ELSEVIER

"Think about how fascinating this is": Engagement in academic blogs across disciplines

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1. Introduction

Engagement is the ways writers rhetorically acknowledge the presence of their readers in a text. It is central to successful writing and particularly crucial in academic genres where writers must craft their texts to involve an audience as participants, guide their thinking and anticipate their possible responses (Hyland, 2001; 2005). This reader-oriented aspect of inter-personality contrasts with stance, the writer's attitude to the propositions in a text, by emphasising the importance of participant relations in communication. Equally, it indicates writers' awareness of a community's epistemological and interpersonal conventions, thus connecting texts with disciplinary cultures and communicative practices.

Engagement has been shown to be an important feature in a range of genres such as research articles (Hyland, 2005), PhD confirmation reports (Jiang & Ma, 2018), press releases (McLaren-Hanken, 2019), undergraduate dissertations (Hyland, 2004d), business emails (Carrió-Pastor, 2019), and popular science articles (Hyland, 2010). It has also been found to vary across disciplines (e.g. Hyland, 2004b; Kuo, 1999). In this paper, we expand the study of engagement practices beyond established academic and professional texts, to explore disciplinary engagement in a relatively new and rapidly growing genre: the academic blog. Using Hyland's (2005) engagement model and drawing on 132 blog posts from four disciplines, we seek to identify how academics employ the affordances of the online medium to reach out to a heterogeneous readership. Specifically, we address the following questions:

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(1) How do academic bloggers seek to engage their readers?
(2) What differences are there in the use of engagement in blogs in four disciplines?
(3) How are their choices influenced by disciplinary practices?

We hope, in doing so, to not only shed light on engagement and the influence of context on variations in academic interactions, but also to investigate the role of discipline in this process. Some research suggests that computer-mediated communication follows traditional genres in being influenced by the epistemic conventions of different fields (Kling & McKim, 2000; Talja & Fry, 2007). We not only intend to test this view but also to further our understanding of how blogs contribute to scholarly communication and the ways academics engage wider publics.

2. Engaging with disciplinary audiences

The ways that writers seek to align the presentation of their ideas with their readers incorporates Sacks and Schegloff's (1979) concept of *recipient design* and Sperber and Wilson's (1995) idea of *relevance,* but most centrally depends on Bakhtin's (1981) well-known view that all communication is dialogic. Even what seem to be entirely "monologic" texts are interactive. They involve the speaker/writer in responding in some way to what has been said before on the subject and in anticipating how those addressed might react to what is being argued. Successful academic arguments in particular must always incorporate the active role of an addressee and be understood against a background of other opinions and viewpoints. Texts thus locate their writers intertextually within larger debates and a community whose members are likely to both hold a position on the issue under debate and to recognise only certain forms of argument as valid. Through engagement, then, the language choices writers make help them to create interpersonal solidarity and co-membership of a disciplinary in-group.

Research has shown that disciplinary communities have their own ways of engaging readers, with features such as imperatives (Swales et al., 1998), reader pronouns (Harwood, 2005; Hu & Cao, 2015), questions, personal asides and appeals to shared knowledge (Hyland, 2001; 2002a; 2002b), all varying across disciplines. The overwhelming majority of features, in research articles at least, occur in soft discipline texts, with philosophers employing *ten times* more devices than biologists, for instance (Hyland, 2001). Engagement is not only a feature of writing in soft disciplines, however. McGrath and Kuteeva (2012) found considerable use of shared knowledge markers and reader pronouns in mathematics articles, for example, while Koutsantoni (2004) showed that electrical engineers often refer to shared knowledge to present new claims as already agreed. Frequencies for directives, in fact, tend to be higher in the hard sciences, where they help writers to present information succinctly by directing readers through an argument (Hyland, 2005).

Comparisons have also been made in the ways patterns of engagement not only differ across disciplines, but also by genre, language, and over time, revealing how writers shape their texts to the expectations of different audiences. Thus, we find differences between expert texts and undergraduate dissertations (Hyland, 2004c) and between popular and professional science articles (Hyland, 2010). There also seem to be changes in engagement patterns over the past 50 years (Hyland & Jiang, 2016) and between different first languages users. For instance, Lafuente-Millán (2014) found that while the context of publication and national culture are powerful factors regulating the use of engagement, L1 transfer and L2 proficiency may also have some bearing. Yet despite this scholarly interest in engagement, the main focus has always been on a narrow range of academic genres, principally the research article. We know virtually nothing about the contribution engagement makes to persuasion in relatively new online argument genres.

3. Academic blogs

As an increasingly familiar newcomer to the panoply of academic genres, the academic blog provides a new online outlet for academics seeking to take their research to a wider audience. With the aid of software affordances such as filtering tools for searching and accessing material, hyperlinks to related research work and the availability of immediate commentary, bloggers can exploit the textual practices of the internet to present their work in novel ways to new readerships. Thus, the academic blog plays an important role in sharing and discussing disciplinary information, disseminating new research to heterogeneous audiences, promoting discussion and stirring public debate (Luzón, 2017; Mauranen, 2013; Puschmann, 2014). It also allows writers to widen their personal and research visibility and expand the reach of their work to the commercial and lay worlds. The online environment creates both the possibility for a wider, unknown audience, but also for instant feedback and engagement in a virtual conversation giving experts and lay people alike the chance to respond to these research posts.

Blogs,[1] and the comments which follow them, have attracted considerable research attention over the last decade. While there are different types of academic blogs (Walker, 2006), the distinctions between them are not always clear and they have similar purposes: to disseminate information, express academic views and publicise the blogger's research (Efimova & de Moor, 2005). While a hybrid form of communication, blogs are recognised by their users as a genre, fulfil a common communicative purpose and exhibit regular rhetorical and linguistic features (e.g. Kjelberg, 2009; Mauranen, 2016). Blogs are also seen to sit at the intersection of science and science communication in presenting ideas more widely (Amsen, 2008).

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[1] Strictly, the term 'blog' refers to a genre and posts to specific examples of it. However, for the sake of flow, we often refer to posts as blogs where there is no risk of confusion.

