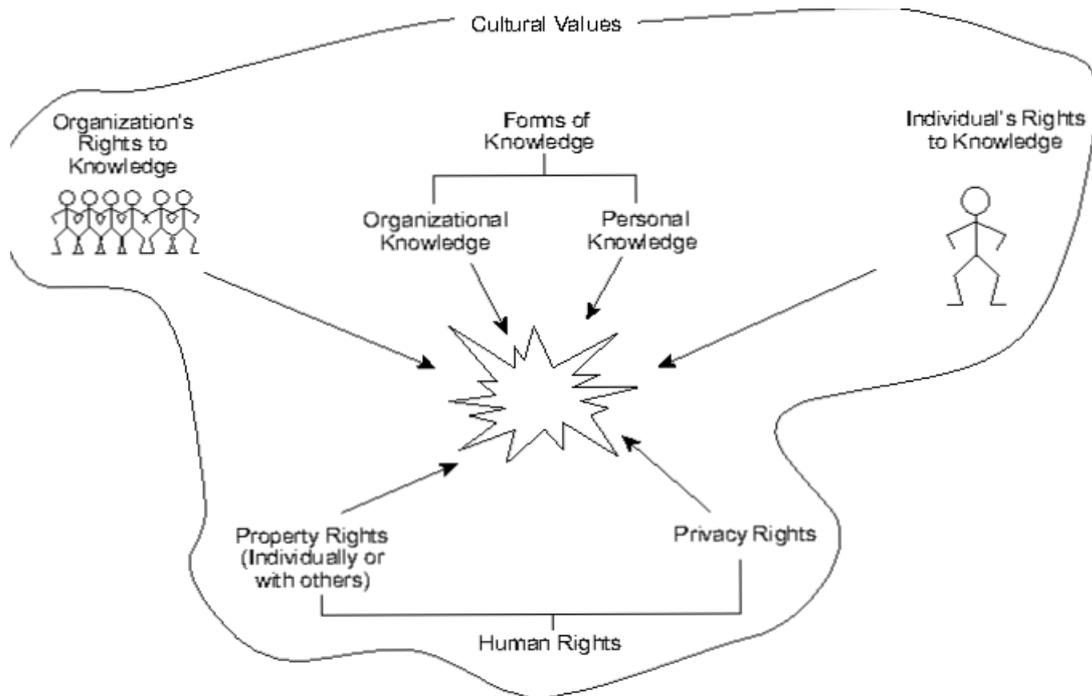
Figure 4
Property or Privacy Rights in Knowledge Transfer? Sources of ethical conflict in
knowledge management (Baskerville, Dulipovici 2006).

A final consideration concerns the "ethics and economics" relationship. In his paper "Economics for Ethics" (2011), Thomas Wells, professor of Business Ethics at the Tilburg School of Humanities and Digital Sciences, builds a bridge between the two apparently contrasting disciplines when he says that "economics is an ethical science, an important branch of applied moral philosophy" and "a great deal of economics is concerned with ethical issues". Ethics, he says, is not only about being "nice and fair" to other people, and economics is not only a means of translating individual selfishness into general wealth. The fact that economists have to cope with scarcity and suggest solutions is a sign of ethical involvement. And this implies a high level of ideology to affirm identity.

Language, in all branches and genres of economics, delivers the sender's stance through which knowledge is transmitted. It may be the case of academic lectures, the most prestigious form of knowledge transfer, where personal and institutional identity are always externalized. The authorial voice of the speaker expressed by the frequent use of 'I' in this genre, as well as the use of "we" with different meanings (establishing contact between the speaker and the audience, or referring to both economists as a discourse community and the developed industrialized countries) aptly combines identity and ideology in knowledge transmission (Salvi 2013). Another example can be found in corporate language in which companies appeal to customers adopting discursive strategies ranging from rhetorical questions to

metaphors, re-formulating technical information in simplified forms, performing articulated strategies in the process of concretization and re-writing (Salvi 2015, 2016).

5. Final remarks

This contribution has been partly inspired by a recent article, "A procedural approach to ethical critique in CDA" (Fairclough and Fairclough 2018) in which ethical critique, usually addressed to actions, is extended to social practices and institutions. Critical Discourse Analysis is defined as a social science method which needs an ethical commitment to impartiality. The Author's distinction between 'concepts' and 'conceptions' can be an effective tool for interpreting ideology-loaded words, such as 'fairness', 'justice' or 'freedom', in different contexts. The focus of inquiry is on 'practical argumentation' in discourse, that is the type of strategies used to evaluate the arguments at issue and the proposals to be tested. Comparison and evaluation of different arguments, expressed principally through language, contribute to 'discourse ethics'.

This chapter has tried to shed light on contacts and connections between linguistics and other domains, particularly from a methodological point of view. Sharing a set of methods, principles and theoretical models, as well as adopting quantitative and qualitative techniques, can be beneficial for scholars of different disciplines. As Ken Robinson says, "Creativity depends on interactions between feeling and thinking, and across different disciplinary boundaries and fields of ideas" (2011, p. 17). Therefore, the concept of interdisciplinarity, which has been a buzzword for a long time, is gaining prominence in teaching and research, despite barriers in both academic structures and corporate settings.

The complete unification and homogenization of knowledge is unthinkable. Nevertheless interdisciplinarity, with its different types of approaches (such as multi-, cross-, inter- and trans-), is necessary to get a broader understanding of some common themes and overcome disciplinary fragmentation. A deeper insight into knowledge production and the transmission process is certainly intertwined with interdisciplinarity.

An intriguing view on the relationship between language and interdisciplinarity can be found in a paper by Bracken and Oughton (2006) where the Authors (one of whom works in the field of geography and the other in rural economics) clearly focus on language as an important aspect of interdisciplinary practice in the development and implementation of research (2006, p. 373). Language, they say, evolves in everyday use and it also evolves in its use within disciplines. They report an appropriate example of variation in writing style when they state: "[…] in physical sciences the use

of the first person is rare, and writing distances the researcher from the object of research, whereas in social sciences the first person is used as a means of acknowledging the role and responsibility of the investigator" (2006, p. 375).

As far as lexicon is concerned, they give the example of the adjective "dynamic" as a point of contrast in different disciplines (physical geography vs social sciences), within which the word has a different meaning (as the Authors say, a word can belong to different *dialects*, that is the specific jargon of a discipline).

> *Dynamic* has both everyday meanings and discipline specific meanings. As an adverb, the OED (1993) defines dynamic as 'of force in actual operation', and this was understood and implicitly used by both participants in the conversation. The problem lay in the differences in the perceived time and spatial scales to which dynamic referred between disciplinary and normal use. To the physical geographer, dynamic meant that stream discharge would be variable depending on the antecedent moisture conditions of the catchment over very short timescales of a few hours to a few days. The social scientists understood dynamic to mean relatively rapid changes over longer timescales, undefined. This confusion could easily have been clarified on the spot had we recognized this as a dialect word. The implications for planning the research in the field were huge, and snowballed from a very simple misunderstanding. This example shows how we got to very different endpoints from a poor matching of understanding of one word. In the company of experts of the same discipline, this misunderstanding would (probably) not have happened. (Bracken, Oughton 2006, pp. 376-377)

An increasingly interdisciplinary perspective therefore seems an essential factor in KD and can offer solutions to the problem of knowledge accumulation and management underlined in the article of *The Economist* which informed some reflections in this paper.

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"NANOTECHNOLOGIES: WHERE SHOULD THEY TAKE US?"
The popularization of nanosciences on the web: A discourse analytical approach

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Abstract - The study investigates a set of web texts dedicated to nanotechnologies with the aim to assess the strategies deployed for the transfer of specialized notions to lay audiences and to evaluate how the controversy potential of the issue on hand is managed by different stakeholders. The texts under scrutiny – EU web pages and web reports issued by the environmental organization Friends of the Earth - show a primary concern, at the lexical level, with the *use* of nanotechnologies: *the use of* is in fact, among the most frequent three-word clusters around the lemma *nano*. In environmentalist texts the topic is often associated with highly emotional topics, i.e. *babies* and *food*, while EU web pages underline a more informational and even beneficial view of nanotechnologies, as in the case of those used *in medicine*, *in the workplace*, or already present *in nature*. This is confirmed also by the analysis of the interactional resources of metadiscourse (Hyland, Tse 2004), in particular hedges, boosters, and attitude markers are often called upon to support the writers' credibility and affective appeals. Coming to the strategies adopted for the purpose of popularizing discourse "to manage its means so as to enable understanding and learning" (Calsamiglia, Van Dijk 2004, p. 17), the corpus of environmentalist reports shows that technical words very frequently used, such as *titanium dioxyde*, *hydroxapatite*, *triclosan*, or *in vivo*, are never defined, suggesting that a previous knowledge of the reader in the field of chemistry and biology is taken for granted. By contrast, texts in the EU section are characterized by plain language, while technical words are very few and, when present, thoroughly explained.

Keywords: nanotechnologies; discourse analysis; popularization; metadiscourse.

1. Introduction

Nanoscience and nanotechnologies deal with materials science and its applications at the nanoscale. The formal definition of nanotechnologies provided by the National Nanotechnology Initiative (NNI) describes them as: "the understanding and control of matter at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications"

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[1] Cecilia Lazzeretti is responsible for § 1. Franca Poppi is responsible for § 2. The discussion (§ 3) and the conclusions (§ 4) were jointly drafted by the two authors.

(NNI 2010, p. 1). Since nanotechnologies can have applications in several sectors, ranging from medicine, engineering and electronics to food, cosmetics, and renewable resources, they are bound to have strong repercussions on humans' daily life. However, they still have a "relatively low level of public visibility" (Dudo *et al.* 2011 p. 57), as confirmed by surveys conducted in the US among the general public. In fact, four out of five Americans (80%) think that they are "not well-informed" about nanotechnologies, with a fifth of all respondents (20%) thinking of themselves as "not informed at all" (Dudo *et al.* 2011).

Obviously, socio-cultural factors play a significant role in orienting attitudes and public perceptions. In this regard Corley and Scheufele (2010) have shown that individuals with at least a college degree displayed an increase in nanotechnology knowledge levels between 2004 and 2007, while those with education levels of less than a high school diploma had a significant decrease in knowledge levels.

Even if nanotechnologies have been described as a "potentially controversial science" (Fisk *et al.* 2014, p. 156), so far they have escaped the destiny of GMOs, when a wide-reaching backlash against genetically modified food was generated by the incapacity of adequately controlling the media exposure of scientists and experts and, above all, by the limited consideration for public perception mechanisms and social impacts of research (Lorenzet 2012, p. 2). This is confirmed, for instance, by a series of surveys conducted between 2000 and 2010 both in Europe and the United States, which showed that public opinion considered nanotechnologies generally useful, good, and positive, with their benefits outweighing possible risks (Lorenzet 2012).

As with GMOs, also when it comes to nanotechnologies there is a divide between public and expert opinion (Ho *et al.* 2011). However, while GMOs are widely considered safe by scientists and mistrust in the public has mostly been fostered by the media, interestingly enough in the case of nanotechnologies, it is the scientists who are significantly more worried about some long-term potential negative impacts on health and the environment of nanotechnology than the greater public (Scheufele *et al.* 2007). Unsurprisingly, it was molecular nanotechnology pioneer Eric Drexler who first suggested that nanotechnologies could lead to a new industrial revolution of unbearable proportions (Drexler 1986). On the haze of the visionary hype that was accompanying the development of this new science, Drexler unintentionally contributed to the generation of the so-called 'grey goo' scenario, prefiguring a hypothetical end-of-the-world situation, with self-replicating nanomachines eating out the planet:

> tough, 'omnivorous' bacteria could out-compete real bacteria: they could spread like blowing pollen, replicate swiftly, and reduce the biosphere to dust in a matter of days. Among the cognoscenti of nanotechnology, this threat has become known as the grey goo problem. (Drexler 1986, p. 172)

The 'grey goo' narrative, which actually takes up only two pages of Drexler's book *Engines of Creation* (1986), was used as an example of the possible dangers associated with nanotechnologies, even if Drexler himself felt the need to back away from his famous claim afterwards, realizing that it could lead to conflicts between science and society.

Since that precedent and because of the lessons coming from previous negative experience on biotechnology, scholars have consistently suggested the importance of a close supervision on the social and ethical reflections surrounding nanotechnologies since the early stages of their development. Hence, despite the potentially deflagrating 'gray goo' incident, scientists and policy makers have managed to limit the spread of negative implications related to nanotechnologies by adopting meaningful communication and avoiding biased terminology (Lorenzet 2012). This is confirmed by the results obtained by means of the tool Google Trend, which measures the information demand by citizens on selected topics, by plotting the frequency of Google searches for related keywords. The results obtained in the present time of writing by feeding Google Trends three specific keywords, namely: nanotechnology, biotechnology and climate change, confirm the same results obtained by Lorenzet in 2012. They highlight a progressive decrease in public interest towards nanotechnology over the last fifteen years and show how the interest in nanotechnology is considerably less than that in other potentially controversial issues, such as 'biotechnology' and 'climate change' (see Figure 1).
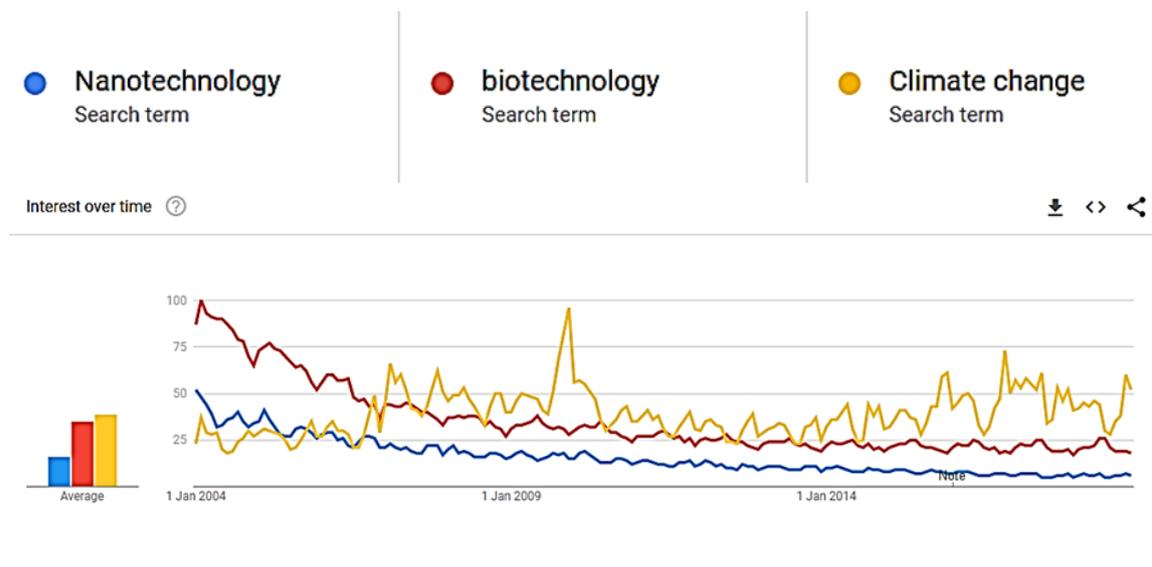
Figure 1
Global Information Demand on Google for nanotechnology, biotechnology, and climate change (source: Google Trends, normalized data; November 2018).

On the one hand these results can be explained by considering that public understanding of nanotechnology is still minimal (Cobb, Macoubrie 2004; Scheufele, Lewenstein 2005), even though media reporting has been increasing over the past decades (Stephens 2005) and many efforts have been made to elicit public participation through 'upstream engagement' practices (Wynne 2001).

On the other hand, it should be borne in mind that these results may be an overgeneralization, as different countries – and different communities – respond differently to nanotechnology risks (Gaskell *et al*. 2005). In particular, a transatlantic divide exists in the public perception of nanotechnologies, since more favourable attitudes towards nanotechnologies were found in the United States than in the United Kingdom and Europe (Burri, Bellucci 2008; Einsiedel 2005; Fisk *et al,* 2014; Gaskell *et al.* 2004, 2005). More religious countries, including Italy, Austria and Ireland, also show more sceptical attitudes. According to a research carried out by Scheufele *et al.* (2009), nanotechnologies were perceived as 'morally acceptable' by only 33.5% of respondents in Ireland, while the proportion in Belgium was 82.4%. In addition, the proportion of respondents who disagreed that nanotechnologies were 'morally acceptable' was also relevant in the United States (24.9%).

Some research suggests, however, that the message about nanotechnology could be evolving over the time to highlight the relative risks which had previously been neglected or overseen (Weaver *et al.* 2009). This trend would appear coherent with patterns in the US media coverage of biotechnology – which was, in general, initially positive, but grew more critical over time (Ten Eyck, Williment 2004). Likewise, nanotechnology-related communication might be in its early, positive phase, and conflicts might be yet to come. As the risk of replicating the biotechnology scenario is not entirely averted, it is surely interesting to observe how different stakeholders communicate about nanotechnologies.

2. Materials and methods

The present study focuses on selected communication about nanotechnologies made available on the web: a set of EU webpages dedicated to nanotechnologies and reports on the same topic released by the environmental organization Friends of the Earth. In order to carry out the analysis, two small-scale corpora were compiled, which respectively include: 1) web reports on nanotechnologies issued by Friends of the Earth (from now on FOE) in 2011, 2014, and 2016; 2) EU webpages on nanotechnologies published in the period from 2013 to 2019.

Nano silver: policy failure puts public health at risk https://foe.org/resources/nano-silver-policy-failure-puts-public-health-at-risk/ (NS)	11,257 tokens
Tiny ingredients, big risks https://1bps6437gg8c169i0y1drtgz-wpengine.netdna-ssl.com/wp-content/uploads/2017/legacy/2014_Tiny_Ingredients_Big_Risks_Web.pdf (TI)	20,775 tokens
Nanoparticles in Baby Formula. Tiny new ingredients are a big concern https://foe.org/resources/nanoparticles-in-baby-formula-tiny-new-ingredients-are-a-big-concern/ (NP)	15,694 tokens
TOTAL	47,726 tokens

Table 2.1
FOE reports on nanotechnologies issued on www.foe.org.

Nanoscience and technologies http://ec.europa.eu/research/industrial_technologies/nanoscience-and-technologies_en.html	960 tokens
Outreach projects http://ec.europa.eu/research/industrial_technologies/outreach_en.html (OP)	292 tokens
About NanoDiode http://www.nanodiode.eu/about-nanodiode/ (ND)	2,228 tokens
About Nano http://nanopinion.archiv.zsi.at/en/about-nano.html (NO)	3,560 tokens
Nanoyou project https://nanoyou.eu/nanoyou-project/about.html (NY)	559 tokens
TOTAL	7,599 tokens

Table 2.2
EU webpages on nanotechnologies.

Friends of the Earth is a global organization rooted in the United States and founded by David Brower in 1969, which is present in 75 countries. Its members define it as "the world's largest federation of grassroots environmental groups".[2] Its aim is to "defend the environment" and "champion a more healthy and just world". The reports on nanotechnologies collected for

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[2] From www.foe.org. Accessed on January 2019, 22.

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the present study are the outcome of independent laboratory analyses commissioned by the association and made available online on the FOE website.

Nanodiode.eu, nanopionion.eu, gonano-project.eu and nanoyou.eu are web platforms launched by the EU in 2013 to establish an innovative, coordinated programme for outreach and dialogue throughout Europe, so as to support the effective governance of nanotechnologies. They were created with the aim of monitoring public opinion on nanotechnologies, with a special focus on hard-to-reach target groups, e.g. people who do not normally encounter and give their opinion on nanotechnologies at first hand. Nanoyou (Nano for Youth), in particular, aims to increase young people's basic understanding of nanotechnologies and to engage in the dialogue about its ethical, legal and social aspects. Specific pages devoted to research in nanosciences and nanotechnologies within the main European Commission website (ec.europa.eu), were also taken into consideration in the analysis,

The aim of the analysis is to assess how specialized information about nanotechnologies is transferred to lay audiences, with a view to evaluating how the controversy potential of the issue on hand, i.e. nanotechnologies, is managed by different stakeholders. Indeed, even though knowledge dissemination is often referred to as a "recontextualization" (Calsamiglia, Van Dijk 2004) or a "translation" (Gotti 2014) of scientific information from experts to non-experts, it is nonetheless true that any communication does not simply mediate the scientific knowledge, but actively contributes to the production of new, common knowledge and opinions about science and scientists – including information and views that do not derive from scientific sources (Calsamiglia, Van Dijk 2004, p. 371). This is why popularizing texts can "inform, raise awareness and cause the reader to take action" (Gotti 2014, p. 29), depending on how the schematic structure of knowledge is organized.

The methodology used for the analysis relies on corpus linguistics and discourse analysis. In the first place all the texts contained in the two corpora were uploaded to the linguistic analysis software Wordsmith Tools (Scott 2016): after creating two sets of wordlists, the concordances of the most frequent lexical items were plotted, so as to obtain the main clusters in which they featured. Then the extended co-text of these clusters was analyzed, with a view to investigating the prevailing semantic prosody[3] associated with the

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[3] Semantic prosody has been studied by corpus linguists for almost two decades. Still, Hunston (2007, p. 249) refers to it as a "contentious term". In fact, disagreement on what it refers to has led to debates on the topic (e.g. Hunston 2007; Stewart 2010). Points of disagreement include the questions of (a) whether the prosody resides in the lexical item or in the discourse, (b) whether semantic prosody is connotational in nature or not, and (c) whether, or how, semantic prosody is different from semantic preference. See Hunston (2007), Morley and Partington (2009), and Partington (2004) for a discussion of these issues. Highly critical views of semantic prosody have also been voiced (Whitsitt 2005, in particular).

examples, in order to shed light on the aura of meaning with which each of the selected word forms is imbued by its collocates" (Louw 1993, p. 157).

In order to fine-tune the results that emerged from the scrutiny of semantic prosody and gather more information on how the writers handle the reader's interpretative process, reference was made to Hyland and Tse's 2004 study. Accordingly, the two corpora were searched for instances of interactive markers,[4] which "are concerned with ways of organizing discourse […] and reflect the writer's assessment of what needs to be made explicit" (2004, p. 168) and interactional resources,[5] which are essentially evaluative and engaging, as they "involve readers in the argument by alerting them to the author's perspective towards both propositional information and readers themselves" (2004, p. 168).

Finally, it was decided to focus on the strategies of explanation adopted to mediate scientific knowledge, in the attempt to disclose how and to what extent each of the two corpora actively contributes to the production of new, common knowledge and opinions, which do not necessarily derive from scientific sources. Accordingly, following Calsamiglia and van Dijk's (2004) categorization of the various strategies of explanation deployed to introduce new knowledge, the corpora were scrutinized in search of those "semantic means that allow language users to relate new knowledge to old knowledge" (2004, p. 370). In particular, the analysis revealed the presence of descriptions, definitions and examples.

3. The Analysis

3.1. Comparing the corpora

Both typologies of texts under scrutiny show a primary concern, at the lexical level, with the *use* of nanotechnologies. *Use* is the second most frequent lemma in the corpus of EU webpages, after *nano*, and the third in the corpus of FOE reports, after *nano* and *food*, as shown in tables 3.1 and 3.2.

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[4] Interactive resources include: *transitions*, mainly conjunctions; *frame markers*, which refer to text boundaries or elements of schematic text structure; *endophoric markers*, which refer to other parts of the text; *evidentials*, which indicate the source of textual information and *code-glosses*, which signal the restatement of ideational information in other ways (Hyland, Tse 2004, p. 168).

[5] Interactional resources include: *hedges*, which mark the writer's reluctance to present propositional information categorically; while *boosters* imply certainty and emphasize the force of propositions; *attitude markers*, which express the writer's appraisal of propositional information; *engagement markers*, which explicitly address readers; and *self-mentions*, which reflect the degree of author presence in terms of the incidence of first person pronouns and possessives (Hyland, Tse 2004, pp. 168-170).

	Lemma	occurrences	ptw normalized frequency[6]
1	*nano*	314	41.3
2	*use*	77	10.1
3	*research*	53	7.0
4	*produce*	50	6.6
5	*europe*	44	5.8
6	*risk*	40	5.3
7	*inform*	36	4.7
8	*safe*	27	3.6
9	*new*	25	3.3
10	*dialogue*	23	3.0

Table 3.1
EU top lexical lemmas.

	Lemma	occurrences	ptw normalized frequency
1	*nano*	1,616	33.9
2	*food*	550	11.5
3	*use*	363	7.6
4	*produce*	361	7.5
5	*health*	289	6.1
6	*environment*	261	5.5
7	*safe*	199	4.2
8	*risk*	198	4.1
9	*ingredient*	134	2.8
10	*baby*	124	2.6

Table 3.2
FOE top lexical lemmas.

3.1.1. EU webpages

The use of is the first most frequent three-word cluster around *nano* in the EU corpus (see table 3.3).

	3-word cluster	occurrences	ptw normalized frequency
1	*the use of*	10	1.3
2	*at the nanoscale*	7	0.9
3	*what are nanotechnologies*	5	0.6

[6] The two corpora under scrutiny are not homogenous in terms of tokens, so the occurrences were normalized per thousand words, in order to make them comparable.

| 4 | *nanodiode is a* | 5 | 0.6 |

Table 3.3
EU most frequent 3-word clusters containing *nano*.

Looking at the co-text of *the use of*, it is possible to notice the presence of positively connoted expressions like *innovations* (example no. 1), *target cancer tumours* (example no. 2) and *increase the amount of electricity generated by each windmill* (example no. 3).

(1) and the use of nanotechnological innovations throughout society (ND)
(2) the use of 120nm diameter nanoparticles coated with a gold shell to target cancer tumours (NO)
(3) Lower weight blades are made possible by the use of nanotube-filled epoxy. The resulting longer blades increase the amount of electricity generated by each windmill (NO)

Obviously, also potential risks are mentioned:

(4) Nanosilver has many beneficial uses, but its benefits must be balanced over the risk of dispersing silver nanoparticles in the environment (NO)

Indeed, the word 'risk' has a higher frequency in the EU texts than in the FOE corpus (see tables 3.1 and 3.2). However, nanotechnologies are never associated with an idea of immediate *danger* (no hits of this word in the corpus), even if, in order to promote the responsible development of nanotechnologies in Europe, it is necessary to properly address the potential risks or challenges, without raising unnecessary alarm:

(5) Some recent research has shown that some nanoparticles, like carbon nanoparticles, can be found in a variety of products that contain "food caramels", which means things like bread, corn flakes, and biscuits. *This shows that we have been already exposed to nanomaterials probably for a long time with no harm caused to humans.* Any emerging technology may be associated with unknown health risks when it first reaches consumers. Think for instance of mobile technology: the health risk of using mobile phones emerged after years of using them and even now this risk is not fully understood. Despite this, we use them routinely. (emphasis added) (NO)

All in all, given the rather positive semantic prosody which is detected in the examples, it is possible to state that EU webpages underline a rather beneficial view of nanotechnologies, which are used *in medicine, in manufacturing* and are also already present *in nature* (*natural nanomaterials*).

(6) Using nanoparticles in the manufacture of solar cells is beneficial. (NO)
(7) Silver nanoparticles in socks eliminate the bacteria which cause smelly feet (NO)
(8) However some argue that the use of nanomaterials in medicine is fairly new (NT)

(9)   Nanosized drug carriers to target cancer cells (NO)
(10)   Often nanomaterials seen in nature are used as an inspiration for engineering
           innovative ones! (NO)
(11)   strong and flexible materials like cobwebs are all using natural nanotechnologies
           (NO)

3.1.2. Friends of Earth (FOE) reports

In the FOE reports *the use of* is the third most frequent three-word cluster
around the lemma *nano* (see table 3.4).

	3-word cluster	occurrences	ptw normalized frequency
1	*of nano silver*	57	1.1
2	*in baby formula*	36	0.7
3	*the use of*	35	0.7
4	*nanoparticles in baby*	33	0.6

Table 3.4
FOE: most frequent 3-word clusters containing *nano*.

However, differently from what happens in the EU webpages, this cluster is
associated with a semantic prosody evoking a sense of impending danger, as
confirmed by the presence of expressions like: *inquire with their suppliers;
warns about the different properties of nanomaterials* and *demand a
moratorium on the use of nanotechnology.*

(12)   We encourage companies to inquire with their suppliers about the use of
           nanomaterials (beyond just titanium dioxide) in all products they offer (TI)
(13)   However, the agency's 2012 draft guidance on the use of nanomaterials in food
           warns about the different properties of nanomaterials compared to
           ingredients used in traditional manufactured food substances. (TI)
(14)   Join Friends of the Earth to demand a moratorium on the use of nanotechnology in
           the food sector (NP)

Beyond the emphasis on the dangers connected with the use of
nanotechnologies, FOE reports also show an association of nanotechnologies
with highly emotional topics, i.e. *babies* and *food*.

(15)   Preliminary studies suggest that nanomaterials may accumulate (and possibly even
           magnify) in organisms along the food chain. (TI)
(16)   Nanoscale titanium and nanosilver are believed to be the most used nanomaterials
           in food and food contact materials. (TI)
(17)   To our knowledge, these are the first laboratory studies focused on the detection of
           engineered nanomaterials in baby formulas that are marketed to the public. Friends

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of the Earth tested a selection of six baby formula samples gathered from retailers in the San Francisco Bay Area. (NP)

Actually, language points to something more than a mere association. In fact, when referring to *babies* and *food*, it looks like Friends of the Earth are aiming at sensitizing public stakeholders towards the pervasiveness of nanotechnologies, which are to be found everywhere, including food and baby formulas, thus possibly contaminating our environment. In other words, the association between something new, about whose effects we still do not know much (nanotechnologies) and *babies* and *food*, namely two very sensitive issues which should normally be associated with a reassuring and positive context, seems to bring forth a negative semantic prosody, which is further amplified by the high frequency of the verb *found* (see table 3.5).

	verb	occurrences	Ptw frequency
1	*used*	126	2.6
2	*found*	87	1.8
3	*accessed*	80	1.6
4	*including*	62	1.2
5	*states*	51	1.0
6	*associates*	47	0.9
7	*manufactured*	42	0.8
8	*based*	37	0.7
9	*emerging*	37	0.7
10	*engineered*	31	0.6

Table 3.5
FOE: most frequent lexical verbs.

In fact, looking at the collocates of *found*, we can find words like: *concern, inhalation hazard*, etc, which evoke a negative scenario:

(18)   We *found* nanosized structures and particles of potential *concern* in all six of the baby formulas tested, including: Nanohydroxyapatite (nano HA) in needlelike and non needlelike form, nano titanium dioxide (TiO2), and nano silicon dioxide (SiO2) (the nano TiO2 and SiO2 results were inconclusive) (emphasis added). (NP)

(19)   Nanoparticles in Baby Formula *found* in the three powdered formulas we tested provide a probable *inhalation hazard* for babies, parents and other care givers, as well as workers involved in the manufacturing of these products (emphasis added). (NP)

On the contrary, the verb *found* does not figure prominently in the EU corpus:

	verb	occurrences	Ptw frequency
1	*used*	26	3.4
2	*using*	17	2.2
3	*make*	13	1.7
4	*funded*	12	1.5
5	*containing*	11	1.4
6	*needs*	11	1.4
8	*challenges*	8	1
9	*develop*	8	1
10	*need*	5	0.6

Table 3.6
EU: most frequent lexical verbs.

3.2. Metadiscourse markers

In order to fine-tune the results provided by the scrutiny of the word-lists, clusters and extended co-text, it was decided to search the two corpora for metadiscourse markers, in order to better establish how the writers handle the reader's interpretative process. The qualitative analysis carried out on the basis of the model of metadiscourse provided by Hyland and Tse (2004, p. 169) highlighted the presence of interactional markers, with a preference for *hedges*, *boosters* and *attitude markers*.

	EU	FOE
hedges	1.3	0.2
boosters	0.2	0.1
attitude markers	1.5	0.5

Table 3.7
Metadiscourse markers.

3.2.1. Metadiscourse markers in EU webpages[7]

Once again, by looking at the EU webpages, we come across a rather positive attitude towards nanotechnologies, combined nonetheless also with the awareness of potential risks or challenges.

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[7] In all the examples that follow, the different metadiscourse markers have been highlighted by using italics.

(20)   Regarding those grand societal challenges and the need to respond to them by means of technological innovation too, *it is clear that* dialogue on between the European public, policymakers, researchers and producers needs to be fostered. (ND)

(21)   In addition they (nanofilters) are more efficient, and they have *incredibly* large surface areas and can be more easily cleaned (NO)

(22)   Meaningful communication is *especially* needed in the case of nanotechnology as the public seems to be more sceptical and less deferential about it. (NT)

Since it is important not to raise unnecessary alarm, hedges are often used to mitigate the force of statements referring to the possible negative impact of nanotechnologies:

(23)   Some say we should avoid overuse of silver (in any form) in consumer products, as this *might* induce bacterial resistance in the environment.(NO)

(24)   In these products the nanomaterials are embedded inside a composite, so there is no direct exposure risk to consumers. Workers producing this material *might* need some specific protection (filter masks, etc.). (NO)

3.2.2. Metadiscourse markers in FOE reports

Hedges seem to serve a different function in the FOE reports. In fact, because of the constant presence in their co-text of words charged with a negative semantic prosody, their use does not make the statements more tentative, but on the contrary, they add to their *ominous* force:

(25)   *Perhaps* the most insidious environmental impact associated with the expansion of nanotechnology in agriculture is its entrenching our reliance on the dominant chemical intensive industrial agricultural model. (TI)

(26)   It is difficult to know how widespread bacterial resistance to silver *might* already be in our hospitals and broader society. (NS)

Boosters and attitude markers serve the purpose of re-affirming the organization's negative outlook on nanotechnologies:

(27)   This is why *we believe* it is important to assess the risk of even small amounts of particles in the human body (TI)

(28)   *It appears* we are on the verge of repeating many of the mistakes associated with our enthusiastic adoption of conventional agrochemicals, whose long-term health and environmental costs are borne by farming communities and ecological systems worldwide. (NP)

(29)   *Unfortunately,* many food items that Americans eat on a daily basis contain nanomaterial ingredients. (TI)

3.3. Strategies of explanation

The final stage of the analysis focuses on the strategies of explanation deployed to introduce new knowledge. Accordingly, following Calsamiglia and van

Dijk's (2004) categorization, the two corpora were scrutinized in search of definitions, descriptions, examples, metaphors and the like.

3.3.1. Descriptions, definitions[8] and exemplifications

EU texts are characterized by plain language, intentionally avoiding technicalities and obscure terminology; technical words are very few and, when present, generally explained by means of definitions or exemplifications.

(30)   At the nanoscale materials that we are familiar with can show new properties. *For example*, a sheet of aluminium foil is a handy way to keep your sandwiches fresh until lunchtime. But if you take that same aluminium and grind it into smaller and smaller pieces, when they become very, very tiny (nanosize in fact) something odd happens – they become extremely reactive. Even explosive! This makes aluminium nanoparticles great for putting in rocket fuel, but probably not something you want near your lunch! (NO)

(31)   Other innovative textiles have fibres specially engineered with nanomaterials that make the textile dirtrepellent: *if you spill a coffee onto these tshirts, they don't get stained!* (NO)

(32)   *Imagine* popping a pain pill that is not only smaller, but up to nine times more effective. Using nanocrystals of drugs can make them more absorbable and better suited to reach their destination inside the body. (NO)

The FOE corpus only contextualizes and explains nano-related terms, while it provides very few definitions of other scientific terms applied in the nano discourse. For instance, technical words very frequently used – as *titanium dioxyde*, *hydroxapatite*, *hydrosol*, *triclosan*, or *in vivo* – are never defined in the corpus, suggesting that a previous knowledge of the reader in the field of chemistry and biology is taken for granted:

(33)   Inability to assess the safety of a silver hydrosol added for nutritional purposes as a source of silver in food supplements (TI)

Conversely, an effort in describing the nano world is to be noticed:

(34)   The term "nanotechnology" does not describe a singular technology, but rather encompasses a range of technologies that operate at the scale of the building blocks of biological and manufactured materials – the "nanoscale." There is still no internationally accepted set of definitions and measurement systems for nanotechnology, although work towards these has begun. However, the term "nanotechnology" is now generally understood to encompass both nanoscience and the broad range of technologies that operate at the nanoscale. (NP)

Explanations in the form of a glossary may also be provided:

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[8] Calsamiglia and van Dijk (2004) point out that *definitions* are used to explain unknown words, while *descriptions* explain unknown things (p. 379).

(35)   Nanoscience: The study of phenomena and materials at the atomic, molecular and macromolecular scales, where properties differ significantly from those at the larger scale. Nanotechnology: design, characterization, production and application of structures, devices and systems by controlling shape and size at the nanoscale. Nanomaterials: particles, nanotubes, nanowires, quantum dots, fullerenes (buckyballs), etc. (NP)

Finally, exemplifications can also be expressed by means of comparisons or similes:

(36)   One nanometre is to an apple what an apple is to the Earth. (NO)
(37)   One nanometer is one billionth of a meter. One way to understand how incredibly tiny these particles are is to consider a tennis ball in comparison with planet Earth. On scale, a tennis ball is the same size in relation to Earth as a nanoparticle is to a tennis ball. (TI)

However, once again, despite the apparent similarity between the two examples, it is possible to notice that while the former has a purely didactic and exemplificatory aim, the latter seems to stress the fact that since nano-particles are so tiny, they are everywhere, as it is very difficult to be able to spot and, especially, to dispose of them.

4. Conclusions

Popularization is a matter of interaction as well as information: it involves persons and identities alongside messages. Since it is not written on a blank slate of public ignorance, but enters into an "interdiscursive memory bank" (Myers 2003, p. 267), it is necessary to investigate it within a framework which takes into account the actors involved, their language choices and strategies and their communicative goals. In particular, since any communication does not simply mediate scientific knowledge, but actively contributes to the production of new information and views that do not derive from scientific sources (Calsamiglia, Van Dijk 2004, p. 371), the present study aimed to establish how the controversy potential of the issue on hand, i.e. nanotechnologies, is managed by different stakeholders. Relying on some of the tools of corpus linguistics, i.e. frequency-ranked wordlists, concordance lines, clusters and collocations, the first phase of the analysis established that differently from what happens in the EU webpages, where a rather beneficial view of nanotechnologies is underlined, FOE reports rely on a semantic prosody evoking a sense of impending danger. These two contrasting attitudes are confirmed by the analysis of interactive markers, which show a rather positive attitude towards nanotechnologies in the EU webpages. Potential risks

or challenges are not ignored, but in order not to raise unnecessary alarm, the statements referring to the possible negative impact of nanotechnologies generally feature hedges.

However, when the same interactional markers, i.e. hedges, are employed in the FOE reports, they serve a different function. In fact, since they often co-occur with words charged with a negative semantic prosody, their use adds to the ominous force of the statements, which is further reinforced by boosters and attitude markers.

Finally, when the two corpora were investigated in search of strategies of explanation deployed to relate new knowledge to old knowledge, they revealed the presence of descriptions, definitions and examples. EU texts are characterized by plain language with few technical words, which are thoroughly explained by means of definitions or exemplifications. By contrast, the FOE corpus does not provide many definitions of other scientific terms applied in the nano discourse. As a consequence, very frequently used technical words are never defined in the corpus, suggesting that a previous knowledge on the part of the reader in the field of chemistry and biology is taken for granted. Also when both corpora make use of a similar strategy of exemplification, by means of comparisons or similes, they do so to achieve different purposes. In fact, while the EU texts rely on a purely didactic and exemplificatory aim, the FOE reports seem to stress the negative implications of the reduced size of nano-particles.

In order to limit controversy about nanotechnologies and refrain from repeating the errors made in the case of GMOs, Lorenzet (2012) suggested downgrading the discourse on the risks connected with their use. Since so far the public is apparently not worried and generally supportive, it looks like the spread of negative implications related to nanotechnology can be avoided by adopting meaningful communication participation and by opening the discussion to other concepts and topics that can stimulate involvement, such as the impact on daily life, work activities, technological innovation, among others. This in indeed what we can find in the EU webpages, whose ultimate aim is to ensure a responsible development of nanotechnologies, so that this technology can progress while at the same time making sure workers and consumers are not exposed to risk. By contrast, the FOE reports constantly evoke a sense of impending danger in connection with nanotechnologies, and in order to make the information provided more authoritative, background information is taken for granted, as if to imply that the information is provided by extremely reliable and knowledgeable sources addressing well informed and well-read audiences.

The results of the analysis prove that the texts in each corpus do not simply limit themselves to conveying scientific knowledge, but also convey information and views that are clearly at odds, even though they refer to the same issue.

However, due to the limitations of the analysis, especially in consideration of the small size of the corpora, the discursive, social and mental processes concerning the management of knowledge about nanotechnologies have been only superficially disclosed. More multidisciplinary research will be needed to find out whether communication about nanotechnologies is actually evolving or not, towards highlighting the potential risks which had previously been neglected or overseen.

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REPRESENTATION OF GENE-EDITING IN BRITISH AND ITALIAN NEWSPAPERS
A cross-linguistic corpus-assisted discourse study

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Abstract – This study provides a cross-linguistic overview of the most recurrent representation strategies of gene-editing in British and Italian newspapers over a period between 2015 and 2018. The aim of the study is to a) identify the archetypal representations in English and in Italian, also considering translation-related issues, and b) to assess whether these representations are positively or negatively framed across the corpora. The research is carried out in a quantiqualitative vein, using the method of corpus-assisted discourse analysis. Corpus linguistics tools are used for text search and data processing and rely on the triangulation of normalized frequency, dispersion and range parameters. Methods of (critical) discourse analysis are applied to the qualitative part of the research. Literature on science popularization and metaphorical framing of genetic concepts is also part of the analytical toolkit. The findings identify a relative lack of terminological stability concerning the denomination choices, especially evident in the Italian corpus. The archetypal representation strategy revolves around the idea of technology and (physical) change. The analysis highlights the use of some ideologically charged denominations across the corpora, with a prevalently positive framing of the technology as applied to agriculture in the Italian corpus and a more balanced framing of gene-editing in the UK corpus. The findings uncovered a paradigm shift in the metaphorical representation of genome: from a mysterious code of life to a domesticated and operationalized idea of a tool.

Keywords: gene editing; representation; cross-linguistic corpus-assisted discourse analysis.

1. Introduction[1]

The developments of biology and medicine raise fundamental questions which should be subjected to appropriate public discussion as they concern

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core issues in people's lives, given that new technologies in the biomedical field have paved the way to new and hitherto unknown possibilities. One of such possibilities is the so-called gene-editing, also known as genome editing, a technique through which living organisms – plants, animals and even humans – could be modified by introducing changes at the gene level, *in vitro* and *in vivo*. Scientific and lay communities are preoccupied with drawing lines between the possible 'ethical' uses of this technology – ranging from improving agricultural yield by plant gene-editing (Piatek *et al.* 2018) and curing rare genetic diseases by gene therapy on human patients *in vivo* (Nami *et al.* 2018) – and potential 'unethical' applications aimed at human enhancement, which could produce superhumans and designer babies. Yet, the borderline between these two poles is not as solid as most people would like to think; in fact, it becomes increasingly porous (Benjamin 2015, p. 50). The novelty of this technology has left modern regulators unprepared, as it is difficult to regulate a tool, which can be used for a variety of applications. Most probably, the regulators' approach will tie into consolidated public attitudes towards what is considered appropriate and ethical and what is a taboo. Consequently, it is of utmost importance that the public at large learns about these scientific novelties in order to take an informed decision on this highly controversial issue.

It has been posited that popularisation "is the only possible solution" (Garzone 2006, p. 81) to inform the public at large about modern advances in science and technology. Gene-editing, as an advancement that touches upon the cornerstone of human existence, has to undergo thorough public scrutiny, yet this scrutiny often relies on various media "as a source of health information (and misinformation)" (King, Watson 2005, p. 1). In fact, any public inquiry into controversial issues will inevitably rely on the information received through conventional or new mass media rather than the actual underlying science, which, along with reaching vast audiences, are actively involved in setting the agenda of the popularisation process. They leave an impact on the construction of the public's understanding of scientific phenomena by producing news and providing opinions (Garzone 2006, p. 84; Gotti 2014, p. 26). As a result, media discourse can promote positions of power and ideologies (Fairclough 1995), in light of the tendency of mass media to provide an interpretation of the news covered.

This study aims to uncover the most recurrent and archetypal representations of gene-editing in popularised texts (Section 2), with an indirect goal of raising awareness about gene-editing, and to investigate whether these representations could be considered neutral or biased across the corpora, adopting the methodological framework of Corpus-Assisted Discourse Analysis (Section 3). The analysis focuses on the most distinctive representation strategies of gene-editing across two corpora of British and

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Italian newspapers. The findings are organised in six subsections, integrating quantitative data under the form of tables and numbers with a discourse analytical approach applied to the qualitative interpretation of representative examples. Finally, Section 6 presents concluding remarks and ideas for future research.

2. Theoretical framework

There is a wealth of research on science popularisation through newspapers (e.g. Garzone 2014; Gotti 2014; Hyland 2010), carried out through a variety of perspectives, on account of the importance of such knowledge dissemination and the easy availability of popularising science newspapers and "general" newspapers with science news sections. As Hyland (2010, p. 3) notes in 2010, "most daily newspapers now have specialized science sections and the number of science articles in the press has been increasing", and little has changed ever since. Linguistic studies on popularisation of genetics range from a comprehensive analysis of genome sequencing overviewed in the Spanish press (Calsamiglia, van Dijk 2004), an analysis of media framing of biotechnology (Marks *et al.* 2007) to a vast number of studies on genetic metaphors (see, e.g. Nelkin 2001; Nerlich, Hellsten 2004; Pramling, Säljö 2007) that are used to communicate the concepts of genome organization to the general public, and thus pursue clear popularisation goals. Starting from 2000s, representations of the genome have consolidated around the image of a written document, a book, a text or a code (Nelkin 2001; Pramling, Säljö 2007) to be discovered, demystified and decoded. By contrast, gene-editing, discovered only in 2012, has only just started to generate terminology and imagery suited to convey such a novel concept (O'Keefe *et al.* 2015, p. 3; see also Mattiello 2019; Nikitina 2020), making research on linguistic and discursive representations of this new technology a relevant field of study with a potential to uncover valuable inputs for the scientific community, also from a cross-linguistic standpoint.

In general, the popularisation process is perceived as a form of knowledge transformation and recontextualization acting on the "specialized-lay" continuum (Calsamiglia, van Dijk 2004, p. 370) addressing the non-specialised audience (Gotti 2014, p. 16). At the same time, journalists, who may not be experts in gene-editing and may find the science behind it challenging (Petersen 2001, p. 1257), could be tempted to rely on trusted sources, without any further checks, recycling denominations, designations and metaphors used by other authors. Popularisation processes through newspapers are associated with a tendency to magnify public response by selecting and foregrounding the most newsworthy elements, irrespectively of their scientific relevance, just "to arouse as much interest as possible in

readers" (Garzone 2014, p. 91). Such selective knowledge transformation may result in (un)intentional interpretation suggestions, bias, slant and even lead to ideological manipulations (Fairclough 2014; Garzone 2018; van Dijk 1998), thus generating specific interpretations of reality (van Dijk 1998, pp. 135-140) through linguistic representations.

3. Aims, materials and methodology

The study sets out to examine the discursive and linguistic representation of gene-editing in the British and Italian press over a four-year period (2015-2018). These two languages and cultures were chosen based on the idea that representations of sensitive knowledge tend to reflect cultural assumptions and to coincide with the expectations of the audiences. The paper thus pursues a twofold goal: to analyse patterns of gene editing representation in newspapers in each of the languages considered and to assess any convergent and/or divergent tendencies from a cross-cultural perspective.

The analysis is carried out on two corpora of newspaper articles, in English and in Italian, created ad hoc using keywords *gene*, *genome* and *editing* (and their Italian equivalents). The first corpus ("GE_UK") consists of 200 newspaper articles that appeared in 36 UK newspapers, including their national, regional and Sunday editions. The second corpus is comprised of 149 articles written in Italian and published in Italian newspapers ("GE_IT"), including both national and regional editions. Both corpora were compiled using the research engine of LexisNexis, looking at the period between 2015 and 2018 (see Table 1) and including both tabloids and broadsheets.

	GE_UK	GE_IT
Texts	200	149
Texts per year (%)	2015 – 17%	2015 – 13%
	2016 – 24%	2016 – 28%
	2017 – 36%	2017 – 23%
	2018 – 23%	2018 – 36%
Tokens	135,065	84,023
Types	7,990	11,776
Ave. text length (w)	680	600

Table 1
Corpus composition.

The basic methodological framework is that of Corpus-Assisted Discourse Analysis (Baker 2006; Baker *et al*. 2008; Partington *et al*. 2004), which exploits operational synergy between quantitative research using Corpus-Linguistic methodology and Critical Discourse Analysis (Fairclough 1995,

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2014; van Dijk 1993).

The Corpus-Linguistic part started with normalisation of all raw frequencies. As the subcorpora had different number of tokens, all data had to be converted to relative, or normalised, frequencies ("NF"), in order to achieve comparable results.[2]

In addition to normalised frequencies, dispersion values ("D") were examined to measure the uniformity of distribution of search words.[3] The pure range ("R") – i.e. how many texts employed a given expression irrespective of occurrences within a single text – was also calculated, as it showed the pervasiveness of linguistic choices.[4] As a result, all quantitative assessments are based on the combination of three parameters: normalised frequency, dispersion and range.

Following Stubbs (1994, p. 212), who emphasises "the need to combine the analysis of large-scale patterns across long texts with the detailed study of concordance lines", patterns were examined in combination with concordance analysis carried out using WordSmith Tools 6.0 (Scott 2015). This operation provided helpful indications of the respective representations in English and in Italian.

Since media discourse is a privileged place to introduce dominant views on knowledge and ideologies in society (Van Dijk 2005), the qualitative part of the analysis assessed discursive and linguistic data as a social practice. The emphasis was placed on the ideological colouring

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[2] The normalisation base was set at the mean value between the two corpora, i.e. (135,065 + 84,023) / 2 ≈ 110,000. Consequently, all absolute frequencies were normalised and rendered comparable in MS Excel following the formula (absolute frequency / tokens in the corpus) * 110,000. This study sets the significant frequency cut-off at 30 occurrences per 110,000 words, or ≈0.03%, which is a more stringent parameter than is typically adopted in quantitative studies. Significant frequency cut-off is a relatively subjective parameter, which is set at different thresholds by different authors (e.g. Biber (2006) uses the benchmark of 0.004%; Goźdź-Roszkowski (2011) adopts the 0.02% cut-off point and Breeze (2013) sets it at 0.005%), see Nikitina (2018, pp. 192-193) for other comparisons.

[3] WordSmith Tools 6.0 (Scott 2015) calculates the dispersion value adopting the algorithm of Juilland's D (Gries 2019, pp. 13-14). The theoretical range of Juilland's D is between 0 and 1, where values close to 0 indicate a skewed distribution and values close to 1 stand for homogeneous dispersion. Typically, values above 0.9 mean a very high level of dispersion, values between 0.8 and 0.9 a high level of dispersion and values between 0.7 and 0.8 translate into a medium high level (Biber *et al.* 2016, p. 441). These ranges were taken as indicative for this study. No *D* cut-off was set, as recent quantitative research has demonstrated that Juilland's *D* formula tends to inflate the values if it is applied to corpora with more than 100 corpus parts (Biber *et al.* 2016; Gries 2019). In fact, it emerged in this research that nodes occurring only five times per 110,000 words demonstrated *D* values above 0.5, which seemed counterintuitive. Moreover, Juilland's *D* calculates the dispersion across corpus parts that are assumed to have identical size (Gries 2008, pp. 410-411), which is not always true in this study.

[4] Again, all data was converted to percent in MS Excel (e.g. 50 texts out of 200 = 25%). The range cut-off point was set at 10%.

