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From Print form to Digital Communication: the One-way Journey of Academic Research

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To state that a substantial amount of academic practices are nowadays making use of digital devices, platforms and media in one way or another is an obvious thing to say. The affordances that the digital technicalities offer are having an enormous impact not only on the dissemination of research output but also on the generation of knowledge itself. In this context of new ways of knowledge-creation and knowledge-dissemination, many aspects related to the way academic practices are instantiated are being revisited from the perspective of discourse analysis, applied linguistics and associated fields such as communication studies, sociolinguistics, pragmatics, and, in general, linguistic disciplines with a social bias. In the light of these approaches, the study of the impact of new technologies and the use discourse communities make of them is essential in order to assess

the role that digital platforms have as elements of innovation and change in the shaping and reshaping of already existing academic practices.

Perhaps the concept of academic genre is the one more widely problematized. Genres are generally taken to be "dynamic rhetorical forms that [...] serve to stabilize experience and give it coherence and meaning" (Berkenkotter, & Huckin, 1993, p. 479). The fragile balance between stability and change which characterizes genres has given rise to two major issues in genre studies, the first one being how to reconcile stability and change, and the second, how genres are structured, controlled or determined (Miller, 2014). In my view, the impact of electronic platforms as elements of innovation and change in the (re) shaping of already existing genres is worth investigating, as it may foster the understanding of the connections between the use that different discourse communities make of new technologies and the emergence of new genres or adaptation of others. Moreover, in our academic context, as in many others, electronic platforms not only act as dissemination bases for information and knowledge but they also determine the interaction among members of disciplinary communities. The way members of a disciplinary community interact nowadays has been modified in comparison with former ways, through the incorporation of new modes and the recontextualization of roles and purposes in a new scenario. Thus, a community's communicative practices and their subsequent "generic repertoire" may be changing (Sancho-Guinda, 2015), incorporating new practices and modifying others in an ever-changing research ecosystem.

Within this ecosystem, genres of high visibility and relevance such as the research article, the abstract or the book review have received a greater degree of attention by scholars investigating the use of genres for research purposes. However, not so much focus has been placed on other genres which have a rather more instrumental role.

Conference announcements or journal call for papers are instances of genres whose relevance lies in their function as enablers of other genres (e.g. conference proposals, reviews from evaluators, research papers), thus being part of a longer genre chain (Räisänen, 1999; Swales, 2004).

Conference announcements, in particular, are housed in the conference webpage which organizers design in order to give visibility to the event and make the information related to it widely available. Dissemination of the conference call is made through international academic lists, which are electronic spaces of interaction and communication among academics, that is, sites for interpersonal academic communication among members of a virtual disciplinary community (Herring, 2004). As to whether they are "Internet genres", that is, whether they are more than former paper genres distributed on electronic platforms, it may be argued that online conference announcements are adapted genres profiting from the affordances of the Internet. The shift of conference announcements to electronic platforms has opened up the possibility of linking and embedding information, of navigating through different layers of information, and in that sense electronic platforms have enhanced the potential of conference announcements in terms of communication and interaction. In all, there is a degree of interactivity and easiness of communication that can only be achieved by means of the electronic mode, and which the paper format did not allow.

In the article entitled "Online conference announcements as spaces for disciplinary communication" (Lorés-Sanz, 2018) I explore the way organizers of conferences, as members of a certain disciplinary community, communicate with their peers through conference announcements distributed on-line. The study focuses on the type of functional roles writers assume and project onto their readers and how this is realized linguistically. A corpus of 50 conference announcements

from the discipline of linguistics posted on a well-known international discussion list, The Linguist List (http://www.linguistlist.org/), was analysed in terms of rhetorical structure and interpersonal markers. The methodology followed consisted first in the hand-tagged move-analysis of the texts (Ding, 2007) which allowed the identification of stages and sections, both formally, through textual markers such as section boundaries, subheadings and paragraph divisions, and also functionally, as each stage and section projects a differentiated communicative purpose. Connections were then established between the communicative purposes of each stage and the role adopted by the writer at that stage. Three stages were identified: i) informative, ii) evaluative, and iii) instructional.