Table 1
Corpus size and composition.

Disciplines	texts	total words	Source
Applied linguistics	33	42,991	Hypotheses
Life science	33	59,422	ScienceBlogs
Education	33	39,919	LSE Impact
Physical science	33	53,218	ScienceBlogs
Total	**132**	**195,550**	

Academic blogs have also been described as "virtual water coolers" (Kouper, 2010) around which a scholarly audience and the interested general public can join a discussion. In sum, blogs promote one's research, or one's field, stimulate discussion and help researchers feel connected (Gross & Buehl, 2015; Mahrt & Puschmann, 2014; Smart, 2016).

While academic blogs perform a variety of functions for their users, they co-exist with traditional venues of scholarly communication and popular scientific journalism, without replacing or entirely mimicking them. Research has shown the hybridity of academic blogs which combines features from scholarly written and spoken genres such as journal papers, conference talks and social media discourses (Grafton, 2009; Mauranen, 2013). By breaking down boundaries between public and private discursive practices, they blend discursive interpersonal strategies which offer a more informal style of communication while making fewer demands on readers' subject knowledge (Luzón, 2018; Walker, 2006). These discursive strategies construe immediacy, affectivity, shared goals, and social support but criticism is also a significant feature, ranging from mild rebuke to bald on record attack (Bondi, 2018a; Luzón, 2013).

Academic blogs are considered as "boundary layers" which create new writer-reader interactions (Shanahan, 2011). Engagement, and the ways authors seek to interact and build a relationship with their readers, is therefore a key feature of this genre and so a matter of interest to those who study academic discourse. Research has found how writers recontextualize, in academic blogs, material they have recently published in journal articles by deploying engagement features in different ways (Zou & Hyland, 2019). The participant-oriented dimension of blogs creates an imperative for dialogue with readers (Bondi, 2018b). In this paper, we examine engagement in blogs and explore how it is influenced by the epistemological and social practices of four contrasting fields.

4. Methods and procedures

4.1. The corpora

We chose applied linguistics, life science, education and physical science as representing a broad cross-section of academic domains which have well-established blogging practices. All blog posts were selected from three of the most influential and prestigious academic blog websites, based on recommendations by disciplinary experts. These are The LSE Impact blog, ScienceBlogs and Hypotheses.[2] All three are established international sites hosting thousands of academic posts. The *LSE Impact blog,* hosted by the London School of Economics and Political Science, was one of the earliest academic venues, launching its first blog in 2010 (Elmes, 2012). Its purpose is to encourage debate, share best practice and bring diverse scholars together to maximize the impact of research in social sciences. *Hypotheses*, founded in 2009, is also a social science site. As part of a larger portal, OpenEdition, it includes all areas of the humanities and social sciences in four languages for both specialists and interested laypeople. Finally, *ScienceBlogs* is an invitation only hosting platform for scientists, professors, professional writers and PhD candidates to discuss their work and enhance the public understanding of science. All these websites claim a global reach of more than 20 million readers a month.

From these three academic blog websites, we selected 33 blog posts from each. Our criteria were that the blog posts:

1) were published between 2013 and 2019 to ensure currency;
2) were written in English;
3) were written by different authors;
4) discussed or reported research issues previously studied by other academics rather than social or political aspects of science.

We reviewed the blog posts chronologically, extracting every nth blog in texts per year in each discipline between 2013 and 2019. Details of our corpus are given in Table 1.

In total, the academic blog corpus comprised 132 texts of 195,550 words (Table 1). We note the differences in word lengths across the fields but do not believe these influence our results. While discourse organizing (interactive) features (such as *we*

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now turn to or *in the next section*) are more frequent in longer texts, our focus on engagement features are less influenced by text length. In addition, all comparisons are normed to a base of 1000 words.

4.2. Analytical framework: engagement

We adopted Hyland's (2005) taxonomy of engagement features, which has been widely used to analyse academic texts such as research articles and student written discourse (e.g. Jiang & Ma, 2018; Lee & Deakin, 2016; McGrath & Kuteeva, 2012). Hyland (2005, p. 178) defines it in this way:

> This is an alignment dimension where writers acknowledge and connect to others, recognising the presence of their readers, pulling them along with their argument, focusing their attention, acknowledging their uncertainties, including them as discourse participants, and guiding them to interpretations.

Engagement, then, is about affiliation and involving readers in the text to both aid comprehension and finesse persuasion. The most obvious indication of this dialogic awareness is by overtly referring to readers by asking them questions, making suggestions or addressing them directly (Hyland, 2001). Specifically, this is mainly achieved by the use of:

- **Reader mention** to bring readers into a discourse, normally through second person pronouns
- **Directives** to instruct the reader, mainly expressed through imperatives and obligation modals.
- **Questions** to invite direct collusion by addressing the reader as having an interest in an issue and a willingness to follow the writer's response.
- **Shared knowledge markers** to ask readers to recognise something as familiar or accepted.
- **Personal asides** to comment on what has been said, adding to the writer-reader relationship.

Together these features reveal something of how writers directly address readers to develop their arguments and build interpersonal solidarity.

4.3. Coding and analysis

The disciplinary corpora were searched for these features using AntConc (Anthony, 2018).

We used list of common engagement features in previous studies (e.g. Hyland, 2002a; Hyland, 2005) and also added items after a thorough reading of each text. All retrieved items were manually checked to ensure that each performed an engagement function and agreement was reached on these by each author independently coding a 30% sample of each corpus. Through discussion, an inter-rater agreement of 96% was achieved. Intra-reliability tests were also conducted by the first author re-categorizing 20% of the cases two weeks after the initial coding with full agreement between the first and second categorizations achieved. Finally, the frequencies of each engagement feature were calculated after normalising the results to 1000 words to allow for cross-corpora comparison and were analysed using SPSS to determine statistical significances. The results are discussed in the following sections.