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associated with different labels used to represent gene-editing in terms of referential strategies (how is the phenomenon of gene-editing named and referred to linguistically across the corpora?) and predication strategies (what traits, qualities and features are attributed to them across the corpora?) (Reisigl, Wodak 2001). As it is often troublesome to distinguish between referential and predication strategies, these were collectively referred to in this study as *representations*, reflecting Hall's view on this phenomenon as "the process by which members of a culture use language […] to produce meaning" (Hall 1997, p. 61). As some representations were built around metaphors, the impressive literature on metaphors in genetics was consulted (Calsamiglia, van Dijk 2004; Nelkin 2001; Nerlich, Hellsten 2004; Pramling, Säljö 2007).

Finally, representations were assessed in terms of their positive or negative components on two levels: *semantic prosody* (Louw 1993; Sinclair 1991), standing for the immediate collocational co-occurrence, and *discourse prosody* (Stubbs 2001), i.e. the tendency to co-occur with certain elements in a wider co-text, beyond the boundaries of a single clause or sentence.

4. Findings

As the topic of corpus texts was known, and the corpora were designed to trace the representations of gene-editing, the quantitative research started with the examination of statistically significant lexical patterns across the corpora involving the terms *gene, editing* and *genome* (and their Italian equivalents) to assess the denominations given to the technology (see 4.1) from a cross-linguistic perspective. Subsections 4.2-4.3 focus on other specific denominations found in the texts that are used as synonyms (genetic enhancement) or as contraries (genetic modification) of gene-editing. Subsections 4.4-4.5 deal with general terms of a superordinate nature used to represent and frame gene-editing, and subsection 4.6 provides synthesis and discussion of the findings, focusing on the positive vs. negative representations and tracing general cross-corpora patterns.

4.1. Denomination

First the level of *denomination* or *designation* was assessed. Although denominations are often explanatory in popularising press (Calsamiglia, van Dijk 2004, pp. 374-375), it was decided to look at the choices of specialised terms to denote a concept without providing an explanation, also called *terminological definition* (Gotti 2014, p. 18). Analysis of key terms *gene, editing, genome* has revealed instability concerning the designation of *gene-editing*. In the UK corpus this designation did not exhibit a clear (non-)

hyphenation standard, and sometimes was also referred to as *genome editing*. The UK corpus also used *DNA editing* and *genetic editing*; however, these versions were statistically insignificant as they had low frequency, low dispersion and low range. It has to be stated that at the corpus design stage "gene editing" only was set as a search parameter, thus the variation observed may be construed either as a sign of general terminological instability associated with this novel phenomenon or as the outcome of the popularisation process, notorious for unsystematic use of disciplinary terms (Gotti 2014, p. 17). This instability becomes particularly evident in the Italian corpus, as Table 2 illustrates.

GE UK	NF	D	R	GE IT	NF	D	R
gene editing	586	0.811	80%	gene editing	41	0.742	15%
gene-editing	338	0.770	67%	gene-editing	41	0.742	10%
genetic editing	9	0.613	5%	editing genetico	90	0.862	32%
genome editing	86	0.828	27%	genome editing	157	0.877	45%
				genoma editing	5	0.596	3%
				editing genomico	4	0.478	2%
				editing genico	3	0.3	0.67%
DNA editing	10	0.429	4%	editing del DNA	3	0.3	1%
				editing del genoma	8	0.644	4%
Total	**1029**			**Total**	**351**		

Legend. NF = normalised frequency; D = dispersion; R = range.

Table 2
Denomination of gene-editing across the corpora.

The Italian texts introduced non-integrated English borrowings *gene-editing* (in both orthographical versions) and *genome editing*, which would go in line with the overwhelming "Anglicization" of Italian (Furiassi *et al.* 2012, p. 1) reflecting some recent labelling choices employing Anglicisms in Italian, ranging from *Jobs Act* to *stepchild adoption*. Along with non-adapted loanwords there are some mixed Anglo-Italian variants, or loanblends (Haugen 1950) that use the node *editing* while translating the modifiers in various combinations. However, most of these mixed variants are statistically insignificant. Without further research it remains unclear whether these borrowings were "necessary" to cover the lack of an Italian word for this notion, or "luxury", i.e. introduced on account of the prestige of the lending language (Santulli 1999, pp. 75-83). The total number of hits across the corpora suggests that the Italian corpus employed other, most probably, purely Italian versions of the term, which are discussed in further detail in the next paragraphs.

4.2. Gene editing as enhancement / improvement

Against the background of terminological variation and transposition of the main keywords into the Italian corpus highlighted in the previous section, it was interesting to observe the introduction of some purely Italian variants to denote the technology of gene-editing. The most widespread of the Italian variants was *miglioramento genetico* (lit. "genetic improvement", see Table 3), used by 15% of journalists. This term is often introduced through juxtaposition – "a process whereby the specialized term is followed by its periphrasis" (Gotti 2014, p. 18), with some kind of graphical division in-between, and sometimes co-exists along with the English term (see example (5)). A similar trope was found also in the UK corpus, where gene-editing was presented as genetic enhancement, yet it appeared only in 9% of texts in English as compared to 15% of texts in Italian. In general, the semantic field of improvement or enhancement is quite widespread across the corpora. It has to be noted that the Italian "migliora*" (NF: 149; D = 0.873; R = 38%) is more positively loaded than the English "enhance*" (NF = 109; D = 0.895; R = 22%); and semantically the latter is more comparable to "aument*" (NF = 55; D = 0.721; R = 19%). The trope of enhancement is less frequent, less dispersed and used by fewer authors in the Italian corpus. Comparison of "migliora*" (NF: 149; D = 0.873; R = 38%) with a semantically closer "improve*" (NF = 91; D = 0.856; R = 36%) revealed the dominance of this pattern in the Italian corpus as compared to the UK corpus.

Table 3 shows some recurrent lexis carrying the idea of enhancement / improvement across the corpora, with their semantic prosody indicated underneath.

GE UK	NF	D	R	GE IT	NF	D	R
genetic enhancement	29	0.820	9%	miglioramento genetico	35	0.831	15%
enhance*	109	0.895	22%	migliora*	149	0.873	38%
enhanc* intelligence / a trait - human / genetic enhancement - genetically enhanced - enhancement technology - enhanced children - potential types of enhancement				rese - cure - soluzioni - funzionalità - piante - genetico - condizione umana - riso - dei sintomi - dei processi produttivi			
improv*	91	0.856	36%	aument*	55	0.721	19%
crops / yield - life - health / welfare - looks/appearance - quality / aspects - safety - nature - policy - intellect / intelligence - efficiency - genome - understanding - treatment - productivity - success rates - trait(s) – performance				le capacità - massa muscolare - il livello - temperatura - quantità - resa			

Table 3
Gene editing as enhancement / improvement.

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Two tendencies emerged from the analysis of the concordances: positive and negative representation of gene-editing as enhancement / improvement. Whenever enhancement referred to agriculture (e.g. semantic prosody featuring words *crops*, *yield* or *piante*, *riso*, etc.), it was represented in a positive way (see examples (1) – (6)), stressing such good results as increased productivity or resistance to disease. In fact, the English "improve*" was used predominantly in reference to agriculture. Remarkably, *miglioramento genetico* appeared in quotes by politically-relevant persons, suggesting political support of this technique in agriculture.

(1) Genome editing is one of the *new tools which will allow us to enhance productivity* on the farm.[5]

(2) Use of the powerful gene-editing tool CRISPR-Cas9 *could help to breed* cacao trees that exhibit *desirable traits such as enhanced resistance to diseases*.

(3) The scientists argued that *crops had been artificially improved for centuries* through conventional breeding techniques, which led to genetic changes.

(4) Britain *needs to consider introducing genetically edited* farm animals and crops, the Environment Secretary said yesterday. Michael Gove said the technology could produce *more valuable livestock and boost crop yields.*

(5) "Solo attraverso la *ricerca innovativa e le tecniche più avanzate di miglioramento genetico* (genome editing), potremo soddisfare la domanda crescente", spiega Pier Carlo Scaramagli, presidente di Confagricoltura Ferrara.
"Only through the innovative research and the most advanced techniques of genetic improvement (genome editing), can we meet the increasing demand", explains Pier Carlo Scaramagli, president of Confagricoltura Ferrara.[6]

(6) […] abbiamo voluto finanziare con la Legge di Stabilità un piano di ricerca pubblica con una *dotazione di 21 milioni di euro e un obiettivo chiaro*: un *impegno mirato di miglioramento genetico* delle principali colture che caratterizzano il modello agricolo italiano.
[…] we wanted to finance, with the Stability Act, a plan of public research with a subsidy of 21 million euro and with a clear objective: a specific commitment to the genetic improvement of the main crops that characterize the Italian agricultural model.

On the contrary, when enhancement referred to humans, it conveyed a negative (see (7) and (9)) or a mixed message (8), warning against possible misuses of this technology, employing the ideas of risks, concerns, fairness and discrimination.

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[5] Emphasis is added in all examples. All examples in English are extracted from the UK corpus (GE UK).

[6] All examples in Italian are extracted from the Italian corpus (GE IT) and are provided with a literal translation into English.

(7)   However, it also *raises the risk of creating errors* in the genetic code that would be inherited and *difficult to remove*, or creating enhancements to subgroups within the population that would *exacerbate social inequalities*, the statements says.

(8)   Human genome editing *holds tremendous promise for understanding, treating or preventing many devastating genetic diseases*, and for *improving treatment* of many other illnesses. However, genome editing to enhance traits or abilities beyond ordinary health *raises concerns about whether the benefits can outweigh the risks, and about fairness* if available only to some people.

(9)   Qui […] si pone un *problema di discriminazione* tra chi potrà avere accesso a cure e miglioramenti e *chi ne verrà escluso*. E c'è chi teme scenari futuri di *discriminazione genetica* alla "Gattaca" (uno dei film proiettati e discussi a Trieste).
Here […] a discrimination problem arises, between who can have access to cures and improvements and who will be excluded from there. And there are those who fear future scenarios of genetic discrimination "Gattaca"-style (one of the films projected and discussed in Trieste).

It is noteworthy that some articles in the UK corpus attempted to construct discursively a positive representation of gene-editing as enhancement by domesticating it and pushing the readership towards accepting it as something normal. Some instances of such normalisation attempts include the use of *attributions* (Sinclair 1986) or *projections* (Halliday 1994), which consist in bestowing additional weight to what is being said by quoting authoritative sources (see (10) and (11)). Such use of quotes and citations is an acknowledged journalistic device in popularised texts (see, e.g. Garzone 2014, pp. 95-98).

(10)   *Professor Church also dismissed fears* that allowing germline gene therapy to treat inherited disorders will automatically lead down a "slippery slope" to genetic enhancement with "beneficial" traits, such as sporting prowess, intelligence or physical appearance.

(11)   In a *major report* on the looming frontier of human gene-editing, *the Nuffield Council on Bioethics (NCB) said it did not believe* there was an ethical red line in tinkering with the genetic material that will be passed to future generations. It also did not draw a distinction between using these techniques to tackle genetic diseases and for enhancing desirable physical or intellectual traits, so-called "designer babies", so long as it meets strict ethical and regulatory tests.

Other normalisation attempts demonstrated straightforward reframing drawing analogies with accepted enhancement techniques. The mechanism behind the comparison between gene-editing and aging reversal, vaccination, prosthesis or implants resides in transferring the acceptability of the latter group to the former, as examples (12; 13) illustrate.

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(12) Some people say, "Oh, you shouldn't do [genetic] enhancement", but the thing is *we do enhancement all the time - to some extent, all aging reversal is enhancement. Vaccines are enhancement.*

(13) Through the *application of prostheses, implants, and other bioelectronic devices*, we are not only healing the blind and the paralysed, but beginning to *reconfigure our bodies, enhance our memories*, and generate entirely new ways of interacting with machines. Through genetic interventions, we are neutralising certain diseases long thought incurable.

Surprisingly, gene-editing was never framed as enhancement of humans in the Italian corpus. Under the CDA perspective, which observes both present and absent elements in the data, the lack of this element in the Italian press is remarkable. It could be tentatively construed as a culturally specific omission.

4.3. Gene editing vs. genetic modification

Another frequent and dispersed representation technique is built around the contrast between gene-editing and genetic modification. Although Table 4 demonstrates some differences concerning the word-class (cf. *genetically modified* vs. *OGM*), the overall pattern of using another genetic engineering technique to depict gene-editing is clear.

GE UK	NF	D	R	GE IT	NF	D	R
genetic modification	51	0.799	22%	modificazion* genetic*	9	0.640	4%
gen* modif*	138	0.738	46%	modif* gen*	48	0.789	15%
GM	72	0.834	19%	gen* modif*	46	0.804	17%
GMO*	28	0.908	7%	OGM	288	0.865	33%

Table 4
Genetic modification as a contrast to gene-editing.

The public perception of genetically modified foods is notoriously negative, and analogies or disanalogies – depending on the author's stance – between gene-editing and GM were frequently invoked in the corpora. The predominant use in both corpora was to construct a disanalogy with GM, thus distancing the two technologies, and at the same time to represent gene-editing as something natural by analogy with cross-breeding (14) and nature (15) in general.

(14) Gene editing, a form of genetic engineering, is a faster version of what happens when animals or plants are cross-bred. […] It is *contrasted with genetic modification, or GM*, which is more unpredictable and involves transplanting genes into a plant or animal from a completely different species.

(15) *Rispetto agli Ogm standard il gene-editing è più semplice, economico e veloce.* Se con i sistemi tradizionali le carte che abbiamo in mano sono quelle della

natura, stavolta - osserva Lippman – è come avere un asso nascosto nella manica.
In comparison with the standard GM, gene-editing is simpler, cheaper and faster. If, with the traditional systems, we had only the nature's cards in our hands, this time – Lippman observes – it's like having an ace hidden up your sleeve.

However, such disanalogical reasoning was activated prevalently with reference to animals or plants. At the same time, the analogy with genetic modification was also used – in a limited number of cases – with a human referent, sending some negative (16) or mixed (17) messages. In example (17), for instance, the proposition featuring "genetic modification" and "gene-editing" is positive, but it is counteracted by the final word "warn".

(16) If scientists create *GM babies*, it will be impossible to avoid the *'designer babies' dystopia*, because the line between therapy and enhancement has not been respected with any other medical technology.

(17) Britain may need to change its IVF laws to allow the *genetic modification of human embryos* so that scientists can use a gene-editing technique that could *eliminate certain inherited diseases*, leading biomedical organisations *warn.*

(18) Ed ecco un tweet di Dan MacArthur, professore di genetica ad Harvard: "Previsione: i miei nipoti verranno da *embrioni selezionati e edited (insomma modificati geneticamente*, ndr) e per l'umanità non cambierà nulla, sarà come vaccinarsi".
And here is a tweet of Dan MacArthur, genetics professor in Harvard: "Forecast: my grandchildren will come from selected and edited embryos (i.e. genetically modified, ed.n.) and nothing will change for the humanity, it will be like vaccination".

Interestingly, there were five cases in the Italian corpus where analogical reasoning was used to represent positively human gene-editing (see (18), note also an explication strategy in brackets), but it occurred only in direct quotes and seemed to be caused by translational reasons, i.e. the lack of an established neutral term to render the English "editing" or "edited".

4.4. Gene-editing as technology / technique

Having established the specific denominations in use across the corpora, the analysis proceeded with the identification of the principal taxonomic category, within which gene-editing was placed. The most pervasive representation strategy of gene-editing is through the *genus* of technology or technique that demonstrated high frequency, very high dispersion values and a very wide range (see Table 5). In contrast to the denominations discussed in the previous sections, it acts as a superordinate category, through which gene editing is represented. From a cross-linguistic standpoint, the preferences towards "technology" and "technique" are opposite across the corpora, with

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the UK press favouring "technology" and the Italian press using predominantly "technic*" (lit. "technique*").

GE UK	NF	D	R	GE IT	NF	D	R
technolog*	433	0.937	78%	tecnologi*	190	0.909	46%
gene technology - powerful technology - revolutionary technology - CRISPR technology - technology work - extinction technologies - cutting-edge technology - kind of technology - gene-editing technology - genetic technology - crop technology - engineering technology - enhancement technologies - technology of genetic manipulation - information technology - use of technology - biomedical technologies				tecnologia di miglioramento - tecnologie digitali - tecnologia genetica - uso di tecnologie - tecnologia di miglioramento genetico - tecnologia CRISPR - nuova tecnologia - tecnologie di gene-editing			
technique*	385	0.801	74%	tecnic*	340	0.895	60%
genetic technique - powerful technique - engineering technique - revolutionary technique - gene-editing technique - breeding techniques - controversial technique - medical technique - similar technique				innovative tecniche - tecnica sperimentale - tecniche di ingegneria genetica - tecniche di miglioramento genetico - tecnica tradizionale - utilizzo di tecniche - tecniche di modificazione genetica - rivoluzionaria tecnica - tecnica CRISPR - tecnica di editing genetico - nuova tecnica - tecniche di modificazione - tecniche di gene-editing - tecniche di ricerca - tecnica di manipolazione genetica			

Table 5
Gene-editing as technology and technique.

Table 5 shows that at the level of semantic prosody the collocates of both "technology" and "technique" and their Italian equivalents tended to be neutral on account of their superordinate position of *genus proximum* rather than a new denomination: *gene technology*, *gene-editing technique*, *tecnologia genetica, uso di tecnologie, tecniche di modificazione genetica*. At the same time, the nodes were frequently accompanied by evaluative adjectives, such as *revolutionary, powerful, cutting-edge, controversial, innovative, sperimentale, rivoluzionaria*, which could already orient the reader towards a certain interpretation of the technique / technology.

Along with the discussion of *genetic enhancement / miglioramento genetico* (see 4.2), *genetic modification / modificazione genetica* (see 4.3), these nodes were used in the clusters *technology of genetic manipulation* (19) and *tecnica di manipolazione genetica* (20).

(19) Advances in the *technology of genetic manipulation*, specifically the development of a gene-editing technique called Crispr/Cas9, could allow scientists to *change the DNA of human IVF embryos before it has been shown to be safe, they warned.*

(20) Da quando, nell'aprile scorso, un team cinese ha pubblicato su "Protein & Cell" un articolo in cui si descrive la possibilità di modificare con *tecniche di manipolazione genetica* gli embrioni umani il *dibattito tra scienziati e bioeticisti non si è più sopito.*
Since last April, when a Chinese team published in "Protein & Cell" a paper which describes the possibility of modifying with techniques of genetic manipulation human embryos, the debate between scientists and bioethicists has never calmed down.

Although these multiword terms did not satisfy the quantitative significance thresholds, analysis revealed peculiar information about denomination choices in the Italian corpus (cf. 4.1 and 4.2).

GE UK	NF	D	R	GE IT	NF	D	R
genetic manipulation	5	0.553	3%	manipolazione genetica	12	0.622	4%
manipulat*	21	0.806	11%	manipola*	29	0.728	9%

Table 6
Gene-editing and manipulations.

As Table 6 illustrates, the cluster *manipolazione genetica* (lit. "genetic manipulation") was used twice more frequently in the Italian corpus than *genetic manipulation* in the UK corpus, although the nodes "manipulat*" and "manipola*" with a wildcard were comparable by distribution and frequency. It emerged that *manipolazione genetica* was another possible Italian rendition of *gene-editing* (see (21) and (22)).

(21) Nella cassetta degli attrezzi ci sono *metodi nuovissimi* e ancora in via di elaborazione come il "*genome editing", la manipolazione genetica* che rischia di superare a destra gli Ogm.
In the toolbox there are newest methods, still under development, such as the "genome editing", the genetic manipulation that risks to outrun on the right the GMO.

(22) Abbiamo appena citato il caso del primo tentativo di applicare all'uomo *una rivoluzionaria ed efficacissima tecnica di manipolazione genetica* - identificata con la sigla Crispr - in corso proprio in questi giorni nel West China Hospital del Sichuan, in Cina.
We have cited the case of the first attempt to apply to a human a revolutionary and most efficient technique of genetic manipulation – identified with an abbreviation Crispr – going on in these days in the West China Hospital of Sichuan, in China.

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Remarkably, the Italian corpus used *manipolazione genetica* with neutral or positively connoted lexis, as this multiword term is in fact listed in the *Treccani Online Dictionary*,[7] *Grande Dizionario Italiano by Hoepli*[8] and in the genetics section of the *Enciclopedia DeAgostini*[9] as a set of operations pertaining to the technique of genetic engineering effected to modify gene pool. The pole position of *miglioramento genetico* (NF = 35; D = 0.831; R = 15%) over *manipolazione genetica* (NF = 12; D = 0.622; R = 4%) assumes a possible ideological reading, as an intentional choice to foreground positive representation of the technique in the Italian readers, probably because *manipolazione* could evoke associations with subterfuge.

4.5. Gene-editing as a tool: between repair and correction

The representation of gene-editing as a technique or technology was further potentiated and extended through the use of *tool* metaphor both in Italian and in English. Not only was it frequent, it also pervaded the UK press, with extremely high dispersion values (0.924) and a significant range (52%), see Table 7.[10] By contrast, in the Italian corpus it was infrequent and skewed.

UK	NF	D	R	ITA	NF	D	R
tool*	180	0.924	52%	strument*	21	0.571	10%
powerful - similar - genetic - tool kit - gene-silencing - gene-editing - molecular - genome-editing				nuovo - di editing genetico			
-				attrezz*	7	0.550	2%
-				cassetta degli attrezzi - attrezzi molecolari			
scissors	38	0.829	19%	forbic*	16	0.731	7%
chemical – genetic – molecular – gene-editing				molecolari			

Table 7
Gene-editing as a tool.

In itself, the *tool* metaphor is not new. Generally, it is linked to the idea of repairing, fixing or modifying something, which makes it "easy to associate the use of such tools with enhancing the quality of our life and our

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[7] "manipolazione, s." *Treccani Vocabolario Online*. http://www.treccani.it/vocabolario/manipolazi one (12.12.2018).

[8] "manipolazione, s." *Grande Dizionario Italiano Hoepli*. http://www.grandidizionari.it/Dizionario_Italiano/parola/M/manipolazione.aspx?query=manipol azione (12.12.2018).

[9] "manipolazione (genetica), s". Enciclopedia DeAgostini, Online. http://www.sapere.it/enciclopedia/manipolazi%C3%B3ne+%28genetica%29.html (12.12.2018).

[10] Table 7 includes only instances of "tool" and its synonyms in concordance where "gen*" was found in the horizon of ten words to the right and to the left of the node.

surroundings" (Farquhar, Fitzsimons 2016, p. 102). Indeed, the concordance analysis showed that *gene-editing tool* collocated with verbs expressing such ideas (23; 24), creating a positive representation of this technique.

(23)   It is the first time the powerful *gene-editing tool* Crispr-Cas9 has been used *to fix a mutation* responsible for a common inherited disease.
(24)   A team […] used a *gene-editing tool*, Crispr/Cas9, to *repair the gene*.

The tool metaphor translates also into the metaphor of *scissors*, specifically genetic or molecular scissors. This image was also typical of the UK corpus, while its use in the Italian corpus was sporadic, reflecting the general avoidance of the tool metaphor.

(25)   The process involves *cutting out DNA mutations with "molecular scissors" and replacing* them with healthy cells.
(26)   […] si impieghino tecniche di editing genetico, ovvero attraverso l'*utilizzo di particolari "forbici" molecolari che spezzano la catena del Dna* nel punto voluto e ci "*incollano*" sopra la porzione voluta.
       […] are used techniques of genetic editing, i.e. through the use of particular molecular "scissors" that break the DNA chain in the desired point and "paste" over the desired portion.

The above examples (25; 26) pinpoint to another common representation strategy, based on the comparison of gene-editing and text-editing through the use of MS Word commands and their hybrid versions with the metaphor of cutting or slicing: *cut and paste, cut and edit, cut and slice, find and replace, cut and replace, copy and paste* and *taglia e incolla / taglia-incolla, taglia e cuci, taglia e modifica, copia e incolla, tagliare e sostituire.* Remarkably, the underlying metaphors of text editing commands are based on other metaphors, making it a double metaphor, where the text editing metaphor is embedded in the metaphor of physical operations (see (27)-(30)). This confirms the findings of previous research on metaphorical communication of genetic knowledge, applying this tendency also to the new technology of gene-editing.

(27)   Gene editing, which effectively allows the precise *"cutting and pasting"* of DNA, *is already used in basic research and clinical studies* that involve non-heritable "somatic" cells.
(28)   As regards *safety*, the Crispr-Cas9 method appears *remarkably accurate* in its ability to *"find and replace"* segments of DNA, with *an error rate of less than 1 in 300 trillion*.
(29)   Potrebbe presto arrivare anche *sulle nostre tavole* il primo alimento modificato geneticamente grazie alla *rivoluzionaria tecnica di "taglia-incolla"*, detta Crispr.
       The first genetically modified food could soon arrive at our tables thanks to the revolutionary technique of "cut-paste", known as Crispr.

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(30) Siamo nel campo del genetic editing, del *taglia e cuci genomico*. Per Giuseppe Novelli, rettore dell'università Tor Vergata *"il nuovo correttore di bozze"* è *particolarmente abile nel vedere gli errori* del Dna e nel *cancellare l'errore* una volta individuata la mutazione responsabile della malattia.
We are in the field of genetic editing, of the genomic cut and sew. To Giuseppe Novelli, dean of the University Tor Vergata "the new draft editor" is particularly able in seeing the errors of the DNA and in erasing the error once the mutation responsible for the disease has been identified.

These functions are typically perceived as something non-threatening and already in use in our daily life, thus working towards domestication of gene-editing. In fact, the concordance analysis showed that they represented gene-editing always in a positive light (see (27)-(30)), stressing its precision, safety and ability to cancel errors.

UK	NF	D	R	ITA	NF	D	R
cut* and past* /find* and replace	56	0.751	23%	taglia* e cuci/incolla/modifica	60	0.522	21%
correct*	57	0.887	21%	correzione / correggere / corretto	107	0.894	40%

Table 8
Gene-editing as text-editing.[11]

Along with text-editing functions, the Italian texts widely employed *correzione*, as *editing* could be translated into Italian with this term (see (31)-(32)). However, if we compare *correction* with *editing*, the former was underused in the UK corpus as a noun (1 out of 70 raw hits), most probably because it had an additional meaning of disciplinary punishment in English,[12] and *editing* already carried the *errata corrige* meaning. However, *correct* as a verb is found in the UK corpus, too (see (33)-(34)).

(31) il team ha ora "in programma di utilizzare la stessa tecnica anche per *correggere direttamente la mutazione*, non solo per spegnerne gli effetti".
The team has now "in programme to use the same technique also to correct directly the mutation, not only to turn off the effects".

(32) Si tratta di *correggere un difetto genetico come si correggono le bozze di un libro*, facile sulla carta, molto difficile in pratica correggere proprio e solo quel difetto senza fare danni.
It deals with correcting a genetic defect like editing a book draft, easy on paper, very difficult in practice to correct exactly and only that defect without any damage.

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[11] Table 8 includes only instances of "correct*" and its Italian equivalents where "gen*" was found in the horizon of ten words to the right and to the left of the node.
[12] "correction, n.". *OED Online*. http://www.oed.com.pros.lib.unimi.it/view/Entry/41910?redirectedFrom=correction (12.12. 2018).

(33) Gene editing to *correct faulty DNA* in human embryos has taken a step closer to becoming a reality, with scientists showing it is possible to *correct genetic problems* in mice before they are born.

(34) The international summit in Washington was organised by the national academies of the US, UK and China to take stock of *powerful new tools* that can make *precision changes to the code of life*, by *correcting*, removing and adding DNA to an organism's genome.

The metaphors of text editor go in line with the already conventionalised representation of genome in terms of a book, a text or a code (32) (Calsamiglia, van Dijk 2004; Nelkin 2001; Nerlich, Hellsten 2004; Pramling, Säljö 2007). Yet, in contrast to the popularisation of genome sequencing, where the "code of life" is represented in terms of decoding operations, news articles on gene-editing do not treat genome as a mystery code. Even though the node "code" appears in texts (UK: NF = 62, D = 0.843, R = 23%; IT: NF = 27, D = 0.683, R = 8%), it is framed in terms of a computerised text-"code" in need of a change, marking thus an important paradigm shift: from demystifying the secrets of life to operationalising something that is possible to change by means of human intervention.

4.6. Synthesis and discussion

Representations of gene-editing in British and Italian press may be grouped into two large semantic fields: change and technology (see Figure 1). These two fields are evenly distributed in the Italian corpus, whereas in the UK corpus the technology trope prevails. It must be acknowledged that the line between the two macrocategories is blurred as most texts intertwined both concepts within a single clause.
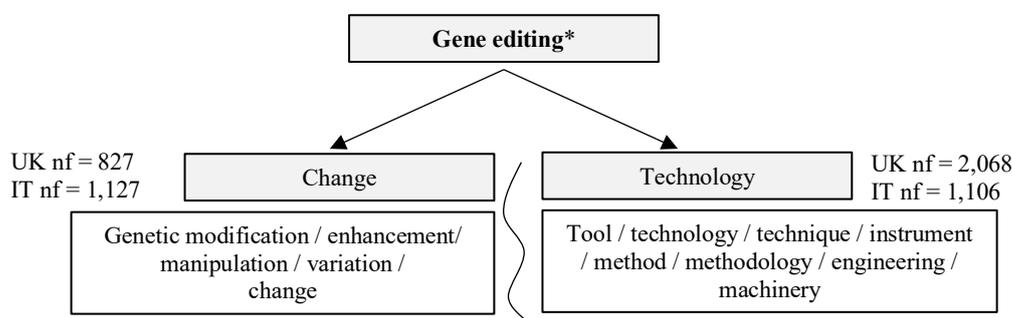
Figure 1
Representation of gene-editing and its variants across the corpora.

Gene-editing as change and technology was represented in both positive and negative ways, as the analysis of semantic and discursive prosody of the node

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words examined in previous sections showed. Table 9[13] gathers most frequent and dispersed items that were used to frame gene-editing as a positive or a negative change / technology.

GE UK	NF	D	R	GE IT	NF	D	R
Positive representations							
breakthough	71	0.541	29%	avanz*	42	0.827	14%
progress	25	0.737	14%	progress*	34	0.833	13%
advanc*	89	0.847	40%	svolta	24	0.622	11%
discover*	74	0.796	29%	scoperta	81	0.673	21%
innovat*	17	0.667	6%	innova*	107	0.796	33%
opportunit*	15	0.706	7%	opportunità	22	0.673	9%
develop*	255	0.920	66%	svilupp*	219	0.900	61%
Total	**546**	**Av = 0.745**	**Av = 27%**	**Total**	**529**	**Av = 0.761**	**Av = 23%**
Negative representations							
risk*	125	0.939	41%	risch*	115	0.899	34%
uncertain*	6	0.723	3%	incert*	8	0.478	4%
consequen*	29	0.800	13%	conseguenz*	22	0.759	7%
danger*	47	0.827	18%	pericol*	26	0.886	11%
fear*	49	0.828	22%	paur*	21	0.753	8%
worr*	24	0.732	14%	timor*	18	0.588	8%
warn*	73	0.709	31%	preoccupa*	18	0.700	7%
cauti*	21	0.824	10%				
Total	**375**	**Av = 0.798**	**Av = 19%**	**Total**	**229**	**Av = 0.723**	**Av = 11%**

Table 9
Positive and negative representations of gene-editing.

Both corpora exhibited a tendency towards a positive representation of gene-editing, which could be perceived both from the frequency of positively coloured lexis (GE UK total = 546; GE IT total = 529) and its dispersion (GE UK has an average *D* of 0.745 and an average range of 27%; the same values in the GE IT are respectively 0.761 and 23%). From a cross-linguistic standpoint, the corpora demonstrate both convergent choices (*development* and *discovery*) and slightly divergent solutions (*breakthrough* and *advancement* in the GE UK vs. *innovazioni* and *scoperta* in the GE IT). On a methodological note, it is remarkable how *breakthrough* demonstrated Juilland's D of 0.541 (insignificant) with normalised frequency at 71 occurrences, whereas *discovery* had Juilland's D of 0.796 (significant), with normalised frequency at 74 occurrences, and both were used by 29% of journalists, thus showing the importance of triangulation of different parameters.

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[13] No cut-off points were applied in order to show a general picture.

The negative representations were on average less prominent across the corpora (19% in British texts and 11% in Italian texts). The main negative trope was that of *risk* (GE UK: NF = 125, D = 0.939, R = 41%; GE IT: NF = 115, D = 0.899, R = 34%). Interestingly, other negative items found in the prosody of the main nodes in the Italian corpus did not satisfy the frequency (NF =30) or range (10%) thresholds set in this study, i.e. their use was insignificant. On the contrary, the UK corpus deployed a wider array of negative depictions which on average satisfy the thresholds set, apart from *uncertain**. Such a tendency could be construed as a more balanced representation attempt of gene-editing in the British press, showing both positive and negative aspects.

5. Conclusions

Quantitative and qualitative analysis of the linguistic representations of gene-editing shed light on a number of convergent and divergent strategies across the corpora. First, some variation emerged in both corpora concerning the denomination choices, caused probably by the novelty of the concept. The texts under analysis confirmed previous research indicating the sporadic use of specialised terms in popularising newspapers, since gene-editing was represented using variegated imagery across the corpora. While in English these images accompanied a more clearly defined core term (*gene-editing*, with some variants), the Italian texts, in addition to popularisation efforts, had to deal with issues of translation. It is remarkable how the lack of a clearly established Italian term to render *gene-editing* resulted in ideologically charged translations, already attributing positive traits at the naming stage (e.g. *miglioramento genetico* (lit. "genetic improvement") was preferred over *manipolazione genetica* (lit. "genetic manipulation")), which showed a slanted position of the Italian media, most probably rooted in the political decisions to sponsor gene-editing in the Italian agriculture. A relative lack of topicalisation of the human applications of this technology in the Italian corpus deserves further attention. It would be interesting to look at terminological choices adopted by scientific papers in Italian overviewing this technique.

Despite some differences in the naming choices, both corpora demonstrated convergent patterns concerning the archetypal representations of gene-editing as a change (*genetic enhancement, correzione*) introduced using technology (*technology, tool, scissors, tecnica, tecnologia, metodo*). In general, both corpora relied on the *editing* (*correzione*) metaphor, in-built in the very name of this technique, drawing on the conventionalised metaphor of DNA as a text. The texts expanded the metaphor by using lexis associated with editing operations, creating thus a complex, double-layered metaphorical

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representation. At the same time, in line with the popularising nature of newspaper discourse, gene-editing was represented through analogies and disanalogies with other, more widely known – accepted or contested – concepts, such as genetic modification, vaccination and natural selection or cross-breeding.

The research identified a paradigm shift in approaching discourse on genome in the popularised press. In contrast to media representations of DNA sequencing, gene-editing was not framed as a mystery to be decoded, but as a useful tool or technique that could change our lives for the better or that potentially puts at risk our very existence, if placed in the wrong hands. Thus, a shift was observed: from a popularisation discourse on demystification of the genome to a domestication and operationalisation of this previously mysterious matter.

In general, gene-editing appeared positively represented in both corpora, with the UK corpus providing a more balanced idea of advantages and disadvantages of this technique, as applied to both human subjects and agriculture. In light of the foreseeable need for the informed public decision-taking concerning the regulation of this technology, it would seem that the British press has performed a fuller popularisation task in comparison with the Italian press.

An important result of this study is also the successful application of the methodology of corpus-assisted discourse analysis. Quantitative thresholds allowed me to trace archetypal representation strategies without including those denomination strategies which were not representative in terms of their frequency, dispersion and range. At the same time, the critical approach to discourse provided an interpretation of certain representation choices and peculiarities that stretched beyond a mere quantitative mapping. The study did not pursue the goal of carrying out an in-depth critical discourse analysis, which somewhat limited the qualitative findings; however, this part is left for further research with downsampling. This project will continue in further research on gene-editing representation across different genres and stakeholders.

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TOXICITY EXPOSED IN THE GREENPEACE TOXIC TECH CAMPAIGN[1]

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Abstract – This paper presents the findings of the analyses of the *Green Gadgets Report* (GGR) and of the *Guide to Greener Electronics* (GGE), the two main documents whereby Greenpeace has been disseminating the findings of the scientific investigations carried out in the context of the Toxic Tech campaign. The study draws on quantitative and qualitative research methods, including Corpus Linguistics, Pragma-dialectics and Multimodal Discourse Analysis, to describe the discursive features of these two texts and examine the knowledge-dissemination strategies used by Greenpeace to expose the toxicity of the tech industry and persuade consumers to consider issues of environmental ethics and health while purchasing their technological devices. The findings suggest that while the GGR lays out the results of a fully-fledged scientific investigation and flaunts certain features of scientific discourse, the GGE is a significantly simpler and totally unscientific document, aimed at disseminating scientific results to a wider, less specialised audience. Certain features not typical of specialised communication (including the use of generalising expressions and the stereotypical recourse to problem-solving argumentation patterns) can also be found in the hybrid GGR, but the GGE appears to rephrase and simplify scientific data in order to recontextualise the environmental and health crisis caused by the tech industry in the sports sphere. The choice to publish these two different texts, one more argumentative and scientific, the other more persuasive and entertaining, thus, appears to be functional to the dissemination of knowledge on a wide scale. By tapping into elements of specialised discourse and visual arguments alike, the Toxic Tech campaign results in a multi-genre discourse, addressing different audiences at the same time and maximising the reach of scientific discoveries by turning them into entertaining sports events.

Keywords: argumentative pattern; GGE; GGR; Greenpeace; knowledge dissemination.

> *The inventor looks upon the world and is*
> *not contented with things as they are. He*
> *wants to improve whatever he sees, he wants*
> *to benefit the world.* (Alexander Graham Bell)

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1. Introduction

While striving to invent and rushing to patent the telephone, Alexander Graham Bell did not probably imagine that his invention would become a problem; more than a century later, the rate at which mobile telephones and, in general, all electronic devices are purchased and discarded is triggering a series of adverse repercussions on the environment. The consumption of electronic equipment continues to grow, "with ever-shorter replacement cycles based on the latest trend or model multiplying the life-cycle impact" of smartphones, tablets, PCs and TVs, from their assembly to their becoming e-waste (Greenpeace 2014, pp. 5-6). Environmental risks are particularly rife in the production and disposal phases. Greenhouse gas emissions during product manufacture remain considerable despite reductions in emissions per device produced, especially because coal power still dominates production in developing countries, thereby exacerbating climate change (Greenpeace 2014, p. 7). Moreover, large quantities of toxic chemicals are still used in the manufacturing phase. These substances, including polyvinyl chloride and brominated flame retardants, remain in discarded e-waste for years. Although electronic take-back programmes are growing, the speed of collection cannot keep pace with the rate of consumption and the recycling of e-products remains problematic, as e-waste is often exported to countries in the Global South where rampant backyard recycling poses serious health risks to the local communities (Greenpeace 2014, p. 5).

The rapid worldwide growth in the consumption of electronic devices is, thus, multiplying the environmental and health problems posed by a thriving industry which is still based on an unsustainable model. In spite of its gravity, the issue is not echoed in the news media, and NGOs seem to be the only subjects struggling to inform the wider public and influence consumer trends in an Orwellian world where the sole idea of questioning the tech industry is unbearable to many. Particularly, Greenpeace has been consistently calling for a revolution in the electronics industry, one that can "ensure a toxic-free future, protect the health of its workers, and prevent environmental pollution" (Greenpeace 2014, p. 8). At the beginning of the century, the NGO launched the Toxic Tech campaign with the aim to expose the presence of toxic chemicals in a variety of electronic devices. Since 2006, it has published and updated its *Guide to Greener Electronics*, whereby a number of leading consumer electronics companies have been assessed and ranked based on their commitments to address their environmental impacts. Coupled with the Guide, more detailed reports (Greenpeace 2008, 2014) have been published to foster the scientific debate on toxic technology and drive corporate and institutional change.

The whole Toxic Tech campaign is, therefore, closely related to

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Corporate Social Responsibility (Catenaccio 2012); it raises bioethical questions revolving around the sub-topics of environmental ethics (Post 2004, p. 757) and environmental health (Post 2004, p. 776) and falling under the broader thematic category of "our duties to nature" (Talbot 2012, p. 393). Notably, the Greenpeace campaign inevitably deals with relatively complex notions pertaining to environmental toxicology and chemistry; consequently, it addresses an expert audience and aims at nurturing a specialised debate on the issue, but it also speaks to a more vast and varied public of consumers in an attempt to lead them to revise their tech purchases, strongly influenced by mainstream media and advertising. In this respect, the Toxic Tech campaign provides invaluable research material to analyse the strategies of adaptation to audience demand (van Eemeren 2010, p. 108) implemented to disseminate scientific knowledge and enact counter-persuasion in the era of consumerism; by examining the documents issued in the context of the Toxic Tech campaign, this paper investigates the knowledge-dissemination strategies (Bondi *et al.* 2015; Garzone 2006) whereby Greenpeace has been blazing the path to greener electronics. This case study, which also provides a contribution to the study of activist discourse (Brunner, DeLuca 2017), has been conducted with a view to providing answers to the following research questions: to what genre do activist reports belong or seem to belong? What are the discursive means whereby scientific discoveries are popularised and recontextualised in the activist context?

2. Material and methodology

The present paper focuses on the analyses of the *Green Gadgets Report* (GGR) (Greenpeace 2014) and of the *Guide to Greener Electronics 18* (GGE) (Greenpeace 2012), the two crucial documents making up the Greenpeace knowledge-dissemination effort in the context of the Toxic Tech campaign.

Since activist campaigns "find in the Web their privileged site of discourse" (Degano 2017, p. 292), both documents are accessible from the official website of Greenpeace;[2] as a consequence, their reach is magnified by the Web, extending beyond the limits of the campaign itself (Degano 2017, p.

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[2] The GGR and the GGE are respectively available at https://www.greenpeace.org/usa/wp-content/uploads/2015/07/Green-Gadgets.pdf and https://www.greenpeace.org/archive-new-zealand/en/Guide-to-Greener-Electronics/18th-Edition/, last accessed on November 5th, 2019. The documents, downloadable from the American and New Zealand pages of the environmental NGO, are no longer available on the website of *Greenpeace International* (www.greenpeace.org/international), but were when this paper was first written at the beginning of 2018.

291) and rendering any attempt to identify specific audiences vain. Despite their digital, online and popularising nature, however, the two documents remain fundamentally different; while the GGR lays out the results of a fully-fledged scientific investigation and flaunts certain features of scientific discourse, the GGE is a significantly simpler and totally unscientific document. In other words, while the former addresses and popularises notions of environmental toxicology and chemistry, thereby restricting its audience to those who have at least a slight familiarity with the subject, the latter is the result of a more significant popularisation effort (Garzone 2006, p. 11) aimed at disseminating scientific results to a wider, less specialised audience.

The exploration of the Toxic Tech discourse conducted in this paper has drawn on quantitative and qualitative research methods in an attempt to describe the features of the GGR and the GGE and categorise these two different activist reports, which do not apparently pertain to any codified genre. Corpus linguistics has offered an aid to qualitative analysis (Garzone, Santulli 2004, p. 351), as the *AntConc* software (Anthony 2009, p. 95) has been used for word count and the identification of keywords (Culpeper, Demmen 2015, p. 90) in the texts. Regarding qualitative research methods, Pragma-dialectics (van Eemeren, Grootendorst 1984) has provided the theoretical foundations to investigate Greenpeace's argumentative endeavours to persuade a vast audience of more or less sensitive consumers to consider issues of environmental ethics while purchasing their technological devices. In particular, the study has focused on the identification of stereotypical and prototypical argumentative patterns (van Eemeren 2017, pp. 19-22), i.e. those that are recurrent and characteristic of the communicative activity type in which they occur.

In addition, the pragma-dialectical approach to the analysis of the GGR and the GGE has been supplemented with insights drawn from Multimodal Discourse Analysis (Kress, van Leeuwen 2006), because Greenpeace taps into different semiotic resources (visual and verbal) to convey meaning (Brunner, DeLuca 2017). In particular, the following sections will illustrate that the green principles that are expressed by means of verbal arguments are regularly re-expressed (especially in the GGE) by means of visual arguments (Degano 2017), set forth "through the choice between different uses of colour or different compositional structures" (Kress, van Leeuwen 2006, p. 2). As Kress and van Leeuwen (2006) suggest, the decision to advance argumentation both verbally and visually affects meaning and results in a complex, more convincing and sophisticated argumentation structure (van Eemeren 2017, p. 25), which is specifically tailored to expose the flaws of an apparently flawless industry and influence the behaviour of its apparently faithful customers.

3. The Green Gadgets Report

Published in 2014 and downloadable from Greenpeace's website as a pdf file, the *Green Gadgets Report* (GGR) presents itself as an extensive and relatively complex text. The following excerpt, where the risk posed by the presence of beryllium and beryllium compounds in electronic devices is addressed, is a case in point:

> (1) *Beryllium* and *beryllium compounds*, when released as dusts or fumes during processing and recycling, are recognised as known human carcinogens. Exposure to these chemicals, even at very low levels and for short periods of time, can cause beryllium sensitisation that can lead to *chronic beryllium disease (CBD)*, an incurable and debilitating lung disease.

This excerpt, indicative of the discursive orientation of the whole report, shows that the GGR appears as a hybrid genre, characterised by scientific topicality but also by a high degree of readability for a wide and heterogeneous audience. Although scientific denominations are used (*chronic beryllium disease*), explanations often follow to help the reader understand the topics addressed (*an incurable and debilitating lung disease*). In other words, specialised lexicon occurs in the report, where lexical items such as *hormone disrupters*, *endocrine disruptors (ED)*, *dioxin*, *antimony trioxide*, *phthalate* can be found; yet these lexical items are generally explained in lay terms. For instance, the reprotoxic nature of some phthalates is codified by resorting to the expression "toxic to reproduction", immediately followed by the term *hormone disrupters* which confers scientificity upon the text.

> (2) Some [phtalates] are classified as *"toxic to reproduction"* and are known to be *hormone disrupters*.

The GGR is, therefore, a popularising text that shares some features with scientific texts. Notably, it also heavily resorts to acronyms, that contribute to meeting the requirements of economy of expression typical of specialised communication (Garzone 2006, p. 33).

> (3) Apple is the only company that has eliminated the use of *PVC* and *BFRs* in all PC components, including external cables.

> (4) Nokia achieves its goal to phase out *BFRs*, *CFRs* and *antimony trioxide* in all new products.

> (5) Currently, no TVs on the market are completely free from *PVC* and *BFRs*.

As the above examples suggest, the most frequently recurring acronyms are *PVC* and *BFR*, standing respectively for *polyvinyl chloride* and *brominated*

flame retardants. Curiously, these noun phrases almost never occur in the report. Only 4 and 7 occurrences of, respectively, *polyvinyl chloride* and *brominated flame retardants* can be observed, as opposed to 234 of *PVC* and 196 of *BFR*. If the higher number of occurrences of acronyms could be seen as functional to avoiding the repetition of longer noun phrases, it is vital to specify that the abbreviated forms first occur without their expansions or explanations, which crop up later in the text; thus, acronyms remain "totally opaque", "impenetrable for anyone who is not already familiar with their meanings" (Garzone 2006, p. 33), at least until their expanded forms occur.

In addition, the GGR also relies on schematisation procedures, i.e. "the marked tendency – common to all types of scientific and technical texts – to make recourse to charts, diagrams, tables, schemes series and lists" (Garzone 2006, p. 68).

Despite the presence of charts (e.g. Greenpeace 2014, p. 16), tables (e.g. Greenpeace 2014, p. 14), specialised lexicon and acronyms, however, the GGR cannot be labelled as a scientific text. Notably, photographs (e.g. showing piles of e-waste or recycling workers in the Third World) render it more similar to a magazine article. Furthermore, the text does not follow the general IMRAD (Introduction, Methodology, Results and Discussion) pattern or structure (Garzone 2006, p. 41) characterising research papers but is, instead, more freely organised. An executive summary (Greenpeace 2014, pp. 5-8) is followed by the "Greener Electronics Campaign Timeline" (Greenpeace 2014, pp. 10-11), the outcome of another schematisation procedure aimed at displaying the progress made in the campaign from 2005 to 2012. The content of the report is, then, divided into thematic sections and summarised in a brief conclusion (Greenpeace 2014, p. 37). If the presence of an extensive bibliographical section at the end of the report gives it the appearance of a scientific paper, another remark concerning the non-scientificity of the GGR should be made. In this text, Greenpeace's need to reach different audiences with different degrees of preparation often results in marked generalisations, not typical of scientific discourse. For example, in (6)

> (6) Other examples of hazardous chemicals commonly used in electronics also pose *a range of environmental and human health problems* […] Antimony trioxide is recognised as a possible human carcinogen; exposure to high levels in the workplace, as dusts or fumes, can lead to *severe skin problems and other health effects*.

the indication of vague *skin problems* (however *severe*) and the use of the generalising expression *other health effects* appear like linguistic items that are not typical of an appropriate, precise and referential form of specialised communication. The *range of environmental and human health problems*

posed by toxic substances are, more often than not, only mentioned rather than discussed in depth.

Moreover, if it is true that scientific texts do resort to well-calculated rhetorical effects and go beyond pure referentiality and informativeness (Garzone 2006, p. 38), it is also true that, in the GGR, persuasive strategies are enacted by discursive means not typical of scientific texts. First, the occasional use of metaphors stands out. For instance, recycling workers are said to be "exposed to a *cocktail* of toxic chemicals and by-products" (Greenpeace 2014, p. 13) and phthalates are described as "softeners for PVC" that "*migrate out of* plastics over time" (Greenpeace 2014, p. 13). However colourful and evocative, these occasional metaphors, coupled with the various generalising passages, often point to the hybridity of the genre in question. Second, and more broadly, an overall discursive strategy aiming at the deconstruction of complexity can be identified in the GGR, further corroborating the "partially scientific" nature of the document: the recourse to the simple argumentative pattern problem-solution (Bortoluzzi 2010, p. 167) stands out, whereby the reality seems to be simplified by stating that there is only one problem requiring one specific solution. In the context of the Toxic Tech discourse, the description of the various environmental and health problems connected to the production and disposal of electronic devices (Greenpeace 2014, pp. 5-7), which have been outlined in section 1, serves the purpose of laying the groundwork for arguing for a green solution. In this respect, argumentation hinges on the *topos of threat*, positing that "if specific dangers or threats are identified, one should do something about them" (Wodak 2009, p. 44). Yet, this premise of argumentation is mainly and most often conjured up by the informal, non-technical adjective *hazardous* (examples 7 and 8), occurring 136 times to trigger the problem-solution pattern that characterises argumentation in the GGR. Other more specific (albeit non-technical) adjectives, such as *toxic* (30 occurrences), show up far less frequently.

> (7) Large quantities of *hazardous* PVC are still used in electric cables for PCs and TVs in particular.

> (8) The *elimination* of *hazardous* substances from the products themselves is the first step in addressing the wider *problem* of *hazardous* substance use across the supply chain.

Coupled with the occasional presence of the noun *problem* and the adjective *problematic* (13 and 2 occurrences, respectively), the reiteration of the adjective *hazardous* conjures up the idea of a predicament that needs to be tackled. As suggested by example (8), the noun *elimination* and the verb *to eliminate* are often used to shed light on how the problem of hazardous

chemicals should be solved; taken together, the noun and the inflected forms of the verb occur 66 times. Yet, the identification of the solution mainly relies on the iteration of the verb *to phase out*, occurring 92 times and pointing to the need of getting rid of all the toxic substances from electronic devices.

> (9) HP now is making progress but has failed to completely *phase out* the worst hazardous substances from all products.

> (10) Dell continues to delay in *phasing out* PVC and BFRs.

> (11) Samsung is penalised for missing its deadline to *phase out* BFRs.

