

**Stance is present in scientific writing, indeed.
Evidence from the *Coruña Corpus*
of *English Scientific Writing*¹**

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ABSTRACT

Stance as a pragmatic feature has been discussed widely in recent years, although the analysis of its presence in the scientific register has been more limited. Stance is most clearly seen in the use of adverbs (Quirk et al. 1985; Biber et al. 1999; Huddleston – Pullum 2002), providing a comment on the propositional content of an utterance. Thus, in any speech act the information they transmit involves both participants, which in the case of academic prose are the writer and reader. Biber et al. (1999) have claimed that oral registers exhibit the highest number of stance adverbs and that these are “relatively common” in academic prose (Tseronis 2009). In this paper we try to ascertain the extent to which stance adverbs were used in Late Modern scientific discourse, and whether differences in use can be observed between British and American authors and also across disciplines and genres, taking the orality or written nature of texts as a key feature in the analysis. Data have been drawn from around one hundred and twenty authors, from three sub-corpora of the *Coruña Corpus of English Scientific Writing* (see also Zea, this volume). Each of these sub-corpora contains extracts of texts from different scientific disciplines written between 1700 and 1900. However, for the present study, only nineteenth-century authors have been selected. The material also allowed us to consider whether the sex of a writer had a bearing on the use of these forms. Ultimately, we have found that the most frequently used stance adverbs are those indicating inclusiveness and expressing either emphasis or tentativeness. Curiously enough, they are more abundant in texts written by North American authors and when we come to sex, male uses exceed by far female ones.

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1. Introduction

The aim of this contribution is to describe the use of stance adverbs by nineteenth-century writers of science, and in this way to characterise the nature of authorial presence and commitment in this special kind of language. Our working hypothesis is that these texts will not contain many instances of stance adverbs, given that nineteenth-century scientific discourse can be expected to conform to the object-centred pattern of Empiricist science based on objective descriptions in seeking reliability, thus avoiding the use of linguistic tags denoting personal engagement. Such instances that are found might be explained on the grounds of certain extralinguistic variables, such as an author's place of education (British or American), their sex², or the genres in question. In the case of genre, writing may approach the standards of oral communication to some extent, depending on their degree of technicality, and the oral-to-be-written or written nature of texts will be taken into consideration during the analysis.

In accordance with this working hypothesis, the paper is organised as follows. Section 2 will deal with stance adverbs, looking at their nature and use. Data from the different sub-corpora of the *Coruña Corpus of English Scientific Writing* (henceforth CC – see also Zea this volume) will be presented in Section 3, together with a description of the method to be used in the subsequent analysis. Findings will be presented in Section 4, and will focus on three variables where some differences may be expected: whether authors received a British or an American education, the genre in which they were writing, and sex of authors. In the final section concluding remarks will be offered.

2. Stance adverbs

By stance we mean the overt expression of an author's or speaker's attitudes, feelings, judgments, or commitment concerning the message. The expression of stance may also convey the speaker's evaluation of the content of the specific clause (Downing – Locke 2002: 36). As such, it is a pragmatic feature and has been widely studied in recent years, although

² Sex is here used to refer to a biological quality rather than to a cultural construct. For an explanation on the use of the term 'sex' see Moskowich (2013: 467).