5. An overview of engagement patterns in blogs

Overall, we found 4,948 engagement features in the blog corpus. When normed for text length, applied linguistics showed the greatest number of engagement items, with the other fields having remarkably similar frequencies. The proportion of different devices are also quite similar across fields, with reader mention representing the majority of forms, followed by directives and questions. The details are presented in Table 2. The results indicate that researchers in all four fields are conscious of the need to engage their readers, but this is strongest in the soft domains (log Likelihood = 9.32, p < 0.01). It is also worth noting that variation was greater within the two soft fields despite the relative heterogeneity of the 'Life Sciences' category.

Table 2
Engagement features by discipline (per 1000 words & %).

	Applied linguistics		Education		Life science		Physics	
	per 1000 words	%	per 1000 words	%	per 1000 words	%	per 1000 words	%
Reader mention	24.0	62.9	12.6	55.9	12.4	56.7	11.7	56.0
Directives	5.4	14.2	5.1	22.9	2.9	13.2	2.7	13.0
Questions	4.8	12.5	2.6	11.7	2.0	9.3	2.3	11.1
Shared knowledge	3.1	8.1	1.5	6.7	3.6	16.3	3.3	15.9
Personal asides	0.9	2.3	0.7	2.8	1.0	4.5	0.8	4.0
Total	**38.2**	**100.0**	**22.5**	**100.0**	**21.9**	**100.0**	**20.8**	**100.0**

The table shows that reader mention, directives and questions are significantly more frequent in the applied linguistics and education blogs (log Likelihood = 7.73, p < 0.03 for reader mention, log Likelihood = 22.52, p < 0.001 for directives, log Likelihood = 9.51, p < 0.01 for questions). Perhaps surprisingly, shared knowledge and personal asides are more common in Physics and Life Sciences (log Likelihood = 21.57, p < 0.001 for shared knowledge, log Likelihood = 4.47, p < 0.1 for personal asides). Directives showed the greatest difference, with nearly twice as many cases in the soft fields and reader mention accounted for the largest proportion of engagement features in both soft and hard fields.

Disciplinary variations have generally been ascribed to community practices and the disparate ways disciplines construct knowledge (e.g. Becher & Trowler, 2001; Hyland, 2004a). Each discipline has its own assumptions regarding what constitutes knowledge (ontology) and how this knowledge is obtained (epistemology), which means that argument patterns differ. The soft fields are obviously more discursive and claims are more firmly based on the writer's personal voice, expertise, experience, and authority, which necessitates building a strong alignment with readers. There is an emphasis on common assumptions and styles of thought, taking a view of knowledge as abstract and open to individual interpretation. Writers are expected to spell things out, and work harder to create an understating with readers. Interaction thus requires a strong sense of professional solidarity which makes engagement resources essential to securing agreement. In the natural sciences, in contrast, knowledge is secured by appeal to the use of legitimate methods, empirical authority and lab observations. Knowledge is regarded as both linearly developed over time and cumulatively assembled from relatively small elements. Scientists deal in quantifiable and universal entities, following a set of strict rules, and value simplicity of explanation. This reduces the need to solicit solidarity as results are stronger without the intervention of the observing scientist.

By opening research findings to non-specialists, however, we might expect blog writers to move away from the ontological and rhetorical practices of professional academic research. Here are readers who may be less conversant with the conventions of disciplinary writing, yet we find in these results a certain adherence to the familiar engagement patterns of research communication. It is also interesting to note that blogs encourage far more interactivity with readers compared with other online academic discourses. Wikipedia articles, for example, are impersonal and require consensus between different authors for their effect (Myers, 2010). In the following sections, we look at each category of engagement in turn.

6. Reader mention: constructing solidarity

Reader mentions offer the most explicit ways of bringing readers into a discourse (Hyland, 2005) and they account for the largest proportion of engagement markers in each corpus. Clearly, writers from four fields all are seeking to involve readers in their arguments by addressing them as directly as possible, unlike in research articles where writers are more coy about using this unequivocal recognition of the reader (e.g. Hyland, 2008). This is a more informal use than inclusive *we* and acknowledges the fact that readers can respond, publicly and immediately, below the post, thus creating a greater sense of conversational intimacy and proximity.

(1) In these people's minds, their mother tongue is stronger than the other ones, or, as linguists call it, dominant. What do ***you*** think happens when these people are speaking their weaker language? Correct. (AL1) [3]
(2) I'd like to think ***we*** can develop a shared view of what can still happen in audit-driven environments. Could ***we***, online, document interesting institutional practices ***we*** can take back to ***our*** own institutions? (E11)

Table 2 shows that writers in applied linguistics and education employed significantly more reader-oriented markers than those in life sciences and physics (log Likelihood = 7.73, p < 0.03). The relative accessibility of social science topics and an expectation that non-specialist audiences might be attracted to them helps explain this, but interestingly, it is also in line with Hyland's (2008) study of research articles which show over 80% of these signals occur in soft knowledge papers. A great deal of writing in hard disciplines, however, is relatively heavy going for lay readers, not only because of the knowledge required to unpack the content but because they encounter meanings which are conveyed in an esoteric, highly compressed, code. The social sciences may be equally impenetrable at times, but generally contain fewer technical terms and are couched in more familiar, everyday language.

It is also interesting that the applied linguistics blogs contained significantly more reader mention than those in education (log Likelihood = 12.51, p < 0.002) while only slight differences were found in the science texts. It is difficult to account for this, although linguists may be more accustomed to writing for more diverse audiences and in more varied contexts (Bygate, 2005) and perhaps display a greater sensitivity to the possible impact of language on readers' reactions to their arguments. We also found that bloggers in soft fields overwhelmingly employed second person *you/your* (log Likelihood = 9.14, p < 0.02), once again underlining the dialogic nature of blogs, conveying a sense of proximity and openness to readers:

(3) As ***you*** now know, language acquisition and language learning are two different concepts. But it can get a little more complicated than that: ***You*** might both acquire and learn a language, even ***your*** first language! (AL3)
(4) I actually have three answers, take your pick. (E7)

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[3] AL refers to the applied linguistics corpus, E references to the education corpus, LS refers to the life science corpus and P to the physics corpus. The number identifies the text.