> (12) Toshiba is penalised for missing its *phase-out* deadline along with Samsung.

In the light of the recurring character of the lexical items pointing to a problematic situation and a proposed solution (examples from 7 to 12), argumentation in favour of detoxification in the GGR can be said to hinge on a specific version of pragmatic problem-solving argumentation (Garssen 2017, p. 35) that is prototypical of activist discourse (Brambilla 2019). It is the argumentative pattern of complex problem-solving argumentation, whereby "it is first established that there *is* a problem in the current situation, because it is not automatically accepted by the audience" (Garssen 2017, p. 36). In consideration of the lexical pillars of argumentation in the GGR, the discursive implementation of this pattern in Greenpeace's Toxic Tech campaign can be represented as follows:

1. Standpoint: The hazardous chemicals used in the tech industry should be eliminated/phased out
    1.1a Because: There are environmental and health problems connected to the production and disposal of electronic devices
    1.1b Because: The elimination of these hazardous chemicals will solve the environmental and health problems connected to the production and disposal of electronic devices
    (1.1')(And: If there are problems connected to the production and disposal of electronic devices and the elimination of these hazardous chemicals solves these problems, hazardous chemicals should be eliminated/phased out)

The problem statement 1.1a is complex, because it has a descriptive and a normative component (Garssen 2017, p. 37). In pragma-dialectical terms, it is composed of what Garssen (2017, p. 37) calls an *existential presupposition*, i.e. a premise expressed by means of an existential structure, and a *normative qualification*. In other words, through this basic pattern, Greenpeace defends the premise that an environmental and health crisis exists and that it is troublesome. In so doing, the NGO defends the standpoint that the

elimination of the hazardous chemicals used by consumer electronics companies leads to a green and, therefore, desirable result.

Notably, the excerpts from (7) to (12) have been selected in that they highlight the iteration of the nouns and verbs that enable the reconstruction of argumentation in the GGR, but examples (11) and (12) have also been displayed because they reveal other non-casual lexical items, whose presence can be said to be curious in a "scientific" report. The verb *to penalise* occurs in the passive form just 3 times in the GGR, raising a few doubts in the minds of those who are not familiar with the report in question: why are companies penalised, and by whom? What does this penalty consist of? Is it an economic sanction? These questions are exhaustively answered in the other main document released in the context of the Toxic Tech campaign, the *Guide to Greener Electronics*. The discursive features of this text are only anticipated in the *Green Gadgets Report*, where other unexpected lexical items sporadically stick out, especially in evocative section headings:

(13) Progress on hazardous chemicals: the *leaders* and *laggards* as of 2014

(14) *Backtrackers* and compromisers

The occasional references to *leaders* (6 occurrences), *laggards* (4 occurrences), *followers* (2 occurrences) and *backtrackers* (1 occurrence), triggering associations with races, speed and slowness, would be out of place (to say the least) in a scientific paper, but not in a hybrid text produced and published in activist contexts. The hybridity of the GGR is further confirmed by the presence of a table (Greenpeace 2014, pp. 38-43) condensing the information provided in the report; despite systematising the scientific results laid out in the previous pages, however, this table does not merely look like the outcome of a schematisation procedure. Introduced by the title "Which companies are phasing out PVC and BFRs?", it presents a list of the tech companies assessed, which are ordered from the more to the least sustainable. In particular, a series of coloured symbols, listed and explained in a key (Figure 1), are placed beside the names of the companies to assist the reader in interpreting the data.
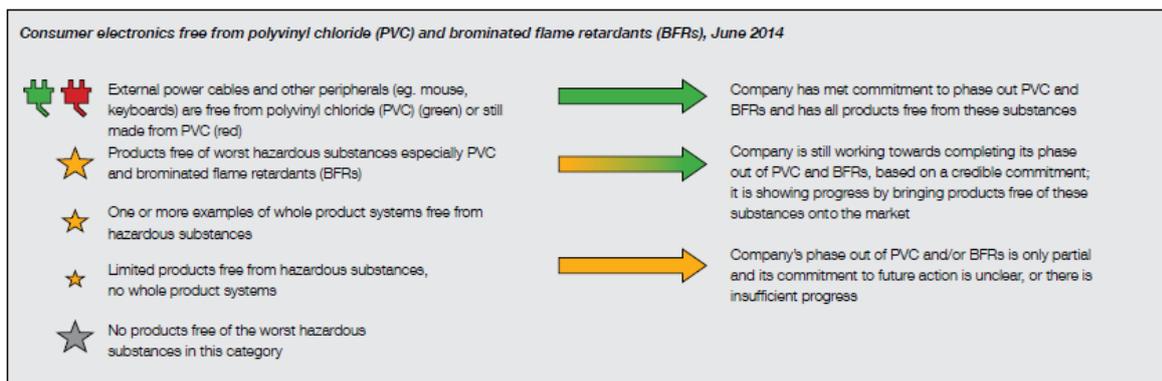
Figure 1
Key to the comprehension of the table entitled "Which companies are phasing out PVC
and BFRs?".

The information in the key clarifies that the different stylised plugs and stars
(in the left portion of the key) indicate the extents to which companies use
toxic chemicals in the production of their devices, while the three arrows (in
the right portion of the key) refer to three different degrees of corporate
commitment towards the solution of the environmental problem. Besides the
choice of the symbols themselves, though, it is the choice of colours that
stands out. The almost universal meanings of colours green, yellow and red
will be explored and described in section 4, illustrating the discourse features
of the *Guide to Greener Electronics*, where these colours are more
systematically used for informative and pragmatic purposes alike. As regards
the *Green Gadgets Report*, colours are used sporadically[3] and especially in
the table at issue where, in combination with the plugs and the arrows, they
seem to act like traffic lights to tell the reader which companies are
proceeding (green), slowing down (yellow) or stopping (red) on the path to
greener electronics. The colours (yellow or grey) and dimensions of the stars
also contribute to specifying the brightness and scope of corporate
commitment.

In the table, partially displayed in Figure 2, the logo of each company
is flanked by a few of the symbols explained in the key and by a brief
description of the company's progress or setbacks, which is nothing but a
short summary of the data expounded in the whole GGR.

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[3] These three colours are also used discursively on page 14 of the GGR, where another table of the
same type is shown, and on page 16, where five pie charts reproduce the same findings shown in
the table.

Company	Mobile phones	PCs (desktop & laptop computers, monitors	Desktop monitors and other products	Televisions	Other products	Progress
[Apple logo] [86]	⭐ PVC and BFRs were eliminated from Apple products in 2008.	[green plug icon] ⭐ PVC and BFRs were eliminated from Apple products in 2008, with the exception of PVC cables, which were eliminated in 2013 (as of 2014 regulatory approval for PVC-free cables is still pending in India and South Korea).	[green plug icon] ⭐ PVC and BFRs were eliminated from Apple products in 2008, with the exception of PVC cables, which were eliminated in 2013 (as of 2014 regulatory approval for PVC-free cables is still pending in India and South Korea).			[green arrow] Apple led the way on eliminating toxic PVC and BFRs from all its new products with the new iMac and MacBook being the first PCs completely free of PVC and BFR and met its commitment to phase these substances out by the end of 2008.
[HP logo] [89]		[red plug icon] ⭐ All of HP's notebook products and 60% of the company's non-mobile product families are low halogen, as of January 31, 2014 (apart from external components such as keyboards, mice, cables, and cords are not low halogen).[90] HP's Windows tablets and hybrid/split products are also low halogen; however, lower priced Android tablets are not yet low halogen.	[red plug icon] ⭐ Examples of three HP models of monitor that are virtually free of PVC and BFRs are the HP Compaq LE19f and LA22f widescreen LCD commercial monitors and the HP 2310e LED consumer display. The HP ENVY 100 e-All-in-One is the first PVC-free printer.			[orange-green arrow] HP needs to complete its phase-out of PVC by investing in PVC-free cables for all its computing products, and complete its phase-out of all PVC, BFRs and other hazardous substances in all its products. HP maintains that the entire industry needs to shift towards PVC-free cables to maintain a competitive playing field and is advocating with its suppliers.

Figure 2
Excerpts from the table entitled "Which companies are phasing out PVC and BFRs?".

The analysis of the verbal content of the table suggests that the ideas of competition expressed by the non-scientific lexical items that are sporadically used in the main sections of the GGR (*leaders*, *laggards*, *followers*, *backtrackers*) are also infrequently evoked in the table. For instance, the verb *to lead* is used in "Apple *led* the way on eliminating toxic PVC and BFRs", in the right column of the Apple row. Moreover, the HP row also signals the occasional presence in the table of the deontic verb *need to*, whereby Greenpeace warns tech companies against the moral risks of persevering in using hazardous chemicals. This verb, which has already been found to play an instrumental discursive role in activist communication (Brambilla 2019, p. 186), discursively presents the arguer as an authority, as Greenpeace is put in the position of assessing individual companies, judging them and instructing them on what they are required to do. The practical and moral authority of the NGO in the field of environmental ethics and health is, however, further and more skilfully constructed in the other document that is analysed in this

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paper. The use of colours, the recourse to non-scientific terms evoking a competitive atmosphere and the choice of the deontic verb *need to* are significant but sporadic strategies in the hybrid GGR which, however, become pillars of Greenpeace's discourse in the totally unscientific GGE.

4. The Guide to Greener Electronics

First published in 2006, the *Guide to Greener Electronics* (GGE) reached its eighteenth edition in 2012, the year when the incessant updating process of the document came to an apparent stop. All the editions of the Guide are available on the official website of Greenpeace International,[4] showing the extent to which the changes undergone by the text have progressively streamlined its persuasive component. Indeed, while the GGR is governed by the pattern of complex problem-solving argumentation, logic immediately appears to play a minor role in the "simpler" version of the report.

> (15) This Guide is not an endorsement for buying products from one company or another. *Remember*! The most sustainable devices are the ones you don't actually buy! *Work* to extend the life of your existing electronic gadgets, *buy* used products, and only *purchase* what you truly need.

However significant, recourse to imperatives (*remember, work, buy, purchase*) is sporadic and only characterises excerpt (15), an isolated comment elucidating the nature of the text right at its outset. Although imperatives are functional to the promotion of ethical purchasing choices, the Guide remains a descriptive rather than prescriptive text. If the GGR can be considered a hybrid text sharing features with scientific discourse, the GGE can be seen as either its enthralling abstract or a riveting expansion of the table that has been described at the end of section 3 and displayed in Figure 2; in this regard, the GGE is conceived not only to summarise the contents of the *Green Gadgets Report* but also, and especially, to disseminate at the popular level (Garzone 2006, p. 11) the scientific results contained therein.

The *Guide to Greener Electronics* has been updated and modified throughout the years, but all the eighteen editions share one central theme: since its first appearance on the web, the GGE has taken on the form of a ranking, whereby selected companies are listed according to their commitments to cut greenhouse gas emissions and eliminate toxic chemicals from their products, with a view to reducing health and environmental

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[4] The editions of the Guide from the 1st to the 18th can be found at https://www.greenpeace.org/archive-international/en/campaigns/detox/electronics/Guide-to-Greener-Electronics/Previous-editions/, last accessed on November 5th, 2019.

impacts. The companies analysed are assigned points from zero to ten and listed according to the score obtained. The ranking criteria are regularly revised to account for different problematic areas of the electronics industry.

Each and every edition from the first to the seventeenth is dominated by the unambiguous heading "How the companies line up". The verb *to line up* further points out the linear arrangement of the Guide and contributes to situating the text within the boundaries of sports discourse. In this regard, the association with sports events and, broadly, competition is made explicit in the GGE, a document that overtly "helps to highlight the competitive, innovative aspects of the consumer electronics sector". This paper focuses on the eighteenth edition of the Guide, evaluating leading consumer electronics companies based on their commitment and progress in three environmental areas: *Energy*, *Products* and *Operations*. Although it is representative of the previous editions in most respects, it also shows peculiarities and significant updates that will be highlighted below.

More than in the previous editions of the GGE, the eighteenth sees the complex path to greener electronics being discursively constructed as a competition, particularly a race, in which there are *leaders* and *laggards*. By means of various discursive strategies which will be illustrated below, the sixteen companies whose performances have been analysed are either presented as "fast" or "slow", competitive or not. Although the heading "How the companies line up" ceases to dominate the webpage, the ranking-like configuration of the text remains evident. As in most previous editions, a brief account of the performance appears next to the number specifying the company position in the ranking. By clicking on the name of a company, the user is redirected to the company's *scorecard*, where few additional and slightly expanded indications on corporate achievements can be found. In these individual descriptions of company performances, the deontic verb *need to* is used (more frequently than in the GGR) to "order" all the companies to revise their polluting practices, irrespective of their positions in the ranking. Various examples could be provided, but only a couple of excerpts are displayed (16, 17) to shed light on the crucial pragmatic role that the iteration of *need to* in the Guide plays in discursively representing Greenpeace as the referee of the competition.

(16) To increase its score, Lenovo *needs to* set ambitious targets to reduce its own GHG emissions by at least 30% by 2015 for its operations and dramatically increase renewable electricity use by 2020.

(17) Toshiba aims to use renewable energy for a wider range of its operations, and *needs to* set a target to dramatically increase renewable electricity use by 2020.

The presence of the noun *scorecard* itself further suggests that all the lexical and expressive choices in the GGE are aimed at recontextualising scientific knowledge in the domain of sports. Broadly, verbs, nouns and expressions generally found in sports news and commentaries proliferate, especially the verb *to score* and, to a lesser extent, the noun *score*. Virtually absent in the GGR (where only 3 occurrences can be observed), the verb is the inescapable linguistic indicator of the fact that *points* (examples 18, 19, 20, 21) are awarded to the participants, as in all sports competitions.

> (18) Wipro […] makes its debut in the international version of Greenpeace's Guide to Greener Electronics with 7.1 *points – placing it in 1st position*.

> (19) HP […] has *lost* its top spot […] and now *sits in 2nd position*, with 5.7 *points*.

> (20) Dell *drops to 5th position*, with 4.6 *points*. While Dell *scores* high overall, the company *scores* poorly on all Products criteria.

> (21) Apple *drops to 6th position*, with a *score* of 4.6. Though one of the high *scorers* in this edition, Apple misses out on *points* for lack of transparency.

The fact that a contest is under way is rendered evident by the omnipresent indication of the positions occupied by the companies in the ranking (examples 18, 19, 20, 21). As example (19) shows, the occasional occurrences (6 in the whole text) of the verb *to lose*, used to shed light on the setbacks suffered by certain companies (namely HP, Apple, Sony, Philips, Sharp), further evoke a competitive atmosphere. Moreover, the linear nature of the GGE is further highlighted by the iteration of verbs indicating upward or downward movements, such as *to drop* (examples 20 and 21). Besides this verb, *to move up* (22) and *to fall* (23) contribute to shoring up the underlying idea of a corporate race for the top.

> (22) Nokia *moves up to 3rd position* in this edition of the Greenpeace Guide to Greener Electronics. After three years at 1st position, Nokia *fell to* 3rd in last year's edition.

> (23) Panasonic *falls back to 11th position* in this edition of the Greenpeace Guide to Greener Electronics, with 3.6 points.

The competitive nature of the text is enhanced by the opportunity, offered to the user, to download, from the homepage of the GGE, the *Full Scorecard*. This sixty-five-page pdf document, whose denomination further contributes to equating the path to greener electronics with a sports competition, ventures into more detailed descriptions of corporate performances, showing more similarities with the hybrid GGR than with the popular GGE. The same holds

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true for another document, retrievable from the webpage of the Guide, i.e. the *Ranking Criteria Explained*,[5] which provides more exhaustive insights into the assessment procedure. In this respect, the simple GGE offers links that redirect the user to more detailed and scientific sections, in a sort of virtual route where the expert can proceed in order to acquire new knowledge and the lay person can stop without being deprived of the privilege of being duly informed. Thus, in spite of this web configuration, the GGE remains a simple text addressing an audience of non-experts in toxicology. In this regard, other crucial discursive peculiarities of the eighteenth edition of the GGE need to be addressed.

Despite the crucial role played by verbs in constructing the Toxic Tech discourse as a race, not only linguistic but also pictorial elements are instrumental in determining the discursive configuration of the Guide. A multimodal approach to the document points to the presence of an arrow next to the number that shows the position in the ranking; the symbol is used to indicate whether the company at issue has improved or worsened its performance since the previous edition of the "race", thereby contributing to guiding the reader towards the appropriate interpretation of the research findings, thoroughly described in the more scientific GGR. When companies "participate in the race" for the first time, the space reserved for the arrow is occupied by the adjective *NEW*.

WIPRO 7.1/10

Wipro, an Indian electronics company that has previously participated in Indian editions of the Guide, makes its debut in the international version of Greenpeace's Guide to Greener Electronics with 7.1 points – placing it in 1st position.

HP 5.7/10

HP is still above most companies on the ranking, but has lost its top spot from the most recent edition of the Greenpeace Guide to Greener Electronics, and now sits in 2nd position, with 5.7 points, behind newcomer Wipro.

NOKIA 5.4/10

Nokia moves up to 3rd position in this edition of the Greenpeace Guide to Greener Electronics. After three years at 1st position, Nokia fell to 3rd in last year's edition.

Figure 3
Excerpt from the GGE.[6]

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[5] The document is available at https://www.greenpeace.org/archive-new-zealand/Global/international/publications/climate/2012/GuideGreenerElectronics/Guide-Ranking-Criteria-v18.pdf, last accessed on November 5th, 2019.
[6] The picture is available at https://www.greenpeace.org/archive-new-zealand/en/Guide-to-Greener-Electronics/18th-Edition/, last accessed on November 5th, 2019.

Besides displaying a portion of the ranking, Figure 3 reveals another discursive strategy which is implemented in the GGE: as in the table displayed at the end of the GGR (see Figure 2), specific colours are chosen and used to shore up the ideas expressed by means of language and ratified through numbers and arrows. The skilful use of colours has contributed to the creation of meaning in the GGE since the beginning of the Toxic Tech campaign, as the leaders of the ranking are regularly associated with the colour green and the laggards with red, with all the other companies sitting in the middle of the table being characterised by yellow. In Figure 3, the Wipro square is green, while the HP and Nokia squares are coloured in yellow; and this choice is not casual. Kress and van Leeuwen (2006, p. 269) highlight that "colours often have conventional meanings" and suggest reading, for instance, "green as the colour of nature". Green is, therefore, quite intuitively associated with the only committed and environmentally-friendly company while, moving down in the ranking, yellow gradually turns to red, progressively blaming the laggards and polluters in a universally comprehensible way.

Although the GGE ranking embellished with arrows and meaningful colours would probably be enough to clarify the differing situations of the competitors, another pictorial element, dominating the webpage, contributes to exposing the toxicity of the tech industry and shedding light on the performances of the various companies analysed.
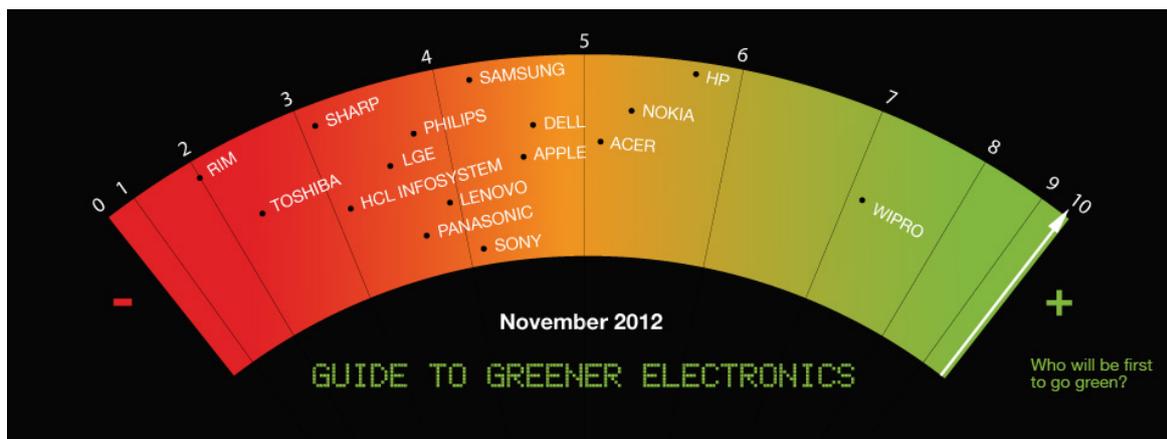

Figure 4
The GGE speedometer.[7]

The remarks on colour regarding Figure 3 also apply to Figure 4. It displays the GGE speedometer, whose left portion is coloured in red; moving to the

[7] The picture can be found at https://www.greenpeace.org/archive-new-zealand/en/Guide-to-Greener-Electronics/18th-Edition/, last accessed on November 5th, 2019.

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right, red gradually turns to yellow which, in turn, progressively verges on green in the right section of the picture, thereby portraying a continuum of varying degrees of environmental responsibility.

The name of the leading company, Wipro, is placed on the right, where the indicator signals high speed in a speedometer. Wipro is the only company occupying the green part of the speedometer, while all the other companies are lagging behind, either stuck in the red area or struggling to reach the more promising yellow or green areas. Acknowledgement of the fact that Wipro is the only company situated in that specific portion of the speed gauge triggers basic but significant inferences: Wipro is a green company, it is fast and it is leading the race. The newcomer Indian company still has work to do before winning, as it has not scored ten points; the contest has not ended yet, as clarified by the question "Who will be the first to go green?". This question, flanking the speedometer, ideally shows the finish line and flaunts the prize of this apparently endless race for the leadership and the victory.

Despite the similarities and recurrent themes in all the editions of the Guide, the speedometer was first introduced in the eighteenth edition, significantly contributing to enhancing the explanatory potential of the document: while the ranking merely indicates position, the speedometer also shows directionality, incidentally enabling the readership to appreciate how distant companies are from one another in terms of "greenness". For instance, while Panasonic sits in eleventh position and LGE in twelfth, the speedometer unveils that the companies occupy almost the same position and can, thus, be said to perform more or less the same way. The gap between one company and another can also be grasped by comparing the points attributed, but the speedometer is a more intuitive instrument that provides a graphic overview of company performances and helps recontextualise the Toxic Tech discourse in the sports sphere. By gathering all the sixteen companies in a narrow but telling semiotic space, it plays an instrumental role in further condensing the results of the scientific investigation on the performances of the companies; in so doing, it also highlights, by implication, the difference that the choice of buying a device instead of another would make in health and environmental terms. It, thus, appears as an empowering discourse tool and knowledge-dissemination device, showing the consumer the right path to greener electronics.

5. Conclusions

The discursive analysis of the main documents published in the context of the Toxic Tech campaign provides significant indications regarding the knowledge-dissemination strategies implemented by Greenpeace. On the one hand, the hybrid *Green Gadgets Report* demands familiarity with scientific

notions and/or denominations to fully appreciate the explanation of the risks posed by toxic chemicals in electronic devices. Although the occasional occurrence of non-specialised terms, the sporadic presence of the deontic verb *need to*, the prototypical and stereotypical recourse to the problem-solving argumentation pattern, the numerous generalising strategies and the frequent explanations of specialised concepts assist the reader in understanding the Toxic Tech discourse, the GGR remains a document that shares a variety of features with scientific texts and, thus, addresses a heterogeneous but not totally unprepared audience. On the other hand, the simpler *Guide to Greener Electronics* appears to recontextualise, rephrase and simplify scientific data at the popular level, since the document seems to be exclusively conceived to turn the Toxic Tech problem into an entertaining sports event. The inherent complexity of the topic is mitigated and the references to toxic substances and their scientific names totally disappear, supplanted by the simplicity of attending a car race. Furthermore, the iteration of the deontic verb *need to* in relation to the prospective behaviour of tech companies towards issues of environmental ethics and health ratifies the non-objective and non-scientific nature of this text, whereby Greenpeace rises as the "referee" in the exciting, albeit serious, corporate competition for greenness in the tech sector. In light of these prominent discourse features, toxicity can be said to be exposed but certainly not explained or expounded in the *Guide to Greener Electronics*, and while the GGR is governed by logos, pathos prevails in the GGE.

The co-presence of these two inherently different texts in the context of the Toxic Tech campaign is not casual, but rather functional to the dissemination of knowledge on a wider scale; by tapping into elements of specialised discourse and the interplay between words and pictures alike, the Toxic Tech campaign results in a multi-genre discourse, addressing different audiences at the same time by skilfully merging scientificity and readability.

More broadly, the analysis of the GGR and the GGE also shows that the communicative pillars of Greenpeace's discourse are subject to regular review and rapid revision. Incidentally, as this study was being conducted and this paper drafted, the nineteenth edition of the Greenpeace *Guide to Greener Electronics* appeared on the official website of the NGO, towards the end of 2017. A superficial analysis of the new data indicates that the ranking criteria have been revised (changing from *Energy*, *Products*, *Operations* to *Energy*, *Resources*, *Chemicals*) and, particularly, that the scores from one to ten (employed since the first edition of the Guide) have been replaced by marks from A to F. Colours still play an instrumental discursive role, and more detailed explanations regarding their meanings appear at the bottom of the webpage, where a key specifies that *"A grades are green, B grades are olive, C grades are yellow, D grades are orange, F*

grades are red''. Moreover, the superlative adjectives *best* and *worst* stand out next to green and red companies, respectively.

A further, significant update lies in the fact that Wipro, the leader of the 2012 race, unexpectedly disappears, overcome by the new leader Fairphone. Yet, the most meaningful novelty lies in the choice to abandon the speedometer, replaced by a similar picture that preserves the function of displaying directionality and the distance between the companies, but relinquishes references to speed and sports events. The competition, thus, appears definitively to be moved from the racetrack to school, where "student-companies" are rebuked, taught and assessed as if they were youngsters in desperate need for education. This discursive choice is not only functional to presenting imperfect companies as pupils, but also plays a crucial role in shedding light on Greenpeace as the possessor of knowledge and dispenser of marks, i.e. the professor in the toxic classroom. This radical and unexpected change in the discursive configuration of a twelve-year-old campaign seems to suggest that the rapidity of the communicative changes brought about by Greenpeace forces discourse studies to venture into the systematic description of activist discourse, in order not to lag behind.

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THE DISCOURSE OF ECO-CITIES AS AN ETHICAL COMMITMENT
A comparative study in English specialized domains

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Abstract – This paper presents the methods and results of an integrated quantitative and qualitive analyses of texts related to contested environmental issues in the field of eco-city projects. The premise is that eco-cities are socially constructed entities, shaped by different voices, therefore the aim is to investigate how these voices are discursively constructed. Hence the study focuses on the exploration of specific rhetorical patterns which legitimize or delegitimize stakeholder claims about how to manage environmental issues in eco-city projects, empirically identifying grammatical and semantic clusters which uphold certain discourse processes such as evaluation, argumentation and ideological stance. The study pays particular attention to where the environment comes into contact with business and economic concerns, indicating the environmental-economic paradigm and ambivalent neoliberal frames. The methodological approach aligns itself within recent frameworks combining the in-depth contextual analysis of critical discourse analysis with corpus linguistic quantitative retrieval techniques, which can fine-tune the data and consolidate the qualitative analysis. In this way, two prominent clusters emerged throughout the corpus identified as lexical-semantic and syntactic patterns of authority and certainty.

Keywords: critical discourse analysis; eco-cities; environmental-economic paradigm; lexical-semantic patterns; specialized corpora.

1. Introduction

This paper presents a corpus-aided discourse analysis of texts related to contested environmental issues in the field of eco-city projects. Eco-cities are understood here as models for future urban development in response to one of today's big environmental challenges: how to make urban living healthier and more sustainable. This has caused a variety of stakeholders – including academics, architects, engineers, government, structural consultants and urban planners – to propose different methods for sustainable urban forms, one of which is the eco-city. Therefore, the premise being that eco-cities are socially constructed entities, shaped by different voices, the aim of this work is to investigate how these voices are discursively constructed and how they perceive the eco-city. This investigation especially focuses on the discursive strategies used to define eco-cities, which may differ according to the

'primary definer' i.e. the player or discourse community. Thus, the study explores how eco-cities are represented through specific rhetorical patterns which legitimize or delegitimize stakeholder claims about how to manage certain environmental issues in eco-city projects. In other words, there are opposing views, giving rise to public debate.

The term eco-city was originally coined by Register (1987), meaning 'an ecologically healthy city'. Register was also quick to admit that it is not possible to have a truly healthy city, hence the term's oxymoronic ambivalence (Alusi *et al*. 2011). Today, any city can get an eco-city label depending on its number of ecological initiatives, e.g. from renewable or recycled materials, clean, efficient transport systems, to power points for electric cars, and so on. As the term's usage has become more widespread, so too have the meanings associated with it and the diversity of projects adopting the label (Jabareen 2006). For the purpose of this research, I specifically investigate texts referring to on-going new eco-city projects being built as a model for future urban development, with case study examples in China, Italy, South Korea and the United Emirates. I chose five well-known projects referenced in research papers and retrievable on Google Search. Two case studies are based in China due to the fact that China appears to be at the forefront in reshaping its urban environment with over 200 eco-cities in the pipeline, despite rising criticism of these projects (Shepard 2017).

In fact, the issue is far more complex. What really lies at the heart of the controversy is a growing awareness, in the last decade or so, of the difficulty of integrating environmental policies into institutional settings, leading to the translation of the environment and nature into economic and monetary language (Alexander 2009). Environmental exploitation has long been denounced, but a trait belonging to today's type of exploitation is its 'rhetorical concealment' (Colombo, Porcu 2014, p. 66), for example, the increasing appearance of lexical compounds reflecting ambivalent relationships, e.g. *green consumerism* or *eco-tourism*. As I am particularly interested in where the environment comes into contact with business and economic concerns, I focus on the lexis and associated syntactic and discursive patterns which indicate the environmental-economic paradox and ambivalent neoliberal frames, e.g*. green business, green capitalism, green competitiveness*. In this way, the present study, unlike previous work on environmental discourse, seeks to contribute to the understanding of potentially new interpretations of the environment within the topic of eco-city initiatives*,* especially the integration of environmental discourses into *neoliberal frames,* which appear to give rise to specific rhetorical devices and planned responses.

2. Research questions and approach

The analysis is guided by the following research questions. Do discursive strategies differ between different discourse communities? What rhetorical and functional purposes do the grammatical patterns and semantic features produce in the texts and discourse? How are solutions to problems discursively constructed? How do the keywords in the representative sub-corpora index the ideological orientations of the scientific community? Thus, to answer these research questions and in order to provide an empirical comparative analysis, two sub-corpora of texts from two discourse communities were compiled. One consists of texts from eco-city project websites created by architectural and structural consultants; the second represents the environmental science research community which tends to critically evaluate the eco-city projects. As is often the case with controversial issues, the texts epitomize spaces of representation and interaction with a targeted audience in order to promote a point of view and, for the documents analyzed in this particular study, to persuade the audience of how an eco-city should be conceptualized. The ensuing debates provide fertile grounds for linguistic research, which seeks to understand if and how chosen lexical items function as a key to discursive activity within the framework of the discourse of eco-cities, in which language shapes and maintains ideological forces in society. The linguistic analysis empirically details and explores grammatical and semantic clusters and patterns which uphold certain discourse processes such as evaluation, argumentation and ideological stance, reflecting the values and beliefs of the group, in terms of their conceptualization of 'nature', 'environment' and the 'eco-city'.

Such work falls under the framework of critical discourse analysis (CDA) which examines communication in various institutional settings and aims to identify how discourse shapes society and power relations and, in this particular context, how certain definitions achieve hegemonic positioning over others (Garzone, Sarangi 2008; Fairclough, Fairclough 2018). This type of investigation can also draw a parallel with recent studies in environmental discourse (Alexander, Stibbe 2014), and studies in the field of ecolinguistics (Stibbe 2014), defined as the study of language in relation to man and nature (Halliday 1990). However, this present research aligns itself more broadly within recent frameworks combining the in-depth contextual analysis of CDA methodologies with corpus linguistic (CL) quantitative analysis, which is able to fine-tune the data, consolidate the qualitative analysis, and in this way reduce researcher bias (Mautner 2009).

Drawing on the integration of the above methodologies, two distinct clusters were identified running throughout the corpora (see section 4). In the eco-city project corpus (ECP), the most dominant cluster patterns within the

data can be labeled as a language of authority and certainty, marked by high frequency items like company names (e.g. *ARUP*), self-reference pronouns *we, our* and the future auxiliary *will*. Whereas, in the environmental research papers corpus (ECR), the dominant cluster is one representing a discourse of uncertainty reflected by high frequency features such as the modals *may, can*; *if clauses* and argumentation patterns like *not only ... but also, some ... whilst others*. These structures commonly occurred to produce a discourse of caution and skepticism regarding supposedly environmentally friendly eco-city projects, which also pursued a rhetoric of aesthetic value and environmental stewardship with salient clusters referring to *land value* and *green space*. Thus, the analysis focuses on investigating semantic associations particularly around these lexical items.

To sum up, at the socio-linguistic level the main objective of this study aims to contribute to the growing body of research focusing on the discourse involved in communicating environmental issues. A by-product of this analysis can be indirectly linked to pedagogical aims, which are not discussed in this paper, but I briefly mention in terms of experience in the university English language classroom, where students are expected to participate and to actively construct discourse patterns similar to the ones analyzed in this paper. As language teachers we seek to create a dialectical reading process to guide students to interpret texts critically from all angles so as to reach the truth of a text.

The paper continues as follows: section 3 presents a short overview of the literature and applied theoretical frameworks. Section 4 describes the corpus and methodological procedures. Section 5 discusses key findings in relation to the genre, and section 6 draws conclusions.

3. Literature review and applied theoretical frameworks

The theoretical approach is concerned with the construction of knowledge and how it is given meaning and applied to the social world, namely the urban, cultural, economic and political reality (Garzone, Sarangi 2008; Salvi, Turnbull 2017), thus involving critical discourse analysis to investigate how the discourse of eco-cities shapes urban practices. This type of analysis is broadly aligned with theoretical frameworks underlying recent work on environmental language (Stibbe 2014). Indeed, over the past decade or so, there has been a growing body of research into the language used to discuss environmental issues (Poole 2016), including studies on lexical choices within the context of the environment and their social, cultural, economic implications (Alexander 2009; Bevitori 2011). Recent studies have also examined the role of the media in defining contested environmental issues, for example, climate change (Carvalho, Burgess 2005). This present study

builds on such research but focuses on a linguistic and discursive enquiry which can uncover potentially new interpretations of the environment within the field of environmental issues and ecological city initiatives.

A word needs to be said here on early works by scholars like Halliday (1990, 2001), and Goatly (1996), who studied the connection between language use and environmental degradation, (inspiring the 'ecolinguistic' movement in the 1990s). Halliday (1990, 2001) argued that applied linguists have an important role to play in the environmental crisis. He claimed certain aspects of grammar and language patterns 'conspire … to construe reality in a certain way… that is no longer good for our health as a species' (1990, p. 25). Halliday believed our perception of the environment and nature is culturally embedded in our language, in cultural codes, prompting features of language that normalize and reproduce dominant often unstable conceptualizations of the relationship between humans and their environment. He gives various examples; for instance, the lexical unit 'undeveloped land' implies a common cultural, subconscious tacit acceptance of the need to develop land for economic purposes, which may produce ecological destructive results. He identified other linguistic features like nominalizations and transitivity, which allow the agent to be omitted, e.g. 'the extinction of the rainforest' or 'rainforest depletion' leaving unstated who is responsible for the extinction; and examples of mass nouns, like 'soil' and 'water', often construed in language as unbounded and unlimited in supply. Similarly, Goatly (2002) investigated how passive and normalized forms in texts concerning the environment in the BBC failed to ascribe agency and responsibility, and showed how news values feed into the way nature is constructed. He concluded that on the BBC there are "frames of consistency" (2002, p. 6). For example, sharks, like wolves, always appear to have a bad press.

In fact, this sort of linguistic phenomenon can be linked to framing analysis (Entman 1993), that is, the careful choice of some aspects of a perceived reality, to the exclusion of other aspects. Thus, framing occurs by means of linguistic choices and the framing of an issue is likely to influence a reader's perception of it. In this case study, the discourse of eco–cities is shaped by social, economic, political and cultural frames.

To uncover these frames, it is useful to identify meaningful lexical patterns and collocation profiles in texts. This makes it possible to investigate the discourse of a particular community in a practical context and examine lexical behaviour in order to reveal its possible 'ideological' implications (Hunston 2007). Cumulative evidence from the collected data can reveal different pragma-semantic patterns signaling different connotations that words have in relation to semantic preference and semantic prosody, often carrying an evaluative element making it negative or positive, good or bad (Hunston 2007). This hidden meaning, uncovered through collocation and

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concordance analyses, may in turn provide cultural and/or ideological information (Stubbs 2002). For example, in this corpus the word *green* is rarely neutral, being rather value-laden (Salvi 2016).

As the texts present a fair amount of affirmations and claims based on legitimizing decision-making processes, any linguistic analysis needs to consider features of argumentation and persuasion, and of the ensuing rhetorical strategies related to categories of argumentation (Toulmin 2003), as well as the dialogic nature of some structures which put one argument against another revealing the pragma-dialectical elements of the discourse (van Eemeren 2017). Nevertheless, this study looks at argumentative patterns within the integrated framework of CDA and CL analyses mentioned above.

4. Corpora and methodology

What follows is admittedly a description of a small-scale research corpus. However, as shown in the methodological procedure and subsequent analysis, the emerging salient items drawn from empirical data make the methodological approach a useful step towards social scientific rigor and replicability in line with other small scale corpus-based critical discourse studies (Partington *et al*. 2013). Following a methodological framework which integrates corpus linguistic quantitative data with qualitative descriptive analysis, a comparative empirical analysis was carried out on the two specialized sub-corpora illustrated in Table 1. One sub-corpus consisted of texts downloaded from eco-city project company websites. The following eco-cities were selected: Dongtan (China), Liuzhou Forest City (China), Songdo (South Korea), Eco-village Marino (Italy), Masdar City (UAE), all under construction by joint international partners (see the website URL sources listed in the references). Unfortunately, I was not able to access proper urban planning documents, which needs licensed permission, nonetheless the promotional discourse of the retrievable texts provided enough data for the purpose of this research.

The second sub-corpus consisted of a collection of scientific research papers specifically related to eco-cities and their environmental challenges, retrieved from the academic research journals *Journal of Environmental Policy and Planning, Journal of Environmental Sciences, Journal of Cleaner Production,* as well as papers from research *Symposiums* on eco-cities in the period 2015-2017. Interestingly, most of these papers are critical assessments of eco-cities and what has been done so far in terms of their management and planning. In truth, the analysis took this line of research unintentionally, as it was only when the research papers were assessed that the critical evaluation of eco-cities emerged. It is important to point out that the papers do not oppose eco-cities in their own right, but rather they provide critical

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recommendations. Above all the researchers draw particular attention to the need for an integrated approach and the fact that eco-city projects may not be as sustainable as they claim to be. Hence the focus on lexical choice and argumentative structures reflecting contested issues, opposing views and ideological stance.

Discourse community	Genre	Text sources	Total tokens/ types	Time period
Eco-city project companies/ structural consultants (ECP)	Websites	*ARUP, Boeri Architectural studios, Danish Architecture Centre, Gale International, Foster and Partner, Lendlease.*	34,320/5,387	2017
Scientific environmental researchers (ECR)	Academic research journals	*Journal of Environmental Policy and Planning, Journal of Environmental Sciences, Journal of Cleaner Production, Papers from Symposiums on eco-cities.*	87,980/9,273	2015 - 2017
Case study eco-city projects	Eco-village Marino (Italy), Vertical Forest City (Liuzhou, China), Dongtan city (China), Masdar city (UAE), Songdo (South Korea).			

Table 1
Specialized corpora.

The primary purpose of both discourse communities is to influence the public perception of the eco-city projects. While internal linguistic features indeed distinctively varied due to differing genre conventions and constraints, the overall communicative purpose of the two genres is similar, to promote and persuade the audience of a certain point of view.

The research journals corpus (approximately 88,000 words) is larger than the eco-city projects corpus (approximately 35,000 words), so it was necessary to use relative frequencies to normalize the data. Once the texts were cleaned and formatted I used different CL software for different purposes: *ConcApp* (Greaves 2005) for frequency and collocation analyses; *Wmatrix* (Rayson 2009) for creating keyword lists and key semantic domains; *ConcGram* (Greaves 2009) allowed me to retrieve phraseological configurations and uncover dominant discursive strategies, e.g. purpose clauses with *will/to*, *will/for* patterns; and argumentative structures such as *not only… but also*. In this way, I was able to identify key lexico-semantic grammatical patterns and keyword collocates and compounds, e.g. *behavioral change*, *green practices*.

With this approach it is possible to explore and identify which words are chosen in preference to other words in the rhetoric of a particular discourse community, and see how specific linguistic features serve to uphold larger discourse processes. From a critical discourse perspective several areas are worth investigating, to which we now turn in the discussion of salient findings.

5. Analysis and discussion

I proceed now to describing the stages of the analysis. I read all the texts in the corpora for first impressions. I then let myself be guided by frequency and keyword lists which confirmed nuances from the manual reading. The recurrent lexical items emerging from the data were then closely observed in their contextual use, leading to a comparative analysis of the two sub-corpora.

Frequency lists and keyword analysis revealed lexical features of interest, idiosyncratic to each sub-corpus, however, due to space constraints, I discuss here only salient key items. Some high frequency lexical content items were common to both sub-corpora, e.g. *eco-city,* and lexis related to *urban development* and *projects*, such as *buildings, land, green, sustainable,* but with different intensity and keyness. For example, *green* is a high frequency word in the ECR corpus 350 instances (0,4%) vs. 70 instances (0.2%) in the ECP corpus. It is also key in the ECR texts (8th), but not so key in the ECP texts (20th). What is worth investigating is the difference in the pragma-semantic contextual use of these items, which produced different connotations and prosodies depending on the discourse community.

As I wanted to investigate rhetorical devices of persuasion and argumentation, I took into account high frequency grammatical function words, namely, the auxiliary *will* (158, 0.7%)*,* and the prepositions *to* (561, 2.5%) and *for* (253, 1.2%) in the ECP corpus*,* and *not* (271, 0.3%) and *but* (160, 0.15%) in the ECR texts. An empirical investigation into their use led to the identification of prominent rhetorical and argumentative strategies peculiar to each corpus. In addition, I paid particular attention to where environmental discourse came into contact with economic and business discourse.

5.1. Dominant discourse strategies in the eco-city projects (ECP) sub-corpus

It is worth pointing out here that in the ECP corpus each company highlighted or focused on a particular aspect of what they wanted to promote. In order to confirm nuances from a manual and visual observation of each

company's promotional objective, I carried out a brief comparative, quantitative keyword analysis (not reported here) of the company websites. Each website corpus was uploaded onto *Wmatrix*'s keyword tool, which compares the texts against an inbuilt BNC sampler. In this way keywords can be calculated statistically. Although the nature of keywords by definition differ from one corpus to another, I was able to support my intuitive observations with quantitative evidence. For instance, *education* is at the top of the keyword list in the *Danish Architecture* company website, but it has no keyword instances in the other websites. I will not go into the differences between the companies, but rather I focus on their communicative purpose as a common denominator, i.e. to promote the company and appeal to potential investors. Companies are keen on endorsing their valuable, technological expertise, hence the hegemonic promotional discourse reflected in linguistic features and patterns, for example, the salient use of speculative *will* suggesting commitment and vision. Applying the software *ConCgram,* I retrieved all configurations for *will/to* (Figure 1). Of the 57 instances, approximately 35 instances (over half of the occurrences), stood for speculative *will,* introducing prepositional phrases of purpose.

```
1          waste, including rice husks, will be used to make energy to power a combined heat and power
2       a viable source of income. They will also help to identify priority risk elements and provide more
3        land to the cities means it will be necessary to build some 400 cities by 2020 to house 300
4        large bioreactors which will gasify the waste to produce electricity and heat. All the buildings
5        using 156 metrics and will be used as a tool to support the 100RC programme.  Project Summary
6         those facing north, will have thermal glass to minimise the need for heating and therefore the
7         ambitions. Masdar will be encircled by a wall to shield its inhabitants against the hot desert
8             rice husks, will be used to make energy to power a combined heat and power plant. Rice
9         will be several metres above ground level to make room for the underground system. Cars will
10    will make use of the existing roads and railways to connect with the surrounding area. Masdar is
```

Figure 1
Sample *will/to* concgrams – (57 instances) – ECP sub-corpus.

As we can see from the concgram and concordance analyses, the dominant pattern is s*ubject/noun phrase + will + verb + to + verb phrase,* expressing the overall function of intention and purpose. Not only does the pattern reveal how the company promotes itself, but above all it reveals the companies' perceived role in society, their sense of mission and commitment to finding the perfect solutions for urban sustainable living. The following sample excerpts illustrate this rhetorical function.

1) Windows, especially those facing north, **will** have thermal glass **to** minimise the need for heating and therefore the consumption of energy.

2) […] some of the organic waste, including rice husks, **will** be loaded into large bioreactors, which **will** be used **to** make energy **to** power a combined heat and power plant.

*L*ingue e
*L*inguaggi

Excerpts (1) and (2) show how the *will/to* patterns perform short, declarative, assertive illocutionary acts, often embedded in problem-solution moves. For example, the company has the solution for reducing heat and energy consumption and boosts its technological expertise through the use of semi-technical vocabulary, e.g. alternative energy can be attained by putting *rice husks* in *bioreactors*. The prevailing prosody is one of certainty and vision in terms of assuring the project's success and guaranteeing that money is well-invested, stimulating further investments. All in all, the assertive tone legitimizes the company's planning and activities. Moreover, the future-oriented nature of the texts and the lexical choices showcase ECP companies and enhance their authority, conveying their commitment to solving the environmental challenges.

5.2. Argumentation in the eco-city research (ECR) sub-corpus

While the ECP corpus is marked by a high frequency of features reflecting assertive, authorial stance and *will* clauses, the ECR corpus is populated with modals and modality, in particular the modals *can* 292 instances, 0.3% (vs. 40, 0.17% in the ECP corpus), *may* 130, 0.1% (vs. 0 instances). Other frequent items include *should* (59), *need to* (32), *would* (45), *has/have to* (15), and *if/whether* (101) subordinates. Two distinct clusters are produced, one reflecting a discourse of uncertainty and doubt, and a second dominant cluster representing ethical, moral recommendations and mitigation. The cumulative effect of these clusters is a rhetoric of scepticism which questions the construction of eco-cities, the stability and efficiency of investments and the potential harm they may cause, as shown in the following sample excerpts.

3)   An interesting example of how **blind faith** in technology **may not** always lead to better results **can** be taken from a project in Brescia.

4)   **However,** the data collected illustrates that **some** parts of citizens lifestyles **may** become more environmentally friendly **whilst others may not.**

5)   So, **even if** eco-city managers provide attractive alternative forms of transport to the car, … there is **no guarantee they will change** their daily habits.

Excerpts (3) and (4) illustrate how the modals *may* and *can* act as hedging and approximation devices producing an overall cautionary stance on ecological initiatives within eco-city projects. This stance is re-enforced by rhetorical alliteration (*may, may not*) and argumentative structures such as, *however, some … whilst others* (4), and *even if* (5). In addition, lexical items which contextually emanate a negative semantic prosody are embedded within the argumentation structures, e.g. *blind faith, no guarantee* (3 and 5 respectively). On the surface, these items may not seem to deploy or be

inherently tied to a rhetoric of uncertainty, but within the context they contribute to the overall negative effect. Lexical choices in the texts with a similar prosody include *risk, failure, threat*. Recurring patterns such as *not only ... but also, at the same time, as a result of, due to,* can be brought to the surface using *ConCgram* for the retrieval of configurations, as shown in Figure 2.

```
1    the contention that critical urban scholars can not only analyse but also propose and aid in the enactment
2              development, a development that it is not only environmental, but also economic and social. More
3    services offered to residents—covering therefore not only the urban environmental sphere but also economic
4            circle sizes. 'Sustainable city' turns out not only to be the most common category, but also quite
5    paradox has negative public health implications, not only because of continued park poverty but also because
6    Asian development interests that rapidly changed not only the skyline of Downtown Vancouver, but also the
7       with housing policies at the municipal level, not only in terms of the design of buildings but also in
8        originating indoors. Indoor sources encompass not only the building structure and materials but also the
9        sustainable development requires us to change not only the concept of economic development, but also how
10     a set of broadly agreed principles. Rather, it not only involves active physical construction but also a
```

Figure 2
not only/but also concgram– ECR sub-corpus.

The above pattern *not only ... but also* is a common feature of scientific writing and academic research papers (Hyland 2009), in which arguments are put forward as persuasive rhetoric to engage the reader and put the audience into a certain frame of mind. This type of moral argumentation often occurs alongside modals which have the pragmatic function of making recommendations or suggestions, such as *have to, need to, should,* (example 9).

9)   **Not only** do urban form, transportation systems, water, waste and energy technologies **have to** change, **but** the value systems and underlying processes of urban governance and planning **need to** be reformed to reflect a sustainability agenda.

All in all, the argumentation patterns question eco-cities in terms of their environmental and economic impact. It is not that the research papers oppose the projects, but rather they question stakeholder objectives and raise public awareness of ambivalent actions.

If we look more closely at the examples above we can see the lexis often refers to two well-defined reoccurring themes throughout and across the two sub-corpora, i.e. *change* and *economics* (e.g. (9) *sustainability agenda, value systems),* confirmed by *Wmatrix*'s semantic annotation system (USAS). We now turn to explore the items and compound collocates reflecting these two prominent semantic areas.

5.3. The semantic domains of change and business/economics

Both discourse communities talk about *change* and *business/economics*, but they do so in different ways, meaning the pragma-semantic function of the lexical items belonging to these domains undergoes a semantic shift depending on the community.

We can begin with an analysis of *change*. Semantically related high frequency verbs include: *affect, become, develop, evolve, replace, reform, restore, revise, reclaim, reduce, transfer, transform,* and related nouns and nominalization equivalents include *development, reclamation, transition, etc.* Let us compare the following excerpts.

10)   *Lendlease* delivers high-quality, mixed-use urban **regeneration developments** that **transform green fields** and urban **renewal** sites **into vibrant master planned** communities with sustainable spaces […].

11)   The project [Chongqinq] is located in a suburban area, which is **one of the last natural areas without development**. Facing such rapid urbanization, this **virgin land urgently needs a solution** for **its transformation,** through eco-design.

In example (10) we can see the use of the prefix *re-* indexing *change* and *land* transformation, a common feature in the ECP texts, e.g. *redesign, renewal, regeneration, reforestation, revaluation, revitalize.* This process of transformation is depicted very positively, e.g. *vibrant master planned communities*. The examples highlight the excessive concern for any *natural land without development* (11)*,* or *virgin land* which *urgently needs a solution* for *urban renewal.* This process recalls Halliday's (1990) argument of culturally embedded notions of the environment, that is, the framing of 'any land which is undeveloped' as a negative 'state of affairs'. The company's view is not one of protection, but rather one of transforming the *land* into 'productive value'. We can now look at *change* in the ECR texts.

12)   **People** have been shown to be more susceptible to influences aiming to establish **new greener behaviour patterns** at key life-stage moments such as **moving** to a new location […].

13)   **Sustainable development** requires us to […] **change the concept** of **social development**.

Close collocates of *change* (and related lexis) in the ECR texts are *people* and *behaviour* (12 and 13). In contrast to the ECP corpus*, change* is not viewed in terms of *nature* or *land transformation* but rather in terms of how the environment is influenced by people changing their habits and by environmental education: for example, *new greener behavior patterns* and the frequent clusters around what is happening to *lost green space*, or the

greening process.