not always under this name: evaluation (Hunston 1994), evidentiality (Chafe 1986), affect (Ochs 1989) or hedge (Hyland 1998) were tags also used by authors to refer to the same concept as Alonso-Almeida – Vázquez (2010: 1173) have put it. In the case of the scientific register its analysis has been restricted to certain fields and disciplines (Salager-Meyer 1994; Hyland 1998, 1999, 2005; Al-Saaidi 2010; Alonso-Almeida 2012a, 2012b). The analysis of stance has not only yielded present-day accounts of its function and representation but also some diachronic works have attempted to trace historical changes across registers (Biber 2004; Busse 2010; Gray – Biber – Hiltunen 2011). Stance is one of the elements that forms a model of interaction between participants in academic discourse (Hyland 2005). As Hyland (2005: 173) notes, “writers seek to offer a credible representation of themselves and their work by claiming solidarity with readers, evaluating their material and acknowledging alternative views”. This is central to the construction of persuasive argumentation and thus to the success of scientific communication. Stance can be manifested by means of lexical categories or constructions (Downing – Locke 2002: 74), including adverbs. Indeed, adverbs have been widely acknowledged among the primary lexical markers of stance in English (Biber – Finegan 1988: 1; Quirk et al. 1985; Biber et al. 1999; Huddleston – Pullum 2002), and they will serve as the focus for the current paper.

Since adverbs used in this way provide a comment on the propositional content of an utterance, the information they transmit in any speech act involves both participants, speaker and hearer, or writer and reader in the case of academic prose. Writers need to position themselves and to express their value judgments, endorsing their argumentation with attitudinal comments that express reliability and help reinforce their relationship with readers. In this sense, the expression of stance can also be understood as an audience-engagement mechanism, in that the use of linguistic structures transmitting point of view aims at promoting the addressee’s approval of the claims made. This manifestation of the interpersonal level of meaning has led authors to describe the phenomenon in different ways. Thus, stance adverbs have also been called “comment pragmatic markers” (Fraser 1999) and “attitudinal and style disjuncts” (Quirk et al. 1985). In the literature, such adverbs are said to mark either degree of confidence (*usually, possibly, probably*) or involvement and solidarity (*highly, mainly*). Hence, the supposed objectivity of scientific writing is counterbalanced by the subjectivity implicit in the use of these adverbs (Hyland 2005).

Bacon's and Boyle's canon for style in scientific writing, which emerged as a reaction to the medieval scholastic tradition, demands the use of clear and plain language devoid of ornamentation (Allen – Qin – Lancaster 1994). This transparent, object-centred style (Atkinson 1999), acting as a direct vehicle for the transmission for scientific observation and experimentation, seems to have tolerated the veiled presence of the author. The reasons here may lie in the necessity for authors to connect with the increasing numbers of the literate public, while complying with the ideas of the dissemination of knowledge, so central to the new science, and with the principle of reliability, another core aim of Empiricism. The linguistic mechanisms best suited to express this intimate relation between author and audience include stance adverbials, modality, second person pronouns, suasive and private verbs (Biber 1988), and directives (Hyland 2005), among others. The use of stance adverbs in particular may have been conditioned by several factors, and the social and external factors we will consider here may have influenced their degree of use in scientific writing. First, we will consider where authors acquired their competence in scientific writing: that is, whether the writing tradition in which they were educated had any effect on the extent of their reliance on such adverbs. Second, assuming that certain genres are closer to orality than others (Biber – Finegan 1992, Culpeper – Kytö 2000) and that, *a priori*, the expression of one's attitude towards the message conveyed is more easily detected in oral than in written scientific texts, we will ask whether the degree of technicality of genres may influence language choice. In a previous study of contemporary English, Biber et al. (1999: 767) claimed that oral registers exhibit the highest number of stance adverbs, the occurrence of which is "relatively common" in "academic prose, while they show the lowest frequency in news" (Tseronis 2009). This may imply that news is somehow more objective than scientific or academic prose, which in principle might seem to be a wholly objective field with a high degree of abstraction (Monaco forthcoming). Finally, we will ask whether male and female authors may also have used these stance markers differently, in that it has been argued that women are generally more involved than men in their writing style (Argamon et al. 2003). Previous studies on sex differences in a variety of aspects of scientific writing (Crespo 2011; Crespo – Moskowich forthcoming; Moskowich – Monaco 2014) point to the relevance of distinct writing practices by men and women, each manifested in the preponderant use of specific linguistic strategies.