This is a strategy which exploits the association blogs have with conversational sharing, by apparently presenting in-formation through personal experience or explicit interpretation rather than by citing measures of objective proof. This is obviously closer to the knowledge creating practices of the soft fields which tend to foreground the agency of researchers and maintenance of closer relationships with readers. It suggests that claims are more explicitly negotiable than those founded on the hard data of quantitative measurement. It is more difficult to account for the preference for *we* pronouns in the life science and physics texts. While this is not a significant difference (log Likelihood = 1.01, p < 0.38), there is certainly a more concerted effort in these blogs to draw on an assumed collegiality and recruit readers into a world of shared knowledge. As these examples show, inclusive pronouns signal shared disciplinary understandings with the reader and express peer solidarity:

(5) **We** know quite a bit about tetrapod and arthropod limb development, and they aren't homologous at all. (LS3)
(6) …. in this case the science and the clinical observations **we** have both agree: Homeopathy doesn't work. (P15)
(7) Understanding how **our** biology came to take one particular path should involve looking at all the different paths. (LS3)

These examples suggest that writers are making the assumption they are speaking to fellow members of the discipline, or at least an audience with more than a passing knowledge of the topic. The use of inclusive pronouns is helping to engage readers as participants in a shared journey of exploration and understanding.

7. Directives: instructing readers

Directives instruct the reader to perform an action or to see things in a way determined by the writer: they therefore help manage the readers' understanding and processing of a text (Hyland, 2002a). They are generally expressed through obligation modals (*must, should have to*), imperatives (*note, consider, imagine*), and predicative adjectives expressing the writer's judgement of necessity/importance. Studies of research articles show that these are heavily used in the hard science texts where they seek to focus readers' attention and emphasize important points (e.g. Hyland, 2002a). In our blog data, however, we were surprised to find that they were significantly more frequent in the soft disciplines (log Likelihood = 22.52, p < 0.001). The difference lies in the potential interpersonal impact of this choice in this context, resulting, once again, in a different approach to engaging readers.

Essentially, directives are a potentially risky strategy of involvement for research article writers in the soft fields as they come close to violating the conventional fiction of democratic peer relationships. They carry strong connotations of unequal power, claiming greater authority for the writer by requiring readers to act or see things in a way determined by the writer. This seems to be less of a concern for science researchers as readers are looking for bottom line information. Succinctness is prized and directives allow them to cut to the heart of scientific arguments (Hyland, 2002a). For bloggers in the soft fields, however, directives are a key element of establishing a dialogic relationship with readers as they speak directly to them while evoking a credible and engaging persona.

(8) **Think about** how fascinating this is: When you decide to say something in English, it will usually come out in English, without mixing German and English words. (AL1)
(9) But before reaching this conclusion, **let us** firstly see the challenges from the other side. (E15)

As we can see, when combined with reader-mention, directives have considerable interpersonal impact, bringing writer and reader into closer rhetorical proximity to reach agreement.

There are also disciplinary differences in the functions directives are used to perform in blogs. Hyland (2002b) identifies three main kinds: (1) They can guide readers to another part of the text or to another text using *textual acts* (e.g. *see* Smith 1999*; refer to* Table 2); (2) instruct them how to carry out some action in the real world through *physical acts* (e.g. *open the valve, heat the mixture*); or (3) lead them through a line of reasoning to steer them to certain conclusions using *cognitive acts* (e.g. *note* or *consider* some argument). As in research articles, textual and physical acts were significantly more frequent in soft disciplines (log Likelihood = 4.27, p < 0.1 for textual acts, log Likelihood = 19.55, p < 0.001 for physical acts) while cognitive ones were more common in the science texts, although not significantly so (log Likelihood = -2.08, p < 0.74). Table 3 presents the disciplinary differences.

Table 3
Functions of directives by discipline (per 1000 words & %).

Directives	Applied linguistics		Education		Life science		Physics	
	per 1000 words	%	per 1000 words	%	per 1000 words	%	per 1000 words	%
Textual	0.2	4.3	0.3	4.9	0.1	4.1	0.1	4.8
Cognitive	0.8	20.2	0.9	18.0	1.0	36.3	1.0	35.9
Physical	3.1	75.5	4.0	77.1	1.7	59.6	1.6	59.3
Total	**4.1**	**100.0**	**5.2**	**100.0**	**2.8**	**100.0**	**2.7**	**100.0**

Textual acts are comparatively rare in blogs as the texts are short and there is little need to direct readers to illustrative material, while referential supports tend to be hyperlinked rather than explicitly signalled. Physical acts of this kind help create space to anticipate the writer's conclusions by activating the readers' actions. Both applied linguistics and education made greater use of physical acts, however, unlike their role in research papers, these were principally to encourage readers' active involvement with the argument rather than perform an action outside the text.

(10) Next, **write** a narrative heading that gives your essential message substantively. (AL21)

(11) To achieve that, we **must begin to frame a discussion** on the purpose of HEIs that is less focused on economics and more focused on people. (E14)

In research articles, in contrast, physical acts are mainly found in the hard science where they instruct readers how to conduct experimental procedures.

Cognitive directives make a greater imposition as they seek to position readers, requiring them to reflect on, recognise or concede some aspect of an argument (Hyland, 2002a). Bloggers tend to follow the preference scientists have for these forms when writing research articles, ensuring their views are understood and their convictions recognised. Examples like this are common:

(12) **Think about** why these various inventions were invented in parallel by so many people, and I bet you'll see where I'm going with this. (LS8)

(13) We also **must keep in mind** that Energetic Testing, MSA, is not the same thing as standard physiological, pathological and biochemical medical health measurements. (P3)

(14) It **must be conceded that** it is not entirely unreasonable to examine all the tools in our armamentarium and ask if there might be a role for DDT in controlling *Aedes aegypti*. (LS4)

We can see here that the use of cognitive acts allows bloggers to adopt an authoritative command of their claims and their audience, engaging readers by pulling them in a desired direction. Once again, bloggers tend to follow disciplinary practices in more conventional genres when making rhetorical choices (Hyland, 2002a; 2008).