As regards the semantic domain of *business and economics*, semantically related items occur across both sub-corpora, e.g. *bottom line, bottom up approach, capitalism, economic development, investment, land markets, profit, triple*, *public/private sector*, *property values*, but with different degrees of distribution and involving different associated lexical items. The difference lies in the economic focus. Companies are overtly interested in supporting and ensuring *clients make the soundest investments*. Whereas the ECR papers often draw attention to the environmental-economic paradigm addressing the *green space paradox,* and the increasing market-orientation of *land property values*. It is for this reason that I expand on the business dimension in the following section (5.4), in which I investigate the collocates around *land* and *green* to see how they are constructed in the discourse.

5.4. Land *and* green *collocates*

The recurring items *land* and *green,* and their associated collocates, both generate compounds which potentially carry contextual connotations and ideological values according to the discourse communities' beliefs and agenda.

Land is a high frequency item in the ECR texts with 230 instances (0.3%) versus 38 (0.2%) in the ECP corpus. As mentioned above, the eco-city projects focus on the need to *transform land.* This ideological stance is reflected in *land* collocates, such as in the following excerpt:

14)   Songdo International Business District, a new city built on 1,500 acres of **land reclaimed** from the Yellow Sea. The team recognized that it would take several years for the canal **ecology** to become **established**, necessitating that **the operation** and **maintenance regime** be developed over time. (ECP)

In (14) *reclaimed land* is framed positively by the companies, but in actual fact associated nominalizations like *development, operation, maintenance* as well as *ecology* obfuscate what is actually happening to the *land* and *river* ecosystem. The framing of 'what is not said' becomes the focal point. The truth is more likely to be *reclaimed land from the Yellow sea* has disrupted the *canal ecology* which will take years to become *re-established.*

The ECR texts make frequent reference to how *land markets* are organized as central to the development of eco-cities, and to the establishment of a profit motive for developers and policy makers, e.g. *land can become highly vulnerable to arbitrage.*

Turning to the lemma *green*, a comparative frequency analysis in the two sub-corpora shows that it occurs with different frequency and different salience. *Green**[1] (adjective, noun, verb, e.g. *greenest, greenery, greening*) has 401 instances (0.5%) in the ECR corpus versus 88 (0.4%) in the ECP corpus. In addition to its primary meaning and more common occurrence as a color to describe nature and green foliage, *green* is also used as a process verb, e.g. g*reening the industry,* and as a noun, e.g. *Interiors overlooking the Green.*

The next step in the exploration involved comparing the occurrence of the items in the vicinity of *green. Green* in fact often collocates to form a compound, e.g. *green businesses, green capitalism, green energy, green power generation,* to name but a few. Table 2 reports the total number of collocates and the top most frequently occurring left and right collocates of *green*.

ECP sub-corpus		ECR sub-corpus	
Left collocates = total 41	Right collocates = total 45	Left collocates = total 168	Right collocates = total 113
European 4	city 9	urban 44	space 95
new 4	river 5	innovation 9	city 29
city 2	society 5	just 8	innovation 19
food 2	architecture 4	new 7	capitalism 13
vertical 2	space 4	city 5	economy 12

Table 2
Top frequent collocates for *green*.

Both sub-corpora have a variety of *green* compounds, with some more prominent in one corpus than the other. For example, *green architecture* is more frequent in the ECP corpus, whereas *green space* (95 hits) is prominent in the ECR corpus. A qualitative manual analysis of the collocates in context revealed more about the pragma-semantic meaning and ideological function of *green* and what was happening in its vicinity. In semantic terms, the *green* compounds and associated lexical items tended to form patterns. Once dominant patterns were identified, I grouped the collocates and classified the *green* compounds into the most recurrent semantic fields, which were then observed in their larger contextual use. Table 3 illustrates the most common lexical compounds reflecting the dominant semantic fields.

green + architecture	*alleys, architecture, area, buildings, city, construction, courtyard, corridors, design, houses, projects, retrofits, roofs, space, towers, urban, vertical green forest, walls.*

[1] The symbol * refers to word inflections of *green,* e.g. *greener*, etc.

*L*ingue e
*L*inguaggi

green +business/economics	business, capital, capitalism, certification, competitiveness, development, economy, energy, gentrification, GDP, grabbing, grabs, growth, industry, management, purchasing, products, process, supply.
green + social	behavior, belt, community green, footprint, gentrification, living, society, utopias.
green+science/ technology	carbon, insulation, innovation, technology, instant green city, wired.

Table 3
Classification of semantic areas for *green* compounds across the two sub-corpora.

Green is not necessarily emotionally charged, e.g. *green fields*. However, it is more than reasonable to argue that the lexical vicinity of the word *green* can provide clues as to whether this item is indeed involved in the promotion of a particular agenda or ideology in the corpora. For example, in context these compounds appear to contribute to the creation of particular values, e.g. *green living*, or *green* denoting a link to the financial world, e.g. *green capital.* The impression is that depending on its use *green* betrays a certain world view (Stubbs 2002).

I focus here mainly on right collocates of *green* (Table 3), but its left collocates follow similar semantic patterns. Most of the compounds belong to the semantic areas of *architecture* and *business/economics*. *Green architecture* and related compounds, e.g. *green alleys, green buildings,* are dominant in the ECP corpus, unsurprisingly, whereas *green+ business/economics* is predominant in the ECR corpus, e.g. *green economy, green industry.*

Interestingly, the compound *green space* displays semantically different contextual meanings depending on the discourse community. *Green space* in the ECP corpus is conceptualized in terms of architecture, e.g. *green corridors, green avenues, vertical forests*, a sort of 'window-dressing' of 'perfect' *green spaces*. In contrast, in the ECR texts *green space* becomes 'contested' *space.* There is an attempt to define and qualify *green space,* with *green* juxtaposed alongside other modifiers, and occurring in longer lexical units, e.g. *bottom up urban green space strategies, green anti- gentrification policies,* meaning *green* becomes a social, political and environmental justice issue.

Although there are compounds headed by the lexis of finance and management in the ECP corpus, e.g. *carbon trading costs, green economy, green competitiveness,* the variety of compounds in the domain *green + business/economics* is greater in the ECR corpus, where the contentious battle ground of the environment–economic paradox is repeatedly brought to the surface. We can compare the following excerpts.

*L*ingue e
*L*inguaggi

15) The Songdo International Business District project, **expected to cost about 35 billion dollars, […]** has set itself an audacious goal: **becoming the world's greenest business hub. (**ECP)

16) This project, **advocated on ecological grounds**, has led to increases in **property values** and the conversion of industrial **land uses to commercial uses** serving more **affluent stakeholders. (**ECR)

Example (15) is illustrative of how *green* in the ECP texts often appears in the vicinity of money and number crunching activities, e.g. *35 billion dollars. Green* becomes a 'value', accentuating the world's *greenest business hub,* and highly evaluative as a marketing tool to showpiece the world 'business' eco-city. Excerpt (16) highlights the ECR focus on the increasing *market – driven orientation* of *green policies,* where sustainable agendas are subsumed into the economic paradigm.

The *green + business* semantic area in the ECR texts often overlaps with the *green+ social* frame reflected in lexical choices like *gentrification, lower income families, community activism*. Instances of this semantic area also occur where *green* modifies lexis conceptualizing what may be called everyday actions which raise ecological and social awareness, referring to human behaviour and the *green* friendly frame, e.g*. green footprint, green habits, green lifestyle, green solutions, green way of life.* Interestingly, *green* compounds here are often introduced by verbs announcing green measures such as: *become, design, facilitate, implement, increase, make, promote, renovate, recycle.*

The *green+science and technology* domain is represented by a small group of compounds headed by scientific/technological and semi-technical vocabulary, e.g. *carbon emission, instant, wired, connected society,* illustrated in the following example.

17) Songdo is the archetype of the **new, fast-constructed**, and **'bright green'** city. This '**instant city'** concept is part of a **new paradigm: green, connected and replicable new cities** for **booming economies** not only in China but globally.

Again, *green* contextually acts like a 'glamorizing' tool; everything is *wired* and immediate. We can see the standard corporate principle at work 'accentuate the positive' and what companies justify as 'technological progress', e.g. *new green instant-cities for booming economies*. The recurring associative patterns endow the word *green* with a certain intrinsic value, in the sense that *green* might be a valuable item to possess or exploit, confirming its potentially evaluative and connotative properties (Catenaccio 2011; Salvi 2016).

In contrast, the ECR texts exploit *green* as a tool to uncoil the contentious ideological terrain as in the following.

18) Dongtan was proclaimed **'greenwasher** of the year' by Ethical Corporation magazine in 2007.

19) […] there is a need to critically interrogate the mechanisms through which new eco-cities are built, including the land market, … and **"green grabbing" practices.**

20) […] analysis of eco-city projects shows that they often form highly **visible "green" excrescences** of "**industrial capitalism as usual**".

In the above excerpts, *green* and associated lexical choices display an overly negative semantic prosody, e.g. *green grabbing, green excrescencies, green washer, green utopias*. These types of compounds tell a cultural narrative of *grabbing, lying*, *stealing*, calling into account ethical standards, alluding to *guilt* and framing the discourse in critical moral tones. Negative prosodies do not appear in the ECP texts, *green* is always 'showcased', or rather the ECP texts refer to ethical behaviour in terms of co-textual lexical choices about their own *commitment to* and/or *contribution to* urban environmental challenges.

To sum up the semantic exploration of *land* and *green* compounds, they seem to find themselves with significant recurrence within a discourse of complex ideological conflict involving environmental, cultural, neoliberal, and social frames. What is clear is that a lexical association with *green* can potentially add positive or negative value to lexical items in the vicinity and by implication to the actors or voices involved. In short, it seems possible for a stakeholder to gain access to very powerful, social, political and financial ideological frameworks merely by virtue of association with the word green, or similar items like the use of the prefix *eco-* e.g. *eco-footprint, eco-tourism*, or the words *renewable, sustainable*, sometimes used uncritically and flippantly.

6. Conclusions

The results show how at the micro and textual levels, linguistic features are linked to broader discourse processes including standard persuasive rhetorical strategies in promotional discourse and in argumentative discourse in relation to the discourse community and genre. The hegemonic discourse patterns can be summarized as follows. The ECP corpus demonstrated a dominant discourse of certainty, authority and vision reflected in specific features and associated patterns, such as speculative *will* and prepositions of purpose conveying their commitment to solutions. The language consists of short, declarative assertive statements, as part of the promotional style. The ECR corpus revealed a prevailing discourse of uncertainty and doubt, involving a

rhetoric of skepticism and caution towards the ongoing projects, reflected mainly in features of modality and argumentation, e.g. *not only ... but also*, and in carefully chosen lexis carrying overly negative semantic prosody. Sentence structures are more complex and involve longer lexical chunks e.g. *new urban green strategies.*

As regards evaluative compounds and their pragma-semantic functions, these serve as discursive tools for expressing assertive discourse or ideological stance, in keeping with recent studies on environmental discourse (Alexander 2009). What is most evident is their semantic shift in meaning according to the contextual use, as in the investigation of *land* and *green* collocates, which revealed value-laden prosodies that work towards the promotional or argumentative agenda of the discourse community. These findings confirm how words can become imbued with particular contentious contextual meaning (Roux 2014). Of interest, we also find the coinage of 'new' lexical items which can evaluate the objects and processes they conceptualize, e.g. *green washer, green grabbing, vertical foresting*. *vertical greenery.*

As linguists and teachers, this sort of analysis reinforces the need to question the extent discourse engineering is at work in texts and what frames are being constructed, so that by adopting a critical, analytical approach and a questioning perspective our students can become increasingly aware of world views and learn not to take facts at purely face value. This entails discussing the substance and truth of an opinion or ideological position.

Finally, concerning methodology, these findings, though tentative, demonstrate the value of integrating critical discourse analysis and corpus linguistic approaches in the analysis of discourse to support and provide deeper insight into the functions of language in society.

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A CORPUS-BASED STUDY OF ETHICALLY SENSITIVE ISSUES IN EU DIRECTIVES, NATIONAL TRANSPOSITION MEASURES AND THE PRESS

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Abstract – This paper is set in the framework of the Eurolect Observatory Project, which is studying the differences between the EU varieties of legislative language (Eurolects) and their corresponding national legal varieties in 11 languages (Mori 2018). In this paper, our focus is on ethics and legislation: more specifically, the research question is whether any differences can be detected in the discursive construction of ethically sensitive issues in the English version of EU directives, their related national transposition measures adopted in the UK, and press articles reporting on the introduction, revision or implementation of such laws. In this sense, news reports and comments are seen as sitting at the end of a genre chain covering the whole spectre of knowledge dissemination, from the expert (legislation) to the popularising level (newspaper article). The ethically sensitive issues in question concern human health and animal welfare, and the corpora used for the study were selected from the English section of the EOMC (Eurolect Observatory Multilingual Corpus) and from the Lexis-Nexis database of press articles.

Keywords: Eurolect; national transposition measures; discursive construction; human health; animal welfare corpus.

1. Introduction[1]

This paper is set in the framework of the Eurolect Observatory Project, which aims to describe the language varieties of EU legislative texts (i.e. Eurolects), vis-à-vis their corresponding national legal varieties. By comparing corpora of EU directives in 11 languages and the related national transposition measures (NTMs) adopted by the Member States, the first phase of the project has already identified specific features of Eurolects at different levels of language description; more specifically, it has shown English Eurolect to be more conservative than the national legislative variety (see section 2).

In this paper, attention is turned to the interface between the lexical and the discursive level, considering how some issues that pose strong ethical concerns are discursively constructed in EU and national legislation, and

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[1] Although the paper is the product of a joint effort, Chiara Degano wrote sections 1, 3, 3.1 and 4.1, while Annalisa Sandrelli wrote sections 2, 3.2 and 4.2. The Conclusions were jointly drafted.

whether any differences can be identified that reflect different ideological perspectives. At the same time, the analysis will consider how the national press reported or commented on said EU measures and matching national transposition measures; thus, our study also takes into account a different register, aimed at the circulation of specialised contents to a broader lay audience.

Understanding ethics as a system of moral principles concerned with what is good for individuals and society, as a resultant of religious, philosophical and cultural forces, the law provides a codification of such principles by reflecting them and at the same time enforcing them, at least in those areas of social interaction that are legally regulated. However, insofar as competing systems of values may, and do, coexist in any given society, their codification in the law will inevitably offer a partial representation of ethics, enjoying an established threshold of consensus (as envisaged by the applicable laws), but rarely amounting to a unanimous consensus. This is all the truer when issues are highly controversial or divisive, and the legislative process is accompanied and influenced by a polarised debate in political circles and society at large. Further dialectical differences may arise when supranational legislation is passed, as is the case with EU directives. In addition to that, different genres can be driven by specific, and possibly conflicting logics: while legislative documents tend to adopt a principled and more detached approach to moral problems, media discourse generally takes a more clearly oriented approach, as giving voice to conflicting views is part of the business.

In European Commission documents, ethics is often explicitly cited with reference to research, with the most sensitive ethical issues including: the involvement of children, patients, vulnerable populations; the use of human embryonic stem cells; privacy and data protection issues; research on animals and non-human primates.[2] This paper will focus from an interdiscursivity perspective (Bhatia 2010; Candlin, Maley 1997) on two selected areas of legislation, namely human health and animal welfare. The research question is whether differences – be they lexical or at higher levels of discourse construction – can be detected in how the subject matter is codified in EU and national acts, and, whether differences, if any, may be the reflection of different ideological orientations. At the same time, attention will be paid to how the discursive constructions originated in the EU context are refracted in UK news discourse, with news reports and comments seen as sitting at the end of a genre chain covering the whole spectre of knowledge dissemination, from the expert to the popularising level.

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[2] See https://ec.europa.eu/programmes/horizon 2020/en/h2020-section/ethics.

2. Multilingual legal drafting and English Eurolect: An overview

As was mentioned in the Introduction, the language used in EU legislation tends to differ considerably from legislative language used in domestic laws, even when such laws transpose the legal obligations of EU normative texts, as happens with European Commission directives and their respective national transposition measures.

The differences between Eurolects and the national varieties of legislative language stem from the specificity of the EU multilingual drafting process and the peculiar language contact situation in which EU norms are originated. More specifically, EU directives are produced in a multilingual environment in an iterative drafting process referred to as "multilingual legal drafting": all the language versions thus produced are equally valid and authentic (Biel 2014; Stefaniak 2013; Strandvik 2015). What actually happens in practice is that each new text is drafted in one language and is then translated into the other official languages of the EU: since the 2004 round of enlargement and up to the time of writing the main drafting language has been English, which has thus acquired the role of institutional lingua franca of the EU[3] (Felici 2015; Pozzo 2012; Robertson 2010). However, it has been estimated that only 13% of European Commission drafters are native speakers of English (Wagner 2010). Thus, over the years several guidance materials have been published to improve the quality of legislative drafting: the overall goal is to produce clear, unambiguous and (relatively) simple sentences. Recommendations include streamlining sentence structure, avoiding passive forms, nominalisation and synonyms (for the sake of terminological consistency), replacing archaisms with contemporary expressions, and refraining from using terms that are too closely related to any national legal culture. The latter is especially important in the light of the fact that legal English has evolved in the Common Law tradition, and is therefore not especially suitable to express EU law concepts. However, the upshot is that directives are often worded in fairly vague terms, since EU law "[…] tends towards a higher level of generalisation (and therefore abstraction) in order to accommodate all the national variations on a matter" (Robertson 2010, p. 157).

In order for directives to be applicable, they have to be transposed into national legislation: in the UK about 80-90% of directives are transposed into secondary legislation, i.e. Statutory Instruments (ministerial rules, orders or regulations), which is a faster and more efficient route than transposition by

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[3] The impact of Brexit on drafting and translation practices in the EU is yet to be determined.

an Act of Parliament (Steunenberg, Voermans 2006). Legislators must first check whether existing national laws already cover the obligations imposed by any new EU directive (and if so, to what extent), to avoid "double-banking" ("when European legislation covers the same ground as existing domestic legislation"; HM Government 2013, p. 9). If a new norm is needed, the recommended method is "copy-out", i.e. using the same wording as the directive. However, UK drafters are often obliged to resort to "elaboration" in order to spell out the legal obligations contained in the text, in keeping with the Common Law tradition which dictates that legislation be very detailed to be consistent with case law (Mattila 2013).

In 2013 a small research team at Università degli Studi Internazionali di Roma (UNINT) set up the Eurolect Observatory to investigate systematically the differences between the language of EU directives and the language used in the related national transposition measures, with a view to enhancing both translation and drafting practices. The project has gradually expanded to involve scholars from 17 universities and 11 European languages, namely Dutch, English, Finnish, French, German, Greek, Italian, Latvian, Maltese, Polish and Spanish. The first phase (2013-2016) of the project produced the Eurolect Observatory Multilingual Corpus (EOMC), which includes the 660 European Commission directives adopted between 1999 and 2008 in the above-mentioned languages (Corpus A) and the national transposition measures adopted in the various countries (Corpus B) over a slightly later time span, as transposition usually takes some time (2-3 years in the UK). The directives were downloaded from the Eur-Lex website, which also publishes the links to all the related NTMs: the metadata included in the headers of all the texts in both Corpus A and B allow easy retrieval of matching texts (see Tomatis 2018 for more details). A common research template (an analysis grid used to classify morphological, lexical and textual/discursive features) was adopted by the whole research team to ensure data consistency and comparability. Differences were identified at several levels of language description (morphological, syntactic, lexical and textual) not only in English, but in the other European languages involved, albeit not all to the same degree: thus, it is possible to talk of 'Eurolects', i.e. a distinct variety of legislative language (see Mori 2018 for a full overview).

The study of English Eurolect has made it possible to isolate and describe some distinguishing traits (Sandrelli 2018). English Eurolect tends to be more conservative and more formulaic than the legislative English used in national transposition measures: traditional "frozen" traits of legal English, such as archaisms, Latinisms, the modal "shall" and subjunctive verb forms still feature prominently, while in recent years their frequency has decreased in the national legislative variety as a result of the Plain Language Movement. In addition, there is an overrepresentation of loanwords and

calques (mostly from French) and of words with Greek and Latin prefixes, which may be a reflection of the multilingual law-making environment. Finally, there is an overabundance of certain formulaic text-organising patterns (complex prepositions and legal phrasemes providing intra-textual and extra-textual references). In English Eurolect the same phrasemes tend to be repeated over and over again, while in UK legislative English there is more diversity; this is probably for the sake of consistency and clarity in view of translation into all the other official languages.

In the second phase of the project (2017-2020), a Corpus C of domestic legislation entirely originated in each country (i.e. with no connection with the EU) has been added for English, German, Italian and Spanish, and the corpora (A, B and C) in these four languages have been POS-tagged. This will make it possible to carry out more sophisticated searches to further refine the description of Eurolects and their typical traits.[4]

3. Materials and methods

A corpus-driven analysis was carried out on a small number of directives (Corpus A) and national transposition measures (Corpus B) from the English section of the EOMC concerning two fields in which legislation evidently intersects more with ethics, namely human health and animal welfare. The discursive features emerging from the analysis of the two sets of legal documents was then contrasted with a corpus of national press reporting on the issues in question. The analysis proceeded by comparing the selection of directives with that of national legislation through the extraction of keywords, so as to be able to identify patterns (if any) that may suggest a different discursive construction. The corpus of directives was then compared with the press corpus (Corpus P), taken as a benchmark against which the specificity of legislative discourse can be better appreciated.

The human health and animal welfare directives were extracted manually from Corpus A of the EOMC; they all belong to the group of documents on "Environment, Consumers and Health Protection", and they were chosen on the basis of the directive title. The corresponding national transposition measures were then looked for in corpus B. Finally, the press corpus was built starting from an automated search of news and comment articles retrieved from both quality newspapers and tabloids via the Lexis-Nexis database.[5] Here, the search criteria were set to cover a longer period of

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[4] See https://www.unint.eu/it/ricerca/progetti-di-ricerca/8-pagina/1219-eurolect-observatory-project.html.

[5] See https://www.lexisnexis.com/en-us/gateway.page.

time (1999-2018), as the debate around a given directive or its transposition may in fact resurface in the national press whenever a related topic makes headlines because of political or current affairs news. The search string pattern included the word 'directive', the Boolean operator AND and, in turn, key content words featured in the titles of the directives, such as 'human tissues and cells', 'blood', 'animal feed', 'experiments', 'stockfarming'.

3.1. Human health

Ten directives dealing with human health were selected from the EOMC corpus, together with their UK national transposition measures. As can be seen in Table 1 below, the collection of directives (Human Health A) is roughly half the size of the corpus of domestic legislation (Human Health B). The Lexis-Nexis query produced 71 articles published between 1999 and 2018 which form the press corpus on this topic (Human Health P), totalling a slightly smaller number of words than the corpus of directives. Full corpus statistics are detailed in Table 1:

	Running words	Tokens in wordlist	STTR
Human Health A	68,096	64,498	29.73
Human Health B	139,547	130,025	23.70
Human Health P	60,532	59,070	46.35

Table 1
Human health, English.

3.2. Animal welfare

The seven directives on animal health, animal feed and stockfarming adopted between 1999 and 2008 were extracted from the EOMC corpus, together with their matching national transposition measures passed in the UK; finally, a collection of 100 related newspaper articles (79 on animal feed and 21 on animals in experiments) was compiled via Lexis-Nexis. In this case, the corpus of national legislation is about 3 times the size of the corpus of directives, while the press component is over twice as big as corpus B.

	Running words	Tokens in wordlist	STTR
Animal welfare A	16,084	14,387	29.20
Animal welfare B	47,741	42,257	22.06
Animal welfare P	100,728	98,056	46.49

Table 2
Animal welfare, English.

Alongside the main corpus investigation, the construction of animal welfare

discourse has also been analysed by means of a qualitative case study on a later directive (i.e. one that was not included in the EOMC), namely *Directive 2010/63 EU of the European Parliament and of the Council on the protection of animals used for scientific purposes*. The English and Italian versions of the Directive and the related NTMs adopted in the UK and Italy were compared and analysed via close reading and by means of WordSmith Tools. Table 3 provides information about the size of each component used in this small-scale study.

Documents	Tokens	Tokens in wordlist	STTR
A1 (Dir. 2010/63, English)	23,000	20,932	29.53
B1 (Statutory Instrument 2012 no. 3039, English)	27,659	25,846	23.11
A2 (Dir. 2010/63, Italian)	21,153	19,124	34.23
B2 (Leg. Decree 26, 4 March 2014, Italian)	23,534	21,494	34.2

Table 3
Case study on animals in experiments.

4. Data analysis

4.1. Human health

The keywords in Corpus Human Health A, extracted using corpus Human Health B as a reference corpus, can be organised in two semantic fields. One is related to *law implementation and control*, including deontic modals (*must, shall, should*), words referring to the competent authorities and their responsibilities (*authorities, personnel, ensure, assess, control, testing*), often expressed through nominalisations (*implementation, scrutiny, evaluation, surveillance, identification*), and words pointing to the attendant protocols and regulations (*procedure, standards, regulatory, documented, documentation, validated, accreditation*). The other semantic field refers more directly to the matter regulated by the directives, represented by keywords such as *human tissues*, *cells*, *blood*, *plasma*, (featured in the titles of directives as well), but also *reproductive, autologous, transfusion*, *donor(s)*, *recipient*, and the nominalisations *donation, procurement, processing*. Within this content-specific semantic field, a subgroup can be identified, dealing with *safety*, which partly overlaps with that of law enforcement and control. It contains the word *safety* itself, some words connotated as desirable (such as *quality*, *protection*, *traceability*, and others connotated negatively as the risks to be warded off (*risk, infection, contamination, transmission*). The negative keywords in the directives (i.e.

those words that are significantly less frequent in corpus Human Health A than in corpus Human Health B) include *ethics* – interestingly enough – and words related to the sphere of the individual, namely *child*, *individual* itself, *person*, *holder*, the pronouns *his* and *him*, alongside the scientific terms *embryos* and *gametes*.

The trend suggested by the above keyword analysis is that the directives codify the matter they regulate more abstractly than the UK transposition measures, and with a focus on quality standards. In the NTMs the keywords suggest a more direct representation of the relations among participants and the processes they are involved in through the transitivity system (Halliday, Matthiessen 2004), with a lesser incidence of nominalisation. This may be either an effect of the Plain Language Movement on legislative drafting, or of the case law requirement that legal obligations be clearly set out in the text (cf. section 2), or possibly a combination of both. As a result, a more personalised discursive construction emerges, with responsibilities assigned to a person (*an authorised person*, *the qualified person*, *the responsible person*), and rights to health and safety expressly connected with individuals. The latter are placed in a political dimension when it is stated, for example, that notices restricting the availability of medical devices may be issued "in order to protect the health or safety of any *individual* […] *of any class or description*".

The keywords in the press corpus (Human Health P), extracted using Human Health A as a reference corpus, testify to an even greater personalisation of the discourse at issue, quite predictably. The only keyword related to the semantic field of legislation in the press is *regulation*, often used vaguely, without any reference to specific norms (e.g. *tobacco regulation*, *chemical regulation*, *environmental regulation*), while actors include *scientists* and *companies* involved in the medtech industry. However, the largest semantic field is that of stem-cells research, associated with fertility, cancer (*stem* and *cells* – often occurring in the phrase *human embryonic stem cells – cord, embryos/embryonic, fertility, eggs,* and *cancer*) and, occasionally, animal testing. These keywords suggest a heightened focus on the social relevance of the issues regulated by the directives, with research on stem cells grabbing the most attention, thanks to its novelty and cure potential, but also to its ideologically divisive nature. In order to observe more closely how the directive discourse is remediated in the press, the analysis will move on to a small-scale case study, based on the close reading of articles from corpus Human Health P that deal with Directive 2004/23/EC, setting quality and safety standards for research and clinical practices involving human tissues and cells. The press corpus contains reference to said Directive since its early stages, when it was submitted to the European Parliament prior to its final approval.

4.1.1. Case study

Even a cursory look at the articles dealing with Directive 2004/23/EC reveals that both the novelty and cure potential, on the one hand, and ideological division on the other are largely topicalised. Besides an explanation of the European legislative process, which the lay reader may not be familiar with, the complexity of the stem-cell research procedures calls for the popularisation of the topic, while its controversial nature is reflected in the highly evaluative stances emerging from the news. Although the Directive is apparently technical, stipulating that the operational protocols and standards must be clearly defined for those who carry out this research, during the parliamentary debate attempts had been made to interpret the text restrictively, so as to ban research on human embryonic stem cells.

In line with the findings of earlier studies on the popularisation of scientific (Calsamiglia, van Dijk 2004) and legal discourse (Cavalieri 2017; Williams 2013), the articles reporting or commenting the Directive present examples of explanation, definition, exemplification and metaphor. The explicatory intent is sometimes made explicit by the presence of a specific marker, such as a rhetorical question ("What are stem cells?"), or the code gloss (Hyland 2005) 'which means' introducing a periphrasis, as in the excerpt below:

(1) [Stem cells] found in early-stage embryos are pluripotent, *which means* they can potentially become any type of tissue in the human body. (*Yorkshire Post*, April 10, 2003)

Other times a definition is used, as is the case with the string "transfer of somatic nuclei (cloning)", where a highly technical concept, the *definiens*, is made more readily accessible by juxtaposing its *definiendum* in brackets. Similar popularisation strategies are used also with regard to legal matters, where efforts to bridge the gap between experts and lay readers entail mostly an explication of the mechanisms through which Directives become law, as is shown below.

(2) With MEPs having the right of veto over the proposal, the parliament is expected during its second reading of the proposals to negotiate changes to the regulations agreed by the Council. (*The Times Higher Education Supplement*, July 18, 2003)

(3) There are still a number of stages to go before the amendments can become law. They will be considered by health ministers in June, and must return to the European Parliament for a final vote. (*Yorkshire Post*, April 10, 2003)

Metaphor is also frequently used both with regard to scientific concepts and to the effects of the new Directive. Stem cells are defined as "the 'master cells' of the body," i.e. cells "that can be programmed to become other types of cells", or as the 'mother' of all the other cells. However, as is normally the case, metaphors express not only informative but also evaluative contents. In the newspaper articles at issue, the metaphorically conveyed evaluation is generally positive when referred to the potential of stem cells, and often rests on the conventional cognitive metaphor SCIENTIFIC PROGRESS is WALKING FORWARD, whereby scientific breakthroughs are presented as inherently positive ("Stem cells *open the door* to novel therapies", "Our stem cell lines will be a significant *step forward*"). In another case, less conventionally, regenerative medicines are cast as a "game changer", the underlying metaphor being that scientists are playing a match against diseases, and thanks to stem cells they are more likely to overturn the scores and lead the team to victory. Or again, drawing on an economic metaphor, the first stem lines produced in the UK are hailed as an invaluable "gold standard", i.e. starting material against which future achievements will be measured.

Conversely, restrictive legislation is at times represented as an illness ("…a resulting near *paralysis* in the field," "the research has been *handicapped*"), or as a violent act ("increasing regulation is *threatening* the future of pioneering research", "the vote was a *blow* for medical research", "the European Parliament had allowed itself to be *hijacked* by a few zealots opposed to progress").

The effects of legislation are also illustrated using examples that help make the scope of the Directive tangible. Detractors normally bring examples of the restrictive effect of legislation ("As a result of the 2004 directive a major Huntington's disease trial […] had to be *put on hold*"), or quote the diseases for which stem cell research may produce a cure, like Parkinson's and Alzheimer's.

Evaluation, at times, becomes so central as to override the explanatory drive. Referring back to the hijacking metaphor – a quote generically attributed to 'Scientists'– no explanation is given of how, if any, the vote deviated from legitimate procedures, so as to justify the "hijacking" frame. The ratio for the hijacking metaphor is elaborated by saying that the original intention of the 'laudable' Directive was to protect the health of the recipients of donated tissues and cells, whereas this round of votes (which presumably was taken in compliance with the norms of the EU Parliament) resulted in a restriction on allowed stem cell research.

The expression of negative evaluation is possibly the greatest difference between the popularisation of scientific and legislative discourse. While both focus on communicating the effects of new accomplishments,

scientific results are generally presented as positive, adding something valuable to human knowledge or bearing some desirable effect on people's lives. New legislation, falling in the realm of policy-making, inevitably draws more polarised opinions, as is the case with the human cells and tissues Directive. Reporters and commentators tend to take sides in the heated debate between pragmatists (in favour of loosening legislative constraints) and the supporters of pro-life positions (calling for further restrictions), thus making their 'explanation' far from neutral.

All in all, the newspaper articles about the Directive bring to the fore ethical and political controversies related to stem cell research practices that remain carefully untouched in the Directive, which eventually set quality standards for stem-cell related research, whilst preserving the right for individual countries to introduce stricter regulation, if they so wished.

4.2. Animal welfare

As was explained in section 3.2, the animal welfare corpus includes 7 directives, the related NTMs and a collection of newspaper articles. The first step in the analysis was to compare keywords in the 3 corpora via the KeyWords tool in WordSmith Tools.

When comparing the Animal Welfare A and B corpora, the keywords emerging in the collection of directives feature many references to the legal framework concerned with animal protection (EU institutions and norms); they also include several abstract nouns and expressions related to animal nutrition (e.g. *nutrition*, *animal growth*, *undesirable substances*) and to potential dangers posed by certain substances in animal feed (*risk/ danger to human health, human consumption*, etc.). Negative keywords (i.e. emerging as more frequent in the NTMs than in the directives) indicate that national transposition measures tend to be more concrete, referring to *feeding stuffs* and their composition (rather than to the generic *nutrition* of directives), and to UK laws that contain the specific norms to be followed (e.g. *paragraph*, *regulations*, *case…*). The keywords comparison between Animal Welfare A and the press corpus (Animal Welfare P) returned a number of references to the legal framework and EU institutions, and also showed that scientific terms (*hormones*, *additives*, *oestradiol*, *residue* and so on) feature more prominently in directives than in newspaper articles; conversely, the only negative keyword (i.e. characterising the press corpus vs. the directives) is an everyday word like *food*. Finally, the comparison between the NTMs and the press corpus highlighted references to UK laws and parts of them (*regulations*, *paragraph*, *annex*) and to the processing and production of animal feed (*protein*, *compound*, *sodium*, *calcium*, *magnesium*, *acids* and so on). This is because national transposition measures need to be very detailed in relation to the precise obligations that companies, research institutes and

universities involved in animal feed and stockfarming need to comply with in the UK; by contrast, the negative keywords show that the press articles on such issues tend to use common (non-technical) words and to focus on topics such as the safety of production processes (*waste*, *food*, *standards*) and potential dangers to human health (*disease*).

To sum up, it could be said that the analysis of these 3 small corpora on animal health, animal feed and animal protection has confirmed that EU directives tend to describe such issues in very general terms, whereas UK laws are more detailed, in line with what was discussed in section 2. At the same time, while both legislative corpora tend to be more focused on technical (legal and scientific) descriptions of what is or is not allowed in animal feed, newspapers focus their attention on the potential repercussions of the animal foodstuffs industry on human health. Interestingly, despite the obvious ethical relevance of the normative texts in the two legislative corpora analysed here, no occurrence of the words *ethical* or *moral* was found in either the directives or in the domestic laws; by contrast, there were 9 occurrences of *ethical* in the press corpus, and they were all related to the use of animals in experiments.

Therefore, it was decided to expand our investigation by adding a qualitative case study on a later Directive focused on the latter issue, namely *Directive 2010/63 EU of the European Parliament and of the Council on the protection of animals used for scientific purposes*.[6] More specifically, the first step was a close parallel reading of the Directive and the UK Statutory Instrument, followed by a reading of the Italian version of the Directive and the Italian legislative decree that transposed it; then, the two language versions of the Directive were compared, to detect any usage differences. This led to the identification of two potentially interesting semantic areas, namely the *use* of animals in experiments and the notion of *pain* potentially suffered by animals during scientific procedures. The frequency of key terms related to these two semantic areas was checked in all four documents; in addition, as the four documents differ in size, frequency data were normalised to one million to make them directly comparable. Table 4 includes frequency data of terms related to the notion of "using" animals in scientific experiments.

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[6] The Directive was not included in the EOMC, because the collection stops at the year 2008.

English	A1	B1	Italian	A2	B2
Use (n.) Re-use (n.) Use (v.)	6,609	4,085	Uso/-are	3,073	680
			Utilizzo/-are riutilizzo	6,092	467
			Impiego/-are	236	552
TOTAL	**6,609**	**4,085**		**9,401**	**1,699**

Table 4
"Using" animals in scientific experiments.

The first observation that can be made is that, while both the English version of the Directive and the UK Statutory Instrument only employ the word *use* (as a noun and as a verb), the two Italian documents use three different synonyms (*uso*, *impiego* and *utilizzo*, and the related verbs *usare*, *impiegare* and *utilizzare*). The preferred option in the Italian version of the Directive is *utilizzo*, which Italian dictionaries such as Gabrielli and Treccani define as the technical, bureaucratic term for "use"; by contrast, the Italian transposition decree employs all three words in a fairly balanced manner, with a slight preference for *uso* and related verb forms. In addition, the overall frequency of expressions related to the use of animals in scientific experiments is much lower in the Italian decree in comparison with both the Italian Directive and the two English corpora. The difference between the Italian Directive and the Italian decree is all the more striking in the light of the fact that the decree is a considerably longer text (about 2,400 words longer): in other words, it would seem that the latter talks (proportionately) less about animal use in experiments.

Let us move on to the description of the potential effects of experiments on animals, namely their "*ability to experience pain, suffering, distress and lasting harm*" (Directive 2010/63, English version). These concepts, together with *stress* and references to animal *welfare*, are repeated over and over in the Directive in both language versions, and are also featured in the two decrees. Care was taken to check the frequency of the above items used as nouns and verbs (in English) and to check the presence of the related nouns and verb forms in Italian; likewise, adjectives related to the above, such as *painful/ painless* and *harmful* were also looked up. All frequency figures below have been normalised to a million.

English	A1	B1	Italian	A2	B2
pain/painful/painless	2478	1699	dolore	2364	1487
suffering/suffer	2391	1663	sofferenza/soffrire	2600	1657
distress	2261	1374	angoscia	2458	637
			distress	0	765
harm/harmful	1217	940	danno/danneggiare	1371	892

Table 5
"Pain" in scientific experiments on animals.

As can be seen in Table 5, the relative frequency of the above terms in the two language versions of the Directive is quite similar, as they are parallel versions of the same text; moreover, all four concepts are also prominent in the two national laws. Interestingly, however, the Italian transposition decree does not use the copy-out method when it comes to describing animal distress in experiments: while the Italian Directive translated this concept as *angoscia*, the Italian decree uses both *angoscia* and the English word *distress* as a loanword. The combined overall frequency of the two terms, however, is much lower than the frequency of *distress* in the Directive. Moreover, the Italian decree includes a definition of the English loanword *distress* in article 3, where key terms used in the decree are defined:

(4)   "Distress"
       Art. 3 (definizioni)
       Ai fini del presente decreto si intende per:
       […]
       p) distress, condizione di non adattamento dell'animale a stimoli stressanti
       (Legislative Decree 26 4 March 2014)

It is unclear why it was felt necessary to introduce an Anglicism and a technical definition of it in the decree; moreover, the absence of a definition of the term *angoscia* may potentially cause legal ambiguity, since the terms *angoscia* and *distress* are actually used interchangeably in the text and readers are left wondering whether there is any difference between the two. In other words, there does not seem to be any valid legal or linguistic reason for introducing a loanword here. What the use of *distress* does produce is a sort of emotional detachment from the concept being expressed, as the foreign word used in an Italian sentence does not have the same impact of *angoscia* on readers. While it can only be hypothesised that this was a deliberate strategy on the part of the Italian drafters, it can be concluded that the fact that the English word is more frequent than the Italian equivalent has the effect of softening the overall import of the text and, consequently, the ethical implications of the scientific procedures therein described.

5. Conclusions

The analysis carried out here has revealed notable differences in how ethically sensitive issues are discursively constructed in EU directives, national transposition measures and the press. The greatest difference was found between the corpus of directives and the press corpus, with the UK transposition measures straddling across them.

The Keyword analysis has shown that the language used in directives is more abstract than that used in national transposition measures and in the press articles on the same topics, resulting in a less personalised construction. Nominalisations, which allow an agentless representation, and reference to institutional actors of other legislative texts characterise directives, and (to a lesser extent) UK transposition measures. Operationalising the directives' content, the UK national transposition measures are much more detailed, and reference is more frequently made to non-institutional actors (*person, individual, parents, children, patients*, and so on). One of the reasons for this is the different nature of the normative texts in question: directives are aimed at the national institutions of the Member States, but are not directly applicable to citizens. The parliaments of each Member State have the task of ensuring that the obligations contained in directives are correctly transposed into national laws which therefore contain many more references to citizens, categories of people, businesses and so on. This shows that, while to an extent impersonal drafting is typical of legislative discourse, it is not a given in absolute terms. At the same time, as an effect of the highly depersonalised construction of directives, distance is taken from the ethically disturbing aspects of the legislation at issue, such as the destruction of human embryos and animal suffering.

Two small-scale case studies have allowed a closer look at the texts, highlighting some traits of interdiscursive variation along the Directive-NTM-press chain, from an interlingual perspective, too. The case studies have confirmed the pattern highlighted by the keyword analysis. Avoidance of loaded language, for example with a lower frequency of terms indicating experiments on animals and their pain, may be aimed at 'sanitising' ethically controversial topics. The same seems to be true of the use of an Anglicism ('*distress*') in an Italian decree to refer to the suffering inflicted to animals in lab experiments.

The content of directives becomes more contextualised in the UK transposition measures and all the more so in the popularisation of legal matters carried out by the press. Here, the focus is on the effects of legislation (be it medical research or animal nutrition) on people's lives, or alternatively, on the most controversial aspects touched upon in the law in question. The popularising structure which most clearly contributes to this process is the

use of metaphors to connote (positively or negatively) the effects of legislation.

All in all, it can be observed that the greatest difference between the directives and the press articles – respectively the beginning and the end of an interdiscursive chain – is the extent to which ethical dilemmas are allowed to come to the surface. The directives seem to armour their content by means of a discursive construction that keeps reference to ethically sensitive elements (potentially divisive) to a minimum. The human dimension of the subject matter they regulate, whether affecting human beings directly or posing ethical problems for them, is placed in the background, possibly as a result of the supranational law-making process where several political, national and cultural identities must be catered for. Going from directives to NTMs and, above all, the press, legal technicalities lose relevance and what becomes topicalised are the practical implications of the law, which in a way enhance the presence of ethical issues. Drawing from stylistics, it could be said that the human being increasingly becomes the 'focaliser' of the subject matter (Toolan 2006, p. 471), i.e. the one through whose eyes the reader sees the 'events', irrespectively of who is telling the story, and the anchorage point for deictic relations. Out of metaphor, in the NTMs and the press the human 'eye' is more perceptible than in the directives, restoring the matter covered by the legislation to the most human dimension of emotions, ethical dilemmas and ideological strife.

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WHEN A RELATIONSHIP ENDS "THERE CAN BE NO TURNING BACK"
The divorce metaphor in the Brexit discourse

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Abstract – Brexit has inspired far more metaphors than it has solutions. Many conventional and novel metaphors have been used to frame this issue and the relationship between the EU and the UK. This paper addresses one of them: the divorce metaphor. Starting from the assumption that it is not the side with 'the most' or 'best' facts that wins but the one that provides the most plausible and reliable scenarios (Musolff 2017), this paper intends to explore how the metaphor of divorce has been used by British politicians and in British mainstream media with a view to influencing citizens when justifying political actions. Modelling our method of analysis on Conceptual Metaphor Theory (Charteris-Black 2004), we try to demonstrate how the same metaphor becomes a powerful tool for disseminating different evaluative content and expressing criticism.

Keywords: Brexit; discourse; metaphor; divorce; frame.

> *In the early 1960s you could hardly pick up a*
> *newspaper without finding a story about the*
> *UK's desperate efforts to get in. No-one thought*
> *to call it "Brexin". But that's what it was.*

1. Introduction[1]

One of the most remarkable political changes in our democratic epoch is the revival of radical right-wing movements which are fuelled by ethno-nationalist myths about cultural homogeneity and national identities. The logic of English nationalism has also been studied as being one of the invisible drivers of the Brexit referendum (Virdee, McGeever 2017). The claim for national sovereignty and other localisms such as *take back control*, *create new borders and walls, pull up the drawbridge* (Milizia 2018) used by political actors as a framework for politics making are undoubtedly seen as

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[1] Even though the two authors conceived the paper together, for practical reasons Cinzia Spinzi is responsible for sections 1, 2, 3.2, 3.3, and 5. Denise Milizia is responsible for sections 3.1, 4 and 6.

metaphorical expressions of populist rhetoric. In particular, these xenophobic and ethno-nationalist frames are used to construct meanings based on the friend-enemy dichotomy. Therefore, *create borders or walls* implies a divide from the 'other' as well as *take back control* implies that somebody else has taken it for a while. These binary oppositions together with conceptual metaphors provide the foundation for the development of ideology in discourse (Lassan 1995). For their communicative efficacy, usefulness and persuasiveness, it has been generally agreed that metaphors are more likely to be encountered in extremists' speeches rather than in those of other groups (Vertessen, De Landtsheer 2008, p. 274), and that they are mainly used to "arouse moral beliefs associated with the creation, maintenance or restoration of control" (Charteris-Black 2008, p. 4).

Despite the tautological expression used by Theresa May "Brexit is Brexit" and "Brexit means Brexit" to gain the Conservative MPs' support, Brexit discourse is replete with metaphors and one of them in particular, the divorce metaphor, which is the focus of our study, structures the British separation from the Union as the outcome of a complex and tangled relationship between the EU and the UK, a relationship of love and hate (Đurović, Silaški 2018). If the Prime Minister prefers to avoid the word 'divorce' when referring to Brexit (Milizia 2019a), for all the negative and embarrassing implications that a divorce might entail, her comment and repeated use of the phrase "deep and special partnership" as a replacement has not stopped the media from continuing to use the metaphor to refer to Brexit. Through a critical metaphor analysis of the 'divorce metaphor' as used by British speaking political elites – politicians and journalists – the ideological implications of such choices will be made explicit. More particularly, this study aims at investigating how discourse metaphors (Musolff 2004), namely those metaphors whose meaning is also shaped by their use at a given time and context about a particular topic, are discursively and then ideologically employed to serve politicians' political agenda first: hence, it also aims at showing how the same metaphor is re-contextualized by the British media to support their view and hence shape the political minds of citizens.

Before addressing these matters in detail, we briefly set out the theoretical framework to this study in the next section; we will then move on to the analysis of the divorce metaphor in the political speeches first, and then to the mediated political discourse. Findings show how the same metaphor occurs in specific patterns that have a strategic function in the narrative of the complex relationship between the EU and the UK.

2. Theoretical background: metaphors and political communication

Since the publication of Lakoff and Johnson's ground-breaking work in 1980, the conceptual significance of metaphors has been confirmed by the bulk of evidence in different fields of study which have contributed to shape the current cognitively-informed discourse approaches to metaphor (Musolff 2004). Intended in terms of a systematic set of correspondences between two conceptual domains or schemas, conceptual metaphors perform crucial functions in natural discourse, thought, and communication. Culturally relevant frames and embodied experience are chosen in metaphors insofar as they activate links to other unfamiliar frames making topics clearer and more manageable. Apart from this potent feature, metaphors in political communication aim "either to promote one view against another or to discredit or humiliate political adversaries or enemies" (Cammaerts 2012, p. 6). However, since the figurative meaning of a proposed frame is not unambiguous, it leaves room for multiple interpretations making metaphorical meanings negotiable. A fairly common, frequently cited example, which illustrates this haziness of metaphors, concerns the "common European House" metaphor used by Gorbachev in the 1980s (Chilton, Ilyn 1993; Zinken 2007). The Russian leader's main intent was to convey the meaning of shared responsibility of the various states that were compared to the several rooms of the common house, whose cultural referent in Russia are the apartment blocks. On the contrary, on the basis of the stereotypical image of detached house, the interpretation privileged by the western media was related to the freedom of moving from room to room in a house.

Our research draws upon the critical approach to the study of metaphors mainly known as Critical Metaphor Analysis (CMA), which aims at uncovering ideological and political meanings behind metaphors (Charteris-Black 2004, 2006, 2019). According to this approach, political discourse is seen as thoroughly permeated with metaphors which also constitute powerful tools to achieve politicians' aims. A plethora of examples may be mentioned to support the view that metaphors are crucial to the construction of meanings in both speeches and mediated political discourse. As Charteris-Black (2006) notes, Churchill relied on the monster-like analogy to describe the enemy, i.e. the Nazi Germany, and struggle against it; in this way, Britain was profiled as a hero. Former UKIP leader Nigel Farage exploited the space-container scenario in his public addresses during the proto-referendum debate to strengthen his anti-immigration rationale (Cap 2019); right wing parties made use of the immigrant as scrounger scenario (i.e. negative analogies with animals like locusts) to represent Jews as

enemies in the British Fascist discourse (Spinzi 2016), as well as in Nazi discourse (Wodak, Richardson 2013).

The common thread in this bulk of literature is the focus on "discourse metaphors" (DMs) considered as "relatively stable metaphorical mappings that function as a key framing device within a particular discourse over a certain period of time" (Zinken *et al.* 2008, p. 364). Like cognitive metaphors, DMs imply a set of correspondences or conceptual mapping operations rooted in sensorimotor experiences and "highlight salient aspects of a socially, culturally or politically relevant topics but are not independent on time" (Koteyko, Ryazanova-Clarke 2009, p. 114). This feature of DMs is relevant to our research in that our purpose is to demonstrate that the 'divorce' metaphor is crucial, from an ideological point of view, to the meaning-making and dissemination of knowledge of the Brexit discourse. Indeed, as put forward by Lakoff (2004), one of the main tasks performed by metaphors is that of validating political choices by confiding in the elemental social and cultural value systems. Hence, Lakoffian cognitive categories (also known as "frames" – Fillmore 1976; Musolff 2006, 2019) provide language users with interpretative templates to make complex phenomena more intelligible (Spinzi 2017).

In line with this viewpoint, for example, Koteyko and Ryazanova-Clarke (2009, p. 124) have shown that the metaphorical framing of path and building in Putin's public speeches has contributed to constructing a political narrative where the leader's actions are legitimized as forces of good which aim at fortifying the state apparatus, at building economy leading it on a path in contrast with the wrong direction/path taken by the former president. Nevertheless, the activation of a frame in a specific discourse does not necessarily lead to its acceptance. As Musolff (2019, p. 3) notes, the receiver may reject the frame or replace it with other frames. Thus, by analysing the metaphoric phrase *Britain at the heart of Europe*, Musolff (2017) maintains that this conventional metaphor grounded in the physical metonymy of the heart as the centre of a container-like entity has been quoted as a slogan since 1991, when Prime Minister John Major used it to highlight his favourable attitude towards the European Community's policy. Three years later, when new proposals (e.g. the division of Europe in a circle of member states) to foster European integration were put forward, specifically by France and Germany, Major's approach to promote Britain as being at the centre of the European community revealed itself to be fallacious. As a matter of fact, because of these new political proposals, which did not match with Major's ideas of looking at Britain as a key player in Europe, his metaphorical slogan was then used by the euro-sceptics for sarcastic purposes: being at the heart of Europe was not conceivable because the heart got sick. As Musolff explains (2017), the conventional undertones of the source domain concept

'heart', (i.e. prominence and good state of health), are implied in its initial uses but then contradicted over time. The schematic shift from heart-as-centre to heart-as-organ entails emphasis on the organ, hence, on emotions rather than on position. For this reason, it provides new avenues of interpretation for the re-contextualised historical and political scenario. By hiding or highlighting the emotional potentialities of the new metaphoric formulation, new ways of representing Euroscepticism have cropped up: the original positive connotations of the slogan have left space for a range of negative abstractions in terms of illness and death.