Although we are conscious of the fact that many other linguistic structures could be taken as expressions of stance, we have decided to focus

here on only one lexical category, that of adverbs. This means that our results cannot be extrapolated to the general use of stance in the scientific works under survey, but are obviously limited to the use of stance adverbs.

3. Material and methodology

Data are drawn from three sub-corpora of the CC. These are *CETA (Corpus of English Texts on Astronomy, 2012)*, *CELiST (Corpus of English Life Sciences Texts, forthcoming)* and *CHET (Corpus of Historical English Texts, forthcoming)*. Each sub-corpus contains extracts of texts from different disciplines, Astronomy, Life Sciences and History, respectively, written between 1700 and 1900. However, for the present study, only nineteenth-century authors have been chosen as not all the sub-corpora contain samples by eighteenth-century American authors.

Our data represent 120 different authors and a total of 607,251 words. Since all samples contain more or less the same number of words (ca. 10,000) there is quite a regular distribution across the three disciplines, with Astronomy containing 201,830 words, Life Sciences 203,422 words and History 201,999 words.

For the purpose of this study we have resorted to a closed list of items taken from Quirk et al. (1985) (see Appendix 1), a seminal descriptive grammar work on which more recent grammars have been based. The stance adverbs under consideration were retrieved from the corpora using the *Coruña Corpus Tool* provided with the CC.

Figures will be normalised to 10,000 when necessary, as a means of ensuring a more rigorous study and more reliable results.

4. Description of findings

All the 114 adverbs listed by Quirk et al. (1985) under different categories have been searched for using the *Coruña Corpus Tool* in the three present sub-corpora. After the retrieval, their function as stance adverbs was manually checked. From this search 1,420 tokens were found, which represents just 23.38 cases of stance adverbs per 10,000 words (see Appendix 1). However, we will proceed with the description of those types and tokens found in order to outline the use of these forms in nineteenth-century scientific writing. Some of Quirk et al.'s adverbs (41) are not represented at all in our data. These are listed in Table 1 below:

Table 1. Stance adverbs not present in the material under survey

admittedly	hopefully	refreshingly
amusingly	incredibly	regrettably
arguably	indisputably	reportedly
astonishingly	indubitably	reputedly
bluntly	ironically	supposedly
conceivably	luckily	suspiciously
crudely	maybe	tragically
cunningly	mercifully	unarguably
delightfully	metaphorically	understandably
disappointingly	patently	unluckily
disturbingly	predictably	unreasonably
flatly	preferably	unwisely
frankly	prudently	wrongly
funnily	purportedly	

The absence of these forms might be explained by the fact that particular adverbs were not in use in the nineteenth century. This is certainly the case, for example, with *arguably*, first recorded in the *Oxford English Dictionary* in 1890:

- (1) 1890 Sat. Rev. 22 Feb. 216/2 His policy, if sometimes arguably mistaken, was almost always a generous policy.

Table 2 below shows the number of tokens for each of the 73 types found in the sub-corpora.

In order to clarify the frequency of occurrence of these forms, Figure 1 represents only those types for which more than 20 tokens were recorded. In fact, we note that hapax legomena abound in the data, with 16 stance adverbs appearing just once across all 3 sub-corpora, which may indicate a high degree of lexical richness in the expression of the authors' attitude or feelings towards what they are writing. This is exactly what we have found in our data and, as a consequence, our claim must be understood as being restricted to the number of words in our corpus here. However, we are aware of the possibility that larger corpora might yield fewer hapax legomena (Baayen 2001).