8. Questions: creating involvement

Questions are perhaps the main strategy of dialogic engagement, inviting the involvement of readers and bringing them into the discussion as participants (Hyland, 2002b). Although almost all of them are rhetorical in the sense that the writer is not looking for an answer but an effect, questions can turn a one-sided exposition into a dialogue. They help to recruit readers into a virtual debate and manufacture immediacy and informality which makes specialised knowledge more intelligible and arguments more negotiable. They are, therefore, a key component of the more egalitarian and personal context which blog posters are seeking to create. As a result of this explicitly engaging role, they are almost twice as frequent in the soft knowledge blogs (log Likelihood = 9.51, p < 0.01).

Once again, this contrast in disciplinary uses of an engagement feature reflects the practices found in the more established, knowledge-creating genres of the academy. The more technical, less interactive conventions of the sciences are, in diluted form, carried into the blogs. While blog writers are not creating knowledge through peer negotiation in the same way as they might in research articles, they are promoting the values and practices of their disciplines as much as they are announcing their research. This is a discourse which emphasises the importance of empirical uniformities through trusted procedures, broadly predictable outcomes, and relatively clear criteria of acceptability. The fact that there are fewer questions in the science blogs thus reflects a science epistemology, a way of looking at the world in which, as Thompson (1998) observes, the presenter is a teller rather than a questioner, an explainer instead of a raiser of problems and issues. In contrast, questions in the softer fields suggest a less hierarchical community structure and a more inclusive exploration of issues. While the writer is leading the route, questions help engage readers along the way, making them feel that their views count and addressing the interests of different types of participants.

Variations can also be found in terms of question functions. Thompson (1998) has classified questions into audience-oriented and content-oriented types. Content-oriented are real questions which expect no audience response, but we found all examples in our corpora to be audience-oriented questions. These are more interactive and evaluative symbolically allowing the audience an opportunity to provide a response as they read. They are sub-divided into those which check comprehension, evoke audience responses and seek audience agreement. According to Thompson (1998), check type question use the tags *OK, right, all right* to ensure the audience's understanding of the message. Questions which evoke a response change the monologue to a dialogue (*what would you do?*) and those seeking agreement add interrogative tags (*isn't it? Wouldn't you?*). Table 4 shows that check questions predominate in the science disciplines (log Likelihood = 5.77, p < 0.05) while social science bloggers preferred questions which evoked a response and sought agreement, although the differences for seeking agreement type were not significant (log Likelihood = 13.89, p < 0.001 for evoking response and log Likelihood = -3.46, p < 0.8 for seeking agreement). Both sub-types predominated in the applied linguistic blogs.

Table 4
Functions of audience-oriented questions by discipline (per 1000 words & %).

	Applied linguistics		Education		Life science		Physics	
	per 1000 words	%	per 1000 words	%	per 1000 words	%	per 1000 words	%
Check	0.5	10.2	0.1	3.8	0.5	22.5	0.6	25.0
Evoke response	4.2	87.4	2.5	96.2	1.5	74.2	1.7	72.6
Seek agreement	0.1	2.4	0.0	0.0	0.1	3.3	0.1	2.4
Total	**4.8**	**100.0**	**2.6**	**100.0**	**2.1**	**100.0**	**2.4**	**100.0**

The greater use of check questions in the science blogs indicates the writer's sensitivity to the possible knowledge gaps among their readers. This supposition is strengthened by the fact that physics bloggers tend to use them more frequently, recognising the highly complex nature of knowledge in that field. Blog sites explicitly seek to reach wider audiences with the content they host, and this acknowledges that readers may be less familiar with the complexities of specialised procedures and ideas they encounter in the blogs. Writing outside an established knowledge context of shared disciplinary understandings, authors can use check questions to engage readers by ensuring they are following the argument:

(15) For instance, a 30C dilution is 30 one hundred-fold dilutions (C = 100, **get it?**). (P15)
(16) I need a model that takes all the different factors into account, then I predict what your dog will do. Should be easy, **right?** (P2)

Periodically entering the text to refer to readers' understanding of the material and agreement with the direction of the reasoning, writers can anticipate possible problems in comprehension while at the same time offering them a guarantee that the writer is fully conversant with the material and committed to what is being said.

Questions which encourage a response and solicit agreement fit more naturally into humanities and social science discourses, where knowledge depends more on individual interpretation and the power of persuasive argument. This reflexivity and questioning is founded on doubt and possibilities rather than the proof of proven experimental methods. Evoking a response from readers using questions, often combined with direct reference to them with *you*, helps writers to construct a more dialogic and interactive discourse:

(17) ***Do you follow specific 'rules' then? Do you like receiving and giving feedback on a text you have written?*** …. Tell us in the comments section below! (AL7)
(18) ***What is a mathematician anyway, and can you know what one is before becoming one - and by the time you have become one, will you have a secure future?*** (E6)

By explicitly eliciting responses via questions, writers can promote 'not just polylogues or multi-party conversations, but interwoven polylogues' (Bondi, 2018b, p. 41).

Seeking agreement through use of tag questions is a particularly intrusive form of engagement as it represents a direct intervention by the writer to influence the reader's thinking. These almost never occur in research texts (Hyland, 2002b) as they can be seen as an overt display of authority, but they also carry a conversational collegiality which helps draw the reader into the dialogue and display an interest in his or her position on the view being expressed. At the same time, they can put a certain amount of pressure on the audience to concur with these claims, to make a potentially controversial point an accepted one:

(19) It is rather obvious why the lawyer is stumped after Vicky's highly irritating answer, **isn't it?** (AL5)
(20) It looks totally out of place, **doesn't it?** What would be useful information in a letter is completely unnecessary in a WhatsApp message. (AL11)

Interestingly, bloggers in education used no seek agreement questions at all indicating, perhaps, a preference for a different style of argument and relationship with readers.