This means that the same metaphor lends itself to controversial interpretations according to the prevailing schema chosen for representation, and that constancy and variation of DMs may be analysed not only synchronically but also diachronically to explore how they strive for existence. For these reasons, metaphors in discourse are both strategic and ideological (Hart 2010, p. 127), and they use language "to activate unconscious emotional associations" (Charteris-Black 2004, p. 53). As a matter of fact, a perlocutionary effect has been attributed to metaphors in that they persuade people to act according to a set of feelings, values and intentions (Gregg 2004, p. 60). In this sense, metaphors constitute guides to decision-making.

The divorce metaphor found in our data is seen as an entailment of 'nation is a family' (Charteris-Black 2019; Chilton, Lakoff 1995; Musolff 2016), a conceptual metaphor which activates its implicit analogies to the domain of relationships through other words and phrases such as *couple, parents, married life*, (Musolff 2016, p. 31). Relationships may be successful or not, amicable or unamicable, short or long, they might experience tiffs and reconciliation and, if they end, bad or good may follow. Furthermore, as shown in the literature (Đurović, Silaški 2018; Musolff 2009), the marriage metaphor as well as the divorce metaphor unveil the traditional stereotypes of gender and family roles in the Brexit discourse, i.e. Britain as female and Europe as male (Musolff 2009).

3. Data and Methods

3.1. The spoken corpus

The spoken corpus we have relied on for the present analysis is retrieved from the institutional website, number10.gov.uk and totals, at the time of writing, approximately 4 million words. Transcriptions are made available on the website and are free of charge. The corpus includes pre-vote data and post-vote data, thus embracing speeches and statements from David Cameron and Nick Clegg in the 5-year period coalition (2010-2015), David Cameron's

speeches delivered in the one-year period from 2015 to 2016 until the referendum date, some speeches delivered by Theresa May when she was serving as Home Secretary and all the speeches delivered in her premiership, a few speeches delivered by Justine Greening, Secretary of State for International Development, some speeches and statements delivered by Philip Hammond when he was serving as Secretary of State for Foreign and Commonwealth Affairs and some speeches when he was appointed Foreign Minister in the post-referendum government.

Politicians	Political stance on Brexit	Role	no. of words
David Cameron and Nick Clegg	Remainer	PM and Deputy Prime Minister	1.423,40
David Cameron	Remainer	Prime Minister	842,533
Theresa May	Remainer	Home Secretary	250,543
Justine Greening	Remainer	Secretary Int. Development	25,006
Philip Hammond	Remainer	Chancellor of the Exchequer	89,008
Alan Duncan	Remainer	Europe Minister	1,657
David Lidington	Remainer	Secretary of State for Justice	12,833
Jeremy Hunt	Remainer	Brexit Secretary	10,553
Theresa May	Leaver	Prime Minister	416,062
Philip Hammond	Leaver	Foreign Minister	1,657
Nigel Farage	Leaver	Leader of UKIP	78,235
Boris Johnson	Leaver	Foreign Secretary	300,054
David Davis	Leaver	Secretary of State exiting EU	453,008
Dominic Raab	Leaver	Brexit Secretary	1,504
David Jones	Leaver	Minister of State	1,982
			4.057,36

Table 1
Political stance of British politicians on Brexit.

The corpus includes also some speeches by Alan Duncan, Europe Minister, all speeches and statements by David Davis, Secretary of State for Exiting the European Union until July 2018, when he stepped down in opposition to the Chequer's Plan that the Prime Minister was putting forward. A few speeches by Boris Johnson are also part of the corpus, a prominent Brexiteer and the Foreign Secretary until July 2018, when he resigned over Brexit a few hours after David Davis, claiming that May's plan "sticks in the throat" and that the UK "was headed for the status of a colony". Some speeches by Nigel Farage are also included, the then leader of UKIP and a prominent Eurosceptic in the

UK and, at the time of writing, leader of the Brexit party, together with some speeches by Dominic Raab who took over Boris Johnson as Foreign Secretary, but who also resigned after only four months in opposition to the Draft Withdrawal Agreement. Dominic Raab was succeeded by Jeremy Hunt, and his speeches are also included in the corpus, as well as those by David Jones, the then Minister of State at the Department for Exiting the European Union.

As is clear from Table 1, the political stance on Brexit of the politicians object of our study, and of British politicians in general, does not follow a consistent direction, thus corroborating the tragic split that the Brexit mess has caused. Indeed, there has never been a clear-cut division and a consistent trend within the British political parties, and whether we might be inclined to believe that Conservative Ministers are mainly Eurosceptic and Labour Ministers are mostly Europhiles, the table above illustrates that quite the opposite is true. David Cameron, for example, leader of the Conservative Party for eleven years and Prime Minister of the UK for six years, was a fervent Remainer, adamant that Brexit would be an act of "economic self-harm", insisting time and again that "Britain is stronger, safer and better off inside the EU", and that it was in the national interest to stay inside a reformed EU. Lib-Dem Nick Clegg, who, together with Conservative David Cameron formed the first coalition since the Second World War after the hung parliament of 2010 (Charteris-Black 2014), was highly passionate about his pro-Europeanism, like all Liberal Democrats who, unlike the other parties, have always been quite united as a group. Indeed, David Cameron and Nick Clegg did not see eye to eye on the referendum issue, with the Deputy Prime Minister always warning the Prime Minister that promising the British people a referendum was actually playing with fire, and "if we go down this track, it is Britain that will get burned".[2]

David Cameron and George Osborne, the then Chancellor of the Exchequer, both closely involved in running the Remain campaign, had tried to seek the advice of experts and global policymakers, including American President Barack Obama who, taking advantage of his visit to the UK on the occasion of the Queen's birthday, warned the British people that "if the UK does leave the EU, there might be a UK-US trade agreement, but it's not going to happen anytime soon, because [...] the UK is going to be at the back of the queue". President Obama's opinion and his incitement not to give up on Europe was not welcomed by several nationalists, such as Michael Gove, former UK Minister of Education, who, endorsing "the arrogance of

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[2] The then Britain's Deputy Prime Minister, and leader of the Liberal Democrats, Nick Clegg answered delegates' questions at the party's autumn conference in Glasgow, Scotland, September 16, 2013.

ignorance" (Wodak 2015), said that the British people had made their decision, they know what is good for them and they do not need experts, nor intellectuals. However, this trait of challenging the élite, including intellectuals, resembles typical traits of populism and, as Moffit (2016) puts it, big crises like the one the UK has been experiencing in recent years pave the way for populism and, more often than not, crises are interpreted as "the struggle of the new to be born" (Moffit 2016, p. 119).

Needless to say, when Theresa May was serving as Home Secretary in David Cameron's government, she was pro-Europe, fighting together with the Prime Minister "with all her heart and soul" to stay in the Union. Yet, when David Cameron announced, in his resignation speech after the referendum outcome on June 23, 2016, that he could no longer "steady the ship over the coming weeks and months", Theresa May was among the most likely potential successors to take the lead, together with Andrea Leadsom, and Boris Johnson, former mayor of London. Nigel Farage, who had a been a prominent supporter of the Leave campaign, quite surprisingly, stepped back, saying that, with the UK having voted to leave the EU, his political ambition had been achieved.

Despite being part of the Remain camp in the run-up to the referendum, Theresa May was chosen to be, to borrow David Cameron's words, "the captain that steers our country to its next destination" (Spinzi, Manca 2017), with the purpose of pushing ahead with the UK's divorce from Europe: she was appointed Prime Minister by Queen Elizabeth on July 13, 2016, becoming the second female British Prime Minister after Margaret Thatcher, who held office from 1979 to 1990.

Justine Greening and Philip Hammond, both belonging to the Conservative Party, were both pro-Europe. Yet, Philip Hammond, just like Theresa May, switched to the Leave side after the referendum outcome. Alan Duncan, David Lidington and Jeremy Hunt, from the Conservative party, were all fervent Europeans who campaigned for the Remain vote. To conclude with the other politicians included in the spoken corpus, David Davis, Dominic Raab and David Jones all belong to the Conservative party and all convincingly campaigned to leave the Union.

3.2. The media corpus

The data for the analysis of the mediated political discourse was collected from the Lexis Nexis archive using the following query words: *EU, Britain, relationship, divorce* and *Brexit*. All the articles after the referendum (July 2016) until December 2018 were then downloaded. Representativeness in the media corpus was ensured by the selection of different politically oriented newspapers and magazines. Relying on their standpoint towards Brexit, we included two pro-Leave newspapers (*The Daily Mail* and *The Telegraph*),

two pro-Remain newspapers (*The Guardian* and *The Mirror*), and a pro-Remain magazine (*The Economist*). The articles extracted amount to 143,438 running words.

Newspapers	Political stance	Number of words
The Guardian	Left	29,856
The Telegraph	Right	25,973
The Economist	Liberal	43,976
The Mirror	Left	22,546
The Daily Mail	Right	21,087
Total number		**143,438**

Table 2
The media corpus: political stance of the newspapers and no. of words.

3.3. Methodology

From a methodological point of view, we embraced a deductive approach to the study of the divorce metaphor in the context of Brexit, assuming that there is a conventionalized cross-domain mapping in thought (Steen 2017, p. 78) such as NATIONS ARE FAMILIES. The procedure for the identification of metaphorically used words in discourse was the one put forward by the Pragglejaz Group (Metaphor Identification Procedure, 2007). This method is concerned with the linguistic analysis of metaphorically used words, i.e. lexical units, in discourse and it is carried out through four different steps. First, we read most of the speeches and the articles and we established the metaphoricity of the lexical unit considered (e.g. divorce) by comparing its contextual meaning to its basic meanings. What is important to highlight here is that two different text typologies will be dealt with in our investigation: speeches given by political elites to speak to their own and to opponent parties and to the electorate, and articles extracted by the mainstream media whose main aim is both to express criticism and to make an intricate political process more agreeable. These differences will give us the opportunity to study the same metaphor in political communication but moving from a specialized level to the public sphere.

Our analysis is mainly qualitative in that we were interested in investigating the use and the function of metaphor in the Brexit discourse for popularizing purposes. If the politicians' corpus revealed 22 instantiations of divorce, twelve of which have a metaphorical meaning with reference to Brexit, three metaphorically refer to normal life, e.g. 'divorced from normal life', 'divorced from the wider economy', and 'our opponents are trying to divorce the two issues" (Table 3, lines 16, 18 and 21), in the media corpus all the occurrences were found to carry a metaphorical meaning.

*L*ingue e
*L*inguaggi

4. The divorce metaphor in the political speeches

As anticipated in the Introduction, in her narrative Theresa May makes all efforts to shy away from the word 'divorce' when referring to Brexit, for all the negative connotations that the word carries within itself. The Prime Minister said that, more often than not, when people get divorced, they do not have a good relationship afterwards, whereas what the British people are trying to seek with their European *friends and allies* is *a deep and special partnership*,[3] and the relation they want will be *enduring*, *strong*, *deep*, *broad*, *close* and *unique*.

It is well known that the relationship between the UK and the EU has always been troubled and fraught, hard, difficult, ill-fated, erratic, turbulent, tumultuous, to quote just a few adjectives that have been used to refer to the relationship between Britain and Europe, a marriage on the rocks (Milizia 2015, 2019b), as it were, and that the UK has never been too keen on *tying the knot with Europe* (Milizia 2014, 2016, 2019a). In 1975, after only two years of marriage, one of the two sides, the UK in fact, who is often referred to, in the couple, as the unfaithful wife (Đurović, Silaški 2018), had already tried to apply for divorce and, on several occasions one of the two sides, the unfaithful wife again, had tried to rewrite the marriage vows. Thus, in this context, Britain is given the female role and the EU the male role who is, in the case in question, the aggrieved husband (Đurović, Silaški 2018). Since Britain on June 23, 2016, decided to turn its back on Europe and file for divorce, asking to put an end to this four-decade dysfunctional relationship, people have been wondering whether it will be a separation or a divorce, and whether an amicable divorce is only a pipe dream. Jean-Claude Juncker, the President of the European Commission, reiterated on several occasions his conviction that "this divorce is a tragedy", and that Theresa May should call things with their real name: "this break-up is a divorce". Relying on another metaphor, the EU Commission President argued that the EU is not a golf club that can be joined or left at will, it is a family (Musolff 2009) and, as a consequence, Brexit should be treated as divorce, despite all the efforts to try and avoid the word.

It is true that the United Kingdom is sometimes seen, as David Cameron said in one of his famous speeches on Europe, as an argumentative and rather strong-minded member of the FAMILY of European nations but, if the UK leaves the Union, they will still be neighbours, and will still continue to champion the same beliefs.

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[3] The binomial *deep and special*, in the pattern *deep and special relationship*, is historically and conventionally related to the relationship between the United Kingdom and the United States of America. Hence, the one with the UK is a *deep and special partnership*.

The marriage between the UK and the EU started as difficult in the first place, indeed even prior to the UK's accession, in that they were denied membership twice;[4] throughout the years, like any family, they experienced the ups and downs that every couple goes through, with the several crises that finally brought them to the final decision of a break-up.

In the paragraph below, the analysis of the spoken corpus is carried out, taking into account both the data before the referendum outcome and the data after the British people had decided to "turn their back on Europe".

4.1. The spoken data

Before looking at how British politicians tackle the divorce metaphor, we should bear in mind that the same metaphor applies also to Scotland, and thus two references to the Scottish independence referendum, held in September 2014, have emerged in our corpus.

N	Concordance
1	did leave the UK; that this marriage of nations has run its course and it needs a divorce. Now, today I want to take on all these views: the idea we'd be better off
2	say that this marriage of yours is stronger than ever; others say you're planning a divorce. Could I ask you both how would you sum up the state of your union?
3	say that this marriage of yours is stronger than ever; others say you're planning a divorce. Could I ask you both how would you sum up the state of your union?
4	end before they were 12 years old. One of my half brothers then went through a divorce himself after his first wife left him- and left him with the care of three young
5	interests and accidentally slide into a no-deal separation and an acrimonious divorce, I am afraid that we risk losing our sense of common destiny, undermine
6	out one type of relationship over another. There are millions of separated and divorced parents who continue to have a really good relationship just as there are
7	these events but very well remember the second, and my brother's separation and divorce were difficult enough for the rest of the family, let alone for his three children
8	of uncertainty for Britain, just as we are getting back on our feet. And, like any divorce, the negotiations with our former EU partners are likely to be difficult. The
9	the EU succeed politically and economically. In exit we are not seeking a bitter divorce, but a better relationship. That's the Government's ambition. The outcome
10	the EU to remain as close as possible in the future. We should aim for a friendly divorce, that would be our starting point in the coming negotiations. Of course our
11	you to channel Margaret Thatcher and make clear to our EU partners that a Brexit divorce would be unreasonable. Do you agree with the Foreign Secretary? Prime
12	we do that? Again, it flies in the face of common sense. It would be like getting divorced, moving out, then still expecting to pick what colour curtains you have in
13	to someone settled in the UK. He got indefinite leave to remain then immediately divorced his UK-based spouse, returned to Pakistan, remarried and then applied
14	personally for a moment. My dad was married twice and his first marriage ended in divorce. My two older half-brothers Richard and David saw their parents' marriage
15	ally for the US and all countries that share our values. But the risk of a messy divorce, as opposed to the friendship we seek, would be a fissure in relations
16	may have changed today – indeed these schools have become more and more divorced from normal life. Between 2010 and 2015 their fees rose 4 times faster
17	the fact that people are living longer. Others we should regret - like the high rate of divorce or the immigration policies that led to a net influx of 1.7 million people into
18	flourish. We must never, ever talk about consumers as if they are somehow divorced from the wider economy. The UK's green industry is worth around £128
19	made their decision and of course we respect that, and there's no way around the divorce. But I can assure you that we will miss you when you leave. Despite the
20	not have members of our immediate or extended families who have gone through divorce or separation or other form of family break up. I was appointed to my job as
21	will really drive living standards up in the long term. Our opponents are trying to divorce the two issues. As if living standards and the deficit weren't intrinsically
22	be if the remainder of the UK agreed to become a 'new state'. The so-called velvet divorce of the Czech Republic and Slovakia, where two successor states emerged,

Table 3
Concordance lines of *divorce* in the spoken corpus.

[4] The UK made its first application to join in 1961 and was vetoed by President Charles De Gaulle in 1963. A second application was vetoed by the French again in 1967. The French General was adamant that the British view of the European project was characterized by a deep-seated hostility and that the UK would require a radical transformation if it were ever to be allowed to join the Common Market. He said that London showed a "lack of interest" in the Common Market, and that several aspects of Britain's economy made Britain incompatible with Europe.
It was only in 1969 that the green light was given to negotiations for British membership. The United Kingdom joined the EEC (European Economic Community) in 1973 with Ireland and Denmark. The UK's application for membership was not approved until General De Gaulle fell from power, and he was dead before the UK actually joined.

As we can see in line 1, Table 3, Prime Minister David Cameron says that "this marriage of nations has run its course and now needs a divorce". These words might, at first, sound weird, it being very well-known that David Cameron always made clear that the United Kingdom is stronger with Scotland within it, and that the four countries together are like a powerful brand: separating Scotland out of that brand would be like separating the waters of River Tweed and the North Sea. Thus, enlarging the context, we find out that David Cameron, in a speech delivered a few months before the Scottish vote, argues that there are a whole range of different views about the referendum: there are the 'quiet patriots', the 'shoulder shruggers', and those who think that the UK is better off if Scotland did leave the UK and, hence, that "this marriage of nations has run its course and now needs a divorce". Indeed, never did we find David Cameron, in his six-year premiership, use the word divorce in relation to UK-Scotland, as well as in relation to the couple UK-EU. Yet, it is worth highlighting that, in our data, the divorce metaphor was at work also before 2014, even though with reference to another partner.

In line 22, Lord Wallace is talking about the "so-called velvet divorce", envisaging a scenario where the separation of Scotland from the rest of the United Kingdom would be as smooth and calm as the one that brought to the creation of the Czech Republic and Slovakia in the early 1990s and to the extinction of Czechoslovakia. Indeed, such a divorce is also what Theresa May was hoping to bring about, an orderly and calm Brexit, envisaging a smooth transition into a new reality with an EU made up of 27 instead of 28 member states.

As stated earlier, the marriage metaphor is one of the conventional metaphors of political discourse (Charteris-Black 2014; Musolff 2004, 2009), and it has become common to speak of the relationship between broader entities such as nations or states, or political parties, or politicians, as is the case in line 3 (Table 3), where the interviewer is asking David Cameron and Nick Clegg about their relationship and their coalition government:

> Interviewer: Some say that this marriage of yours is stronger than ever, others say you are planning a divorce. Could I ask both of you how you would sum up the state of your union?

> David Cameron: I hate to sort of spoil the party, but let me put it like this: we are married, not to each other. We are both happily married. You know, this is a government, not a relationship. […] To me, it's not a marriage. It is, if you like, a Ronseal deal: it does what it says on the tin. We said we would come together. We said we'd form a government. We said we'd tackle these big problems. We said we'd get on with it in a mature and sensible way, and that is exactly what we've done.

In the one-year period of the Conservative government from 2015 to 2016, the divorce metaphor was relied on just once, and in particular by Philip Hammond, as we can see in line 8: "And, like any divorce, the negotiations with our former EU partners are likely to be difficult". It would have been very interesting to compare, in relation to the divorce metaphor, Philip Hammond's speeches before and after the referendum, but unsurprisingly he never uttered the word when he was appointed Chancellor of the Exchequer in the new government. Just like Theresa May, after backing Remain in the Brexit referendum, Philip Hammond, in fact, agreed he would support the withdrawal of the UK from the EU. However, it is worth knowing that, in January 2018, senior Conservatives asked Theresa May to sack him as Chancellor, following his comments about Brexit, which were deemed to be too Europhilic in nature.

In this speech delivered in March 2016, only three months before the referendum, the then Foreign Minister attempted to stress the drawbacks of leaving, after being offered 'the special and unique status' that David Cameron had painstakingly negotiated: outside the Euro, outside Schengen, with an opt-out in Justice and Home Affairs matters, an exemption from 'ever closer Union', and a new mechanism to limit access to British benefits system for EU migrants. With this offer, Philip Hammond concedes, Britain was offered the best of both worlds. In his speech he managed to foresee what might happen in the future, which is indeed happening at the time of writing, namely that after three years of excruciating debate the two sides have not reached an agreement, yet.[5] Brexit was scheduled for March 29, 2019, and it was meant to be easy, Nigel Farage promised, and "there will be no downside, only a considerable upside", David Davis pledged. But the reason why no deal has been reached at the time of writing, and the deadline was extended for several times, is because *they* – the Leave supporters – "cannot point to an example which is better than the special status within the EU that we now have on offer". The 27 member states, he adds, already think that they have gone the extra mile for Britain. As many scholars have pointed out in this respect, the image of the cake has often been employed in this

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[5] Even though Boris Johnson as Prime Minister has succeeded where Theresa May had failed, i.e. strengthening the conservatives in a national election and carrying the UK out of the EU on January 31, 2020, delivering on his promise to "get Brexit done", at the time of writing a deal has not been reached yet between the UK and the EU. In the 11-month transition period the two sides will need to negotiate the terms of their future relationship. If a new agreement is not in place by the beginning of 2021, the UK will become a "third country" to Brussels.

context, referring to the British government's wish to retain EU membership benefits without its obligations (Musolff 2019).

In this speech Philip Hammond uses the divorce metaphor likening Brexit to the legal proceedings that follow a failed marriage (Musolff 2017), balancing the burdens and the benefits, and listing the many disadvantages that would emerge out of such a leap in the dark.

It has been noted (Koller *et al.* 2019) that Remain politicians and supporters largely failed to represent the EU in positive terms and make a positive case for EU membership, thus the Remain side started as disadvantaged with respect to the Leave side, in that a positive image of the EU membership was never laid, and never established in the past by the media and politicians. Through the often-used scaremongering tactic (Zuccato, Partington 2018), Philip Hammond is trying to instill fear and scare in the British people that a blunt and hard divorce would be difficult, and would bring no positive effects, but only uncertainty, frustration, fear, a feeling of revenge on the part of the former partner who has been 'dumped', or 'jilted' (Berberović, Mujagić 2017), who would have no interest in helping the unfaithful partner to thrive outside the EU, as well as apprehension, from the other 27, of a British 'contagion' that a Brexit might bring to other countries. It seems that Remainers were only able to show the several disadvantages of leaving, yet without providing any advantages for remaining, relying on the common and apologetic formula "Europe is not perfect but we're stronger, safer and better off within a reformed European Union", and that, in the end, "it is best to simply stick with the status quo" (Buckledee 2018).

The evidence of the data shows that the Remain campaign appealed to rationality and negative emotions – with Philip Hammond appealing in particular to economic facts in his role of Chancellor of the Exchequer – whereas the Leave side appealed more to positive emotions, managing to sound more confident and more engaging in their language, by telling the people what to do: *Vote leave! Take back control!* rather than giving them a statement such as *Britain Stronger in Europe* (Koller *et al.* 2019). Needless to say, the imperative construction, the most prototypical means for the expression of orders, has a different appeal on voters, particularly on wavering voters, than plain assertions. The imperative *Get Brexit done*, for example, Boris Johnson's mantra in the 2019 election campaign, turned out to be as successful, short in form but wide in scope.

In line 12 (Table 3), the divorce metaphor was uttered by a woman, Justine Greening who, in the Cameron's government, was serving as Secretary of State for International Development. The past three decades have seen an increase in the number of women serving in high-level political positions in countries throughout the world (Ahrens 2009), and even though

Theresa May is not the first female British Prime Minister, the number of British female parliamentarians has never been as high as recently. In 1997, over 100 women became MPs, and this arose out of the Labour Party policy of requiring equal numbers of male and female candidates for elected positions within the party (Charteris-Black 2009).

The language of women has long been held to display peculiar traits (Jespersen 1922), and one of these is that women tend to refer to their immediate surroundings, the finished product, the ornamental, the individual, and the concrete, while the masculine preference is for the more remote, the constructive, the useful, the general, the abstract. This is reflected in Justine Greening's words:

> It would be like getting divorced, moving out, then still expect to pick what colour curtains you have in the front room. [...]
> Why would any club or membership organization give non-members a better deal – people who are outside it? It's like cancelling your gym subscription and expecting to get upgraded access to all the fitness machines.

What Leave campaigners are proposing, Justine Greening claims, flies in the face of common sense: it appears at times that they want to have, as said earlier, their cake and eat it: they are claiming that they can shape the EU more from being outside than from being in. "This is illogical and absurd", continues Justine Greening but, as it often happens, the divorce proceedings could turn into a long fight over everything, including furniture, or into an endless legal battle over trivial things. If a couple decides to divorce, the partner who moves out will have no say on the furniture or the colour of the curtains in the front room, just like a person who decides to cancel his/her gym subscription will have no access to all the machines whose use is free for the members of the club. Justine Greening is warning her fellow citizens that, if Britain decides to exit the club/gym, they will not be able to keep the assets and maintain occasional relations with the EU.

She then goes on, instilling fear of a leap into the unknown, relying on the well-known metaphor of the one-way ticket with no clear destination, borrowed very likely by David Cameron who spoke of a one-way ticket without a return:

> But it seems to me that, as it stands, leaving the EU is a one-way ticket, with no clear destination.

Jespersen's assumptions are shared by Charteris-Black (2009) who, in his study on the use of metaphors used by female and male parliamentarians, found that women are far less likely to indulge in grand metaphorical constructs than men. Justine Greening, with her symbols, is in fact trying to persuade the Leave supporters that divorce is not the best option and that,

even though the idea of divorce may appear thrilling after many years of dull and passionless marriage, freedom is not always such fun (Berberović, Mujagić 2017), and when "you take back control" there is no one to blame when things go wrong.

As mentioned earlier, it is interesting to notice that, in Table 3, out of 22 instantiations of divorce, 12 have a metaphorical meaning and they all refer to Brexit, whereas 7 carry a literal meaning, and 3 are meant metaphorically but do not refer to the relationship between the UK and the EU. This high frequency clearly indicates that the figurative scenario of the UK-EU divorce metaphor is by now somehow firmly entrenched in the discourse community and, at least in this time in history, is widely shared by the public at large.

In September 2018, Vice Premier David Lidington went to Siena, Italy, to a conference titled "Bridging the Gaps". In this speech, he repeats time and again that the British are leaving the institutions of the European Union but are not leaving Europe, and spells out how deeply they value their relationship with Europe and Italy in particular. This said, he explains that the reason why they are doing all this, despite the fact that it would be easier for the UK just to stay in the EU, is because the British people have made a democratic choice in a referendum, and in a democracy a democratic choice has to be respected, otherwise what is pretty fragile public confidence in the political process would be damaged still further. David Lidington's words clearly mirror a fervent Remainer's ideology, yet he seems unable to build a positive case for Europe, but rather he appears to accept passively, almost resigned, what has already been decided, even though this may mean "leave without a deal". Yet, a deal is in both the UK and the EU's interest, thus, David Lidington argues, we should on both sides look for one, as we read in line 5, because if we forget our common interests and "accidentally slide into a no-deal separation and an acrimonious divorce, we might risk losing our sense of common destiny, undermine our ability to cooperate, facing the challenges of the 21st century divided". He thus suggests that we should try and avoid an acrimonious divorce, but rarely does a divorce carry positive feelings; it can be by mutual consent, but seldom friendly and without any grudge, in that even though it was a loveless marriage, or a marriage of convenience, rather tedious and restrictive (Berberović, Mujagić 2017), from a sterile partner (Musolff 2017), it is still a divorce after 45 years.

Playing with the adjectives *bitter* and *better*, David Davis' words in line 2 reflect the wishful thinking that, in exit, the UK is not seeking "a bitter divorce but a better relationship", still knowing well that it will not be easy and that "it won't be plain sailing, but we need to navigate the course together". The evidence of the data shows that the divorce metaphor is employed by both Remain and Leave supporters, and David Davis, as

Secretary of State for exiting the European Union, obviously chose to leave, confident that the people voted for a better and brighter future for the UK, despite the challenges that would lie ahead.

In line 11 it is the interviewer who, questioning Theresa May at the European Council meeting, utters the word *divorce*, ascribing it to Boris Johnson, and presenting it as a reflection of the Foreign Secretary's views:[6]

> Boris Johnson has called on you to channel Margaret Thatcher and make clear to our EU partners that a Brexit divorce would be unreasonable. Do you agree with the Foreign Secretary?

It is interesting but hardly surprising to notice that not only does Theresa May not repeat the word *divorce*, but she also leaves the question unanswered.

Lines 10 and 19 come from the same statement, held in Copenhagen between the British Prime Minister and the Danish Prime Minister. The word *divorce* is uttered twice, and both times by Lars Løkke Rasmussen, who seems to bear no grudge whatsoever that one of the two partners, the UK in fact, is breaking the relationship. Denmark is a natural partner to the UK, says Theresa May, they are like-minded allies and even though Britain is leaving the EU, she repeats one more time, they are not turning their back on Europe. The Danish Prime Minister seems to passively accept their decision, but he adds:

> I think that it is tragic that the UK is leaving the European Union, but the Brits have made their decision and of course we respect that, and there's no way around the divorce. But I can assure you that we will miss you when you leave. […] We should aim for a friendly divorce.

Donald Tusk, the former President of the European Council, also spoke of a tragedy in the same respect, claiming, ten days after the referendum outcome, that "Brexit would mark nothing less than the beginning of the destruction of western political civilization in its entirety".

As Geary and Lees (2016) rightly argue, divorces can be such tragedies, yet at the same time if people stay together it can even be worse: unhappy couples simply do not stay together, let alone couples who have been drifting apart for decades. As Musolff (2016) puts it, this relationship resembles drama or soap opera plots even though, according to some

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[6] We did not manage to find the original source where Boris Johnson makes such a statement. Thus, what we read here are the interviewer's words, ascribed to the Foreign Minister. Indeed, being Boris Johnson one of the fathers of Brexit, we found it odd to actually see the noun *divorce* co-occurring with the adjective *unreasonable*.

politicians, this separation is proving to be more serious and more difficult than an "ordinary lovers' quarrel".

In line 15, Foreign Minister Jeremy Hunt is warning against the risk of leaving the Union with no deal, and against the risk of a messy divorce, which would bring to a fissure in the relations between European allies, and whose fissures would take a generation to heal. This process has been likened to the opening of a Pandora's box (Nejad 2015): being the first time that a member state has withdrawn from the Union, we may find in the Pandora's box all possible negative consequences and troubles.

Indeed, if Europe used to be regarded as a house with a closed or missing exit door (Musolff 2000, p. 226), now it has become more willing to allow member states to withdraw, with all the possible consequences and troubles arising from the fact that no other member state has ever left the Union before: only Greenland left the EU in the 1980s over fishing rights, but Greenland is part of the Danish realm, hence there is no precedent for how the fourth most populous European nation would divorce the EU. The framework of exiting generates metaphors like escaping a prison, and often has the EU been compared to a prison, to an oppressive force, a trap, a straitjacket, and therefore Brexit is like a liberation from a trap (Musolff 2017).

5. The divorce metaphor in the media

Although Theresa May voices opposition to the dangerous divorce metaphor, newspapers and magazines are replete with it. In *The Guardian*, 74 occurrences of *divorce* out of 80 are used metaphorically and are part and parcel of the marriage/divorce narrative. It is not surprising that *divorce* is negatively evaluated as a *stressful* and *hostile process* in *The Guardian* as well as in other Europhile newspapers, such as *The Mirror* in our data, because divorce sanctions the end of a long relationship with Europe.

1. **Divorce** is often a stressful, hostile process, riven by bad feelings on both sides. For Theresa May's government, leaving a union with Europe is proving to be a humiliating experience. (Dec 8th, 2017)

2. A **divorce** is between two equal partners. But the UK is to the EU what Belgium, Austria or Portugal are to Germany: an entity eight times as small. If the EU informs the UK that "no soft Brexit means no soft Brexit" then that is what it is. For the same reason the analogy of a "game of chicken" for the coming negotiations should be cast aside. The UK and the EU may be driving at furious speed into one another, each expecting the other to swerve. But if the UK is a Mini then the EU is a truck. (March 30th, 2017).

As it can be observed from these two extended citations, not only does *The Guardian* reject ideologically divorce as a solution to the problem but it also challenges the metaphor by showing its inadequacy as shown in example 2. When repeated, metaphors become conventionalised, and conventional metaphors are taken as self-evident starting points in debates. The debate here questions the equality between the UK and the EU. A divorce is assumed to happen between two equal partners, and metaphorically speaking between two countries, which is not the case in point since the UK is a small entity if compared to the EU. A further metaphor is then introduced which helps comprehend the difference between the two parties in terms of size and hence power (e.g. the UK is a Mini and the EU is a truck). For this reason, the divorce metaphor cannot work, and a more acceptable imagery for *The Guardian*, as written elsewhere, would be that of "a club of almost 30 vessels sailing together in the belief that this serves their interests" (March 30th, 2017). The idea of a 'club' seems to leave more space for negotiation of broken relationships whereas, in a broken marriage, a couple rarely remarries when the choice has been to divorce. Metaphors are used purposefully to strengthen certain views on the world, and in the case of the divorce metaphor *The Guardian* takes a more critical stance towards the divorce by stating that what is being negotiated between Britain and the EU is not the end of a marriage but "it's a self-inflicted downgrade" (March 30th, 2017) which does not encompass any prospects for reconciliation. Other metaphors emerged in this newspaper (e.g. means of transport such as truck and vessels; clubbing) seem to point to a rather "authoritarian way of framing" the Brexit issue (Charteris-Black 2019, p. 228) which implies, in the case of the 'club', the presence of a set of rules and facilities to comply with and an emphasis on directions to take in the case of the means of transport. The strength of the vessel or truck metaphors may be seen in their ability to naturalize the peculiar lack of equality between the EU and its member states due to the different size and speed of the various means of transport employed.

Coming back to the main metaphor investigated in this research, the other pro-European newspaper, *The Mirror,* naturalizes the feelings of dread due to the post-referendum events by likening them to the moral and often unknown consequences in a divorce, and it does so by foregrounding the negative emotional effects of a separation (*pain, dread, humiliation,* examples 3 and 4). By evoking the ethical implications of divorce, above all the traumatic effect on children, *The Mirror* calls for the two parties to strike a deal that will not leave one or both sides devastated and resentful, and reminds the reader that parents have an obligation to protect their children from harm, all else being equal. The view behind this position is that marriage creates moral obligations primarily because it involves promise-making and, last but not least, because parents have the moral responsibility

to safeguard their offspring. In so doing, the pro-remain newspaper adopts the view that couples/nations, despite their conflicts, should stand united.

3. "WE'RE getting a **divorce**." It's something we all <u>dread</u> hearing, whether from our children, siblings, best friends or parents. […] It's not just the heartbreak of seeing their **marriages** end, it's also the gut-wrenching knowledge of the <u>pain</u> it will bring. Because while everyone starts out hoping to keep things friendly and civil, <u>we all know it rarely ends that way.</u> (July 28th, 2017)

4. **Brexit's** like a **divorce,** like being told by someone you love that they're leaving you and then having to deal with saving face while trying not to drown <u>in a sea of humiliation</u>. **Divorces** happen. It's how they turn out and its effect they have on the children that matters. <u>Unfortunately, in this case we're the children</u>. So, let's hope it's resolved amicably, for all our sakes. (October 10th, 2018)

In the Pro-Leave newspaper, *The Telegraph,* the breakup between the UK and the EU is described as "an unresolved divorce on a monumental scale" (May 19th, 2018). Initially, *The Telegraph* focuses attention on the Brexit *divorce bill* with *bill* as the main collocate (e.g. "*sufficient progress" had been made over the issues of the Brexit divorce bill*, Dec 16th, 2017). The divorce from the EU entails the contraction of financial debts (framed as *divorce bill*) that the UK is supposed to pay after leaving the union for its historic commitments (Charteris-Black 2019, p. 9). Seen as the price of freedom, the *bill* fits perfectly in the divorce scenario in that, like a divorce between two people, the two parties have to deal with money and access to the children afterwards. The ideological function of the metaphor is clear from a headline in this newspaper: "*It's not divorce, so the EU can forget alimony*" (April 27, 2017). If the two countries are not divorced because they have never been married, so there is no reason to discuss *alimony*.

    In line with the Prime Minister's stance, *The Telegraph* rejects the divorce metaphor because it does not fit the real situation, and historical facts are put forward to sustain the pro-Brexit position. *The Telegraph* ideologically privileges the distinctive aspects of Britain (example 6) rather than emphasizing the effects of the end of the marriage to the Union, to demonstrate that Britain can live by without the EU.

5. …We were never in a **marriage** with the EU and we are not going through a **divorce** […] Let's at least try to stop sounding like an **embittered couple** trying to deal with heartbreak while working out a way of remaining civil to each other because we must. Securing a good deal is hard enough without all this emotional baggage. (August 7th, 2017)

6. What we are, and always have been, is **good neighbours**, and it must be

> possible to remain just that without being part of an **ever-closer political union**. We never joined the euro, we stayed out of Schengen, and we have continued to drive on the left side of the road. (August 27th, 2017)

The Daily Mail, which has been very influential when advocating Brexit, relies on an argumentative narration where the main point is that, even though Christians do not divorce (cf. excerpt 7), there is no absolute prohibition on putting an end to the marriage when it does not work. As a matter of fact, the best solution, at times, is to split up and have the marriage *annulled* as if it had never existed. In so doing, the *Daily Mail* legitimises and naturalises the change in the UK-EU relationship that should be intended in terms of neighbourhood rather than as a marriage.

7.   Many Christians seem to believe that our relationship to the EU is analogous to **divorce** - and Christians don't **divorce** do they? But there has never been an absolute prohibition on **divorce** among Christians. The Bible allows **divorce** under certain circumstances and even the most traditional churches have accepted that **marriages** can die, or can be annulled. To follow the analogy of **marriage** and **divorce** there comes a time when such harm is taking place within the **marriage** that there is no choice but to end it.

   But of course, the relationship with the EU is not a marriage. It is a treaty which can be replaced by a better treaty. So there should be no squeamishness about unity, peace and harmony. Many countries contribute to brotherly fellowship and international peacemaking without surrendering their democratic controls. (May 15th, 2016)

8.   Yes, we have decided to leave the EU's political structures, but we should still seek a close economic, diplomatic and legal **relationship** with our European neighbours. (June 10th, 2018)

When the metaphor of divorce is used in *The Economist*, the opportunity is taken to evaluate the separation from the union negatively. This is because, firstly, divorce is seldom *amicable* and, secondly, after a *bitter divorce* cordial relations are impossible. By stressing the bad consequences of the divorce above all on the economic level, *The Economist* exploits the metaphor to invite readers to concentrate more on uncertain and *acrimonious* relationships with Europe. The metaphor is used to criticise Brexit and, even though divorces exist, there is always an opportunity to revoke *the letter of divorce*.

9.   **DIVORCE** is seldom amicable, as Britain's exit from the European Union shows. […] Both sides have points. The EU is right that the British papers lack substance and list options more than solutions. It is also fair to complain over Britain's failure to publish any proposal on its

divorce bill. […] Yet the real question may be: are cordial relations ever possible after a <u>bitter</u> **divorce**? (August 31st, 2017).

10. Britain and Ireland are too distracted to give enough attention to Belfast, which looks like the child in an <u>acrimonious</u> **divorce**. (March 31st, 2018)

11. Throughout the Brexit talks, the door remains open for the UK to change its mind and revoke its **divorce** letter. But once Britain walks out, the door slams shut. (June 19th, 2017)

The interpretative analysis of metaphors sets up discursive links between the source and the target domains. The conceptualisation of the state or the nation as a family rests on the following cross-domain correspondences:

Target domain		Source domain
EU	→	Family
EU/UK	→	Partners in a marriage; couple
Brexit	→	Divorce; letter of divorce
Negotiations	→	Divorce bill; terms; deal; proceedings; settlement; terms
Problems	→	Offspring; expenses;
Future outcome	→	Unknown; uncertainties; rupture; better neighbours;

Table 4
Cross-domain correspondences in the state/nation as a family metaphor.

The metaphor of divorce constitutes in the media a mini-narrative or metaphor scenario (Musolff 2006) which reflects all the complex aspects of almost 45 years of troubled relations between the EU and the UK. The scenario starts from the marriage breakdown seen as the natural outcome of sick marriages. Divorces then may develop further, following either a conciliatory way or on the contrary with a feeling of hatred and longing for revenge. When divorce procedures start, what follows is a phase of transition. In this temporary phase, the two countries still *live in the same house* but *sleep in separate beds* or - as Theresa May has said - *dine separately, maintaining a polite façade* (*The Telegraph* October 18th, 2018). The transition period may be quite long but necessary. In the following phase, negotiations take the offspring into consideration and all the expenses for the divorce. Further implications of this metaphor concern uncertainties about the future relationship and agreement between the Union and the UK. However, the relationship can take different forms, from friendship to good neighbourly relations, or a civilised married ex-couple where each person goes their own way.

Even though it is very difficult to say how far the mainstream British newspapers have influenced the public opinion on Brexit, what can be safely stated is the vital role played by the metaphor of divorce in structuring a narrative of the UK leaving the European club. The same divorce metaphor cautiously but also strategically used by politicians in their speeches, as seen in the previous sections, has been exploited in the media in all its facets. Lexically speaking, the divorce metaphor has provided media with a rich vocabulary to frame a strenuous political and economic membership and its potential and unforeseen consequences; textually speaking, the same metaphor performs a textual cohesive function in this narrative of love and betrayal. Where the aim was to emphasize the dangerous effects of Brexit, i.e. the sensitive side of the long relationship and the ethical issues of such a dissolute decision have been stressed (see *The Guardian, The Mirror* and *The Economist*); by contrast, these emotional effects have been blurred when negotiations had to be emphasised. Thus, in the mainstream press, which has long been antithetical to British membership, attention has been shifted to other types of "better" relationships (e.g. neighbourhood; friendship; partnership). Furthermore, the metaphor lends itself to legitimising the still ongoing negotiations for settlement since discussions to reach an agreement may be hard and long, but necessary to put an end to a complex relationship maybe useless and not suitable to such an independent and powerful nation as Britain (see *The Telegraph* and *The Daily Mail*).

The higher frequency of the divorce metaphor in the media (0.18%) with respect to the spoken corpus of politicians' speeches (0.00055%) is due to a number of reasons: firstly, whatever the outcome will be, the flexibility of this metaphor fits the needs of journalists who amplify its resonance by plotting the events as in a drama serial and also those of the politicians who sometimes obfuscate truths. Secondly, the divorce metaphor is dissociation-oriented, unlike for example other metaphors that might have been used for the same purpose of representing two dissimilar entities or teams (i.e. sports metaphors); thirdly, it highlights the inevitable hardship endured during a separation phase and evokes the need to settle everything down, in an appeal to order; finally, it is a flexible metaphor which is still valid in case of an upside down turn.

6. Conclusions

The public discussions about the European Union and Brexit are couched, like all political discourse, in metaphors (Musolff 2017). Brexit has inspired very many metaphors, and politicians and the media, very often related to one another, as we have shown, have come up with their own way to describe the

British vote to leave the European Union. The word *Brexit* itself is a persuasive metaphor, and even though the portmanteau of British Exit has become an entirely natural part of discourse, the concept of exiting the EU is metaphorical, mediating between conscious and unconscious persuasion, between cognition and emotion, giving the public the idea that Britain can stop being an EU member by simply walking through a door.

In this paper our purpose was to investigate the use of metaphors in the European debate, more specifically we have looked at the use of the divorce metaphor in a spoken political corpus of British politicians and in the mainstream media. Our analysis has shown that while the divorce metaphor is more popular in the media for dissemination purposes but also because of its potential for moral and ideological reasoning, politicians are more cautious about using it, both on the Leave side and on the Remain side. This outcome has emerged also in relation to 'family' metaphors, mainly in view of the fact that the European Commission had long used the metaphor of the 'European family', which was welcomed by some and altogether rejected by others. Our corpus has shown that politicians on the Leave side have in fact argued for a new sort of relationship, different from a family, thus suggesting partnership, friendship, alliance, neighbourhood. Being partners, friends, allies or neighbours implies different kinds of obligations, because the frame for 'family' includes emotions and notions of right and wrong behaviour (Charteris-Black 2014), which do not strictly typically pertain to friendships or other kinds of relationships, where more freedom and liberty, i.e. independence, are generally accorded.

It was interesting to notice that, according to some media, the UK was never in a marriage with the EU and, consequently, "we are not going through a divorce", also taking into account that a marriage or a divorce is usually between two equal partners, and this is not the case because the UK is a small entity if compared to the EU.

The metaphor we have investigated in this paper is by no means novel, indeed the conventional and well-established metaphor of the FAMILY and, in particular, of MARRIAGE/DIVORCE is prominent among conceptual metaphors used in EU discourse. The DIVORCE metaphor has turned out to be malleable and mouldable, according to the different perspectives and contexts: going through a separation can be a disaster and a tragedy, a humiliation, yet ending a marriage and taking a different path can be emotionally therapeutic, even more so when the couple has been building towards separation for decades, and one of the two has always been a reluctant partner in an asymmetric marriage relationship. The European Union was meant to be a win-win situation for both the UK and Europe, yet many have come to wonder throughout these 45 years whether the marriage was a 'marriage of convenience' (Berberović, Mujagić 2017) or, as it has often been called, a

'shotgun wedding' (Koller 2002), which now seems to have come to an end. After the referendum outcome, Britons have thrown the wedding ring, have instructed lawyers, have lodged the petition but, as the Brexit mantra goes, "nothing is agreed until everything is agreed". Indeed, even though Boris Johnson has managed to carry Britain out of the EU, Brexit is far from over, and nothing has been agreed yet, or better not everything has been agreed and, after three years of excruciating uncertainty, the UK remains split vis-à-vis its relationship with the European Union. The kingdom is in pieces, even though the sound parliamentary majority won by Boris Johnson may have given the impression of a countrywide consensus for the divorce. The future could foresee, instead, a divorce of Scotland from the rest of the UK, as well as a divorce of Northern Ireland, to unite the island under Dublin.

The divorce metaphor can certainly be regarded as one of the master metaphors among the many metaphors built around the Brexit debate. Interestingly but not surprisingly, we noticed that even though Boris Johnson as a journalist is an inveterate metaphor addict, he tried to shy away from the divorce metaphor both as a Foreign Secretary and as a Prime Minister. Yet, relying on metaphors whose origins he carefully attributes to someone else, on several occasions indeed did he make clear that, for him, departure from the EU was not the end of a marriage but simply the realignment of a friendship group, thus framing the UK's relationship with the EU as a transactional one (Charteris-Black 2019). For him, marriages are constraining forces on the individual freedom that he values so highly, as is clear in one of his speeches where he compares Britain to a beautiful girl, called Britannia, who was persuaded to go into an arranged marriage with a foreign gentleman who didn't speak much English and who, over time, became more controlling and needy, and who kept making up new rules and inviting new guests (Berberović, Mujagić 2017).

To conclude, our study has shown that the divorce metaphor originated in the media framing the British-EU relations (Charteris-Black 2019) and, since the marriage was framed as 'a marriage of convenience' from at least 1990 onwards, divorce was always a possibility. However, events such as divorce can be reframed in terms of 'moving on', and what Brexiteers are now considering is to frame the Commonwealth as an alternative 'family' to which Britain could return when the EU and Britain will be no more than neighbours.

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DON'T LET THE FACTS SPOIL THE STORY
Foregrounding in news genres versus scientific rigour

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Abstract – News producers habitually make use of the technique of "foregrounding", that is, deploying structures and resources that make specific elements in the text more or less prominent. This is closely linked to the media's overriding need to communicate one clear narrative, which is bolstered by a variety of foregrounding strategies that operate both textually and multimodally. This chapter tracks the discursive processes through which a health-related research paper emphasising the benefits of a non-meat diet was transformed, through the cumulation of different foregrounding processes, into a media story about the disadvantages of a vegetarian diet. Some practices that contribute to the generation of bias are discussed, with a particular emphasis on combined multimodal effects.

Keywords: Health reporting; framing; foregrounding; headlines; multimodality.

1. Introduction

Media reporting of scientific research has been under scrutiny for some years now, after several high-profile cases in which the diffusion of misleading information was found to pose a risk to public health. It is generally thought, for example, that the UK media gave excessive coverage to anti-MMR vaccine campaigners, leading to a sharp drop in vaccination rates and a rise in serious childhood diseases (Macintyre, Leask 2008). Commenting on the role of the media in this affair, Speers and Lewis (2005, p. 171) concluded that "the media's critical scrutiny of those supporting MMR was not matched by a rigorous examination of the case against it". However, the roots of the problem actually seem to lie even deeper: the basic issue seems to be linked not so much to a failure to exert critical judgement, as to the media's intrinsic tendency to exploit and even exacerbate controversy. In Goodman's words (2007, p. 222), "some things are just too attractive to the media", and the kind of claims being made by the anti-vaccine campaigners matched neatly with the media's essential need to find a strong "story".

But how exactly can we account for the fact that even though the scientific community was almost unanimous in supporting vaccination, the public seemed to be under the impression that "medical scientists were split

down the middle over the vaccine's safety" (Dobson 2003, p. 1107)? This particular effect can be attributed not only to the need to sensationalise in general, but specifically to the media's predilection for using the "controversy" genre. In situations where a controversy is present, the habitual media practice is to give equal weight to both sides of the story - supposedly in the name of objectivity, but also to attract public interest. As Lewis and Boyce (2003, p. 914) put it, "this 'balancing act' is a time-honoured convention of journalistic good practice. The impression created by this balancing is that of two conflicting bodies of evidence. What the coverage generally failed to convey was the fact that evidence as a whole was not finely balanced, as most of it clearly indicates that MMR is safe." In other words, this particular media genre and practice - itself perhaps neutral or even positive - introduced a particular bias into the media messages on this subject, putting empirically established facts on the same level as unfounded claims. These distorted messages then had harmful effects as they filtered out into the wider society.

In this paper, I investigate another set of genre conventions/media practices commonly used in reporting research results from the field of biomedicine and nutrition, which also have the potential to introduce a systemic bias into media science reporting. These relate to news producers' habitual technique of "foregrounding" (Gee 1999, p. 79), that is, the use of structures and resources that make specific elements in the text "more or less prominent" (Khalil 2005, p. 3). In this context, this is also bound up with the news media's overriding need to communicate one clear "story", that is, one argumentative line, which is bolstered by a variety of foregrounding strategies that operate both textually and multimodally. To analyse this, I take the example of a research paper published in September 2019, about an 18-year study in which a vegetarian diet was found to be associated with a lower risk of heart disease but a slightly higher incidence of stroke. Although the original press release strongly emphasised the benefits of a non-meat diet, since the population incidence of stroke is overall much higher than that of heart disease, the news reports on the same research in six national news sources (BBC, Independent, Times, Sun, Mail, Telegraph) all transmitted the opposite message, stressing the dangers of a vegetarian diet, with only two newspapers (Guardian and Mirror) maintaining a more balanced position. In their contents, all the articles were framed as reports on vegetarianism and the risk of stroke, although the balance of associated risks or benefits varied somewhat.

In an attempt to account for this phenomenon, I examine the contribution of the different textual and multimodal foregrounding strategies found in online news articles, and suggest ways in which such foregrounding may influence reader perceptions.

2. Multimodal mechanisms of foregrounding

Science news is a subset of news reporting in general, and news from the field of biomedicine and nutrition is generally shaped by the genre conventions/media practices found in all news reporting. However, it also has certain specific features. On the one hand, all news reporting avoids complexity, as journalists tend to foreground one clear "story", that is, one argumentative line, which is bolstered by a variety of foregrounding strategies that operate both textually and multimodally. On the other hand, certain conventions of media reporting on biomedicine and nutrition also play a specific role: to present complex information in a reader-friendly way, journalists often overstate the case, and this effect is more pronounced in the more downmarket publications (Breeze 2015).