The informative stage contained sections in which information was provided about date, place, website, linguistic field and type of audience. The function of the text stage was to provide contextual information and the function of the writer was to act as an informant. The second stage, evaluative, included the section called "meeting description", where information was given about the field state of art, the plenary speakers invited to the event and also further details about registration, fees, etc. The function identified was to attract colleagues, to identify discourse community and to present inceptives for participation. The functional role of the writer was to act as a colleague and a peer. Finally, the third stage was instructional, which included sections such as the proper call for papers, presentation modalities, how to submit the abstract and important dates. The function of this stage was to control quality (i.e. establishing conditions for submission of abstracts) and the writer acted as a gatekeeper. As regards interpersonal markers, self-mentions, engagement markers, modal verbs and passive voice were explored. These interpersonal markers were quantitatively and qualitatively analysed. With regard to quantification, normalized

frequencies per 1,000 words were carried out. No interpersonal markers were found in the first stage (informative), where information was requested in a very telegraphic way. The interpersonal markers under analysis were more frequently found in the third stage (instructional), sometimes three times as much in comparison with the second stage (evaluative).

Still, results showed that Stage 2 is highly interpersonal, characterized by the use of the inclusive pronoun *we* (and its possessive form *our*). This engagement marker is used to encompass both writer and reader, revealing a collegial attitude on the part of writers, who address readers as peers with whom to share attitudes, interests and beliefs. Collegiality was also expressed in Stage 2 through the combination of epistemic modality (*will*) and a syntactic subject which refers to the event itself (*the symposium*, *the conference*, etc.), highlighting in this way an in-group attitude by members of the same academic community.

In Stage 3, the writer acts as a gatekeeper making use of various interpersonal markers such as self mentions (exclusive *we* to refer only to the writers, or nouns such as *the organizers*), which manifest a powerful position on the part of the writer. Engagement markers are also used in this final section. Readers as potential contributors are addressed in two different ways: by means of the second person pronoun *you*, especially when less imposing acts are uttered (e.g. invitation to contribute), and by means of nouns such as *authors* or *contributors*, when the acts are more imposing, as is the case when instructions are given or information about submissions and acceptance of contributions is provided. Directives are also found mainly to give instructions to potential contributors, thus manifesting the more powerful position that writers adopt in their role of gatekeepers. Still, hedging by means of polite forms such as *please* is consistently used. The use of deontic modality (*will*, *should*, *must*) is another common linguistic marker of interpersonality in this

final section, which shows the writer's instructional voice. However, the combination of modal verbs, impersonal subjects and passive voice acts as an effective hedging device which minimizes the imposition that instructions imply for potential readers, thus helping writers to guarantee the quality of the academic event while saving face and avoiding offending peers.

By way of conclusion it was claimed that although the affordances of digital platforms facilitate academic communication (to spread information about conferences globally through listservs and other electronic platforms has become quick and easy), this has also resulted in a challenge for organizers, as they need to make the event sufficiently interesting and attractive at an intellectual and academic level so that it attracts potential contributors' attention. At the same time, the wider readership afforded by electronic distribution also implies a higher number of potential contributors, which involves the need to apply quality filters in the form of very detailed instructions for the presentation and submission of contributions, stricter deadlines and a higher number of reviewers involved in the selection process, among other aspects.

In all, acknowledging the limitations of exploring a single distribution list, the results of this study seemed to point to the characterization of online conference announcements as strategic sites of interaction among disciplinary members, in which various communicative purposes overlap (informational, promotional, quality-control), and a variety of roles are adopted by writers.