9. Appeals to shared knowledge: positioning readers

Appeals to shared knowledge are common in professional research genres where writers seek to position readers within the apparently naturalized boundaries of disciplinary understandings (Hyland, 2001). Readers can only be brought to agreement with the writer by building on what is already implicitly agreed, and by explicitly referring to this agreement writers construct themselves and their reader as members of the same academic community. In blog posts, of course, writers aren't constructing new knowledge, but they are seeking to persuade a new readership of claims which are currently in the

academic mix. Explicitly referring to shared knowledge is a one way of bringing readers on board, of flattering their knowledge of the topic, and of moving them towards agreement.

Appeals to shared knowledge are significantly more common in the hard disciplines in our blog corpus (log Likelihood = 21.57, p < 0.001). These posts are likely to attract an audience which, while less cohesive than disciplinary specialists, are likely to have a lay interest in the subject and some familiarity with the background to the topic area. Appealing to shared knowledge here can remind readers of this background or, perhaps more often, present new information as shared to engage readers and encourage its acceptance as an inescapable fact. Thus, finessing their acceptance of the writer's argument, as here:

(21) **Obviously**, this view rests on a Panglossian view of DDT in which it is virtually perfectly effective and safe, even though nothing really is. (LS4)

(22) The bottom line is that cell phone usage as measured by a study like the Technion study is almost certainly a confounder, a surrogate for some other factor that **we know to be** related to infertility that the study doesn't control for. (P6.)

There is, then, an assumption that readers will bring some prior knowledge to the text and, if not, be prepared to accept the writer's characterisation of information as sufficiently evident to be shared. 'Soft' knowledge, on the other hand, is generally more organic and holistic rather than atomistic and integrative which means that claims are often made on the basis of discussion and argument. A great deal can be assumed from the experiences readers bring to the text of everyday life so bloggers can be more confident about readers' understandings and their willingness to follow along without reference to this knowledge.

Appeals to shared knowledge can be sub-categorised into three types: referring to logical reasoning which concerns the coherence of the argument (e.g. *obviously, of course*); to routine condition, concerned with usual circumstances or behaviours in the real world (e.g. *normally, regularly*); and to familiarity with tradition, concerned with usual community practices and beliefs (e.g. *common, traditionally*) (Hyland & Jiang, 2016). Table 5 shows that markers relating to logical reasoning and typicality were significantly more frequent in life science and physics (log Likelihood = 14.85, p < 0.001 for logical reasoning and log Likelihood = 19.29, p < 0.001 for tradition & typicality), while differences in routine conditions were not significant (log Likelihood = -1.47, p < 0.68).

The predominance of logical reasoning and typicality in life science and physics reinforces the conventional patterns of rhetorical persuasion in the hard fields. By signalling agreed reasoning, bloggers can imply that readers already know or readily accept the information, thus involving them as participants in the journey to an agreed outcome. Hyland and Jiang (2016) argue that this is the most manipulative form of shared knowledge engagement because it moves the focus of the discourse away from the writer to shape the understandings of the reader, as is apparent in these examples:

(23) **Obviously**, this view rests on a Panglossian view of DDT in which it is virtually perfectly effective and safe, even though nothing really is. (LS4)

(24) **Of course**, as most regular readers will know, reiki has only been in existence since the 1920s. (P1)

This explicit manoeuvring of the reader into acceptance of the claim is perhaps too transparent a strategy in the soft fields where, as we suggested above, shared understandings cannot be assumed from wider experiential knowledge and are less likely to be referred to.

Appeals to the readers' assumed familiarity with aspects of background research information can also be seen as consistent with the ways hard disciplines tend to formulate knowledge in an established knowledge context. The epistemological practices of the hard sciences, where truths are established following a linear progression of understandings which build on previous understandings is transferred to the argument patterns in blogs. The presentation relies on the reader accepting certain presuppositions and prior knowledge of what underlies the assertion of new claims:

(25) If you spray a wall with DDT today–a method **commonly** used because mosquitoes are known to rest on walls a moment after having a blood meal—it could still be coated by DDT in 20 years. (LS4)

Table 5
Appeals to shared knowledge (per 1000 words & %).

	Applied linguistics		Education		Life sciences		Physics	
	per 1000 words	%	per 1000 words	%	per 1000 words	%	per 1000 words	%
Logical reasoning	0.9	27.8	0.6	38.3	1.3	35.5	1.5	46.3
Routine conditions	1.4	45.1	0.3	18.3	0.9	24.2	0.5	13.6
Tradition & typicality	0.8	27.1	0.7	43.4	1.4	40.3	1.3	40.1
Total	**3.1**	**100.0**	**1.6**	**100.0**	**3.6**	**100.0**	**3.3**	**100.0**

(26) After all, **it's well known** that increased temperature is associated with decreased sperm count and quality. It's the very reason that fertility doctors recommend that men being evaluated for infertility wear boxers instead of briefs. (P6)

Reference to the routine conditions under which statements are accepted as valid are more common in the applied linguistics and education blogs. These are quite rare in research article writing in the soft fields as writers have less confidence in their readers' ability to recover background knowledge about experimental practices. In blogs, however, appealing to their assumed familiarity with aspects of background information and wider everyday understandings, rather than research practices, helps to engage readers as cooperative participants:

(27) Again, this definition is quite similar to my proposed definition, because left dislocation and right dislocation are not **normally** thought to be possible in embedded clauses. (AL12)
(28) Yet largely due to experiences of working on the ASC, **a common perception** of the REC was as an additional, often impossible, workload. (E1)

10. Personal asides: intimating intimacy

Personal asides allow writers to address readers directly by briefly interrupting the argument to offer a comment on what has been said (Hyland, 2005). We can see something of the effect in the example:

(29) The Batman one was slightly larger than the others, and the Pokemon one was very quickly taken upstairs and tied to SteelyKid's door (**so quickly, in fact, that it didn't make the photo with the others**), where it suffered slightly less abuse than the other three, (P. 7)

The comments in parentheses are not directly related to the development of the ongoing text, adding little to the argument or propositional development. Instead they are explicit interventions of the writer to engage directly with readers.