The present study examines the contribution of the different textual and multimodal foregrounding strategies to this effect, paying special attention to the use of the "slots" provided by the news genres which "automatically bestow prominence on any information occupying those slots" (Huckin 1997, p. 82). These include textual features of the genres: headlines and subheadings, the reverse pyramid structure of news, sentence-level foregrounding, particularly topicalisation, and the presence of inserts. They also encompass para-textual/multimodal aspects such as typographic highlighting, images, and hypertext links. The different foregrounding strategies together create a "slant" which is likely to influence reader perceptions. In what follows, I will explain the different features of the online news genre and, more specifically, the biomedicine/nutrition news genre, and suggest how these may contribute to the foregrounding of specific aspects.

From their beginnings, newspaper texts have been multimodal, and conventional features of the genre, such as headlines, subheadings, different fonts, images, captions, layout, etc., have long played important an important role in the way they communicate their messages. In online media, to these traditional features we have to add a further range of meaning-making resources that may appear in association with a news story: these include hyperlinks to related stories, or to background information, inserts, discussion boards, comments boxes, advertisements, and particularly colour photographs and images with a very prominent visual impact. In this scenario, it is clear that the text itself engages a smaller portion of the reader's attention, while headlines and images tend to have prominence. Moreover, online media are particularly likely to generate cumulative effects resulting from the juxtaposition of different modes or the overshadowing of one by another. Like other multimodal texts, these orchestrate specific effects by operating on various semiotic levels at the same time, often in a coordinated way, but

sometimes in ways that are contradictory or confusing. This is important for our present purpose, and requires further explanation.

Theories of multimodality generally posit that the different semiotic systems used in a multimodal text are carefully modulated to create specific effects. The most common assumption made about multimodal texts is a common-sense correlate of relevance theory (Sperber, Wilson 1995) which can be expressed in the view that "everything is there for a reason", or alternatively, that "multimodal conjunctive relations" (Bateman 2014, p. 208) are established in the multimodal text, in such a way that the different modes are intended to combine to generate a particular effect. This can be seen most clearly in the assumptions made about the relationship between verbal and visual aspects of the text, which are generally held to be linked in a systematic manner: 1) the text and image may present relations of similarity, contrast or complementarity; and 2) the text and image may be related in terms of illustration (the image makes the text more specific) or anchorage (the text makes the image more specific) (van Leeuwen 2005, p. 230). However, when we make assumptions about this relationship, we should take into account the different properties of text and image: as Stöckl (2004, 2010) has shown, we should not fall into the trap of placing them on the same level, as though an image were a visualised text, or an article a textualised image. In Stöckl's words (2010, pp. 48-49), images are dense in meaning and have immediate cognitive and relational effects, but are semantically rather imprecise and open-ended. For example, a photograph may spark a strong negative reaction or trigger a good feeling, but it is unlikely to prompt extensive analysis. By contrast, texts are slow to digest and may require abstract thinking, but their logical linearity and clear space-time orientation give them high definition and make them capable of conveying much more explicit information in a univocal manner.

In the context of online news, it is also important to give some consideration to the obvious but often ignored point that not all text is the same. First, there is the obvious distinction between text and headlines. As Breeze (2014, p. 307) has explained in some detail, headlines can be seen as standing somewhere between text and image in terms of reader impact and semiotic role. Like images, they are eye-catching and make an instantaneous impact, and may prioritise emotional impact over ideational content. Like text, they are made up of words, which means that they are at least in one sense more explicit; but unlike text, they are often curiously allusive, ambiguous or polysemous, suggesting a broad area of relevance rather than communicating a specific proposition. Photographs, on the other hand, come with a high truth-value. Folk wisdom tells us that "the camera cannot lie", and when we combine their high truth value with their visual impact, we are clearly looking at an aspect of the multimodal mix that has the potential to

dominate and overshadow all the others. As Messaris and Abraham (2001, p. 217) point out, photographs come "with an implicit guarantee of being closer to the truth than other forms of communication". As Breeze (2014, p. 316) notes, photographs also "tend to diminish the likelihood that viewers will question a particular vision of the events, since it is more difficult to question what one can see than to doubt a proposition". The role of images in the ideological framing process is generally that of narrowing down the scope for possible interpretations and nudging the reader towards a particular view of the text and events that is consistent with the photograph.

Although headlines and images are undoubtedly the most salient aspects of the online news article, the question also arises concerning the role of other textual elements that are given a special treatment, such as subheadings, or pull quotes (key phrases lifted from the text and used as a graphic element in page design to break up the page, with a different font or colour, sometimes in the margin, in an insert box, or cutting across columns). These can take on the quality of "detached utterances" that may serve a foregrounding – or indeed an ironising – function (Maingueneau 2016). They may or may not be verbatim quotations from the text (paraphrases or abbreviated versions are often found), and they are typically placed fairly close to the actual text cited.

Finally, we should also bear in mind that the evaluative impact of the whole ensemble (headline, text, inserts, image, etc.) will vary according to the way the different elements are grouped together and to the relative salience of each one in the specific case at hand (Kress, van Leeuwen 1998, p. 200). Although in principle this might be open to considerable variation, in fact, as Huckin (1997, p. 82) points out, "Textual prominence sometimes derives from the use of genres, as certain genres will sometimes have 'slots' that automatically bestow prominence on any information occupying those slots. For example, the top-down orientation of news reports decrees that sentences occurring early in the report will be foregrounded while those occurring later will be backgrounded." Thus the genre itself actually accords particular importance to some aspects over others: headlines are more important than text, first lines of text more important than last lines of text, and so on. Within this, however, certain aspects, such as the image, have a more indeterminate status. As we noted above, photographs exercise visual dominance over the page as a whole, probably making a major contribution to the reader's initial perception of "what the story is all about". However, their contribution beyond this is more disputable. In the days of print journalism when photographs were relatively rare, their salience in the text was greater, but in online formats, photographs have lost their novelty value. The web design may now contain a slot for an image simply in order to add visual interest to the page. Although in the online newspaper genre, the expectation of relevance tells us that there should be some relationship

between the image and the text, the nature of this relationship is not clear. It is understood that this relation is not one of literal referentiality, or even of illustration or explanation, as might be the case in the school textbooks analysed by Martin and Rose (2008). For example, the vegetables in the photograph accompanying an article on diet are not the actual vegetables being referred to in the text, nor do they provide any particular elucidation (they do not elaborate on the text, in that they are not selected in a specific way, as the most healthy vegetables, for example), and they are not necessary for educational purposes (in the way that textbooks for children, for example, might include pictures of vegetables in order to prompt recall, help children expand their vocabulary, or help clarify categories, for example). The main purpose of the photograph from the production perspective, one suspects, is to lighten the page and give colour. However, even though this may be unintentional, by its very nature it also has the collateral effect of anchoring the story as a story about vegetables (rather than as a story about meat). For this reason, the photograph chosen to accompany a news article may well influence the interpretation that readers make of the text, tipping the balance between one way of framing the story and another (Breeze 2013).

In all this, the relations between the different elements are subject to variation, and the relative impact of headline, image, inserts, text, etc. may differ. In some cases, the headline may dominate most readers' understanding of the image, say, while in others, the image may help to disambiguate readers' overview of the text. Thus although Barthes (1977, p. 39) concluded that text generally "anchors" the implicit meaning of images to help readers draw the appropriate inferences from the "floating chain" of possible concepts that might emanate from the image, this principle would seem to apply more strictly to carefully devised media products, such as advertisements or textbooks. This principle is less applicable to artefacts such as online newspaper pages, which are produced under intense time pressure by a team of professionals from different areas.

Finally, it is important to devote a few words to the sub-genre of news about biomedicine and nutrition. Previous research has shown specific features that are common in such reports, such as special use of "expert" statements, erosion of hedging, and an increase in emotion-markers and boosting devices (Breeze, 2015). These aspects also need to be borne in mind in this analysis, as they may well also contribute to the foregrounding effects in these texts.

3. Texts and method

The original research that provided the starting point for this study was an institutional press release: "Vegetarian and pescetarian diets linked to lower

risk of coronary heart disease, but vegetarians may have higher risk of stroke than meat eaters", published by the Nuffield Department of Population Health, University of Oxford, on 5 September 2019. This was selected on the grounds that it addressed the issue of health and nutrition, was recent, and received reasonable media coverage.

In order to obtain an overview of the media coverage, I then searched in Nexis Uni for specific days from 4-30 September 2019, using the name of the researcher/research group/journal and the term "diet". This search yielded 48 entries, 8 of which were not in English. The articles identified were classified according to date and the main frame(s) applied in the headlines. After this, the original press release and the eight articles published in major UK national news media were selected for in-depth quantitative and qualitative study, centring on: lexical content, framing of headlines, images and captions, subheadings and first line of text, representation of experts, and hedging/boosting devices.

4. Results

In order to compare the results from the broad sample of 40 articles and the focused sample of 8 articles, it is important to understand the framing of the initial press release. In what follows, I present a brief overview of the distinctive features of the press release in question, followed by my analysis of the large and focused samples.

4.1. Press release: multimodal analysis

Press releases are an interesting genre in their own right. One expert defined their communicative purpose as "preformulating the news" (Jacobs 1999), that is, packaging information in such a way that it can easily be taken up by the news media. The underlying purpose of this, however, is not so much informative as promotional, and the hybrid nature of the press release genre has formed the subject of various classic studies (Catenaccio 2008). Within the different types of press release, institutional releases about scientific topics have rarely received critical attention (Breeze 2015). Science press releases are generally intended to attract attention through the intrinsic interest/importance/potential of the research reported, and thereby to boost the reputation and visibility of the institution that produced the study. Like other press releases, they thus combine factual information with some promotional strategies that will highlight the importance of the research, its public relevance, and the qualities of the research team. In what follows, I will briefly describe the main features of the press release in this case.

The original press release published by the Nuffield Department of Population Health, University of Oxford, on 5 September 2019 had the headline:

> Vegetarian and pescetarian diets linked to lower risk of coronary heart disease.

This headline places "vegetarian and pescetarian diets" in theme position, thus establishing that this is a story about vegetarianism. The first proposition in the headline, namely that such diets are "linked to lower risk of coronary heart disease", actually conveys positive information about vegetarianism. The subheading on a separate line sends a less positive message:

> But vegetarians may have higher risk of stroke than meat eaters.

This negative message ("may have higher risk of stroke") is hedged ("may") and comes in second place. This framing is maintained in the first paragraph of the text (advantage for vegetarians is foregrounded, while disadvantage for vegetarians is placed in secondary position):

> Vegetarian (including vegan) and pescetarian diets may be linked to a lower risk of coronary heart disease, or CHD for short, than diets that include meat, suggest the findings of a large UK study published in The BMJ today. But vegetarians and vegans had a higher risk of stroke than meat eaters, particularly haemorrhagic stroke (when blood from an artery starts bleeding into the brain), which the researchers suggest may reflect low blood levels of total cholesterol or a low intake of certain vitamins.

The press release is presented soberly. The only visual information is a straightforward bar chart that shows a clear advantage for vegetarians: although vegetarians are more likely to suffer a stroke than meat eaters, meat eaters are more likely to have coronary heart disease than vegetarians. Because heart disease is much more common than stroke, the advantage for vegetarians is clearly illustrated: vegetarians had 10 fewer cases of heart disease per 1000/population than meat eaters, and only 3 more cases of stroke.

Importantly, the press release also makes use of hedging in its conclusions, and contains a disclaimer: "this is an observational study, and as such, can't establish cause". Thus the three prominent modes in the press release (headline, text and image) all point in the same direction: the principal frame available to the reader from the press release is that a vegetarian diet is beneficial for health.

4.2. Headlines across the whole sample

The 40 relevant articles identified from Nexis Uni were analysed in terms of

the presence of the following frames in the headline: "a vegetarian diet is good for health", "a vegetarian diet is bad for health", or "a vegetarian diet has positive and negative aspects". The following examples illustrate each of these frames:

Examples of headlines that frame the story as "a vegetarian diet is good for health":

> Vegetarian and pescetarian diets linked to lower risk of coronary heart disease (Newstex Blog, 4 September 2019)
> Vegetarian diets lower risk of heart disease (MSN South Africa, 6 September 2019)

Examples of headlines that frame the story as "a vegetarian diet is bad for health":

> Vegetarian diet dangers: Are vegetarians more at risk of having a stroke? (Newstex Blog, 8 September 2019)
> Stroke: This popular diet may raise your risk of the deadly condition by 20 percent (Express Online, 5 September 2019).

Examples of headlines framing the story as "a vegetarian diet has positive and negative aspects":

> Why a vegan or vegetarian diet may lower heart disease but raise stroke risk (News Bites, 11 September 2019)
> Vegetarians have greater risk of stroke, meat eaters have greater risk of heart disease (Newstex Blogs, 5 September 2019)

Each article was classified according to date and frame, and the results are displayed in Graph 1, which clearly shows how the frame "a vegetarian diet is good for health" was in the minority from the outset, and disappeared after the first two days, while the frame "a vegetarian diet is bad for health" dominated overall, and persisted over time.
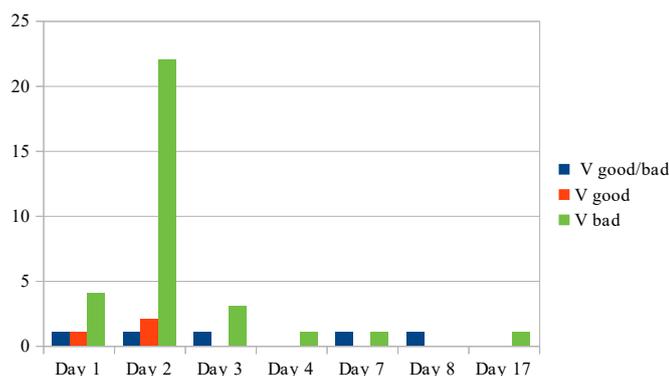
Graph 1
Framing in headlines over the first three weeks.

4.3. Detailed analysis of eight UK news sources

4.3.1. Total lexical content

The number of times a particular phenomenon is mentioned in a text is a good index of what that text is about, and ultimately in this case, of the framing that shapes the story. For example, an article such as that found in the Daily Telegraph, which mentions meat eating nine times, but refers to a non-meat diet once, a vegetarian diet 14 times and a vegan diet six times, is likely to be focusing on the pros and cons of adopting a vegetarian diet. Graph 2 quantifies the most prominent lexical items associated with the different frames, and the number of times they occurred in the press release and the eight articles.
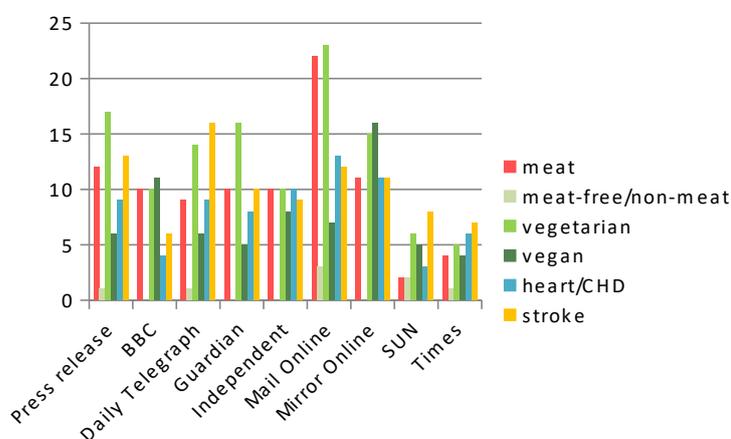
Graph 2.
Frame-associated lexical items: raw frequency in each text.

Graph 2 shows clearly that the lemmas "vegetarian" and "vegan" and the related compounds "meat-free" and "non-meat" (together, all the green bars)

dominated the discussion of this issue in all the articles. Added together, they outnumbered the mentions of "meat" (red bar) in all cases. Similarly, "stroke" was mentioned more frequently than all the combinations referring to heart disease ("CHD", "heart disease", "heart problems", etc.) in five of the news sources, with a roughly equal number of mentions in three (Mail Online, Mirror Online and Independent).

At the same time, we can note that the pattern emerging in the media articles (more weight being placed on vegetarianism and stroke than on meat-eating and heart disease) echoes rather faithfully the number of mentions given to these aspects in the original press release (also shown in Graph 2). That is to say, although the original press release frames the story in such a way as to point out the advantages of the vegetarian diet, in quantitative terms it uses the items "stroke" and "vegetarian"/"vegan" more than "heart" and "meat", a pattern which is reflected in the media articles. The main reason for the prevalence of these items seems to be that the negative results concerning the vegetarian diet are more surprising, and require more explanation, than the positive results. However, the fact that this aspect receives more discussion may well have the effect of drawing readers' attention more to this facet of the research.

4.3.2. Multimodal analysis

The eight articles selected for in-depth analysis were all published on 4 and 5 September 2019. They all contained images, and some had substantial paratextual material.

BBC	Vegans and vegetarians may have higher stroke risk
Daily Telegraph	Vegetarians and vegans have a higher risk of stroke than those who eat meat, study finds
Guardian	Being vegetarian 'lowers heart disease risk but increases chance of stroke'
Independent	Vegan and vegetarian diets linked to increased risk of stroke, study finds
Mail Online	Vegetarians have a 20% higher risk of suffering a stroke than meat eaters 'because they miss out on key vitamins'
Mirror Online	Vegans 'have less chance of heart disease but are at greater risk of stroke'
Sun	OH NUTS Vegetarians and vegans are 20 per cent more likely to suffer a stroke, study finds
Times	Vegetarian diet 'raises stroke risk by fifth'

Table 1
Headlines of articles in the eight sources.

As Table 1 shows, all the headlines place vegetarians/vegans/vegetarianism in theme position, and six of them focus exclusively on the raised risk of

stroke. The two exceptions (Guardian and Mirror Online) foreground the positive aspect (lower risk of heart disease), and place the risk of stroke in second position. The Sun's headline is preceded by a playful comment in full capitals ("OH NUTS", a colloquial phrase meaning something like "Oh dear"), which draws attention to the information about the vegetarian diet: in the UK it is popularly supposed that vegetarians mainly live on nuts, and the prominent image of hands offering nuts that appears after the first line of text serves to reinforce this message as well as providing a visual referent to complement the pun.

Table 2 shows the images and captions found with each of the eight articles.

BBC	Fruit, vegetables, pulses and nuts. (No caption) Video on vegan junk food.
Daily Telegraph	Girl eating pasta with vegetables. Caption: The study, which tracked almost 50,000 Britons for 18 years, found vegetarians and vegans had a 20 per cent higher risk of stroke than those who eat meat.
Guardian	Woman choosing vegetables in supermarket. Caption: Despite the differences in the study, dietitians say everyone could benefit from eating more plants.
Independent	Video of women with vegetables in kitchen, man choosing salad in supermarket. Picture gallery of celebrity vegans. Caption: Celebrity vegans from Beyoncé to Natalie Portman. Vegan burger. Caption: Vegan takeaway orders in UK increase by 388% in two years.
Mail Online	Fruit and vegetables on plates, with four people's hands taking them. Caption: Vegan and vegetarian diets are linked to a lower risk of heart disease but may increase the risk of stroke, experts say.
Mirror Online	Woman eating salad. Caption: The study, published in the BMJ, included data for 48,188 people. Textbook image showing stroke in brain. Caption: The study found 20% higher rates of stroke in vegetarians and vegans than in meat eaters. Woman holding and eating vegetables. Caption: Researchers suggested low blood levels of total cholesterol among vegetarians and vegans may play a role.
Sun	Hands holding nuts, forming a heart shape. Caption: Vegetarians are 20 per cent more likely to suffer a stroke, a study found
Times	Woman handling vegetables on market stall. Caption: Vegetarians and vegans were more likely to suffer from a haemorrhagic stroke, according to research.

Table 2
Images and captions accompanying the articles.

As far as images are concerned, none of the articles reproduces the graph in the press release, and all the articles make original contributions which tend

to exert further framing effects. One of the articles includes a short video (Independent) which summarises the main points of the article. Another includes a link to a video on a topic that is only tangentially related to the topic of the article (BBC, which provides a video on "vegan junk food"). All of the images here are colourful, with high modality indicating a considerable degree of truthfulness and realism (Kress, van Leeuwen 2006, p. 158), and high indexicality (Bateman 2014, p. 138). Following Kress and van Leeuwen's principle that "any image must either be a 'demand' or an 'offer'" (2006, p. 153), we find that the images here almost all clearly belong to the category of "offer": in some cases, the "offer" is quite literal, in that we see disembodied hands holding out the vegetables/fruit/dish to us as though they were inviting us to taste them. In other cases, the photograph is taken from the point of view of the person buying, preparing or eating food (we may see his/her back or arms).

There is only one "medium-close" shot at "social distance", with clear "demand" contact, namely the third image in the Mirror Online: an attractive, sporty-looking woman is eyeing the viewer with a smile, while apparently starting to bite into a tomato, and she is holding a dish containing colourful lettuces, peppers, carrots and tomatoes towards the viewer. This positive image of vegetables and their eaters seems make a greater demand on the reader than the "offer" photographs that predominate in this sample, inviting the reader to partake of a vegetarian diet. However, it is curious that the Mirror Online also offers the only educational image, namely a computer-generated image of the upper part of a skeleton containing the brain, in which a large black spot inside a red area represents a stroke. This didactic image is also an exception in another way, namely in the way that the relationship between the text and image can be construed. As Martinec and Salway (2005, p. 352) explain: "When the level of generality of the image and the text is different, either the image or the text can be more general", and in almost all the cases analysed here, as indeed in most newspaper text-image ensembles, the image is more general than the text Martinec and Salway, 2005, p. 360). The Mirror Online illustration of stroke is an exception to this, because the relationship is of extension (the image adds new information that the text does not supply, as is often the case in textbooks).

At this point, we should perhaps consider whether the images here are not simply decorative or, in some rather trivial sense, complementary (Martinec, Salway 2005, p. 361): the "entertainment aspect of some of the image–text combinations is simply due to what seems to be an enlivening part played by images in a syntagm that in other products would be fully realized by language". In general, in news genres, photographs are essentially subordinate (Martinec, Salway 2005, p. 368), adding colour and affect, rather than contributing to propositional meanings. However, this is precisely where their framing effect gathers strength. In these articles, by drawing our

attention to the topic of vegetarian diets, they are likely to focus the reader's mind on the idea that this is an article about eating vegetables. This is somewhat paradoxical. On the one hand, in terms of informational content, the image clearly has subordinate status to the text: in almost all cases it essentially contains no information that is not in the text, there is hardly any reference to the image in the text itself, and it could even be imagined to be purely decorative (Martinec, Salway 2005, p. 351). On the other, however, in terms purely of attention, it enjoys high status: along with the headline, it exerts an initial framing effect – together, these two aspects probably prime readers to expect an article about vegetarianism and its pros and cons.

Returning to the question of informational content, we might suppose that the caption could also play a part in framing reader interpretation. Previous researchers (Martinec, Salway 2005, p. 351) have followed Halliday's suggestion that tense is deictic (1994) to suggest that use of present tense in the caption points to the image, thus subordinating the text to the image, while past tense points away from the image and suggests that the image merely illustrates the text. In this case, as Table 2 illustrates, of the eleven captions found, seven were in the past, one had no verb, and three were in the present tense. Of these three, two were phrased as "experts say"/"dieticians say", which seem to point loosely to the photograph while also boosting the message through expert attribution.

Six of the eight articles contained subheadings that contributed towards the overall reader experience.

BBC	People who eat vegan and vegetarian diets have a lower risk of heart disease and a higher risk of stroke, a major study suggests
Daily Telegraph	None
Guardian	Findings of major UK study have mixed results for those giving up eating meat
Independent	Researchers say lower levels of vitamins could be the cause
Mail Online	• Researchers at Oxford University tracked nearly 50,000 people for 18 years • They believe low intake of the vitamins in meat may cause the additional risk • This is equivalent to three more cases of stroke per 1,000 people over 10 years
Mirror Online	Researchers from the University of Oxford have revealed that while vegan and vegetarian diets reduce your risk of heart disease, they may increase your risk of stroke
Sun	VEGGIES and vegans are 20 per cent more likely to suffer a stroke, a study found.
Times	None

Table 3
Subheadings in bold.

Although in principle the subheadings could be used to qualify the information from the headline and present the advantages of a vegetarian diet, in fact, this is not the case. As Table 3 shows, the newspapers that presented both positive and negative aspects in the headline (Guardian and Mirror Online) referred to both aspects in the subheading, but only one of the other news sources (BBC) alluded to advantages as well as disadvantages. Three other newspapers (Independent, Mail Online and Sun) used the subheading to elaborate on the negative aspects, while two had no subheading.

It scarcely needs to be explained that the first line of news articles presents the main information (usually who, what, where, when) and serves to anchor these points in the reader's mind as "what the story is about" (Bell 1991). The hierarchy imposed by the reverse pyramid style of reporting violates the normal rules of narrative (Bell 1995) and has a powerful framing effect.

BBC	They had 10 fewer cases of heart disease and three more strokes per 1,000 people compared with the meat-eaters.
Daily Telegraph	Vegetarians have a higher risk of stroke than those who enjoy a good steak, a major study has found. The Oxford University research, published in the BMJ, suggests that a meat-free diet may cause lower blood levels of total cholesterol, and reduce intake of vitamins which protect against such attacks.
Guardian	Vegetarians have a lower risk of coronary heart disease than meat-eaters but a greater risk of having a stroke, researchers have found.
Independent	Vegans and vegetarians have a lower risk of coronary heart disease than meat-eaters but a greater risk of having a stroke, researchers have found.
Mail Online	Vegetarians have a higher risk of stroke than meat eaters, researchers have found.
Mirror Onlines	They're usually seen as healthier alternatives to meat-based diets, but a new study may put you off taking up a vegan or vegetarian diet.
Sun	Experts said a plant-based diet may be deficient in protective fats and vitamins.
Times	Sticking to a vegetarian or vegan diet could increase your risk of having a stroke by a fifth, although it could also be good for your heart, a study suggests.

Table 4
First line of text (Hypertext represented by underlining).

In the articles examined here, Table 4 shows that the first lines of text also contribute to framing this as a story about vegetarians. In seven of the eight articles, vegetarians or vegetarianism are placed in theme position, while only one (SUN) opts to frame this as a story about expert statements, rather than as a story about people who do not eat meat. This framing is reinforced in four cases (Independent, Mirror Online, Times, Daily Telegraph) by the fact that

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hypertext is present that draws readers' attention to what such a diet is, offering readers the opportunity to link through to an explanation of terms like "vegan", "vegetarian" and "meat-free diet", as well as to the two main health conditions mentioned ("stroke" and "coronary heart disease").

The use of "expert voices" is a regular feature of science and health reports, where it serves to reinforce the credibility of what is being stated (van Dijk 2015, p. 80). It has been noted in the context of vaccine controversies that the British media often use the descriptor "expert" rather loosely, and sometimes present "experts" on both sides of an important controversy as having equal weighting (Ren *et al.* 2014, p. 371). In particular, Speers and Lewis (2005) showed that the media seemed to exert a negative effect, subjecting mainstream opinion to particular scrutiny while according "expert" status to scientists whose ideas were not widely accepted.

	BMJ	Study/University	Lead researcher	Other expert
BBC	X	x	no	2
Daily Telegraph	X	x	x	2
Guardian	X	x	x	2
Independent	X	x	no	1
Mail Online	X	x	x	3
Mirror Online	X	x	no	1
Sun	No	x	x	1
Times	X	x	x	0

Table 5
Mention of information sources.

In the present case, Table 5 shows that the site of the study (Oxford University/Nuffield Department of Population Health) and either the journal (British Medical Journal) or the lead researcher (Dr. Tammy Tong) was mentioned in all the news sources. There was somewhat more variation in the alternative sources used to contrast the information from the study: the Mail Online actually quoted three other "expert" sources, two professors of public health and a dietician specialising in heart patients, while most sources only quoted one or two, with the focus mainly on dietary advice and the need for balanced food intake.

For hedging, I looked at modal verbs (may, might, could) and reporting verbs (suggest, seems to/appears to) used to modulate the main health claims in the text.
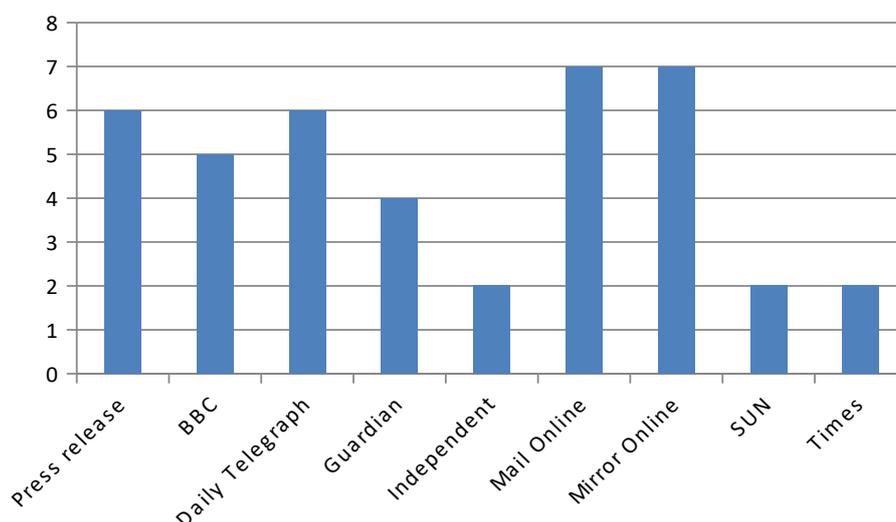
Graph 3
Number of times main claims are hedged in each text.

As Graph 3 illustrates, the main claims were hedged in the original press release and in most of the news sources. The finding that the Sun did not hedge was consistent with previous research on science reporting in downmarket newspapers (Breeze 2015); however, even though the Mail and Mirror can also be situated on the lower end of the newspaper spectrum, their reports were more carefully hedged in this case. The paucity of hedges in the Times can be explained by the shortness of the article, but the same does not hold for the Independent, which has a similar number of words to those from the other news sources, but adopts a categorical style throughout.

Just as important as the number of hedges in the text, however, is the relative foregrounding of hedged and non-hedged statements. The most extreme example of this is found in the Sun, where the headline declares boldly:

> OH NUTS Vegetarians and vegans are 20 per cent more likely to suffer a stroke, study finds.

Yet the article ends with a strangely hedged expert statement:

> And Cambridge University's Dr Stephen Burgess said: "This suggests taking up a vegetarian diet may not be universally beneficial for all health outcomes." (SUN)

Apart from the obvious example from the Sun, above, in which the capitalised phrase "OH NUTS" that precedes the headline already primes the reader to receive shocking news, boosting was extremely rare in these texts.

On the other hand, the journalists did make liberal use of different resources to convey numbers, and thereby, to indicate the relative risk of not

eating meat. All the articles included the size of the sample and the number of years over which they were followed. The largest variation was found in the description of the risk involved.

Press release	After taking account of potentially influential factors, such as medical history, smoking, use of dietary supplements and physical activity, pescetarians and vegetarians had a 13% and 22% <u>lower risk</u> of CHD than meat eaters, respectively. This is equal to 10 fewer cases of CHD in vegetarians than in meat eaters per 1000 people consuming these diets over 10 years. The difference may be at least partly due to lower BMI and lower rates of high blood pressure, high blood cholesterol and diabetes linked to these diets, say the authors. In contrast, vegetarians and vegans had a 20% <u>higher risk</u> of stroke than meat eaters, equivalent to three more cases of stroke per 1000 people over 10 years, mainly due to a higher rate of hemorrhagic stroke.
BBC	People who eat vegan and vegetarian diets have a <u>lower risk</u> of heart disease and a higher risk of stroke, a major study suggests. They had 10 <u>fewer</u> cases of heart disease and three <u>more</u> strokes per 1,000 people compared with the meat-eaters.
Daily Telegraph	The study, which tracked almost 50,000 Britons for 18 years, found vegetarians and vegans had a 20 per cent <u>higher risk</u> of stroke than those who eat meat.
Guardian	The results reveal that once factors including age, sex, smoking status and socioeconomic status were taken into account, fish eaters had a 13% <u>lower risk</u> of coronary heart disease than meat-eaters, while vegetarians had a 22% lower risk. Meanwhile, vegetarians had a 20% <u>higher risk</u> of having a stroke than meat-eaters.
Independent	After adjusting for factors that might influence the results, including age, sex, smoking status and socioeconomic status, researchers found that fish eaters had a 13 per cent <u>reduced risk</u> of heart disease than meat eaters, while vegetarians and vegans had a 22 per cent <u>lower risk</u>. Meanwhile, vegetarians had a 20 per cent <u>higher risk</u> of having a stroke than meat-eaters.
Mail Online	The academics found vegetarians and vegans had a 20 per cent <u>higher risk</u> of stroke than meat eaters.
Mirror Online	After adjusting for factors that might influence the results, researchers found that fish eaters had a 13% <u>reduced risk</u> of heart disease than meat eaters, while vegetarians and vegans had a 22% <u>lower risk</u>. The study found 20% <u>higher rates</u> of stroke in vegetarians and vegans than in meat eaters, equivalent to three more cases of stroke per 1,000 people over 10 years
Sun	VEGGIES and vegans are 20 per cent <u>more likely</u> to suffer a stroke
Times	Sticking to a vegetarian or vegan diet could <u>increase your risk</u> of having a stroke by a fifth, although it could also be <u>good</u> for your heart, a study suggests.

Table 6
Presentation of actual risk data.

As Table 6 shows, in the representation of actual risk, which appeared in different places in the text in each case, the risks associated with the vegetarian diet were foregrounded in four cases (Daily Telegraph, Mail Online, Sun, Times). In particular, the Sun places this information at the beginning of the text, and capitalises "VEGGIES", which draws attention both typographically and through the use of an informal word for vegetarians: the use of slang and informal language in general belongs to the tabloid newspaper's discursive strategy to build collusion with its readership, positioning itself alongside them by using what it presents as "their language" (Conboy 2002).

In the other four media sources, the benefits of the vegetarian diet were placed before the risks, and thus foregrounded in this section of the text. We may note, however, that in some cases, this blatantly contradicts the foregrounding in the text as a whole: thus, for example, the BBC's framing in this part of the text tells the opposite story from its own headline "Vegans and vegetarians may have higher stroke risk". This apparent inconsistency may be due to production factors (even if headlines are now often proposed by the journalist, it is often the subeditor who produces the final version after a cursory glance at the story before the article is launched on the web), or simply to time pressure.

5. Discussion

This study sheds light on what happens when news from the area of science is presented in the media, where a different epistemological regime prevails. The media's overwhelming need for a clear "story" results in information loss and distortion, and to a re-narration of the story that is shaped through the operation of various foregrounding devices. The complexity of the seemingly straightforward genre of online news lies in the way that several different foregrounding processes take place at the same time, sometimes acting in unison and sometimes generating conflicting messages. The question thus arises as to how foregrounding works, and which modes tend to dominate in the overall message that is conveyed. Although it is clear that reader response experiments would be needed to address this question in a broader sense (i.e. what do people notice?), the evidence from these examples can help us to trace the workings of the different modes and their probable combined effects.

In this particular case, almost all the modes transmit the message that the "story" is about the dangers of following a vegetarian diet, in blatant contradiction to the original study and the information supplied in the press release. This sheds light on how the systematic distortion of scientific information can come about: as we have seen in the present case, there seems

to be a tendency for framing effects to set in early in the life-cycle of the article and be all-pervasive. When we look at how this is realised textually, we see that the most prominent modes in the articles – most of the headlines and subheadings, the first line of text in most articles, and above all the accompanying images – all send the message that vegetarianism is the central topic. In particular, headlines and images, as the most visually prominent modes, tend to exert the strongest influence. As I have noted elsewhere (Breeze 2014), although we might imagine, with Barthes (1977) that the text "anchors" the images, making their meaning explicit by providing information about the study in question, this is not the whole story. If we are talking about importance, i.e. status, which is a vital aspect of foregrounding, it seems rather that the images anchor the text: colourful photographs are modally dominant, standing out from the dull black-and-white text, and can be "read" without effort from a distance. The images thus signal to the reader what the text is (supposedly) about. The only other aspect of the online news article that potentially has a similar immediate impact is the headline. When both modes (image and headline) send the same essential message, it is clear that the reader would have to persevere in his/her scrutiny of the text to work out that the message is something else. Moreover, within all this, it is indisputable that the different modes contribute in different ways, and the balance between them may sway the overall message conveyed. In the words of Kress and van Leeuwen (2006, p. 202), "[V]iewers of spatial composition are intuitively able to judge the 'weight' of the various elements of a composition, and the greater the weight of an element, the greater its salience". In the present case, that "weight" may not be part of a grand design, but rather a random production effect resulting from the relative size of photographs and headlines, for example. Yet this also shapes the final impact that the article as a whole will have on its consumers.

At the same time, a few words of caution need to be said about the notion of multimodal cohesion (Bateman 2014, p. 161), that is, the expectation that the text-plus-image should make sense as a whole. In the case of advertising, textbooks, and other highly-thought-out multimodal productions, this assumption is reasonable, and we can suppose that someone has thought carefully about the relations between the different modes, and their respective contributions to the meaning-making process. In online media, the actual production of the webpage may be determined by factors other than the sincere desire to be as informative and coherent as possible. Like all news, online news is generated in a hurry, and like other newspapers, an online newspaper is the result of collaboration between different teams (designers, photographers, writers, subeditors, webmasters). In this case, it is not so clear that a particular person is masterminding the operation, and the messages may indeed be incoherent or contradictory (i.e. headlines that do

not match well with the contents, or photos that set up an ironic contrast to the article). The evidence considered in the present article shows how some multimodal contradictions arise (presentation of the dangers of a vegetarian diet, adorned with appetising photographs of fruit and vegetables, for example), which frustrate the search for a consistent framing effect.

Finally, one emergent theme in this study is the need to address the relations between the different modes within news genres. As Bateman says (2014, p. 251), the interrelation and interaction of images in news is still an under-researched area, but we could also add the need to explore the interrelation of the different textual components. Both press releases and online news genres provide abundant material for studying this important aspect of media discourse.

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GEO-BIOETHICS
Reporting on Russia's ban from Olympic Competition in the International and Russian English language press[1]

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Abstract – The decision of the International Olympic Committee to ban Russian athletes from the 2016 Olympic Games in Rio de Janeiro and the 2018 Pyeonchang Games in South Korea, following accusations of a state-promoted doping programme behind Russian sport, indicates that what was formerly framed as a personal misdemeanour has now developed into a geopolitical matter, a shift that involves a considerable change in the approach taken towards the phenomenon of doping. Scholars of political science and international relations now see such venues as occasions for the exercise of 'soft power', namely, "the ability of states to communicate universally shared values […] in order to court the publics of other states" (Grix, Lee 2013, p. 526). If states are "attempting to use sports mega-events to persuade the governments, businesses and the public in other countries to alter negative stereotypes they hold" (Grix, Houlihan 2013, p. 577), how are those negative stereotypes affected when the reason for non-inclusion is a bioethical one? Concomitantly, how does the ostracized nation attempt to protect its threatened identity before the eyes of the world (Altukhov, Nauright 2018)? To assess how this issue has been contested and negotiated in the media two comparable corpora have been assembled: the first comprising English language articles about the bans in the international press (IPC); the second composed of English language articles on the same topic available on the ITAR-TASS website (Russian Press Corpus; RPC). The corpora are interrogated using concordancing software to provide an initial sample of 100 keywords from each corpus, which are then placed in broad semantic fields. The IPC corpus furnishes insights both into the kinds of stereotypes that abound in reporting about Russia's alleged behaviour and also into the values the international community implicitly attributes to itself. On the other hand, the RPC provides pointers to how Russia implements its English language press service to effect damage repair to its international reputation and cushion the blow to its soft power.

Keywords: doping; Olympic ban; international English language press; ITAR-TASS English language articles; CADS approach.

1. Introduction: Scope and aims

Indicating that doping has now assumed a geopolitical dimension suggests that performance enhancement has evolved from a largely covert activity, practiced by individual rogue athletes and their coaches, into a phenomenon of far greater proportions, co-ordinated by the state and national sports federations. The common pattern in media exposure of doping has been for individuals testing positive to be ostracized by their federations or teams and pilloried in the national and international press. Such offenders were relatively easy to target for media outrage and public and official disdain. Nevertheless, certain athletes have been of such standing and wielded such political and economic power that they could erect forbidding legal and economic obstacles to investigators. It was, however, quite another thing for the media (and doping agencies) to take on the might of state-sponsored performance enhancement. Media exposés of the widespread institutionalized doping in the East German athletics team, for example, did not emerge until after the demise of that very state and with it the forces that could easily muzzle media outcry.

Since then a number of factors have combined to take the doping issue and media coverage of it to another level. The World Anti-doping Agency (WADA) has extended its sphere of influence in world sport and has much closer ties with organisations like the international Olympic Committee (IOC) than was previously the case. WADA has also increased its ability to efficiently monitor the compliance of national drug agencies and to detect deviations from its procedures and protocols. What is more, WADA's communications about investigations and recommendations have improved and its frequent updates have certainly fuelled press coverage of the issue and the spread of relevant information, often of a rather technical nature. Due to these organisational and technical advances it has been possible to incriminate entire federations and even uncover state collusion in malpractice. As will be seen, the reaction to such developments in Russia has been to mobilize it's imposing information resources in a way that is possibly unprecedented in the sphere of sport. Using its main English language news agency to counter the dominant ethical anti-doping narrative in the international press, the Russian establishment has set about informing its readers (presumably in the foreign press and major sporting bodies) of the geopolitical implications of taking such an important member of the IOC to task.

Within this broad perspective, the narrower purpose of this paper is to consider the way in which bioethics in sport now is exploited in the geopolitical arena; namely, how the bioethical issue of doping-free sport is involved in the construction (or destruction) and defence of the identity and

perceived image of a nation within the international community. More specifically, the paper seeks to understand (a) how the international English language press coverage of doping scandals before the 2016 Olympic Games and the 2018 Winter Olympic Games has been instrumental in undermining the Russian state's status and reputation in the international community, and (b) how the Russian English language press agency ITAR-TASS has countered that agenda to shore up and reconstruct that country's threatened reputation.

To do so it is first necessary to review ideas that are current in politics and international relations concerning the geopolitical significance of what are termed mega-sporting events, such as the Olympic Games and editions of the FIFA World Cup, both of which have involved Russia, but with vastly different outcomes for that country's reputation on the international stage.

A relatively small number of international politics scholars have drawn attention to the previously neglected impact of mega-sporting events and involvement in them on the projection of a positive national image (Grix, Lee 2013, p. 525). Typically, such studies (among others, Grillon 2011; Grix 2012) refer to Nye's (2004) concept of 'soft power' as an explanation for nations' strategic interest in staging these events. Nye (2004, p. 2) defines soft power as the ability to attract and co-opt other nations "to want what you want as opposed to hard power, by which they are coerced to do what you want". Grix and Lee (2013, p. 526) gloss soft power as a "discursive mechanism for increased agency in global affairs through the performative politics of attraction rather than the use (or threat of use) of military or economic force", while Gillon (2011) sees such events as important occasions for projecting positive key national images onto the international scene, although, as Grix and Lee (2013, p. 526) point out, the question of what makes a state attractive has all but been ignored in the literature, suggesting that the values of Western neo-liberal economies have possibly become the default gauge for assessing the attractiveness of states in a soft power perspective. That consideration aside, Grix and Houlihan (2013, p. 578) affirm: "the resultant international prestige garnered from successfully hosting such an event or having one's national team perform well – or preferably both – can be converted into enhanced soft power that can make a state, their culture and political values more attractive to others". As Grix and Lee (2013, p. 527) put it, "by hosting international sporting events, [states] can show that they are the guardians of universal norms and, in so doing, can construct attraction by illuminating truths such as fair play that have a universal appeal". That doping-free, or 'clean' sporting performance is currently a universal criterion for meaningful sporting competition is fairly self-evident, given the lengths to which governing bodies and anti-doping-agencies will go to guarantee there is a so-called level playing field for all

competitors and ensure that the results we witness are true, pure, unadulterated, clean.

What happens, though, if a state, and one that has traditionally been a protagonist and indeed host of modern mega-sporting events, first as the Soviet Union (1980) and more recently as Russia (2014), is barred by two of the most powerful international sporting bodies and anti-doping agencies (The International Olympic Committee and the World Anti-Doping Agency) from competing, because it is believed to have betrayed a universal value like sporting fairness? Russia's partial and total exclusion from the 2016 and 2018 Winter Olympic Games as a result of alleged doping malpractices is a powerful illustration of how the attempt to use mega sporting events for the ends of soft power can backfire (Grix, Lee 2013, p. 528). The failure of Russia to demonstrate its 'sameness' with the other competing nations resulted in a loss of international prestige, reflected in a tendency to ostracism in the international press coverage of these developments and a corresponding recourse to damage limitation strategies in Russia's English language press agency ITAR-TASS, which has historically had very close ties with the Russian government (Krasnaboka, online). This paper represents a preliminary attempt to glean initial pointers as to how international relations between Russia and the global community, as represented by organizations like the IOC and WADA, have been represented in the English language press of the world and of Russia itself following that country's exclusion from the Rio Olympics in 2016 and the Winter Olympics in Pyeonchang in 2018, as a direct result of alleged doping violations that came to light in the aftermath of the 2014 Winter Olympics in Sochi, Russia.

2. The background events

Measures to ban Russian athletes from the 2016 Rio Olympics and the 2018 Pyeonghang Winter Olympics in South Korea were set in motion by Russian whistleblowers who made allegations of state-run Russian doping programmes. Additionally, two independent reports commissioned by WADA, the 2015 report overseen by Dick Pound and the 2016 McClaren report, substantially confirmed the whistleblowers' allegations. Particularly damaging was the testimony of Grigory Rodchenkov to the *New York Times* in 2016 (Ruiz, Schwirtz 2016). The former director of the anti-doping laboratory in Moscow maintained he had overseen the switching of contaminated samples with clean ones as part of a state-run doping programme at the 2014 Winter Olympics and other major events. In 2015, WADA declared RUSADA (Russian Anti-doping Agency) non-compliant; the Russian track federation was also suspended by the IAAF (the International Amateur Athletic Federation) in the same year. In May 2016,

the IOC commenced retesting previous samples from the 2008 and 2012 Olympic Games, with the result that many Russian athletes were banned from the 2016 Olympics, forcing Russia to take part with a much reduced national team. Faced with fresh evidence of mass Russian cheating at the Sochi Winter Olympics, in 2017 the IOC adopted a much tougher stance and officially banned Russia from the 2018 Winter Olympics in Pyeongchang, allowing 168 Russians to compete only as "Olympic Athletes from Russia" but not as part of their national team.

3. The data

The purpose of the preliminary research that eventually led to this paper was not intended to analyse the shifting implications of performance enhancement for international relations. The initial intention was to interrogate a corpus to examine press discourse on a well-known case of doping in sport using the search words 'doping', Rio Sochi 'Olympics', 'Russia'. However, on closer examination of the initial data set, it emerged that of the articles provided by the Lexis Nexis data bank, a sizeable proportion were actually released by the Russian news agency ITAR-TASS, one of the four largest news agencies in the world. Further investigation revealed the reason for the relatively high ratio of ITAR-TASS articles in an international English language corpus. On the ITAR-TASS website, the navigation bar not only directs readers to a sports section, but once there, they can access a separate sub-section on doping, a feature not encountered in any of the other sports pages of major international online newspapers. Far from sweeping the issue under the carpet, it would appear that the Russian press agency actually signposts very clearly a stigmatised activity in which it is implicated. This fact alone appeared to open up a possible avenue of research. It was therefore decided to divide the data into two comparable sub-corpora, one comprised of articles from the international English language press (IPC), the other made up of English language articles from ITAR-TASS (RPC); the latter was integrated with articles taken directly from the ITAR-TASS website spanning the period between the Sochi winter Olympics (2014) the Rio Olympics (2016) and the Pyeonchang Winter Olympics (2018). This produced two comparably sized sub-corpora: IPC 52,882 words; RPC 59, 819 words.

4. Method

Anyone interested in sport, linguists included, is likely to have strong culturally ingrained attitudes to the issue of doping. In order to form as objective a view as possible of the language used to frame this issue, the use

of corpora can help avoid the pitfalls of cherry picking texts and skewing interpretation of the relevant discourse by working on too small a sample of it, or working on texts that chime too neatly with the researcher's own received opinions. As Meir *et al.* (2015, p. 7) remark, "CL allows for the processing of large amounts of text data and enables a higher degree of objectivity. CL can also pinpoint areas of interest for further/closer analysis by identifying emerging patterns and leading to examination of concordance".

Corpus linguists (Bachmann 2011) stress the usefulness of corpora in highlighting patterns of linguistic use that warrant closer analysis. Initially, the corpora were simply examined for the presence, if any, of such patterns. From this starting point, the most fruitful avenue of enquiry appeared to be lexis or meaning words, as opposed to function language. This is because, although the two sub-corpora involved in this study are closely aligned, both in terms of genre and topic, they revealed significant differences in the lexis that characterises them; further, although actually sharing a substantial number of core semantic fields, they revealed important divergences in the lexical items comprising them. This indicated an opportunity for an objective understanding of how the international community and Russia frame this issue linguistically by effecting a content analysis (Gwang-Yoon 2011, p. 240) of what the international and Russian English language papers actually say about Russian involvement in the Olympic doping scandals.

From this point on, having established the key macro-patterns of lexis distrubution with content analysis, this study tends towards a Computer-Assisted Discourse Studies orientation (Gabrielatos, Baker 2008; Garzone, Santulli 2004; Hardt-Mautner 1995; Partington, Zuccato 2018, pp. 11-12). This not only entails a more fine-grained examination and interpretation of significant patterns of linguistic usage thrown up by the concordancing software, but takes the analyst beyond descriptive duties in the attempt to provide an ideological explanation for certain kinds of language use. Thus, the concordances and collocations of lexical items comprising the key semantic fields are also inspected for any insights they may provide into significant differences in attitudes and stance that underpin the Russian and international perspectives on the Olympic doping bans.

5. Keyword analysis

The most suitable tool for identifying the distinctive core lexis of a corpus is the Keyword function on concordancing software. Keywords are identified as such because they are repeated a lot (Scott, Tribble 2006, p. 56), but raw frequency alone does not confer keyness. For that comparison with a reference corpus is required, and "for a word to be key […] it must be

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outstandingly frequent in terms of a reference corpus" (Scott, Tribble 2006, p. 59). As will be seen, a high proportion of keywords in the node corpus (in other words, the corpus we are exploring) are lexical items that point to the "aboutness" of the node corpus. This will be the focus of the present study.

5.1. Choice of reference corpus

The bearing of the size and type of reference corpus on the resulting keywords has not gone unnoticed in the literature (Berber-Sardinha 2000; Scott 2009), where a canonical opinion as to the ideal characteristics of a reference corpus has yet to emerge. McEnery *et al.* (2006, pp. 308-311) maintain that the size of the reference corpus is relatively unimportant, while Berber-Sardinha (2000) indicates that a larger reference corpus will generate more key words. From the point of view of text-type or genre-based corpora, Scott (2009) goes so far as to say that even an absurdly incongruous reference corpus will provide useful information on the defining content of the node corpus. Scott (2009) also indicates that genre is an alternative criterion for the selection of a reference corpus and will provide a different range of key words than a reference corpus chosen on the grounds of size. The reference corpus selection for this study took its cue from this claim and indeed proved true. Using a large general reference corpus, like the Sketch Engine online corpus, to generate keywords from each of the two corpora did little more than outline the general and shared 'aboutness' of each one, throwing up rather predictable results, without delineating any significant differences in the highest ranked keywords. The first 200 keys words of the RPC, for example, were overwhelmingly occupied by the topic of doping, the institutions involved in the enquiries, names of sports and the proper nouns of numerous Russian athletes or key Russian and international political or institution figures; the same was true of the IPC. The only significant discernible differences were in the proper names of athletes, politicians, and institutional figures involved. In fact, the use of large general corpora appeared to dilute revealing aspects of keyness, saying more about what the corpora had in common rather than revealing significant differences. It was therefore decided to use each of the two node corpora as reciprocal reference corpora in the expectation that key differences in the treatment of the issue would be more readily apparent. Indeed, despite their shared topic and genre, this procedure, threw up a more significant array of key lexis. Already with a cut off of 100 words, it was possible to detect clear divergences in lexical keyness, providing insights into differences of stance and strategic language use regarding the issue.