Another relevant effect connected to the "digitalization" of academic research is the boost that academics and scientists' visibility is receiving. The use of digital platforms has had an enormous impact on the practices they are adopting to give light to their research output. By producing and sharing contents and creations, researchers dynamically contribute to disseminate knowledge and enhance their visibility in

different digital spaces such as research websites, blogs, academic fora, social media, YouTube videos, etc. This type of electronic visibility (e-visibility) has been approached in a recent study, entitled "New concepts, different approaches: Tackling e-visibility in research project websites" (Lorés-Sanz, & Herrando-Rodrigo, 2020) whose object of study has been the international research project website. Several approaches which include perspectives of identity and self-representation in writing (Ivanič, 1998), in combination with the exploration of metadiscourse (Hyland, 2005) and multimodality (Kress, & Van Leeuwen, 2001; 2006) were deemed necessary to explore what visibility may imply and how it is crafted in this type of digital discourse. A convenience corpus of 10 websites of research projects from the European Programme for Research and Innovation (Horizon 2020) was selected from another, larger, corpus previously compiled, EUROPROwebs Corpus, which includes 30 H2020 research projects[1]. These websites are compulsory for European-funded projects and are considered strategical for the exploitation and dissemination of research results.

Our first methodological step was to identify the pages that appeared in these websites. We identified a type of common basic structure, all of them including a Homepage or an About page (sometimes both), a Partners page, and a News and Events page. These three pages have in common the fact that they contain information generated for the web and are not mere repositories of information generated offline and uploaded in the web.

A second methodological step involved analyzing the content of these pages by means of manual analysis combined with quantitative

1. The EUROPROwebs corpus (corpus of websites of European H2020 projects) was collected as part of a research project on digital scientific discourse analysis, carried out by the research group InterGedi (www.intergedi.unizar.es). See Pascual, Mur-Dueñas, & Lorés (2020) for methodological steps and criteria of compilation.

analysis via AntConc (Anthony, 2020). Such content, data-driven analysis revealed which entities were being made visible in these prominent pages. Three main entities were made visible on the pages under analysis: i) the project on which the researchers are working; ii) the institution, organization or company which participates in the project as a partner; and iii) the individual researchers, participating in the consortium. Moreover, various lexicogrammatical markers were identified as prominently serving the purpose of providing visibility to the entities highlighted. These linguistic markers were the following: proper nouns, common nouns and self mentions. A quantitative analysis of frequency and distribution showed that the project is the most salient entity, especially in the About page and in News and Events page. In contrast, institutions and individual researchers are only made visible in the Partners page, whereas they are almost invisible on the other pages. The grammatical patterns associated to saliency were also explored. As regards the project, it tended to appear, in any of its realizations (as proper noun, common noun and self mention), as subject in a clause followed by an active verb. The subject position in active clauses ensured a high degree of visibility, contrasted, for instance, with the use of the passive voice. Thus, the entity of the project was ranked as highly visible, as both the parameter of frequency of appearance and the type of pattern in which it appeared pointed towards it. As regards individual researchers and institutions, they mostly appeared in Partners pages as agents in material processes, as carriers of attributions, included in lists of participants or in combination with logos and images, thus interacting with other modes as meaning-making resources.

In fact, one of the most pervasive insights we gained through the study of the three entities identified in research websites is that visibility can only be properly understood if verbal markers are analysed in combination with other modes with which they connect

(i.e. visual), along the lines suggested by multimodal analysis (Kress, & Van Leeuwen, 2001; 2006). The way in which visibility of an entity is projected is more intricate and complex than a mere adding up of lexico-grammatical and visual means. It is out of the combination of modes that meaning is made and concepts such as visibility can be explored in depth. As a result of this combination of modes we categorized e-visibility in research project websites into four types: impersonated e-visibility (the research project acts as an agent with personal attributions), collective e-visibility (projected by the partners), individual e-visibility (projected by the researchers), and a multifaceted type of e-visibility (projected by the research project in combination with visuals of researchers). In each type of e-visibility lexico-grammatical devices were combined with different multimodal devices (logos, pictures, visuals), giving way to various ways of projecting e-visibility.

To conclude, visibility revealed itself as a complex feature in the digital practices under study, in contrast with more conventional, usually offline, academic practices (i.e. research articles), where it is the authors and their research that are made visible. In research websites authors are unknown and they are usually multiple, thus problematizing features such as authorial voice, identity and visibility.