Table 2 shows that this feature was slightly more common in the hard discipline blog posts, (log Likelihood = 4.47, p < 0.1). Generally, we might expect these intrusions to be a feature of writing in the more discursive fields, where readers must be drawn in and involved as participants to a greater extent than in the physical sciences (Hyland, 2001). But in blogs we find writers in all fields willing to intervene explicitly to offer a view. This helps to intimate writer-reader proximity and oil the communicative wheels. It affirms the participants are similar kinds of people with shared interests and understandings, which is why scientists may use them rather more, especially when they want to allude to commonly accepted in-group understandings:

(30) These animals were certainly old enough to have been fully independent (**though of course they may or may not have been gregarious/social etc.**). (L6)

This parenthetical comment is almost a throw-away remark, but evokes a shared frame for understanding, but it also creates a bond of common knowledge between the writer and reader.

In the soft disciplines we find personal asides used more to express the blogger's personal views or convey a sense of personal conjecture. It introduces a dialogic element into the text which is more familiar in these fields where the writer's presence is much stronger.

(31) Mathematics could also be **(but so far, to my knowledge, has not been)** theorised as emotional labour, identity work, production and reproduction, community work, digital labour and self-exploitation. (E6)

11. Conclusions

We have explored how disciplinary conventions impact the use writers make of engagement resources in academic blogs. Explicitly appealing to readers through questions, directives, asides, signalling sharedness, and explicitly referring to the reader are common strategies in academic blog writing. This is not unexpected given the affordances of the medium to reach a wider, non-specialist audience, for immediate feedback, and for compressed, more informal styles of argument. In blogs, writers are not negotiating their claims with peers to persuade them that their interpretations are worth publishing and citing. Instead, they are making use of the internet to disseminate work to new and wider audiences of experts and interested lay people. One of the consequences of this changed rhetorical context is that bloggers have to adopt new ways of informing and persuading readers of their ideas, adopting interpersonal relations with readers which are more egalitarian, informal and engaging than those in research articles.

This does not mean, however, that all blogs are rhetorically identical or that writers treat their readers in the same way across all fields. Our results reveal clear disciplinary differences in engagement patterns, which strongly suggests that the

rhetorical practices in this genre cannot be disassociated from those employed to create knowledge in traditional research genres. The frequencies show that blogs in the soft disciplines have significantly more reader mentions, directive and questions, features which intrude more overtly to engage readers. In contrast, bloggers in sciences rely more on resources which claim relatively more author authority and require more shared understanding, engaging readers in a joint exploration of issues. These frequencies indicate a clear relationship between rhetorical choice and disciplinary conventions, influenced by the authority granted to the agent in different fields and their epistemological and social knowledge-making practices.

Of course, this study focuses on just four disciplines and more research can be done in this area, perhaps exploring more disciplines, variations within disciplines and whether there are different forms of engagement when writers are discussing their own research or reporting that of others. We have, however, suggested how different disciplinary communities respond to new rhetorical exigencies and how their epistemic practices are articulated in scholarly blogs. The choice of these features implies that writers anticipate that readers are likely to expect and respond positively to them, suggesting that while audiences might be less specialised, they are not as diverse as is often supposed. No more than their much-studied cousin, the research article, academic blogs do not occur in a disciplinary vacuum, and writers draw on the conventions which they are familiar with and which work for them in that context. In other words, when considering engagement strategies, the academic blog is not only a blog, but also very much academic.

Funding

References

Amsen, E. (2008). Who benefits from science blogging? *Hypothesis, 4*(2), 10−14.

Anthony, L. (2018). *AntConc (version 3.5.7) [computer software]*. Tokyo, Japan: Waseda University.

Bakhtin, M. M. (1981). *The dialogic imagination*. Austin: University of Texas Press.

Becher, T., & Trowler. (2001). *Academic tribes and territories: Intellectual enquiry and the cultures of disciplines* (2nd ed.). Philadelphia: Society for Research into Higher Education and Open University Press.

Bondi, M. (2018a). Blogs as interwoven polylogues: The dialogic action game. *Languages and Dialogues, 8*(1), 43−65.

Bondi, M. (2018b). Try to prove me wrong: Dialogicity and audience involvement in economics blogs. *Discourse, Context & Media, 24*, 33−42.

Bygate, M. (2005). Applied linguistics: A pragmatic discipline, a generic discipline? *Applied Linguistics, 26*(4), 568−581.

Carrió-Pastor, M. L. (2019). Authorial engagement in business emails: A cross-cultural analysis of attitude and engagement markers. In C. S. Guinda (Ed.), *Engagement in professional genres* (pp. 47−65). John Benjamins.

Efimova, L., & de Moor, A. (2005). Beyond personal webpublishing: An exploratory study of conversational blogging practices. In *Proceedings of the Hawaii international Conference on system sciences (HICSS-38)*. IEEE Computer Society Press, 3-6 January 2005.

Elmes, J. (2012). LSE bloggers divine the future of academia in european politics. Retrieved from https://www.questia.com/read/1P3-2687970771/lsebloggers-divine-the-future-of-academia-in-european.

Grafton, K. (2009). Situating the public social actions of blog posts. In J. Giltrow, & D. Stein (Eds.), *Genres in the internet* (pp. 85−111). Amsterdam, Netherlands: Benjamins.

Gross, A., & Buehl, J. (2015). *Science and the internet: Communicating knowledge in a digital age*. NY: Baywood: Amityville.

Harwood, N. (2005). We do not seem to have a theory. The theory I present here attempts to fill this gap: Inclusive and exclusive pronouns in academic writing. *Applied Linguistics, 26*(4), 343−373.

Hu, G., & Cao, F. (2015). Disciplinary and paradigmatic influences on interactional metadiscourse in research articles. *English for Specific Purposes, 39*, 12−25.

Hyland, K. (2001). Bringing in the reader: Addressee features in academic articles. *Written Communication, 18*(4), 549−574.

Hyland, K. (2002a). Directives: Argument and engagement in academic writing. *Applied Linguistics, 23*(2), 215−239.

Hyland, K. (2002b). What do they mean? Questions in academic writing. *Text, 22*(4), 529−557.