6. Results and discussion

The keyword tool of the Antconc concordancing software provided an initial sample of 100 keywords from each corpus, which resulted in the following overview once lexis had been separated from function language and broken down as neatly as possible into semantic fields. As can be seen in table 1 below, these are ranked according to their percentage of the key lexis (proper names and function language excluded) for each corpus, which should also compensate for the slight differences in size between the two corpora.

Key IPC semantic fields	hits	%	Key RPC semantic fields	hits	%
Sport	3,637	14.2	GOVERNING BODIES/ PROCEDURES	5,442	28.1
Governing bodies/procedures	3,212	12.6	SPORT	2,554	10.7
Doping	3,007	11.8	DOPING	1,689	7.9
Ethics	1,772	6.7	REPORTING	572	2.7
Reporting	666	2.6	GOVERNMENT	189	0.7
Testing	659	2.5	TESTING	43	0.18

Table 1
First six ranked key semantic fields for IPC and RPC.

At first sight, there appears to be considerable convergence between the corpora. In fact, five fields are common to both: sport, governing bodies/procedure, doping, reporting, testing, albeit with differences in the percentage of their respective corpora they jointly account for.

6.1. Non-convergent key semantic fields

Just two semantic fields do not converge. Key lexis associated with ethics and revelation is exclusive to the IPC, while the semantic field of government is key only in the RPC. This divergence alone points to a significant difference of perspective on the issue in the international and Russian English language press.

Ethics	Hits	Russian Collocates
clean	591	41,1%
scandal	317	91.8%
cheating	237	65.4%
integrity	180	46.1%
corruption	140	45.0%
whistleblower	100	
whistleblowers	61	
cover (up)	68	
cover	64	
complete	1	
hole	2	

Table 2
Lexical items comprising semantic field of ethics in IPC.

Table 2 indicates the lexical items comprising the semantic field of ethics in the IPC. The other semantic fields are itemized in the same way, though for reasons of space and word count, tables are not provided.

As is evident, the international press ostentatiously aligns itself with a moral and ethical position. Additionally, a high percentage of the concordances for other nodes also have Russian collocates in the vicinity, either in the form of that nation's name and the relevant adjective or in the shape of the proper names of Russian politicians, officials or athletes implicated in the issue. For 'clean', 40.1% of the concordances include an explicit Russian collocate. A high proportion of these occur in press accounts of the sample-swapping scandal at the Sochi Olympics, by which athletes' contaminated samples were systematically replaced with 'clean' ones by the secret police. The adjective 'clean' also frequently collocates with 'Russian' when it refers to those athletes who have not tested positive and may, according to the IOC ruling, compete under a neutral flag. Using the attributive adjective 'clean' to reposition these athletes as neutrals competing under the IOC banner implies, however, that that those Russians not deemed neutral, or who do not seek neutrality, are inevitably and innately compromised. In the case of 'scandal', for example, nearly 92% of the 317 concordance lines generated include a Russian collocate, explicitly assigning culpability and questionable ethics to that nation, as can be seen in Table 3 below where, apart from references to notorious cases of doping in the history of modern sport (e.g., Lance Armstrong, and the East German athletics team) the majority of concordances refer to Russia:

Russian slider implicated in that nations government-sponsored doping	scandal	, another front in the new Cold War
an environment in which doping is rife,</><s>Russian doping	scandal	5 of the most chocking allegations
The after affects of Russia's doping	scandal	Have gone far beyond the sports field
What can be drawn from the	scandal	? The Global times has collected three
The party with nothing to gain from the	scandal	Which will benefit from the event is worth
But the UK will ultimately not benefit much from the	scandal	China, incidentally has no conflicting athletic
government encouraged and covered up doping among athletes. The	scandal	led the IOC to ban Russia's entire track
the latest of three chapters so far in	scandal	that led to more than 100 Russian athletes
deputy sports minister Yuri Noagornykh who was dismissed amid	scandal	last summer and Grigory Rodchenkov the
Games in Rio de Janeiro next month following the country's doping	scandal	, the games committee has announced
on Sunday placed the blame on the Russian government for the	scandal	"All Russian athletes seeking entry to the
the release of Friday's report, the latest of three chapters so far in the	scandal	that led to more than 100 Russian athletes
Senator presses agency for answers on Russian doping	scandal	WASHINGTOM (AP) The chairman of the
Russia was banned from the Olympics because of a massive doping	scandal	at the 2014 Sochi Games. Two of more than

Table 3
Co-occurrence of *scandal* with Russian references.

The remaining 8% of concordance lines concern doping and corruption scandals involving other nations, sports, and governing bodies. They reveal a more general ethical focus of the international press, concerning the need to guarantee fair competition for genuinely clean athletes, the ethical responsibility of institutions to 'clean' athletes all over the world, and the shortcomings and difficulties of tackling this issue.

In the case of 'integrity', concordances containing unambiguous Russian collocates accounted for 46.1%, and these overwhelmingly occur within the context of the Mclaren Report on the Sochi Olympics sample-swapping scandal. The most frequent collocations frame this as an act of aggression towards the integrity of sport. By far the most frequent collocate in this sense is 'attack' on integrity, but expressions indicative of violent conduct or attitude are also in evidence: 'threatens integrity', shattered integrity', 'integrity has been damaged', as can be seen in the concordances below:

Doping deeply undermines the	integrity	of elite sports, which are supposed to be
Young athletes learn early on that	integrity	Is just another price to be paid for winning
for the development of new drug screening methods to assure the	integrity	of national and international athletic
produced at least 27 ill-gotten Olympic medals and undermined the	integrity	of two Olympic Games and several other major
the Russian doping program as a "fundamental attack on the	integrity	of the Olympic games and on sport s in general
"This was an unprecedented attack on the	integrity	of the Olympic Games and sport" IOC president
of the report show a shocking and unprecedented attack on the	integrity	of sport and the Olympic Games. Therefore the
Winter Olympics in Pyeongchang for 'unprecedented attack on the	integrity	of the Olympic Games and sport'. Only Russian
BLACK HOLE IT'S the 10 cm "mouse hole" that has shattered the	integrity	of world sport and has exposed Russia's drug
the investigation found a "shocking and unprecedented attack on the	integrity	of sport and on the Olympic Games. Therefore
investigation found "a shocking and unprecedented attack on the	integrity	of sport and the Olympic Games". Russian

Table 4
Integrity collocates in context.

As with the other ethical lexis, the remaining percentage of concordances reflects the international Press's concern with broader ethical concerns

underlying sporting competition in general and the issue of how to guarantee and protect the integrity of sporting competition.

'Corruption' also appears to conform to the above pattern. 45% of concordance lines feature unequivocal Russian or contextual collocates that attribute corrupt behaviour to that country. An overwhelming proportion of the collocates refer to the scale of the phenomenon, with 'widespread', 'large-scale', 'mind-blowing levels of' corruption, all recurrent. Here, too, the press considers the issue from a broader perspective, referring to the need to contrast corruption in other spheres of sport outside Russia and to confront the issue at the level of international organizations like the IAAF or FIFA.

The distribution of co-occurrence with unambiguous Russian collocates is slightly higher in 'cheating', though the overall pattern obtains. The predominant collocations are "state-sponsored, 'state-sanctioned', 'state-backed', government-ordered', 'federalized', 'systematic' 'deeply rooted culture of' – all reflecting a systemic and endemic tendency, while expressions of the extent and difficulty of controlling the phenomenon are also significant: 'epidemic', 'rampant'. As with the other lexis in this category, this word occurs in strings of text that consider this behaviour in a more general theoretical light, as well as referring to cases in other sports in other nations.

The other non-convergent field is present in the RPC. The semantic field of government is composed exclusively of the word 'minister', with 189 hits. 86.2% of the occurrences involve statements on the issue by members of the Russian government, chiefly the prime minister, deputy-prime minster, sports minister and ex-sports minister, all of whom comment variously on the IOC and WADA rulings and procedures.

Overall, the data for these non-convergent key semantic fields indicates significant differences in how this affair is approached in the international and Russian English language press. The data for the field of ethics reveals a dual focus: on the one hand an accusatory stance on Russian sports in general, with a significant proportion of the relevant key lexis depicting that nation as unethical, if not criminal; on the other hand, a more abstract concern with the ethical issues involved in doping within sport as a whole is evident. A substantial number of the concordances for this lemma reveal a preoccupation with the ideal or philosophical aspirations of sporting competition without unfair advantage. Thus, the international press regularly expresses a commitment to an enshrined ideal, declaredly occupying the moral high ground on the issue, a stance that is conspicuously not key in the ITAR-TASS coverage of the affair. The RPC, on the contrary, views the events through a political prism. Russia openly regards this as a geopolitical issue, while the international press coverage frames it as an ethical one.

6.2. Comparison of convergent key semantic fields

This section compares converging semantic fields in each corpus. The analysis will focus on the lexis of procedure, doping, and reporting. The field of sport is not analysed because the differences are largely due to the focus on sport in the different corpora. The IPC talks about sport ('sport', 'competition' more generally (e.g., 'field' and 'track', while the RPC tends refers to specific sports (e.g., cross-county skiing, bobsleigh) and numbers and kinds of athletes (e. g. skiers) affected by bans.

The semantic field of procedure and governing bodies is the second and first-ranked in IPC and RPC respectively. It is immediately evident that it accounts for over double the percentage of lexis in the RPC. When the individual items comprising the semantic field are investigated, significant differences in perspective emerge. Although much of the lexis comes close to the neutrality of terminology ('commissioned', 'investigator', 'report', 'bodies') accounting for 46% of this semantic field in the IPC, a significant portion of the items has strong negative connotations. The item 'ban' alone accounts for 35.4% of all lexis in this field, and collocates with 'blanket', and 'complete'; while the most frequent key word 'report' collocates with 'damning' in 6.6% of occurrences. Moreover, although these investigations are not trials, they are framed as such. There is a noticeable tendency to couch the procedure in language associated with criminal investigations and legal process. Thus, we find in this field 'case', 'allegation', 'charge', 'accusation', 'evidence', implicated', together accounting for 5.2% of this field.

The lexis of the corresponding field in the RPC offers a striking contrast. To be sure, negative connotations are present (e.g., 'life (ban), 'violations', 'accusations', 'probe'), though they account for 5.3% of lexis for a field that is more than twice the size of the corresponding one in the IPC. Otherwise the language describing the procedures of the various agencies and commissions is far more diverse, detailing multiple aspects of the procedures followed by the investigating bodies; it is also less connotative and nearer the opaque register of 'officialese' and the neutrality of straightforward terminology. What the RPC lacks in key ethical lexis, it apparently compensates for with lexis concerning the official procedures against Russian sport and the workings of international sports governing bodies and drug agencies. While the ITAR-TASS reports do not conceal the workings of the investigations or the deliberations of the commissions and committees, the more negative framings found in the IPC corpus are less conspicuous. What is more, far from obscuring official procedures, the RPC devotes considerable space to a detailed representation of the workings and progress of the investigations and reports under way.

The convergent semantic field of 'doping' is characterised by significant divergences in lexical realisations in the corpora. The relevant lexis in the IPC displays a preference for negative semantic loads. Thus, 'drug' and 'doped' are prominently key (accounting for nearly 20% of total key lexis). Additionally, IPC lexis emphasises the scale of the phenomenon in Russia ('widespread' (5.9%) and the longstanding involvement of the state: 'history', 'state', 'run', 'sponsored', 'programme' (cumulatively 54.7%). The negative slant is confirmed by the specific mention of a stigmatized doping substance, 'steroids', and repeated references to the lab at the Sochi Olympics where the athletes' samples were swapped.

Although the RPC apparently does not shirk the issue, the negative connotations of the IPC are conspicuous by their absence. Admittedly, 'abuse', is the most key word in this semantic field, but closer examination reveals its co-occurrence with collocates that attenuate negative impact, notably through disendorsement (Cavaliere 2012, pp. 88-89; de B. Clarke 2006, pp. 86, 89, 131; Kornetski 2011, pp. 179-180; Partridge 2012, p. 135) in the shape of 'allegations' and 'alleged' (32.2 % of occurrences). What is more, neither 'doping' nor 'drug' occurs even in the first 300 ranked key words of the RPC. In fact, the nearest correspondence is the more neutral collocation 'performance enhancing' (22%), a more technical definition lacking the negative connotations of 'doping'. The narrative of state involvement, so prominent in the IPC, is barely acknowledged in the RPC (1.8%), indeed the 'struggle' against performance enhancement is key. The remaining lexis avoids more negatively marked language, with substitutions like 'issue' or less connotative choices like 'manipulations', 'involvement', 'activities' taking the place of the more loaded language found in the IPC.

The next convergent key semantic area to be analysed is 'reporting'. In some respects, it is surprising that this should be key in each corpus, as it is a shared and defining characteristic of all newspapers and involves a limited and conventional repertoire of lexis (reporting verbs and related parts of speech). If it is key, it is so because each corpus uses a significant proportion of different reporting options, which in turn reflects diverging stances on the issue.

It is to be noted that the neutral 'says' is the most key reporting verb in the IPC. 'Claims' is used both as the third-person of the verb and plural noun, and as a signaller of disendorsement it is applied in equal measure to International and Russian sporting bodies and institutions. This distribution may reflect the tendency of the International press to look beyond the immediate issue of the Russian doping scandal and to assume a more critical stance on the very institutions that are pursuing the investigations.

In the RPC, 76% of Sayers for the most frequent reporting key word, 'told', are Russian, with government ministers and officials particularly

prominent, as well as the heads of various national sports institutions. Because of its close ties with Russia's political institutions, we may not be surprised at ITAR-TASS publishing what it is told (to).

'Announced' and 'stated', on the other hand, are linked to Sayers from the IOC and WADA. This would seem to confirm the pattern emerging elsewhere in the corpus, confirming the tendency of TASS to report the findings of the IOC and WADA investigations in a neutral and objective manner, while also making clear that it is a geopolitical issue involving the highest echelons of Russian government. Additionally, disendorsement is key in RPC, as can be seen in the presence of 'alleged' and its corresponding adverb. It is unsurprising that the verb 'alleged' has 0% Russian Sayers. It is interesting to note, however, that the attributive adjective appears in a rather unusual pattern for this form of disendorsement: repeatedly the pattern is of reporting verb followed by 'alleged' as an attributive adjective coupled with another form of disendorsement, when one is the norm. This tendency is noticeable when it co-occurs with 'claim':

[1] The dossier *claimed* that an *alleged* government-backed doping system existed.

The pattern is even more evident when 'allegedly' is employed, resulting in marked forms like:

[2] an IOC commission … *established* that Russia *allegedly* employed a system of manipulation,

This sounds like what is established is an allegation rather than an action on the part of Russia. Similarly, we find:

[3] 'Rodchenkov *claimed* that the Russian sports authorities *allegedly* prepared,

The last example sounds as though what is claimed is the allegation itself. These redundant forms of disendorsement, which we might term double-disendorsement, possibly denote an over-eagerness to disendorse and a corresponding sensitivity regarding the affair.

The final significant converging semantic field is 'testing, though it is disproportionately key in the IPC compared with the RPC. Overall, the lexis for this semantic field conformed to the pattern for the others. Once more, the key words in the IPC are clear and specific - 'testing', 'urine' and 'new'. Furthermore, 'urine', the most key item in the category, comes with a strongly negative charge. Indeed, on closer inspection it refers almost exclusively to the Sochi sample swapping scandal. The second ranked key term in this field is 'testing'. Here 62% of concordances refer to Russia's

implication in testing scandals, Russian athletes' positive results in other tests, or RUSADA's failure to guarantee reliable testing procedures. However, evident in the remaining 38% of occurrences is the tendency within the international press to look at the bigger picture of testing within the world sporting community as a whole. The relevant concordances reveal a concern with the inadequacies of WADA's testing procedures, explanations of how anti-doping tests work (or fail) and reports of irregularities in other sports and other national federations. The final item in this field, 'new', concerns the need to introduce updated and more effective testing procedures to combat doping, reflecting the international press's tendency to consider the issue from a more general perspective. On reflection, this field in the IPC consolidates the concern with the ethical implications of the issue, emphasising the scandalous behaviour attributed to Russia, but also a concern with the duty of governing bodies and agencies to ensure that testing procedures are truly effective. The close affinity of this field with that of ethics possibly accounts for its marginal keyness in the RPC, bearing in mind that the ethical perspective is not key in the RPC. The sole key item in the corresponding field in the RPC is 'collected'. It collocates in all cases with 'sample(s)' in the form of the past participle used in passive constructions. As such, it appears to typify the impersonal and formal register employed in the RPC to deal with this issue and possibly to present an 'impersonal' and 'detached' stance.

7. Concluding reflections

This comparison of key lexis in the two sub-corpora revealed significant differences of perspective and emphasis on how the issue is reported in the English language by the international press and the Russian English language press agency ITAR-TASS. Both corpora, however, share the same geo-political approach to the bioethical issue of doping.

The most obvious contrasts occur at the level of key lexis in the diverging fields within the two corpora, particularly between the emphasis given to the ethical perspective in the IPC and to the political viewpoint in the RPC. The former reveals a dual response to the issue. Firstly, Russian sport is stigmatised as inherently and culturally unethical and dishonest; additionally, frequent collocations in this field point to Russian state and government encouragement of this unethical behaviour; secondly, the IPC reflects a concern with the ideals of doping-free sport in general and a commitment to pursuing and defending such ideals *tout court*, also at a philosophical level (for more on this tendency see Meier *et al.* 2015).

In contrast, the lexis of government (in the form of spokesmen and various high-ranking government ministers) is key within the RPC. Accused

of state sponsorship of doping, it is perhaps only to be expected that the Russian press agency report the reaction of Russia's key politicians, who, moreover, make it clear that the issue is viewed as a geopolitical one rather than an ethical-philosophical question. The conclusion that may be drawn here is that by shifting the argument about doping onto the political plane, Russia may not be claiming the moral high ground, but it is, all the same, attempting to position itself more advantageously in the debate by involving its political class, rather than just its federations and national doping agency, possibly signalling that the stakes have been raised and that the implications are geo-political (i.e., real) rather than bioethical (i.e., ideal) (see Maklund 2015 on this trend within international relations).

Although the remaining five semantic fields in the two corpora converge, there were significant differences in the keyness of the fields within each corpus and the lexis comprising them. The most evident contrast is between the cumulative keyness of the field of 'procedure/governing bodies'. In the RPC the corresponding field accounts for twice as much key lexis as the IPC, and characterises a scrupulous and detailed reporting of the workings of the various committees and reports concerned in the investigation of Russian sport. Its keyness is possibly meant to convey the impression of a country and culture that, far from undermining codes and disobeying them, abides by them, follows due procedure and indeed, has nothing to hide, showing the more submissive side of the coin to the geo-political one.

The other significant differences mainly involve the kind of lexis used in this field. In the IPC the key lexical items tend to be more specific with a preponderantly negative connotations, whereas the RPC betrays a preference for more impersonal and neutral language and official terms, intended, one must suppose, to counter and defuse the more 'inflammatory' language found and reported in the IPC and possibly to foreground the image of a balanced and detached response to the accusations and investigations, which in itself would contrast with some of the negative stereotypes concerning Russian sports that occur in the IPC.

If the IPC corpus furnishes insights into the kinds of stereotypes that abound in reporting about Russia's alleged unethical approach to international sports, and the way in which the international press delegates to itself the role of the world's moral policeman, the RPC provides pointers to how Russia implements its English language press service to effect damage and image repair to its international reputation and cushion the blow to its soft power. On the one hand it paints itself as submissive and obedient; on the other, lest there be any doubt, the reporting and governmental semantic fields, which feature prominently high-ranking government officials who frequently use disendorsement (even double-disendorsement) indicate that for Russia the

bioethics of sport falls within the realm of geopolitics, a sphere in which it difficult to deny its influence and clout.

Before leaping to conclusions about the credibility, effectiveness and persuasiveness of one strategy or another, it should be remembered that RUSADA was readmitted to WADA in 2018. Although this development engendered yet another controversy, it possibly indicates that the Russian strategy of politicising the bioethical controversy payed off. Nor does it stop there, at the time of writing, December 2019, WADA has banned Russia from competing in the next edition of the Olympic Games in Tokyo, whenever that may be, for alleged government tampering with its anti-doping database. It will be interesting to monitor the reactions to this new chapter in the affair in the World and Russian English language press and to trace continuities and/or changes in the linguistic strategies used in the ensuing debate. Whatever side one takes in this controversy, one thing is clear: although the articles in both corpora are written in English, when it comes to doping neither the international press nor ITAR-TASS are actually speaking the same language.

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KNOWLEDGE DISSEMINATION AND IDEOLOGY-FRAMING IN DIGITAL COMMUNICATION
The case of law journal abstracts

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Abstract – Over the course of the last decades, digital communication has contributed significantly to the dissemination of scientific knowledge, thus allowing also lay readers access to material primarily intended for expert audiences. This change has also affected domains, like legal research, which are traditionally and explicitly targeted to 'insiders', and particularly the *esoteric* community (i.e. experts working on similar cases/issues, as opposed to the *exoteric* scientific community at large). For the products of legal research to become appealing and 'usable' for both these audiences, their (meta-)representation needs to be strategically designed in order for legal academic texts to be recognized as authoritative sources where to find relevant contents and their discussion. This is the main purpose of abstracts (RAAs), which are meant to anticipate the main information contained in the associated research article (RA) in a way that is clear, comprehensible and cognitively appealing, so as to encourage readers to read the ensuing text in full. On this basis, this study analyses RAA discourse in online legal publications: a corpus of 100 RAAs from the *Harvard Law Review* (https://harvardlawreview.org/issues/) is investigated in order to show how discursive choices may depend upon the epistemology of the domain, the content discussed (which may range from constitutional law, foreign affairs and national security to issues concerning privacy, intellectual property or civil rights), the target audience's competence, background knowledge, motivation, or needs, and, ultimately, the purpose of the RA (i.e. speculative reasons vs practical application).

Keywords: legal studies; research article abstracts; engagement.

1. Introduction

This chapter investigates how legal research articles (RAs) are metalinguistically represented in the related abstracts (RAAs) in order for their authoritativeness and reliability to be maximized and for them to be perceived as privileged channels for meaning-making and the dissemination of disciplinary knowledge, thus contributing to the codification, consolidation and circulation of epistemologically relevant and ideology-saturated meanings in the legal domain. To this end, this contribution focusses on the reporting verbs and verbal structures used in RAAs to introduce and anticipate the type of scientific activity to be found in the ensuing RAs.

The concept of authoritativeness is particularly relevant in modern

research, due to a long-standing tradition in both human/social and natural sciences (Bruffe 1986; Brown *et al.* 1989; Knorr-Cetina 1981; Toulmin 1972) which has pointed out that the concept of empirical knowledge as the objective understanding of reality is indeed a myth, at different levels. Firstly, "we do not know what reality is independent of a theory" and "it makes no sense to ask if it [theory] corresponds to reality" (Hawking 1993, p. 44), in that the theory – any theory – is the only framework through which we can approach and make sense of reality. We can only perceive reality through this cognitive and interpretive filter, which, as such, is bound to be subjective, that is to say biased by cultural and personal factors and liable to changes (Garzone, Catenaccio 2008). Secondly, any representation of reality, in order to be understood, needs to be based on "consensual intersubjectivity" (Ziman 1984, p. 107), therefore has to be presented according to recognizable parameters which are socially negotiated, shared and accepted. Thirdly, from a linguistic standpoint, the textualization of knowledge does not simply mirror or reflect our observation and understanding of reality, but is "always filtered through acts of selection, foregrounding and symbolisation" and is construed "through processes that are essentially social, involving authority, credibility and disciplinary appeals" (Hyland 2004, p. 6). Therefore, the operation of knowledge-making and dissemination is indeed managed, controlled and manipulated through discourse for such knowledge to be fully comprehended, for it to meet the needs and expectations of the readers, or even to activate and elicit specific expectations on their part. These discursive constructions necessarily confer different importance upon different meanings. This operation of hierarchization, prioritization, and systematization of certain meanings and marginalization of others is highly guided and biased by the ideology (or ideologies) at the basis of the epistemology underlying any domain. This brings about the first questions that this investigation will address: if no perception or representation of reality is objective – hence empirically true, in that reflecting reality – how can it be recognized as being valid? As a consequence, how can any source of information be perceived as being trustworthy and reliable?

Even though this is not a critical discursive investigation, it is worthwhile to point out that, according to Critical Discourse Analysis (Fairclough 1992, 2001, 2003), ideologies – that is, dominant ideas and beliefs determining hierarchies of values (i.e. what is good, right, and acceptable vs. what is bad, wrong or proscribed – Eagleton 1991; van Dijk 1998) – are imposed and enforced upon community members through both coercive means (i.e. laws, tribunals, police, prisons, sanctions, etc.) and consensual means (i.e. education and communicative practices). This distinction is particularly relevant for the present analysis in that the legal domain is the site where coercive practices gain legitimation, where the

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legislator acquires the legitimacy to prescribe, proscribe and sanction given behaviours, where ideological dominance is expressly established and systematized through norms and laws, and where non-dominant or 'deviant' ideologies are, on the one hand, framed and interpreted with respect to dominant ones and, on the other, marginalized or stigmatised. But this is also the domain where non-coercive and consensual practices are implemented, through both domain-specific practices and relevant discourses, in professional settings (i.e. jurisprudence and forensic discourse), pedagogical settings (i.e. expert-to-novice contexts, where knowledge is transmitted and taught, i.e. law schools), or research contexts (i.e. where experts construe knowledge and exchange views on disciplinary relevant meaning), the latter being the case of legal studies, typically represented by law journals. In legal publications, experts discuss what has been established by the legislator in order to define the prospects or the limitation of the applicability of the norms or how to interpret and implement them. In this sense, these sites are highly ideology-saturated, in that the experts' discussion is not primarily guided by their point of view, but needs to be justified on the basis of epistemologically established and recognizable principles, and meanings and interpretations are controlled and solidly framed within a polar system which opposes 'right' and 'wrong', what is acceptable and what is liable to sanction, what is the most appropriate way of representing reality (i.e. self, others, relationships, roles, objects, practices, etc.) or going about activities, and what is instead a deviant behaviour. Given the overlap between coercive and non-coercive contexts, it becomes interesting to see how non-coercive practices contribute to fixing roles – i.e. the legal expert, having the competence and authority to handle justice and discuss legal matters – and defining practices – i.e. the administration of the law or researching about it. Consequently, it will be relevant to observe the discursive strategies that are used in legal studies to make the presentation of meanings acceptable, and, more precisely, to enhance the authoritativeness of the source of such meanings (writers and texts). The assumption is that the act of metadiscursively highlighting the authoritativeness of a given source is going to corroborate the validity of the meaning being discussed, and, in turn, to substantiate a given ideology. The purpose of the present analysis is precisely to see how this process of validation is performed by RAAs when introducing the associated RA, its contents, the type of activity carried out and its function.

RAAs provide an interesting ground for investigation in that their function is to preview the content of the RA in a way that is concise, cohesive, transparent and coherent with respect to the ensuing text, but also in a way that is appealing, so as to attract readers, stimulate their curiosity and push them to read the full associated text (Bondi, Lorés Sanz 2014; Huckin 2006; Swales, Feak 2009). A major factor in order to persuade readers and

convince them that the RA is worth reading is not only its informative content, but also how the discussion of such contents is anticipated. In other words, it is the sense of authoritativeness, soundness or 'scientificity' that is associated to it. In fact, whereas such an impression can be recognized and fully grasped only after completing reading the RA, in RAAs this sense needs to be evoked discursively, through specific linguistic choices which are selected to describe the type of activity performed by the RA which can be introduced as research activity proper (based on observation), or argumentative activity (based on interpretation and speculation), discursive activity (based on reporting or description) (Hyland 2002), or as an activity that, for reasons of impact, originality, and innovativeness, contributes to the progress of disciplinary knowledge. The specific focus of this analysis will be on the verbs which are used in RAAs to point to such activities and on the possible relationship between such verbs and the type of content being dealt with.

2. Material and method

This investigation analyses RAAs from the *Harvard Law Review* (HLR), available on the journal webpage (https://harvardlawreview.org/issues/). The choice of this specific journal is due to several reasons. Firstly, the Harvard Law School has a long-standing tradition in legal studies and is the home of top ranking reviews in key legal disciplines, such as civil rights (*Harvard Civil Rights-Civil Liberties Law Review*), commercial law (*Harvard Business Law Review*), environmental law (*Harvard Environmental Law Review*), international law (*Harvard International Law Journal*), and matters concerning sexuality and gender (*Harvard Journal of Law & Gender*.[1] Secondly, according to the parameters of Google Scholar Metrics, HLR is a top ranking law journal in terms of citations,[2] therefore it is likely to be perceived by users as an authoritative tool for knowledge dissemination (KD) and as a reference for the discipline in that, to put is simply, it is extensively read and cited. Strictly related to this is the fact that the HLR is available through an open source site, where archives, containing RAAs and RAs, are fully accessible via the journal webpage without registration, identification or any form of filtering. In such contexts, the awareness on the part of users, both writers and readers, of the journal being an important KD tool is maximized due to the availability and accessibility of its contents.

[1] http://law.bepress.com/assets/images/expresso/ExpressO_Submission_Guide_2015-16.pdf)
[2] http://law.bepress.com/assets/images/expresso/ExpressO_Submission_Guide_2015-16.pdf   (last accessed in January 2019); see also https://harvardlawreview.org/about/.

Another factor that makes the journal a privileged channel for KD is the fact that, according to the journal description, "the Harvard Law Review is a student-run organization whose primary purpose is to publish a journal of legal scholarship […] designed to be an effective research tool for practicing lawyers and students of the law" (https://harvardlawreview.org/about/). In this context, more than in expert-to-expert settings, writers are aware that they are expressly writing for novices or training experts, who do have very specific needs, interests and expectations (for instance, possible gaps due to little experience to be filled by expert comments), which are different from those of expert audiences. As a consequence, the journal is not primarily intended for speculative purposes, or aimed at creating debate, questioning principles, or providing 'food for thought', as would likely be the case with expert-targeted publications, but it is rather meant for training audiences to fully comprehend and assimilate domain specific contents so as to broaden their competence by clearly establishing notions, clarifying concepts, discussing practical cases, anticipating and explaining possible applications, providing examples, etc. In other words, the HLR is aimed at setting and controlling the ideological and epistemological bases of the discipline rather than question, revise or even expand them.

The journal was first published in 1887 (one of the earliest student-edited legal journals in the US) and, from November 2006 (volume 120) up to the present time (volume 131), issues (organized in yearly volumes) are available on the journal webpage. Each volume contains 8 issues (those for the months of November and December of a given year and issues from January to June of the following year). Each issue contains a varying number of RAs (labelled both as 'articles' and 'essays'), as well as other very discipline-specific genres like 'notes', 'comments on recent cases' and 'comments on recent legislation'. Whereas the latter genres are penned by law students, hence novices, RAs are all authored by professors, judges, and practitioners, hence experts. RAs are not evenly distributed in the various issues (i.e. the November issue of each year only contains comments and in the remaining issues the number of RAs ranges from a minimum of 1 to a maximum of 4 per issue, corresponding to an average of 1.3 RAs per issue).

The present investigation will only focus on RAs, that is expert-authored texts, and more precisely on RAAs referring to them, on the basis of the assumption that the type of discourse to be found there is likely to be indicative of the way experts wish disciplinary-relevant principles, practices, processes and products to be understood by both the *esoteric* disciplinary community (i.e. legal experts – Myers 1990) – to which such texts are expressly targeted – and the *exoteric* and extended academic community (i.e.

scholars in other domains – Myers 1990), as well as the lay community – to which these texts are made available.

Quantitatively speaking, we have considered 12 full volumes (from volume 120 to 131) and we have collected 128 RAAs (totalling about 37,800 words, approximately 295 words per RAA). All issues are miscellaneous (with only one exception, a special issue in memory of a renowned scholar, which has been counted for our analysis). In all the available issues, online RAAs are accompanied by a link to the PDF of the full RA, and they are all pre-headed (i.e. before the title) by a tag indicating the general topic of the RAA/RA (i.e. Constitutional Law, Civil Procedures, Law & Economics, Civil Rights, etc.), which can also function as a hyperlink to a page listing all contributions (RAs, notes, comments, etc.) dealing with the same topic. Given the miscellaneous nature of the issues, this is also a way of allowing readers to coherently navigate the archive and find relevant material. In order to make the material in our corpus manageable for our investigation, these tags have been used to organize the material thematically and divide it into smaller sub-corpora. The use of tags as organizing criterion has been adopted precisely because this is the only research criterion which is available to prospect readers to find relevant texts; moreover, in the HLR they are not meant as purely organizational resources, but as effective retrieval devices and, as such, they presuppose a varying level of disciplinary competence for these labels to be transparent and appealing.

On the basis of this parameter it was possible to distinguish two main sub-corpora: the *esoteric* and the *non-esoteric* one.

The *esoteric* sub-corpus contains texts/contents which are directly and explicitly targeted to legal experts, that is the esoteric community, and are organized under tags which presuppose a specific level of formal competence on the part of readers for the relevant contents to be transparent and appealing (such as Corporate Law, Separation of Powers, Critical Legal Studies, Federal Courts, Administrative Law, Constitutional Law, International Law, Criminal Law, Constitutional Theory, etc.). Such texts are likely to be meant to investigate in depth the peculiarities of some norms and legal principles and their core and peripheral applicability, and the consequences and expectations concerning their applications. These tags already point to some form of gate-keeping, which is also to be found in the titles of the related RAAs, as can be seen in the examples below:

1) Presidential Norms and Article II. (esoteric 2018-2) [tag: Separation of Powers)]

2) Aggregate Litigation Goes Public: Representative Suits by State Attorneys General. (esoteric 2012-2) [tag: Civil Procedure]

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As we can infer from these excerpts, these texts (both RAA and RA) are intended for the articulation, problematization and complexification (i.e. the adding of details concerning different aspects or parts of a given notion, phenomenon, activity, role, etc.) of contents which are presupposed to be already accessible and familiar to the targeted audience. In this case, meaning negotiation is rhetorically possible only on the basis of shared and accepted theoretical bases (or theoretical constraints) and, possibly, of shared knowledge of practical cases. In other words, these texts are targeted to readers-as-experts. This sub-corpus counts 97 RAAs (totalling more than 29,000 words).

Texts in the *non-esoteric* sub-corpus are not necessarily meant to avoid gate-keeping effects but, on the one hand, their wording does not presuppose a threshold level of disciplinary competence for comprehension, and, on the other, they deal with contents that may be of interest also to those who are not legal experts, that is to say, other scholars or even lay users (i.e. hyperlinked to tags such as Civil Rights, Election and Voting Law, Property, Family Law, Copyright, etc.). Such reader-friendliness can also be found in the titles of such texts, as can be seen in the following excerpts:

3) Equality and the New Parenthood. (non-esoteric, 2016- 8) [tag: Family Law Marriage]

4) Worth a Thousand Words: The Images of Copyright. (non-esoteric, 2012-8) [tag: Copyright]

These texts present contents that are not primarily or solely devoted to the definition or discussion of specific theoretical principles, but rather of principles that have some relevance for our everyday life, in that they focus on community members as private citizens and their needs, interests and rights. In other words, these texts are also open to readers-as-stakeholders. This sub-corpus consists of 29 RAAs (approx. 8,700 words).

On the basis of the tags, another possible distinction can easily be made among texts in the two sub-corpora, thus introducing another level of analysis to our investigation, and this is represented by the parameter 'money' as a possible way of dealing with reality, where rights and obligations are expressed in terms of credits or debts. This applies to both the texts in the esoteric sub-corpus, which establish commercial regulations in terms of gaining, saving and losing money, or where legal principles and norms are expressed in terms of sanctions, taxation, etc. (corresponding to the tags Contract Law, Antitrust, Law and Business, Property, etc.), and those in the non-esoteric sub-corpus, which deal with issues concerning property (both intellectual and private) or which discuss matters in terms of fines, refunds, etc. (with the tags Private Property, Intellectual Property, Copyright, etc.).

According to these parameters, our corpus can be distinguished in the following sub-corpora:

Esoteric sub-corpus:

- non-money-related (general principles): tags such as Administrative Law, Constitutional Theory, International Law, etc.;
- money-related (business and commercial regulation, sanctions, taxation, etc.): tags such as Contract Law, Antitrust, Law and Business, etc.

Non-esoteric sub-corpus:

- non-money-related (general principles): tags like Civil Rights, Family Law, Voting Law, etc.;
- money-related (property, gain, losses, refunds): tags such as Private Property, Intellectual Property, Copyright, etc.

For the sake of clarity, the distribution of the texts per topic can be seen in the table below:

	esoteric		*non-esoteric*	
	no-money	*money*	*no-money*	*money*
number of RAAs	76	21	18	11
total words	23,407	5,785	5,287	3,497

Table 1
Content-based description of the corpus.

Although the frequencies are clearly unevenly distributed across the various sub-corpora, it is relevant, even at this early stage of the analysis, to point out that the different topics bear significantly different ideological weight, concern different levels of abstraction and presuppose different areas of application (public vs. private, abstract vs. practical, normative vs. operative, etc.). More specifically, the esoteric non-money-related sub-corpus regards ways of conceptualizing, problematizing and classifying reality and behaving in institutional and administrative settings; the esoteric money-related sub-corpus deals with ways of negotiating relationships and exchanging goods; the non-esoteric non-money-related sub-corpus concerns ways of behaving in private and domestic settings; finally, the non-esoteric money-related sub-corpus concerns ways of regulating possession and property. Such different orientations are expected to bias the way content is dealt with in the RAs and, consequently, the way RAAs anticipate the type of discussion to be found in the RAs in order for them to sound appealing and reliable.

The method applied to the present analysis is modelled after Hyland's (2002, 2005) classification of reporting verbs, according to which verbs are divided into three main groups (research, cognitive and discursive). The

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search for reporting verbs – since the corpus is relatively manageable – was carried out manually, in order to be sure not to leave out relevant cases, and was organized by evidencing all the verbal formulations (active, passive, progressive, participles, etc.) used in RAAs to point to the associated RA and to describe the type of activity performed by the text. Given the peculiar metalinguistic nature of RAAs as texts pointing to other texts, or, more precisely, as texts anticipating what is to be found in the associated RA rather than introducing original material, reporting verbs hold a particular status within the genre of RAAs. For this reason, a further articulation of the categories of reporting verbs provided by Hyland (2002) became necessary. As a matter of fact, the group of cognitive verbs in Hyland's model (i.e. those evidencing cognitive acts, marking positive or critical stance, or tentativeness) is very restricted in our corpus, to the point of proving relatively unrelevant for our analysis, whereas some marked elements of cognition (i.e. evaluation, deduction, induction, etc.) are found in formulations which in Hyland's model are classified as either research or discourse verbs. For this reason, for the purpose of this analysis, these structures have been grouped under the label of argumentative verbs, which indeed point to a research activity carried out through discourse, but which markedly presuppose a clear interpretive design or plan hinging on cognition, appraisal and evaluation (which will be discussed in the relevant section below). This group appears to be crucial for the present discussion since these resources are not only typical of academic writing but generally reflect one of the distinctive discursive practices of legal communication (especially in forensic settings – Gibbons 2003; Tiersma, Solan 2012; Williams, Gotti 2005). Another extension of Hyland's model is represented by a group of verbs that, if infrequent in number, clearly stand out for their rhetorical impact in that they are used to express and emphasise the RA's contribution to current knowledge. The use of such resources in RAAs is possibly likely due to the inherently promotional character of the genre, as will be discussed in detail in the relevant section, below.

On the basis of these specifications, the categories that are about to be analysed here are represented by research verbs, argumentation verbs, discourse verbs and contribution verbs.

3. Results and discussion

Research verbs are those formulations pointing to the experimental activity carried out in the RA. These verbs highlight research-related aspects by codifying research as an act of observation of 'empirical' reality and, more precisely, by foregrounding acts of investigation (i.e. *explore, examine, unpack*, etc.), classification (i.e. *identify, use, apply*, etc.), observation and

measuring (i.e. *observe, see, find,* etc.) or explanation and understanding (rather than interpretation) of data or findings (i.e. *demonstrate, show, substantiate, reveal,* etc.), as can be seen in the texts below:

> 5) This Article *identifies* four factors that create an unlevel playing field in that market check: information asymmetries, valuable management, management financial incentives to discourage overbids, and the "ticking-clock" problem. (2016-2, esoteric, n.m.)

> 6) This Article therefore *examines* intimate discrimination, focusing on race, sex, and disability, and *identifies* key norms for each category. (2009-8, non-esoteric, n.m.)

> 7) This Article *shows* that both positions are mistaken. (2009-1, esoteric, m.)

As these examples show, these verbs represent the RA as reporting a data-driven (Tognini-Bonelli 2001, pp. 84-85), inductive activity (from data to generalizations), by which the expression of authorial stance is minimized whereas depersonalization and, consequently, the impression of objectivity are maximized.

  Argumentative verbs are those verbs which may have cognitive undertones (i.e. *assume, evaluate, ask,* etc.), but are primarily meant to point to a specific design at the basis of the activity carried out by the RA, according to which material was selected (i.e. *focus, establish, advance,* etc.), parameters were established (i.e. *accept, challenge, contend,* etc.), research questions and aims defined (i.e. *aim, argue, propose,* etc.) and results interpreted and evaluated with respect to a given interpretive framework (i.e. *interpret, conclude, suggest,* etc.). Some distinctive uses of such verbs can be observed in the following extracts:

> 8) [T]his Article *argues* that contemporary copyright discourse has overlooked constraint's generative upside. (2015-7, non-esoteric, m.)

> 9) This Article *advances the immodest claim* that the market definition process is incoherent as a matter of basic economic principles and hence should be abandoned entirely. (2010-1, esoteric, n.m.)

> 10) [T]his Article *challenges* some of the historical, normative, and predictive dimensions of prominent critiques of same-sex marriage. (2016-8, non-esoteric, n.m.)

As we can see, such formulations represent the ensuing RAs as carrying out a form of data-based (Tognini-Bonelli 2001), deductive and hypotheses-controlled activity, very much goal-oriented – i.e. meant to make a point – and carried out through a compelling argumentative organization of the content. Unlike research verbs, argumentative resources maximize stance

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and, if indirectly, authorial presence and guidance as well.

Discourse verbs, for the purpose of this analysis, are those formulations referring to the associated RA as describing or reporting about some extralinguistic reality, hence minimizing cognitive activities and concealing the writer's intention to make a point. These verbal constructions may point to both endophoric textual organization (i.e. *begin, close, turn to,* etc.) and content organization (i.e. *distinguish, describe, chart,* etc.), or may introduce the discursive stages of the process of meaning presentation (i.e. *address, introduce, consider, discuss,* etc.), as the following sample texts show:

11) The Article *begins by* describing four particularly striking examples of anti-inquisitorialism at work. (2009-7, esoteric, n.m.)

12) This Article *describes* these efforts, which include putting conditions on the entry of development dollars through contract […]. (2009-2, esoteric, m.)

13) This Article *addresses* this institutional design question […]. (2010-14, non-esoteric, n.m.)

These verbs anticipate the associated RA as performing the act of describing phenomena or illustrating a state of affair rather than as presenting the result of a research-related process or as an interpretively biased hypothesis-testing operation. Through such verbal resources, authorial presence and the impression of interpretive bias are circumscribed and minimized.

Finally, the group of *contribution* markers includes verbs or verb phrases by which the focus shifts from the type of scientific activity being carried out (i.e. the content and the way it is dealt with) to the type of effect said activity is intended to produce on existing knowledge, in terms of novelty, originality or impact (i.e. *offer*, *allow*, *provide*, *fill* [*gaps*], *help*, *contribute*, [*this Article*] *is the first,* etc.). The texts below provide some relevant examples of the function performed by these verbs:

14) This Article *provides a new framework* to evaluate the divergence between legal norms and moral norms. (2007-11, esoteric n.m.)

15) The Article also attempts to *make progress* in explaining how, and in what contexts, successful legal and political commitment may be possible. (2011-11, esoteric, n.m.)

16) This Article *provides the first systematic evidence* that managements have been using bundling to introduce antitakeover defences. (2010-6, esoteric, m.)

Phrases like the ones in the extracts above have a function which is eminently promotional with respect to the associated RAs, in that, by highlighting peripheral or complementary aspects (i.e. novelty, originality, etc.) rather than core and scientific ones, they are primarily meant to intrigue the reader towards reading the full RA in order to find out more about its content and, possibly, to measure its actual effectiveness and impact.

The general frequencies of reporting verbs have been organized in two tables, where they are expressed in normalized terms (per 10,000 words) in order to facilitate comparability. The first table lists the general distribution of the verbs in the two macro sub-corpora (i.e. esoteric vs. non-esoteric); the columns represent the two sub-corpora and the lines contain the occurrences of the various verbs.

	esoteric	*non-esoteric*	TOTAL
research	48.1	80.7	128.8
argumentation	37.6	73.8	111.4
discourse	19.6	34.1	53.7
contribution	8.9	14.1	23.0
TOTAL	114.2	202,7	

Table 2
General frequencies of reporting verbs in the *esoteric* and *non-esoteric* sub-corpora.

By observing the total quantities in the table (last column), we can see the overall predominance of research verbs (128.8 occurrences) which means that legal RAs in HLR tend to be presented as the outcome of a research activity. This trend seems to suggest that, as sources of disciplinary knowledge, RAs in the legal domain acquire reliability when they are concerned with the observation and understanding (rather than stance-based interpretation) of reality. As a consequence, possible underlying ideologies in such texts (determining criteria by which to distinguish what is legitimate vs. what is sanctionable) appear as valid in that they reflect or are instantiated in reality, rather than because they match a given theory or validate a hypothesis. In other words, these verbs corroborate the idea that it is the observed reality that proves the validity of the ideology, rather than the other way around.

The second-ranking activity associated to RAs is argumentation, which implies the framing of meaning within a recognizable framework governing interpretation and allowing for the possible testing of hypotheses and the drawing of conclusions. This is not surprising, in consideration of two epistemologically and disciplinarily relevant factors. Firstly, RAs in social sciences and especially in the legal domain are primarily persuasive and argumentative (Hiltunen 2006; Sala 2010; Tessuto 2012) – their move structure is expected to contain a discussion and some concluding comments to coherently make a point – and this is also due to the fact that legal research

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is not an experimental domain (not like the natural sciences, at least). Secondly, argumentation is the basis of forensic discourse (Gibbons 2003; Marshall 1989; Neumann 2005), and writers of legal RAs (and RAAs) are all scholars or practitioners, therefore competent users of argumentative rhetoric. In the light of this, what appears to be striking is the fact that argumentation is 'only' the second-ranking verbal strategy in RAAs. This can be explained by the consideration made above: the soundness of the RA as a source of knowledge seems to benefit from the impression of objectivity and authorial invisibility, hence by the presentation of the RAs as the site of scientific research rather than scholarly interpretation.

Another noticeable trend concerns the higher frequencies of all reporting verbs in the non-esoteric sub-corpus than in sub-corpus containing RAAs expressly targeting the esoteric community (202,7 vs 114,2). A possible explanation for this uneven distribution may be due to the fact that the esoteric community does not need metatextual framing through reporting verbs in order to grasp the validity of the disciplinary contents dealt with in the RAs, whereas non-esoteric contents may need to be framed with respect to a clear scientific activity (i.e. as the result of research, the conclusion of argumentation, the final stage of a discussion, etc.), for their reliability to be emphasized. In other words, for texts which may be of more general interest, which may tickle the curiosity of the lay reader, there appears to be much more relevant need to clearly and metalinguistically associate them to a specific scientific activity (especially research, argumentation, but also discussion and contribution), for such association implies the existence, for instance, of data behind research verbs, hypothesis for argumentation, a state of affairs worth reporting through discourse verbs, or some disciplinary relevance for contribution markers.

The second table lists the distribution of reporting verbs in a more detailed way and, more specifically, from the thematic angle 'money' vs 'no-money'. This perspective provides a slightly different understanding of the frequencies.

		research	argumentation	discourse	contribution
no-money	esoteric	23.9	27.3	16.2	8.9
	non-esoteric	26.4	51.1	11.3	5.6
subtotal		50.3	78.4	27.5	14.5
money	esoteric	24.2	10.3	3.4	-
	non-esoteric	54.3	22.8	22.8	8.5
subtotal		78.5	33.1	26.2	8.5

Table 3
Thematic distribution (no-money vs. money) of reporting verbs in the *esoteric* and *non-esoteric* sub-corpora.

The data in the table indicate a major difference in the way reporting verbs are used to anticipate the ensuing RAs and this difference seems to depend on the fact that their content is either concerned with general principles and behaviours not expressed in money-related terms or on ideas such as gains, losses, rentability, financial penalty, etc.

3.1. Frequencies of reporting verbs in the 'no-money' sub-corpus

The scientific activity which is associated to the presentation and discussion of general and non-money-related principles, their validity and application, is argumentation (sub-totalling 78.4 occurrences): the theoretical and principle-based character of such contents seems to be reflected and best suited by the deductive, goal-oriented, and paradigm-based nature of argumentation, which moves from conditions to conclusions, to generalizations. This applies to the case of esoteric contents (27.3), where referring back to theory or to accepted frameworks is a way of fixing principles and ideology-based ideas and, in turn, of validating or sanctioning behaviours, while at the same time conferring authoritativeness and reliability to the sources of such knowledge making. The same applies also, and markedly so (51.1), to the case of non-esoteric contents, where ideas which may otherwise seem just commonsensical acquire legitimation (hence ideological backing and disciplinary relevance) when they are argued, interpreted as instantiation of more general paradigms and framed with respect to the theory (i.e. for given behaviours to be recognized as legitimate – hence ideologically acceptable – rather than questionable if not altogether deviant).

Research verbs are second-ranking (50.3), and the importance and relevance of these resources – which confer an empirical quality to the associated RA – has already been discussed above. However, considering the ratio between research verbs and argumentation verbs, the former group seems to be quite strategic for the esoteric community, where experts appear to be persuaded as much by evidence-based observation as by interpretation and reasoning (with 23.9 occ. of research verbs vs. 27.3 occ. of argumentation verbs) rather than for the non-esoteric audiences, who may find interpretation more convincing and appealing (26.4 occ. of research verbs vs. 51.1 occ. of argumentation verbs).

The occurrence of discourse (27.5) and contribution (14.5) markers is quite limited. The relative scarceness of discourse verbs may owe to the already noticed metatextual character of RAAs, by which explicitation and lexicalization of the act of reporting and describing do not appear to be necessary in that already presupposed by the RAA genre itself. In other words, for the sake of exemplification, discourse verbs in a RAA sentence (of the type 'This article *discusses* X and *begins* by *describing* it and

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distinguishing it from Y') may easily be omitted (as in 'This article deals with X, which can be described as… and may be distinguished from Y…') without the text losing much of its metatextual character (which in our example is implied by the verb 'deal with' and the passive use of the verb 'describe' and 'distinguish', neither of which has the function of reporting verb in that they do not have the term 'RA' as their grammatical agent). Moreover, the scarce use of discourse formulations can be interpreted in relation to the relatively higher use of argumentation verbs, as seems to be especially the case in the *non-esoteric* sub-corpus (51.1 occ. of argumentation verbs vs. 11.3 occ. of discourse verbs): the impression is that RAA writers consider the presentation of certain contents to be (perceived as being) more reliable when they are dealt with through a compelling and systematic argumentation rather than a plain description or exposition, hence privileging argumentative resources over discourse verbs.