The website as a digital practice by international research groups was also the object of study in "Science on the web: The exploration of European research websites of energy-related projects as digital genres for the promotion of value" Lorés (2020). The starting point of this contribution was the impact that digital affordances are having on the communication of science to the broad public, facilitating the dialogue between scientists and civil society. In this paper I explored how research group websites, requested as part of specific institutional communication plans (i.e. Horizon 2020), serve the purpose of accounting for the adequate investment of public expenditure. The adequacy of

public investment on research is justified by institutions in various ways, one of them being the promotion of scientific research itself, of its primary objects of study and of the values associated with them, all of this linked to the premise that scientific knowledge is a public good. Thus, institutional research websites are strategically used as repositories and transmitters of the current values of scientific research.

As working frameworks, two perspectives were combined: Computer-Mediated Discourse Analysis (CMDA) (Herring 2004; 2007; 2013; Thurlow, & Mroczek, 2011; Tannen, & Trester, 2013) which basically applies primarily linguistic methods to the properties of digital communication media, and the study of evaluation as proposed by Hunston and Thompson (2000), Hunston (2011) and Thompson and Alba-Juez (2014), which offer a rather encompassing view of what evaluative language is. The study of evaluation presented here revolved around the parameter positive–negative as this parameter is "dependent on the value-system underlying the text" (Hunston, & Thompson, 2000, p. 22), which may be the one institutions want to promote as a way of accounting for the public expenditure on research.

My aim was to explore these sites as instances of current digital scientific writing practices. A special focus was placed on the contribution of evaluative language to the characterization of the genre, in the understanding that these websites' main aim (i.e. accounting for public expenditure) may be strategically enhanced by the functional role that linguistic evaluation plays in the promotion of the EU research objectives and of their associated institutional values. For such purposes a convenient sample of 10 websites was selected of research projects related to the topic of energy funded by the European Horizon 2020 Programme. These 10 websites were part of a larger database of

100 H2020 websites (EUROPROwebs Database)[2]. The fact that all the projects dealt with the topic of energy, one of the main interests in the EU research agenda, contributed to the coherence of the wordlist retrieved and, therefore, to the relevance of the results gathered.

First, the identification of common structural features was carried out in the 10 websites. A series of webpages were found to appear systematically within the larger structure of the research website, among them, the Homepages and/or About pages (some websites in the corpus did not include the first, but only the latter; some others included both), considered to be showcasing genres which facilitate orientation into the website and state the purpose of the research undertaken. Then, evaluative markers along the parameter positive–negative (Hunston, & Thompson, 2000) were identified in Homepages and About pages.

The analysis yielded some insights with regard to the genre itself. The Homepages/About pages explored were multimodal, displaying to a greater or lesser degree some of the following modes: pictures, fixed or moving, allegorical or real, graphics, infographics, or a short video also related to their activity. Hyperlinks were also explored and two types of hyperlink were identified: internal and external. The internal hyperlink connected with other parts of the web, thus allowing to navigate in a non-linear way. External hyperlinking established connections with other sites outside the website. Here two subtypes were identified: (i) the "informative external hyperlinking", which provided information outside the web, and the "social external hyperlinking", which connected with social media such as LinkedIn, Twitter and Facebook. In all, these pages offered could be considered

2. The EUROPROwebs database was also collected as part of a research project on digital scientific discourse analysis, carried out by the research group InterGedi (www.intergedi.unizar.es).

instances of adapted genres as long as they incorporate some multimodality (in the form of pictures and videos) and a bit of hyperlinking which facil itates navigation along the web and may also lead to some interactivity through social media. However, they also revealed continuity with previous offline genres (i.e. abstracts and research application forms) in the rhetorical composition of the texts and in their function as entrance doors (along the lines of abstracts or tables of contents).