Hyland, K. (2004a). *Disciplinary discourses: Social interactions in academic writing*. London: Longman.

Hyland, K. (2004b). Engagement and disciplinarity: The other side of evaluation. In G. Del Lungo Camiciotti, & E. Tognini Bonelli (Eds.), *Academic discourse: New insights into evaluation* (pp. 13−30). Bern: Peter Lang.

Hyland, K. (2004c). Disciplinary interactions: Metadiscourse in L2 postgraduate writing. *Journal of Second Language Writing, 13*, 133−151.

Hyland, K. (2004d). Patterns of engagement: Dialogic features and L2 student writing. In L. Ravelli, & R. Ellis (Eds.), *Academic writing in context: Social-functional perspectives on theory and practice* (pp. 5−23). London: Continuum.

Hyland, K. (2005). Stance and engagement: A model of interaction in academic discourse. *Discourse Studies, 7*(2), 173−192.

Hyland, K. (2008). Disciplinary voices: Interactions in research writing. *English Text Construction, 1*(1), 5−22.

Hyland, K. (2010). Constructing proximity: Relating to readers in popular and professional science. *Journal of English for Academic Purposes, 9*(2), 116−127.

Hyland, K., & Jiang, F. (2016). "We must conclude that...": A diachronic study of academic engagement. *Journal of English for Academic Purposes, 24*, 29−42.

Jiang, F., & Ma, X. (2018). 'As we can see': Reader engagement in PhD candidature confirmation reports. *Journal of English for Academic Purposes, 35*, 1−15.

Kjellberg, S. (2009). Scholarly blogging practice as situated genre: An analytical framework based on genre theory. *Information Research, 14*(3), 1−17.

Kling, R., & McKim, G. (2000). Not just a matter of time: Field differences and the shaping of electronic media in supporting scientific communication. *Journal of the American Society for Information Science, 51*(14), 1306−1320.

Kouper, I. (2010). Science blogs and public engagement with science: Practices, challenges, and opportunities. *Journal of Science Communication, 9*(1), 1−10.

Koutsantoni, D. (2004). Attitude, certainty and allusions to common knowledge in scientific research articles. *Journal of English for Academic Purposes, 3*(2), 163−182.

Kuo, C.-H. (1999). The use of personal pronouns: Role relationships in scientific journal articles. *English for Specific Purposes, 18*(2), 121−138.

Lafuente-Millán, E. (2014). Reader engagement across cultures, languages and contexts of publication in business research articles. *International Journal of Applied Linguistics, 24*(2), 201−223.

Lee, J. J., & Deakin, L. (2016). Interactions in L1 and L2 undergraduate student writing: Interactional metadiscourse in successful and less-successful argumentative essays. *Journal of Second Language Writing, 33*, 21−34.

Luzón, M. J. (2013). "This is an erroneous argument": Conflict in academic blog discussions. *Discourse, Context & media, 2*(2), 111−119.

Luzón, M. J. (2017). Connecting genres and languages in online scholarly communication: An analysis of research group blogs. *Written Communication, 34*(4), 441−471.

Luzón, M. J. (2018). Features of online ELF in research group blogs written by multilingual scholars. *Discourse, Context Media, 24*, 24−32.

Mahrt, M., & Puschmann, C. (2014). Science blogging: An exploratory study of motives, styles, and audience reactions. *Journal of Science Communication, 13*(3), 1−17.

Mauranen, A. (2013). Hybridism, edutainment, and doubt: Science blogging finding its feet. *Nordic Journal of English Studies, 13*(1), 7—36.

Mauranen, A. (2016). *Reflexively speaking: Metadiscourse in ELF*. Berlin: Mouton de Gruyter.

McGrath, L., & Kuteeva, M. (2012). Stance and engagement in pure mathematics research articles: Linking discourse features to disciplinary practices. *English for Specific Purposes, 31*, 161—173.

McLaren-Hankin, Y. (2019). Rebuilding trust in the banking sector: Engaging with readers in corporate press releases. In C. S. Guinda (Ed.), *Engagement in professional genres* (pp. 87—100). John Benjamins.

Myers, G. (2010). *The discourse of blogs and wikis*. London: Continuum.

Puschmann, C. (2014). Micro)blogging science? Notes on potentials and constraints of new forms of scholarly communication. In S. Friesike, & S. Bartling (Eds.), *Opening science* (pp. 89—106). New York, NY: Springer.

Sacks, H., & Schegloff, E. (1979). Two preferences in the organiartion of reference to persons in conversation and their interaction. In G. Psathas (Ed.), *Everyday language: Studia in ethnomethodology* (pp. 15—21). New York: Irvington.

Shanahan, M.-C. (2011). Science blogs as boundary layers: Creating and understanding new writer and reader interactions through science blogging. *Journalism, 12*(7), 903—919.

Smart, G. (2016). Discourse coalitions, science blogs, and the public debate on global climate. In A. S. Bawarshi, & M. J. Reiff (Eds.), *Genre and the performance of publics* (pp. 157—177). Boulder, CO: Utah State University Press.

Sperber, D., & Wilson, D. (1995). *Postface to the second edition of relevance: Communication and cognition*. Oxford: Blackwell.

Swales, J. M., Ahmed, U., Chang, Y., Chavez, D., Dressen, D., & Seymour, R. (1998). Consider this: The role of imperatives in scholarly writing. *Applied Linguistics, 19*(1), 97—121.

Talja, S., & Fry, J. (2007). The intellectual and social organization of academic fields and the shaping of digital resources. *Journal of Information Science, 33*(2), 115—133.

Thompson, S. (1998). Why ask questions in monologue? language choice at work in scientific and linguistic talk. In S. Hunston (Ed.), *Language at work* (pp. 137—150). Clevedon, England: University of Birmingham Press.

Walker, J. (2006). Blogging from inside the ivory tower. In A. Bruns, & J. Jacobs (Eds.), *Uses of blogs* (pp. 127—138). New York: Peter Lang.

Zou, H., & Hyland, K. (2019). Reworking research: Interactions in academic articles and blogs. *Discourse Studies, 21*(6), 713—733.

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