The case of contribution markers is sensibly different, since they are not merely reporting formulations, but they add extra meaning in terms of positive evaluation towards the associated RA. Therefore, if scarce, their presence is indeed relevant. In particular, if we compare their distribution in the no-money esoteric vs. non-esoteric sub-corpus, we notice that occurrences in the former almost double those in the latter, as if experts interested in understanding general principles and applications needed to be informed beforehand about the relevance and impact of the RA on the disciplinary community, so as to advisedly decide whether it is worthwhile to proceed reading the full text.

3.2. Frequencies of reporting verbs in the 'money' sub-corpus

The case of money-related texts appears to be quite different from the cases discussed above. As a matter of fact, when RAs deal with economic, monetary, business or property-related issues, they are depicted in the associated RAAs mainly through research verbs (sub-total of 78.5). In other words, such contents seem to acquire validity and trustworthiness when they are presented as the result of observation and understanding of objective evidence, both in esoteric contexts (24.2), which is the case of public, corporate and administrative issues (i.e. business, commerce, antitrust, etc.), and in non-esoteric ones (54.3), dealing with more circumscribed, practical and ordinary settings (i.e. private and intellectual property). The predominance of research verbs may be due to the fact that such issues refer to data that are indeed measurable and quantifiable in monetary terms – thus can be presented as empirical evidence for observation.

What is noticeable in the money-related sub-corpus is, on the one hand, the marked gap between research verbs and the other verbs (33.1 for argumentation verbs, 26.2 for discourse verbs and 8.5 for contribution verbs)

and, on the other, the little difference in frequency between argumentation and discussion formulations. This could be due to the fact that, when dealing with contents expressed in money-related terms, RA authoritativeness is easily constructed by giving emphasis to empirical observation and measuring, while interpretation and description of the same contents do not seem to be particularly strategic in boosting text reliability, especially with non-esoteric meanings (where the frequencies of argumentation and discourse forms are the same, amounting to 22.8 occ. each). This possibly justifies the use of contribution markers precisely in non-esoteric RAAs, which are expressly meant to emphasize metalinguistically the worth of the associated RA.

4. Concluding remarks

This chapter has assessed the way knowledge dissemination practices in legal studies may be influenced by the epistemology at the basis of the discipline and, especially, the level of competence which is presupposed and expected on the part of RAA readers – hence our distinction between esoteric and non-esoteric users – with respect to specific ideas and principles (i.e. how to conceptualize segments of reality, relations, etc.) and disciplinary practices (i.e. how to negotiate relationships with community members and deal with reality objects). In legal research settings, disciplinary practices concern primarily the appropriate way of investigating and discussing contents, thus regarding the type of scientific activity that is considered to be best suited/suitable to handle them – hence the distinction between research activity, argumentative activity, discourse activity, and promotional activity through markers of contribution. The variation of such practices in legal studies may be related to ideology-based parameters, as is the idea of money as an effective and workable way of appreciating and controlling reality, establishing order, solving disputes, etc. – hence the distinction between money-related and non-money-related contents.

In order to be able to coherently manage these parameters, evaluate the dynamics between them and observe the type of rhetorical strategies they are associated with, we have subdivided our HLR corpus of RAAs on the basis of the tags associated to them and used as hyperlinks, and we have organized the material in coherent sub-corpora for them to be easily analysed. The first distinction concerns the targeted audience, that consists of either expert and competent readers in the case of esoteric texts – those presupposing a threshold level of disciplinary and epistemological competence for them to be appealing and comprehensible (i.e. Constitutional Theory, Critical Legal Studies, Federal Courts, Administrative Law, etc.) – or lay readers for non-esoteric texts – those discussing legal matters of general interest (i.e. Family

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Law, Copyright, Property, etc.). The second distinction has instead to do with the content of the texts, which can be represented by general and non-money-related issues or, conversely, by contents that could be conceptualized in monetary terms (i.e. fines, taxation, refunds, etc.).

On the basis of our quantitative analysis (cf. Table 2), the first parameter, i.e. the targeted audience, only allows us to claim that RAAs addressed to the esoteric community make a relatively limited use of all the four classes of reporting verbs in order to anticipate the type of scientific activity to be found in the ensuing RA, whereas such frequencies are almost doubled in RAAs targeting non-esoteric audiences. However, the ranking of such verbal strategies is the same in both sub-corpora, with research verbs as the most used resource, followed by argumentation, discourse and contribution markers, respectively. An interesting piece of evidence in this respect is the fact that research and argumentation formulations are by far the privileged reporting verbs to be found in HLR RAAs.

What instead appears to be a more significant parameter for rhetorical differentiation is represented by contents, which can be either non-money- or money-related. The different ideological framing brought about by this parameter, which seems to determine different preferences in verbal choices found in RAAs, can be synthesized as follows:

- non-money-related RAs discuss rights, norms and duties, that is how to deal with people (individuals, groups, institutions, etc.), thus problematizing ways of being and behaving;
- money-related RAs discuss debts and credits, that is how to negotiate relations with community members, thus problematizing ways of managing interests, controlling property or disposing of objects and goods.

In short, the former group is concerned with 'what we can do' vs. 'what we cannot do', whereas the second with 'what we must give' vs. 'what we can get'.

This different orientation may indeed explain and justify the different metatextual handling performed by RAA reporting verbs, and especially by research and argumentation verbs. As a matter of fact, on the one hand, non-money related principles (i.e. regulating what is legitimate vs. sanctionable) are not likely to be problematic – they do not necessarily imply conflicting scenarios (i.e. somebody's rights are not necessarily a limitation of someone else's) – but are possibly too abstract, therefore they may benefit from a presentation that, through argumentation verbs, metatextually emphasizes persuasiveness and the expert's interpretation for them to be fully comprehended and recognized as relevant and valid. On the other hand, money-related meanings may be problematic, face-threatening or at least sensitive contents (especially when meant to control or even reduce private

and corporate interests, in that somebody's interests may coincide with a limitation of someone else's). On this basis, the introduction of these meaning in RAAs seems to benefit from a detached, seemingly objective presentation carried out through research verbs, which maximizes the impression of scientific value and conceals expert interpretation that, as such, even though competent, might be perceived as partial, unbalanced or subjectively biased.

Even though the trends observed and discussed here are quite marked, they will have to be tested on a larger and more varied corpus to ascertain whether they indicate a general trend in legal studies in general or if this trend is contextual to the case of HLR.

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ACCOUNTABILITY PRACTICES IN RESEARCH AND PUBLICATION ETHICS ON THE WEB
Linguistic and discursive features

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Abstract – With the large increase in the amount of published research being carried out throughout the world, potential is mounting for ethical practices to take a back seat in the apparent frequency of reported cases of scientific misconduct. While these cases erode the credibility of scientific research and public trust in the publication process, they often delineate accountabilities between conflicting parties and require organisational and institutional responses to good research practices based on fundamental, ethical principles of research integrity. In this paper, I explore the linguistic and discursive features of research and publication ethics in a representative corpus of misconduct cases as a genre created and maintained by the Committee on Publication Ethics (COPE) organisation over its website. Using a combined framework of methodological perspectives from functionally-defined criteria of discourse and genre categorizations (Askehave, Swales 2001; Bhatia 2004; Swales 2004) alongside evaluation (Hunston, Thompson 2000) and stance-taking (Biber *et al.* 1999; Hyland 2005), this study looks at the discourse organisational structure of texts with identifiable communicative moves and associated language use to unveil the types of social actors' relations and identities constructed through "Action", "Representation" and "Identification" (Fairclough 2003) of the social events and practices in question via *recontextualization* and *interdiscursivity* (Bhatia 2004, 2017; Fairclough 2003; Sarangi, Brookers-Howell 2006). Linguistic and rhetorical choices made on recontextualized and representational features of text reveal how cases set the tone for accountability between the social actors (parties) involved in matters of research ethics, and how they allow the organisation to take responsibility for the integrity of their research conduct by fostering a climate of responsible practices and adjusting party accountabilities. Attending to both linguistic and discursive features, the communicative practices of the case genre authenticate the competing social relations, identities, values or interests of the parties in this kind of discourse representation, and align the institutional action, identity and values of the organisation with social norms when legitimising its commitment to create and preserve conditions for ethical principles and professional standards essential for a range of responsible practices of research publishing.

Keywords: discourse and genre; accountability; ethics; research integrity.

1. Introduction

As science evolves and violations of scientific research are ramping up across the board, ethics is increasingly being nudged out of the different stages of

the research protocol with a myriad of misconduct cases covering authorship criteria failure, falsification, fabrication, or other issues, recorded by ethics-related professional organisations over their websites and documented in meta-analytical surveys across the disciplines (DuBois *et al.* 2013; Fanelli 2009; Fanelli *et al.* 2019; Steneck 2006). Not only do these cases reveal that the overall integrity of scientific research practices and ethical principles are fundamentally flawed in the relevant scientific community and that the *trust* (Luhmann 1979) between researchers themselves and the larger society is ultimately lost, they also become central to most accounts of *professionalism*, described as a *normative value system* or *ideology* (Evetts 2011).

In this connection, the debate over what constitutes scientific integrity and misconduct has led to different definitional approaches to ethical lapses in research. One influential, ethicist approach has focused on *responsible conduct of research* as a cover term for *research ethics*, meaning "research behaviour viewed from the perspective of moral principles", such as those "associated with or that arise in the course of pursuing research", and *research integrity*, meaning "research behaviour viewed from the perspective of professional standards", such as those of "professional organisations" or "research institutions" (Steneck 2006, p. 56, original italics). The rationale for this approach is that research conduct occurs on a spectrum, from excellent research conduct at one end to research misconduct at the other, with falsification, fabrication and plagiarism being the most serious forms of scientific misconduct that damage the integrity of the research process (Fanelli 2009; Steneck 2006).

Regardless of how detrimental these research practices may be described in the cited literature, the way ethical principles unite with moral and professional standards in social environments of research publishing implies that there are other frameworks within which several different stakeholders across the publishing industry (for instance, author, editors and research institutions) interact with each other and make choices. These interaction frameworks bring into focus the concept of accountability for scientific misconduct, meaning that "[m]oral responsibility assumes a capacity for making rational decisions, which in turn justifies holding moral agents accountable for their actions" (Barrett 2004) and worthy of *blame* (Hieronymi 2004), as a result of their *role-given responsibilitie*s (Barrett 2004). Joined to a moral and functional logic of responsibility and role, accountability thus describes a person or group who can make reliable and responsible decisions, or can take ownership of one's actions and blame if decisions are not made properly. For our purposes here, accountability makes it appropriate for individual stakeholders to be directly responsible as well as accountable for the consequences of blameworthy actions, decisions, or judgments made by themselves in the relational and interpersonal process of

scientific communication, and becomes a key form of social practice by which interaction is achieved. Under these terms, the concept bears on the essential standards of professional integrity and fiduciary trust within the research community and society at large.

Indeed, "risk always involves the question of responsibility" (Beck 2000, p. 8) in social life just as "risk is always discoursally and dialogically constructed" across diverse professional fields (Sarangi, Candlin 2003, p. 119). In this perspective, accountability also makes it possible to identify how professional organisations think their way through the complex cases of scientific misconduct and provide an ethically defensible answer to the consequences of risky conduct that damages research. Not only do many such organisations now exist in plain sight to have quite a bit to say about what is expected of individual stakeholders, they also issue formal research integrity codes and guidelines that set moral standards and functional responsibilities for risky conduct among stakeholders, thus guiding professionally ethical behaviour and preventing scientific misconduct.

Against this background, this study sets out to look for the possible ways in which professional organisations address accountability in research ethics by systematically working to promote responsible conduct in research, strengthening research integrity and reducing the risk of research misconduct. It does so by exploring the linguistic and discursive features of web-sourced research and publication ethics cases acting as text, medium and genre and influencing both form and purpose. The choice for this digital genre makes it possible to see how writers (organisations' insiders) draw attention to issues of alleged scientific misconduct by the parties concerned (authors and editors) and bring together the functionally and morally responsible behaviour entrenched within the principles and practices of ethical accountability in research agendas and grounded in the professional goals of the organisation. To this end, this paper is guided by three complementary research questions:

- RQ1: How do writers communicate socially situated activities of ethically challenging scientific misconduct performed with the case genre and developed from the interaction of rhetorical move structure, communicative purpose, and lexico-grammatical features?

- RQ2: How does the use of move-level linguistic features reveal perceptions, values, or interests of the participants (parties and organisation) in social actions and events?

- RQ3: How does this use bear on the social participants' relationships, roles, and identities by determining what counts as accountability in scientific research principles and practices?

To answer these questions in both descriptive and interpretative terms, I shall first indicate the empirical material and research method used before I undertake the analysis and discussion of the findings for those questions and draw some preliminary conclusions.

2. Material and method

2.1. Corpus data

The empirical data source for this study came from a relatively small-sized, randomized corpus of 30 online cases of scientific misconduct sanctioned by the Committee on Publication Ethics (COPE) institutional website and collected from the COPE database over a four-year period (2015-2018).[1] COPE stands out as the largest ethics-related organisation in the world and is run by scholars and members of the scholarly publishing industry who are drawn to their work by a commitment to ethical scholarly practice (personal communication).[2] Topics for case publication ethics in the samples covered *authorship*, *conflicts of interest*, *consent for publication*, *copyright*, *correction of the literature*, *data*, *misconduct/questionable behaviour*, *peer review*, and *plagiarism*, thus cutting across all subjects of ethically challenging scientific wrongdoing claimed by individual researchers and institutions. The overall data source for this study was a 22,946 word corpus of published cases (Table 1).

Total tokens	Total sentences	Total mean (in words)	Mean length per text
22,946	930	24.42	764.87

Table 1
Quantitative data of case publication ethics collected from COPE Case Taxonomy
(Topics) through Word Smith Tools 6.0 (Scott 2015).

2.2. Analytical data

To address the two research questions in both quantitative and qualitative terms, this study sought first to contextualize misconduct cases in terms of their activity and function, and then to identify the overall rhetorical structure of the digital genre acting as a medium and a text (Yates, Orlikowski 1992). In the latter mode, the study relied on the functionally-defined criteria of

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[1] https://publicationethics.org/guidance/Case (downloaded on 31 May 2018).
[2] The 'About COPE' website page describes where the organisation aspires to be upon achieving its mission (https://publicationethics.org/about/our-organisation; last accessed in January 2020).

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discourse and genre categorizations (Askehave, Swales 2001; Bhatia 2004; Swales 1990, 2004) to examine a sequence of textually relevant move patterns with communicative purposes, with each functional move being seen as "a discoursal or rhetorical unit that performs a coherent communicative function" (Swales 2004, p. 228; and similarly Biber *et al.* 2007, p. 23), or as a "socio-cognitive pattern [of] a professional community" (Bhatia 2004, p. 9). Linguistic analysis of communicative moves kept track of their patterns for evaluative meanings expressed under the headings of *evaluation* (Hunston, Thompson 2000) and *stance* markers of *hedges*, *boosters*, *attitude markers*, and *self-mention* (Hyland 2005), as well as other linguistic approaches to narrative (Toolan 2001) and systemic perspectives on language use (Halliday, Matthiessen 2004).

Standing alongside this "explanatory, holistic approach" (Garzone, Santulli 2004, p. 352) to the qualitative, evaluative stance meaning analysis of discourse is the recognition that cases favoured the distribution of information between writer's account and attributed source via indirect reporting (Fairclough 2003). Indirect reporting (summarization) subsumes much of the rhetorical process of *recontextualization* (Fairclough 2003; Sarangi, Brookers-Howell 2006), which relates to "how prior talk, text and context are reproduced and transformed in dynamic, dialogic fashion with consequences of meaning making" (Sarangi, Brookers-Howell 2006, p. 6), and brings to the fore the concept of *interdiscursivity* that covers the broader kind of *voice appropriation* (Bhatia 2004, 2017; Fairclough 2003) from different discourses and genres. In order to address the nature of accountability in the corpus data, analysis of the major linguistic and discursive features referenced by the communicative moves equally considered the effects of their textual elements of social relations, identities and roles on social events and practices between participating social actors (Fairclough 2003, pp. 8-11) as they were relevant to articulate "three major types of text meaning: action, representation, and identification" (Fairclough 2003, pp. 26-28).

3. Results and discussion

3.1. Foot in the door: Contextualising cases for their activity and function

Prior to analysing the genre's rhetorical structure enacted within a medium and communicative purpose, it is useful to put the sampled texts in the general context of their activity and function. Sampled cases are representations of scenarios based on real-life situations and problem solving, which illustrate issues of research or publication ethics brought specifically

by authors, journal editors and other institutions (parties) to the COPE Forum (hereinafter referred to as 'the organisation') and discussed at the Forum meetings in London (personal communication). Prepared by the organisation's professional 'insiders' (personal communication) and stripped of the party identifying details for data protection, cases essentially inform how any particular complaint raised by the parties breached ethical standards and integrity of the scientific record before seeing how the organisation advised on, and resolved the issue for the conflicted parties during those discussions.[3]

By providing a public information trace of discussions on scientific misconduct over the Web, cases essentially come through as the writer's "frontstage" work done "backstage" (Goffman 1959) by the organisation, offering a way to understand social interactions, events and local practices shaped by the time and place in which they occurred alongside the participating social actors (parties, organisation). Just as this writing process allows for the representation of social actors, events and situations to be seen as part of the recontextualizing rhetorical strategies, that is, incorporating an earlier event within the context of a new one through selectively appropriate strategies, as further elaborated below, so too it suggests that cases rely on a mixture of 'narrating', 'describing', 'arguing', and 'reporting' rhetorical functions, otherwise called *generic values* (Bhatia 2004) or *discourse modes* (Bax 2011), appearing simultaneously across different types of text at both the genre and sub-genre level.

In practice, these ways of recontextualizing social events that took place back stage carry over to the front stage organisational and rhetorical structure of cases writers had in mind. As a result, they establish the social function of the genre created primarily for informative, advisory as well as resolutive purposes for the parties to the conflicted case – researchers, journal editors, publishers and other individuals. Yet, we may well expect that case writers do more to cover everything from case information to advice and resolution angles, and aim to influence member editors and publishers through education and support for ethical practices in institutionalised contexts, alongside the promotion of professional debate in the wider community, as laid out by the organisation's remit over the web site ('About COPE' webpage). Under these terms, the functionality of the genre is one which brings out the complexity of several possible layers of communicative purposes as advanced in most prominent text and genre analytical perspectives (Askehave, Swales 2001; Bhatia 2004).

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[3] This rationale of case writing lays out quite clearly that the organisation has no enforcement authority since it leaves the final decision on taking legal action in the case up to the individual.

*L*ingue e
*L*inguaggi

3.2. Overall generic structure

As shown in Table 2 (Annexes), a key feature of cases is that they are conventionally structured in section headings as predetermined by the writer's requirements for explicit format and usage situations over the COPE website. Clearly, not all of these sections can be defined as communicative moves since TITLE, CASE NUMBER, YEAR and CLASSIFICATION appear outside text-based entries, with TITLE always being set as a link back to the case itself as are YEAR and CLASSIFICATION sections realized in the medium mode by the functional value of hyperlinks.[4] However, these medium-based section headings become part and parcel of the overall standardized structure of the genre, and add to the backbone of text-based entries appearing across the sequence of communicative Moves 1, 2, 3, 4, and 5 (Table 2) as necessary to provide instant recounts of the organisation's earlier discussions on scientific misconduct – those which rely on a broader view of the representation of social events via recontextualization and the ways these events are narrated, described, reported, and evaluated.

This way then, the multimodal generic structure reveals that writers are mindful of a highly conventionalized and running schema for text production and web medium exploitation in which to organize information, advice and orient the wider audience to the process of case resolution. Besides accommodating the multimodal, non-linear characteristic of the digital genre, writers stage the development of their purposes through a series of moves or rhetorically distinct sub-moves, such as those in Move 1 (Table 2). As a result of this, the overall structural description of the digital genre can be seen as "a typified rhetorical action in the context of socially defined recurrent situations" (Yates, Orlikowski 1992, p. 301) or, like any other offline genres, as an institutionalized, rhetorical behaviour of *generic integrity* (Bhatia 2004), showing how COPE professional writers conceptualise their own communicative activities and purposes and write about ethically challenging issues in research and publication.

3.3. Stance-marking devices

As part of this generic structure, the use of stance-making devices is easily detectable in textually relevant communicative moves. Table 3 in Annexes shows the frequency counts of different lexical features for evaluative stancetaking through hedges (e.g. *can/may/might/would, believe/suggest, likely/possible, assumption/possibility*), boosters (e.g. *certain/impossible/true,*

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[4] YEAR and CLASSIFICATION sections, in particular, are used to provide a valuable resource for editors/journals and those researching publication ethics to build into a comprehensive library of organisation's policies and practices.

clearly, *evidence*, *will-not*), attitude markers (e.g. *should*, *agree/consent*, *desirable/important/necessary*, *importantly/remarkably*), and exclusive self-mentions (*I, we*), with the higher proportion of hedging lexical devices in each move also adding to a distinct set of structural elements of conditionals, as "means of expressing doubt [and] tentativeness" (Hyland 1994, p. 245, 1998).

Along with these different sets of linguistic devices, stance meanings were also treated as a grammatical phenomenon, and Table 3 reveals that these lexical features often collocate with *that*-clauses and *to*-infinitival clauses (Biber *et al.* 1999, pp. 671-674, 716-721), and particularly in the form of "anticipatory" or "extraposed" *it* (Kanoksilapatham 2005) with *that* complement clauses controlled by predicative likelihood adjectives (e.g. *It is unlikely that*), or factual/certainty adjectives performing stance functions (e.g. *It is indisputable that*), or with *to* complement clauses controlled similarly by stance attitudinal adjectives (e.g. *It is unreasonable to*).

However, reporting statements with *that*-clauses also involved the identification of a human/non-human source of written material, so that complement clauses are also usually controlled by cognition verbs (e.g. *The author believed that*), by an epistemic modal verb (e.g. *The Forum advised that*), or by an attitudinal verb for stancetaking (e.g. *The Forum agreed that*), as will become increasingly clear throughout this analysis.

3.4. Operationalizing communicative moves for their linguistic and discursive realizations

Taking these structural and linguistic features into consideration, we will now look into how the content of communicative moves qualitatively works out in this kind of discourse. We will therefore try to understand the relationships between 'what's going on' for participants in the discourse situation and the actions available for them to enact these 'goings on'.

3.4.1. Move 1 – Presenting the case scenario

After *introducing the case topic that is to follow by title* (an important lead-in rhetorical device to entice the reader's interest, setting a tone and creating an expectation) and *identifying the case by serial numbering and dating system*, writers funnelled it down through *presenting the case scenario* (CASE TEXT). In this move, a quick memo of the case circumstance and 'how it all came about' is presented with a set of core facts for the case, informing about the contestable nature of ethical issues that suitably 'sanitized' parties faced when they turned to the organisation on issues of complaint, doubt or conflict for poor (unethically-compliant) research or publication practices. The extract below, dealing with 'authorship in clinical research', may provide a taste of

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how the writer is sketching out the case 'backwards':

(1) In 2015, a prospective author contacted the editorial office of a medical journal to request that an intended submission was not reviewed or consulted on by experts […]. The author then named some of these experts, which included members of the journal's editorial board (including editor A). The author claimed that these experts […] After submission of the paper the author emailed the editorial office [...].

More precisely, the example shows the major objective of the move to provide a narrative report of events similar to a narrative (i.e. 'storytelling'), defined as a "recounting of things spatiotemporarily distant" (Toolan 2001, p. 1), and consisting of "the (re)presentation of character speech or thought" (Toolan 2001, p. 133) more broadly. By means of frequently occurring past tense active forms and time adverbials (Biber, Conrad 2009, p. 119) usually set off from "indirect reporting" (Fairclough 2003, p. 49), as shown above, the writer is able to 're-tell from behind' the broader background of the observable story and real events unfolding in a sequence, and to represent time and actions of the main social actors as participants (author and editorial experts as parties) involved in critical events.

Since information is being provided about case events recounted as objectively as possible through indirect reports of statements, reliance on the reporting verbs and reported (*projected*) clauses (Halliday, Matthiessen 2004) above to give a "gist of what was said" in the "hypotactic representation of a verbal event" (Halliday, Matthiessen 2004, p. 454) becomes relevant for the ways the participant-author is now (re-)positioned in the discursive events. The effect is that the writer as a 'reporter' is also bringing his or her representation to actively bear on the participant-author's evaluation or stance towards the social events 'told'. This rhetorical process, then, is one which transforms the indirect evaluation of contentious social events through what might be called 'twofold stances' that the writer takes up towards another social voice he or she represents discursively while still retaining some degree of objectivity. This implies that selective strategies of "recontextualization – the appropriation of elements of one social practice within another" (Fairclough 2003, p. 32) - are also there to elucidate on the insights to be gained from this indirect, transformative perspective created by the summarization and paraphrase-like style of reporting.

Consistent with the varied stance features occurring within this move (Table 3), evidence of the participant-author's stance towards the (writer's) reported information is prompted in the same case example above by the use of linguistic elements. These are brought into the text by hedging (epistemic) modals, epistemic/cognition verbs or adverbs (*he believed that the experts who contributed to the guidelines 'would likely to be very negative and*

possibly biased' / The author <u>claimed</u> that these experts ... <u>may have</u> a conflict of interest), and an attitude verb (*The author explained that his paper <u>disagrees with</u> the published guidelines ...*), along with a stance (non-hedging) negation operator 'not' to mark an opposing, critical viewpoint (*... was <u>not</u> reviewed or consulted ...*). Together these elements highlight how this attributed stance resonates indirectly with different kinds of assumptions, ideas or attitudes held by the participant in the discursive events, and how it might contribute to the reader's reaction about the story 'told'.

On the other hand, the remaining discourse fragments from the same case example above give the writer something more to aim at, as we observe the social voice and personal ethos of the participant-author now being cited verbatim through his original talk, or "direct reporting" (Fairclough 2003, p. 49):

> (2)   After submission of the paper the author emailed the editorial office with the comments: "I am sure that [the journal] will make sure that this manuscript is treated judiciously and justly. [...]. However, if significant errors remain in this regard and if as a result an important debate and patient safety take a backseat then I will probably need to make a formal complaint to [the journal] against the paper by [editor A] in the interest of patient safety. [...]".

With such subjectively marked statements progressively operating in the (direct) discursive representation of facts, it becomes clear that a greater focus is now brought on the feelings, opinions and goals of the participant social actor, so that the writer is able to verbalise the most explicit means of conveying the participant's own evaluative position or stance towards facts. This stance is evidenced by the grammatical marker of certainty (*I am sure that*) originating from a first person pronoun (*I*), and is clustered round the lexical category of a negatively evaluated noun (*errors*) for connoting a systematic deviation from the norm, or a negatively evaluated phrase (*take a backseat*) for expressing a non-participatory role on the issue. These stance features variously add to a hedging modal and adverbial forms (*could possibly potentially*), and adverbial or adjectival forms of attitudinal meanings (*judiciously, justly, important debate*), or a conditional for lack of knowledge about factual world (*if*). As a result of the participant now appearing in the original, 'seated position' rather than being perspectivised through the writer's indirect reporting, these stance markers are important to better adjust the point of view and attitude of the participant attached to his statements and elicit an evaluative response from the reader.

Allied with these modes of direct and indirect reporting often alternating within the narrative format is the writer's tendency to graft the stories on a set of interconnected discourses via *intertextuality* (Fairclough 2003). Again, in the example above, intertextuality features come through by

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way of "quotation marks" or indirect speech (Bhatia 2004; Fairclough 1993, 2003) to call attention to particular contentious words or phrases referenced in the attributed source via what is quoted or summarised (*he believed that ... 'would likely be very negative and possibly biased'*), or by instantiating several types of previously held interactions (*The author submitted <u>letters to the journal</u> / <u>One of these letters</u> was <u>in response to a paper</u> published ... / the author <u>emailed the editorial office</u>*) through *systems of genres* (Bazerman 1994) or *interdiscursivity* (Fairclough 2003), showing that the outcome of writing a conclusive *email* by the participant was in response to earlier texts or genres (*letters*, *paper*). Just as quotations are specifically included within indirect speech to suit the perspective of writers as case reporters, so too they carry over to the mechanism of *appropriation* (Bhatia 2004, 2017; Fairclough 2003) from texts that are external to the writer's. As a common form of treating the narrative report in the current move, intertextuality thus helps writers cast a different light on, and add different layers of meaning to, salient texts and discourses that are represented for their logical implications of the topic, thus revealing "how the voices of others are incorporated; how other texts are alluded to, assumed [or] dialogued with" (Fairclough 2003, p. 36).

Over and above, writers do not shy away from other inherently evaluative statements to manage the bad value-system (Hunston, Thompson 2000) surrounding the discourse of misconduct. This is most clearly shown by a bundle of lexical items such as nouns (e.g. *flaws*, *fraud*, *sloppiness*), and verbs (e.g. *collude*, *interfere*, *pervert*) occurring elsewhere across text moves to imply that ethical concerns reside in the critical nature of a range of alleged misbehaviours in research activities, and to similarly build up relations with the readers in terms of what is expected of those misbehaviours.

With the writers amalgamating factual stories to fill up their narrative report and bring to life stance and other evaluative meanings in various ways, it is fair to say that the example move (and many others in the data) becomes crucial to certain social realities and activities it maintains in discourse representation. This move, in other words, seeks to disclose the shadowy scenarios lying beneath the surface of text about social conflicts that are keyed both to the relational issue of ethical accountability and to the resulting issue of blame. In essence, we see that such scenarios foreground the ambiguity surrounding unresolved issues of authorship and conflicts of interest during the peer review process and publication of scientific work between interacting participants (author and journal's editorial experts) in earlier face-to-face discourse. More specifically, the scenarios reflexively alert to a set of 'behaviouralised situations' where professional judgment and moral responsibility are compromised by the journal's editorial experts who, in their functional role, are supposed to be in a position of fiduciary trust within the research institutions that host or employ them. Consequently, such

scenarios identify grounds for the author's attribution of blame to those people as a result of their action and role – accountability as an account-giving behaviour. As a matter of fact, we are told about the participant-author being critical of what he sees as the arbitrary behaviour of those experts in situations delineating the domain of their professional integrity and ethical conduct in trust relationships, and holding them accountable for the irresponsible and unreliable standards by which they failed to determine publication of his material as a recognised principle of research integrity.

We can thus reasonably argue that this kind of discursive representation not only turns on account-giving behaviours, but also brings out unequal relations of power (Fairclough 2001) that are glossed over in the surface text. This representation, in other words, gives us a hint of what the participant-author feels about the more powerful participants (review experts) in highly skilled and knowledgeable decision-making areas holding discretionary influence over him (the less powerful participant) by establishing their own limits to, and professionally-biased judgments on, the publication of material, thus carrying out ethically free professional and moral actions in institutional settings where research activities 'should' rely upon trust in those in power. In this way, representing violations of professional responsibilities that expose the research author to unnecessary harm and mistrust in ethical policies as well as risk to his reputation shows just how they are indirectly influenced by those imbalances of power that "work across networks of practices and structures" (Fairclough 2003, p. 16). Just as these power relations work ideologically through the language used within the move, so too they resonate with the social identities of powerful agents who are called 'to account for their own actions' disrupting values and norms in scientific research and its publication process.

3.4.2. Move 2 – Raising relevant questions in the case

We have seen how the factual issues in the case scenario are important to give a foretaste and representation of the conflict-related stories constructed around unethical principles and practices of research publishing. Now it is time for a clear issue or several collateral issues that are 'at question' in the unethical case to be brought to the attention by the organisation and be given prominence in the representation of social relations between the interacting social actors - the parties and the organisation. This, then provides the rationale for move 2 (*Raising relevant questions in the case*) employed in the organisational structure of the genre.

In the full examples below, dealing with 'article correction' and 'research evaluation in medicine', respectively, we can read about the organisation raising one or more issues in the cases on behalf of the parties:

Lingue e Linguaggi

(3)   *Question(s) for the COPE Forum*
        • What is the procedure <u>we</u> *should* follow in this case?

(4)   *Question(s) for the COPE Forum*
        • *Should* <u>we</u> allow data collected in service evaluations to be published
        as research articles? In medical journals, this is *often* seen as an
        acceptable exception; however, *if* research ethics committees are
        declaring a study "not research", *should* journals do the same?
        • *Should* the journal have posted a *correction* on the article to provide a
        more detailed *ethics* statement, bearing in mind that anything labelled a
        "correction" in a *controversial* area *would be* misinterpreted as an *error*
        in the research by the critics?
        • How *should* journals respond to blog posts that they *feel* portray them
        unfairly and are *damaging* to the publisher's reputation?

As can be seen, these examples show that the writers are relying upon the
most straightforward, direct questions headed by a *wh*-question word and a
stance modal (*should*) or auxiliary verb (*Do/Does*) expressed in the present
grammatical tense to allow for many possible answers sought to ethical
problems by the organisation itself. Besides stance-making and other
evaluatively charged lexical and verbal devices (*ethics, correction,
damaging*) finding their way into the above examples (italics), presenting
questions like these provides the move pattern with an initial framework of
the discourse and argument that is to follow, while also contending for the
potential reader's attention and thinking about the complexity of ethical
problems.

       More important still, allowing the organisation to take ownership of the
questions goes hand in hand with the choice of a collective self-mention
marker (*we*) found across individual texts and sometimes reiterated there. So,
the examples above reveal just how the organisation is ready to draw on this
pronominal reference to express its own position or stance towards the
evaluated matters in hand, and to provide expert guidance on the best
professional conduct of research by articulating social relations of action on
behalf of the party seeking such a guidance.

3.4.3. Move 3 – Addressing the case

Once a clear issue or several collateral issues are identified, writers are able
to display all reasonable efforts made by the organisation to finding solutions
to the cause of the conflict happening 'backstage'. This, then, provides the
rationale behind the ADVICE (*Addressing the case*) rhetorical move and sub-
moves in offering guidelines and recommendations for the stated issue or
problem, and highlighting a possible course of action for good practices in
ethically-compliant research or publication, thus justifying the 'frontstage' of
the organisation's advisory work.

The text fragments below, dealing with 'ethics committee approval', may provide a flavour of this move presented as consistent, streamlined advice or opinion on the particular matter:

> (5)   The Forum noted that editors cannot be expected to know the national guidelines for the conduct of research in individual countries. It is up to authors to make sure that they comply with their national guidelines. One suggestion was that the national standards where the research was done should apply here, or the editor could make a judgement on his own national standards […]. It may be that the research is exempt from approval. But if the editor discovers that the study did require ethics approval and the authors failed to obtain approval, he has a responsibility not only to [...].

As we can see, this move still requires the writer to paraphrase the organisation's prior utterances by which participant social actors in larger, conflicting discursive events are now (re-)positioned in the logic of a written report. In other words, the move turns on a transformative rhetorical process which is achieved by creating interdiscursive links between the writer's actual report and the evaluated factual content of prior speakers through indirect reporting (summary). Once again, this process implies *appropriating* elements of social action and practice and *recontextualizing* them (Fairclough 2003) from the offline to the online context of discourse representation, as necessary to provide the move with a reporting function appropriated from earlier discourses and to allow the writers to act as 'reporters' of advised cases. By the same token, this process is one which brings out "specifically defined professional (inter)discursive practices" referenced by textual, discursive and contextual factors (Bhatia 2017, p. 28).

This process gives writers something more to aim at, illustrating just how the organisation as a social actor is now vested with a knowledgeable status in the field and is keen to respond to controversial issues in the case (problem-solving response to the case), sensitizing the parties as social actors to recognise ethical and professional research principles, and deflecting challenges between them. In other words, advising here squares with the idea of the organisation acting as a 'go-between' for the conflicted parties through a 'friendly control' over them. So, it stands to reason that the discourse of the communicative move comes through as an act of social and institutional identity in its own right since it carries over to a professional representation and role of the organisation in fixing 'what is ethical' under those circumstances, and establishing social relationships that endow the organisation with accountability for, and commitment to, the troubled waters of ethical research and publication practices. This kind of identity, as defined by the advisory function of the organisation and aligned with its "discoursal aspects of ways of *acting* and *interacting* in the course of social events"

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(Fairclough 2003, p. 65, my emphasis), becomes apparent, at least initially, in the features of the above and other texts with the writers making explicit use of third-person subjects (*The Forum noted that ... / Cope/The Committee agreed/advised/recommended that ...*), representing the organisation as a collective unit acting in concert and constructing a collegial collaboration and perspective on the scrutinized and problematized issues. This way of emphasising the "voice" of the organisation not only builds up to both "personal and social dimensions" (Prior 2001, p. 79) of acting competently in the relational system, it also veers towards an *identification* (Fairclough 2003) process of the organisation in terms of its identity-supporting ethical values, while also *identifying* a discourse in action for the participants in the social events.

With this legitimate identity, role and action in place, the collective nature of the advisory process in the current move becomes important as a way of balancing minimum rule and principle-based arguments in ethics with aspirational guidelines and recommendations set for the conflicting parties by the organisation, and discursively bears down on the attendant questions of integrity and accountability of parties and the ways they may be negotiated voluntarily between them. In this vein, the collective nature of advising not only helps articulate the organisation-party fiduciary trust relationship by which advice is sought, it also becomes a matter of successfully negotiating mutually acceptable identities, roles and positions during the earlier ('backstage') process of party interactions and the resultant expectations of account-giving social practices.

Bearing in mind that certain elements of evaluated facts by the organisation are now being selectively 'converted' into the reporting genre through the dependent process of *recontextualization*, negotiating claims for the parties and informing the wider audience about a number of advisory points involves the writers to make rhetorical decisions about the most salient positions taken by the organisation which should be selected for the reporting activity. Consistent with the mixed range of rhetorical features in Table 3, different stance-making hedges are realised in the current move for intentionally non-committal statements. So, the set of examples below suggests that these features are used to present non-definitive assertions about referential information while referring to speculative possibilities, and to facilitate a professional and institutional voice of the organisation in presenting a state of knowledge on the topics at hand:

(6)   Generally, the correction options are errata [...], but some of the wording is nuanced in ways that might be helpful in this situation.

Sometimes, authors may claim that their study does not need approval.

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As there <u>seems to be</u> no institutional oversight, <u>perhaps</u> the editor [...].

Although this <u>could be</u> <u>quite</u> labour intensive, it <u>would prevent</u> these patterns of behaviour in the future.

<u>It is possible</u> *that* the institution is already aware of the case but [...].

Not only are these hedges used with a suitable amount of caution 'to protect' the organisation from coming under fire about any ethical position taken, they also help the organisation conciliate social relations with the parties. Of course, different sets of values for stancetaking are presented in few instances where "an opinion of goodness/desirability" (Hunston, Thompson 2000, p. 3) is always clearly reflected in impersonal phrasing (*that*-clause) to indicate the organisation's judgement and attitude towards the reported material (*<u>It is good</u> that the journal has a process for discussing this issue ....*).

Yet, we are still dealing with the collaborative practice of requesting and offering advice through the most genuine suggestions or recommendations that mitigate "face threats" (Mills 2003) carried toward the parties (advice-takers) by the organisation (advice-giver), meaning that the more face-sensitive the advice given by the knowledgeable organisation, the greater the acceptance by the party requesting it. On this basis, reliance on complement clauses controlled by a communication verb (*advise* = expressing guidance, suggestion or recommendation as to what someone 'should' do), or a tentative (speculative) noun (*suggestion*) shown below, plainly supports this kind of mitigating practice:

(7)   <u>COPE advised</u> *that* this appears to be unethical research conduct and egregious violation of human ethics.

One <u>suggestion to the editor was</u> *that* the national standards [...].

While in all such instances of hedging at the clausal outset the writer conveys the organisation's perspective in the following clause, the use of an *advise* reporting verb shows that it is sensitive to the organisation making an inferential reasoning (a particular guidance, recommendation or suggestion is now being offered by the organisation to the parties with regard to a prudent action) and avoids forcing the parties to comply with a straight insistence of the claim as would otherwise be through an 'order' (a clear instruction that should be complied with). This verb (*advise*) usage comes fairly close to modal *should* (*As there seems to be no institutional oversight, perhaps the editor <u>should give</u> the authors the benefit of the doubt.*), which is the most common linguistic strategy for the writers to mitigate the organisation's strength of the claim (tentative meaning based on inferential reasoning made by the organisation) and negotiate face threat by making the advice

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acceptable for the parties' conflicting positions.

In hedging across the text moves, writers also exploit the possibilities made available by conditionals, as in:

(8)   A suggestion was that *if* the paper is accepted for publication, the editor could put a statement or note on the paper around the issue of consent, in the cultural context.

Through the non-assertive value of the "hypothetical conditional" (Declerck, Reed 2001), or *if*-subordinate clause, we can see how this writer is treating the relative content as provisional, pending the acceptance of the situation described in the main clause. In other words, the writer is hedging the certitude of factual outcomes.

Just as the deployment of hedging devices provides the writers with the right strength of claims, politeness and proper position in advice reporting, so too boosting claims helps the writers get off the fence by indicating the organisation's level of certainty about a particular ethical subject under consideration. Thus, we read:

(9)   The role of the editor is to safeguard [...], so an expression of concern is <u>clearly</u> warranted in this case.

There is <u>clear evidence</u> that the spectra have been altered and that this could be [...].

This is not ideal and <u>will</u> regrettably give the impression of insufficient rigour in the execution of a trial and […].

No doubt, these ways of asserting facts or beliefs through evaluative arguments create a rhetorical platform where the writers are seeking to qualify the organisation's confidence in the truth of referential information and knowledge claims, and telling the parties to conform to a reliable set of ethical standards right off the bat. By narrowing the conciliatory space available to the parties within the reporting structure, boosting (rather than hedging) maximises the interpretative role of the parties in relation to the assertive statements and values of arguments, and strategically works towards engaging them with a more responsible conduct with one another.

But writers also work hard to indicate the organisation's attitude towards what it said in the reported information, as in:

(10)   <u>The Forum agreed</u> *that* posting a correction may be excessive and perhaps a short editor's note would be <u>more appropriate</u>.

The Forum noted *that* this was a <u>very unusual</u> case, both <u>fascinating</u> and <u>alarming</u>.

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> It is important *that* the letter is linked to the original article, so that the two items are permanently linked.

In addition to conveying a positive attitude as true or correct with the most commonly used *agree* verb (Table 3) to express the organisation's opinion sharing on the matters, or attributing a positive (*more appropriate*) or negative value (*very unusual*) to the intensified statements, these different realization types for attitudinal meanings show just how the writers are bringing the organisation's evaluative perspective and knowledge in the area covered. By so doing, writers achieve a rhetorical effect which constructs a problematic issue worthy of attention in research ethics, and ultimately guides the party as well as the reader through a response.

At times, though, writers used attitude markers to emphasise that some non-negotiable ethical action was required of the rule-governed argument in seemingly legalistic and formally prescriptive style of advice. Consequently, the common advisability discourse function of *should* modal found across the samples develop into the weak "obligation/necessity" (Leech 2005) modal meaning (Table 3) in the example below to stake the evaluative claim to this particular unbiased, objective action, and to demonstrate the limited range of options available to a responsible party, in this case the editor:

> (11)   One suggestion to the editor was that the national standards where the research was done should apply here, [...].

On the one hand, this example suggests that the modal acquires an accountability-making function in the immediate context of an obligation now discharged on the party in much the same way as it negotiates an asymmetrical organisation-party relationship of competence. On the other, it suggests that a 'threefold stance' to the claim is also represented in the discourse by including the organisation, the party, and the writer as 'reporter' just as this stance comes through the entire advice move based on perspectivizing previous views via reporting activity.

Outside these (stance) classificatory means of expressing attitude, the requirement set for the parties to be responsible for their research conduct along the primary obligation/necessity meanings does not save the writers from the use of 'up to' prepositional bundles. These assign a sphere of duty or obligation falling upon the parties and count as a contribution to maintaining good, responsible relationships with one another:

> (12)   It is up to authors to make sure that they comply with their national guidelines.

3.4.4. Move 4 (Reviewing the case) – Move 5 (Concluding the case)

In move 4 (*Reviewing the case*), writers essentially report further information on the advice given in the case by establishing a broader understanding of the ethical issue the parties contended with, and stated the successful outcome of the case in the subsequent move 5 (*Concluding the case*) any one time the RESOLUTION heading was not left blank. In this way, writers terminate their 'frontstage' reporting activity done with rhetorical series of communicative moves and sub-moves of the case genre, and close curtain to the organisation's engagement with misconduct cases discussed 'backstage' in face-to-face interaction. The rationale of these moves can be seen in the full examples below dealing with 'parental consent' in research:

(13) FOLLOW UP:
      The reviews for the article were returned and the article was rejected based on the merit of the paper. The matter regarding this specific submission is closed. The authors followed the letter of the law in their country, but the editor still <u>wonders</u> <u>if there should be</u> a universal age for consent of minors, without parental approval.

(14) RESOLUTION:
       Case Closed

In the absence of any recurring stance features in move 4, except for some linguistic items in the categories of attitudinal (cognitive) verb (*wonders*) and hedging conditional with *should* modal (underlined), reviewing the case simply focuses on describing and reporting the facticity and further negotiability of ethical issues as they arise from the advisory process.

In this way, the troublesome topic of 'parental consent' shows how the routines of ethical research assessment are enacted by the responsible commitment of the organisation, and the constructive resolution of conflict performed between the parties (authors and editors) and their accountabilities as part of the reporting activity of the genre.

4. Conclusion

This study has probed into cases of research and publication ethics as useful sites where writers engage in professional and institutional goals of the COPE organisation, with 'backstage' scenarios of misconduct discursively spilling over onto the 'frontstage' organisational structure of the case genre. Besides the writer's use of a standardized generic structure enacted by the medium as well, I have shown how specific communicative moves serve rhetorically distinct purposes of the text-genre in providing information, advice, and

resolution on the case, and how much the linguistic elements referenced by specific move-level texts tell us about socially constructed ethical accountability and the resultant expectations of account-giving research practices between individual actors (parties and organisation). Prominent features of language realized across communicative moves show rhetorically selective strategies of direct and indirect reporting by which writers can dynamically effect the transformation or *recontextualization* of elements of social actions and events, and similarly work with representational, meaning-making resources of text within intertextual and interdiscursive processes of the genre. Allied with these rhetorical strategies is the writer's use of evaluative stance-marking resources by which interacting social actors in different boundaries of time and space are (re-)located in the discursive patterns of the reporting genre. Through stance-making devices writers can articulate epistemic and evaluative judgments by merging their perspective with the attributed sources, and reproduce the material information by constructing arguments and shaping knowledge about ethical problems in research publishing.

Just as the move patterns and their discursive and linguistic resources reveal how concretely backstage social events of scientific misconduct are narrated, reported, and evaluated in the frontstage reproduction and representation of cases, so too they project the social relationships, identities, and roles of the parties as social actors who hold each other accountable for results and the ways these conflicting relationships and roles square with the voice of a professionally and institutionally responsible social actor's organisation. After all, research ethics is as much an 'individual' (party) as an 'organizational' issue and the linguistic analysis has shown that specific research ethical issues of individual's accountability are effectively addressed by the 'friendly watchdog' organisation in socially adjusting a course of actions taken by the parties themselves. Without losing sight of its professional goals, this organisation is committed to codifying conduct recognisable by the parties as good practice in line with its identity role-supporting ethical perspective. So, this compliance-based ethics perspective of the organisation provides a systematic, yet amicable way of organising and resolving the parties' conflicting experience, and ultimately move upstream to a culture of ethical research and publication integrity. This governing ethos of the organisation's operating culture may only encourage ethically exemplary research behaviour from the parties, maximise fiduciary trust in the organisation's gatekeeping role and activity, cope with risks of harm and responsibility involved in a range of unethical research practices, and legitimize the organisation's role in adjusting imbalances of power between the parties before their case goes to court proceedings. Recognising the importance of these aspects in the rhetoric of accountability explains the

complexity of research ethics in today's world and the ways it reconciles ideas about social relations, identities and roles using language. It also however offers analytical insights into the role of the web-mediated genre in providing a framework for social rhetorical actions of the professional community.

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Annexes

Overall generic structure		
COPE Standard Headings	**Section headings and generic move function/purpose**	**%**
<u>TITLE</u>	**Introducing the topic of case by title:** - enticing reader's interest, setting a tone and creating an expectation	100
CASE NUMBER	**Identifying the case by:** - attribution of serial numbering and dating system	100
CASE TEXT (ANONYMISED)	**Move 1 – Presenting the case scenario by:** - providing factual recounts via selection of important information: parties, and issues of complaint, doubt or conflict for poor (unethically-compliant) research/publication practices - offering counter-points to poor practices	100
Question(s) for the COPE Forum	**Move 2 – Raising relevant questions in the case by:** - providing a clear issue or problem statement in the scenario or several collateral issues to be answered in the case scenario	100
ADVICE	**Move 3 – Addressing the case by:** - offering guidelines and recommendations for the stated issue or problem: highlighting a course of action for good practices in ethically-compliant research/publication - asserting values or benefits of good practice	100
FOLLOW UP	**Move 4 – Reviewing the case by:** - providing further information on the advice given in the case - establishing a deeper understanding of the ethical issue or problem the parties contend with	100
RESOLUTION Case closed /On-going	**Move 5 – Concluding the case by:** - stating the successful outcome of the case as it results from advice and follow-up information	100
<u>YEAR</u>	**Linking to case taxonomy by year:** - filtering reader/user enquiry into organisation's case classification and keywords	100
CLASSIFICATION	**Providing comprehensive case classification scheme by:** - facilitating the user's coding and learning of cases from organisation's databases, including detailed documents and resources (e.g. <u>Ethical oversight</u> / <u>Questionable</u> / <u>unethical research</u>)	100

Table 2
Cases of research and publication ethics: overall generic structure with specific genre's move function/purpose.

Accountability practices in research and publication ethics on the web.
Linguistic and discursive features

255

Move	Lexical and grammatical stance-marking resources	N.	%
CASE TEXT	a) *Hedges*		
	Epistemic verbs	65	20
	Epistemic adjectives	29	9
	Epistemic adverbs	21	7
	Epistemic nouns	8	2
	Subtotals	**123**	**38**
	b) *Boosters*		
	Adjectives	19	6
	Adverbs	12	4
	Nouns	10	3
	Verbs	8	2
	Subtotals	**49**	**15**
	c) *Attitude markers*		
	Adjectives	33	10
	Sentence adverbs	18	6
	Verbs	12	4
	Subtotals	**63**	**20**
	d) *Self-mentions*	15	5
	e) *That* complement clause	47	15
	f) *To*-infinitival clause	13	4
	g) Conditionals	10	3
	Subtotals	**85**	**27**
	Totals	**320**	**100**
ADVICE	a) *Hedges*		
	Epistemic verbs	87	22
	Epistemic adjectives	15	4
	Epistemic adverbs	12	3
	Epistemic nouns	32	8
	Subtotals	**146**	**37**
	b) *Boosters*		
	Adjectives	27	7
	Adverbs	10	3
	Nouns	6	1
	Verbs	18	4
	Subtotals	**61**	**15**
	c) *Attitude markers*		
	Adjectives	21	5
	Agree verb	46	12
	Necessity/obligation modal verb (*should*)	8	2
	Subtotals	**75**	**19**
	d) *Self-mentions*	-	-
	e) *That* complement clause	85	21
	f) *To*-infinitival clause	10	3
	g) Conditionals	21	5
	Subtotals	**116**	**29**
	Totals	**398**	**100**
FOLLOW UP	a) *Hedges*		
	Epistemic verbs	8	32
	Epistemic adverbs	6	24
	Subtotals	**14**	**56**
	b) *Attitude markers*		
	Verb	4	16
	c) Conditionals	7	28
	Totals	**25**	**100**

Table 3
Frequency of lexical and grammatical stance devices in specific move-level texts.