Secondly, as regards the analysis of evaluative language, a word list was retrieved from the Home/About pages under study by means of AntConc. This word list was filtered and non-content words (articles, determiners, etc.) were removed. Then, all the word types occurring at least 10 times in the corpus were kept in the list, which yielded a total of 32 types. The first two content words to appear were *project* and *energy*. Their frequency was almost three times as much as that of the third content word. A chi-square test (Preacher, 2001) was applied which revealed their significance on these websites. Their rank and frequency were then measured against a reference list. For such purposes, another wordlist was retrieved from the iWeb corpus (https://www.english-corpora.org/iweb/help/iweb_overview.pdf) (14 billion words from 22 million web pages), acting as a reference corpus. The statistical test for the words *project* and *energy* in this second list showed that none of their frequencies was significant. To explore the co-textual use of these two terms, the AntConc functions *clusters* (to identify the lexical and syntactic word types these two terms clustered with) and *concordance* (to spot the terms in the corpus and identify the use of evaluative language in their co-text) were used.

From a syntactic and semantic point of view, the word *project* frequently adopted the subject position in active voice and appeared

in combination with positive adverbs, adjectives, nouns and verbs. As a result, it was observed that this term was usually associated to positive values such as *success*, *reliability*, *consistency*, *development* and *innovation*, in line with strategic policies of environmental sustainability and energy efficiency. The term *energy* appeared in clusters such as *energy consumption* and *energy costs*, showing in some of these collocations the association between energy and negative values. However, by far the most frequent value attached to research on energy was *energy efficiency*.

The polarity of evaluation was basically positive (86.69%) in comparison with negative evaluation (13.3%). In terms of the values projected, apart from *efficiency* and *innovation*, the relatively high frequency of positive values dealing with *development*, *quality*, *responsibility*, *reliability* and *sustainability* seemed also to permeate through the discourse of these webpages. The negative value which stood out over others is that of *limitation* or *problem*, realized lexically by means of terms such as *limited*, *challenge*, *lack*, *barrier*, *problem* or *obstacle*. In all, an ideological discourse is created which permeates these websites and which basically argues that the EU-funded research is *innovative*, *efficient*, *sustainable*, *competitive*, *knowledgeable* and, therefore, of *quality* and *impact*.

Finally, evaluative markers were explored in connection with the rhetorical function they fulfill in Home/About pages. A rhetorical pattern emerged in some of these websites in which positive and negative evaluation combine in ways which go beyond the mere adding of values, serving other rhetorical, strategic purposes. Thus, positive and negative indicators are used to organise discourse along the lines of conventional offline genres, such as the research article abstract, in which positive evaluation is used to mark the centrality of the research, negative evaluation to indicate the research gap, and

positive again to highlight the contribution to the field of research. In contrast to these offline genres, however, technical language is avoided here, in an attempt to address a diversified audience. Thus, these texts may be taken to represent some kind of transition discourse between the written offline scientific text (research article, project proposal), addressed to experts, and the less technical text whose aim is disseminating knowledge. In this transition, genres adapt to new communicative contexts and settings and comply with new communicative demands, thus showing processes of repurposing, with offline genres recontextualised in online contexts taking advantage of the affordances that the digital medium offers.

In all, the H2020 energy-related websites under analysis were shown to be strategical in the dissemination and communication of results obtained and in their attempt to respond to societal demands for good practice in public expenditure and investment in R&D. The exploration of evaluation in these institutional research websites as part of their generic characterization contributed to the understanding of the significant role that these digital sites play in the current and global movement towards Open Science.

To conclude, the research presented in this contribution aligns with other studies which attempt to show that modern digital communication, characterized by its hypertextuality, multimodality and affective interactivity (Petroni, 2011), has changed enormously the way scholars project their identities and interact with others, the way they make themselves and their research visible, and, in general, has affected the communicative practices of the various disciplinary communities, allowing them to strategically give shape to genres, adapting some, creating others, in order to achieve their aims. It is also opening new avenues of dissemination of knowledge and communication with diversified audiences in the understanding that knowledge is a public

good. In all, communication is taking advantage of the "flat earth" that the borderless digital world offers, allowing a global reach never seen before.

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