Table 2. Numbers of stance adverbs found (raw figures)

Form	CETA	CELiST	CHET
amazingly	1	0	0
apparently	30	28	15
appropriately	0	0	1
approximately	6	5	0
artfully	0	0	1
assuredly	1	3	0
avowedly	0	0	5
briefly	4	7	4
broadly	0	7	0
candidly	0	0	1
certainly	29	32	23
clearly	10	23	4
cleverly	0	0	2
confidentially	0	0	1
conveniently	1	5	1
correctly	6	3	1
curiously	1	5	0
decidedly	0	4	0
definitely	3	8	1
doubtless	14	6	2
evidently	19	15	9
figuratively	0	0	1
foolishly	0	0	1
fortunately	3	4	7
generally	43	102	36
happily	1	4	7
honestly	0	0	2
incontestably	1	1	0
incontrovertibly	0	0	1
incorrectly	0	0	1
indeed	68	54	63
inevitably	2	1	2
justly	7	6	12
likely	9	15	17
literally	2	5	2
manifestly	2	3	1
naturally	16	15	15
obviously	6	7	4
oddly	0	0	1
perhaps	34	79	41
personally	0	2	4
plainly	5	9	2
pleasingly	1	0	1
possibly	18	14	9
presumably,	2	1	2
privately	0	0	7
really	26	17	21
reasonably	3	1	5
remarkably	2	8	0
rightly	0	3	2
roughly	3	4	0
sadly	0	0	1
seemingly	3	2	2
sensibly	22	3	0
seriously	1	2	6
shrewdly	1	0	0
significantly	0	1	0
simply	20	10	10
strangely	1	3	2
strictly	14	7	8
surely	1	2	4
thankfully	0	0	2
truly	6	11	5
truthfully	0	0	1
unexpectedly	0	1	1
unfortunately	5	6	6
unhappily	0	0	1
unjustly	0	0	1
undoubtedly	9	6	0
unquestionably	2	0	1
wisely	0	3	4

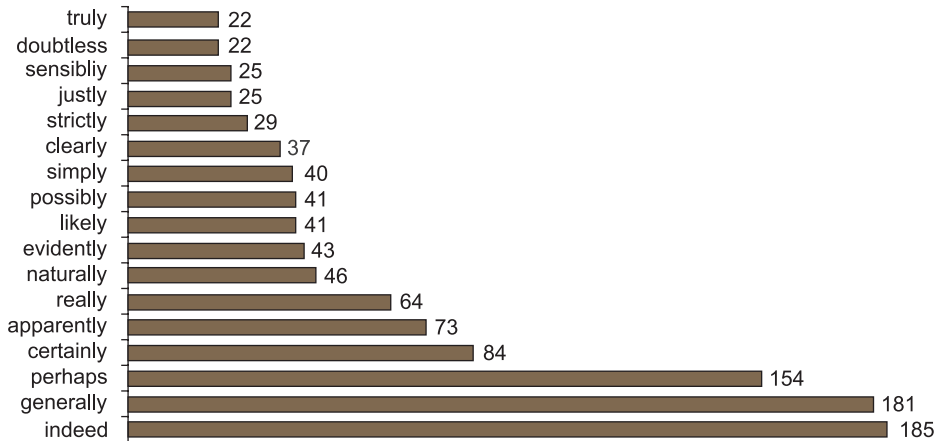


Figure 1. Types of stance adverbs with more than 20 tokens

Although a thorough analysis of the semantics of the stance adverbs found here would be most interesting and could certainly be the object of further research, we have decided to pay more detailed attention to those forms at the top of a frequency scale. The three adverbs which are most frequently used are *indeed*, (185) *generally* (181) and *perhaps* (154). Such forms are easily recognised as being close to orality (Busse 2012) yet seem to fulfil different roles. Given their frequent use, it is tempting to conclude that authors may have perceived them as being somewhat devoid of meaning, and hence felt free to use them more widely. Nevertheless, a careful analysis shows that, in contrast with other adverbs, the abundance of these three forms can in fact be explained on the grounds that they all exhibit some kind of pragmatic peculiarity: emphasis, inclusiveness or tentativeness. Thus, *indeed* reinforces the meaning of the adjacent utterance; in using *generally* authors seem to be including in their discourse all the epistemic community they are addressing (Pérez-Blanco 2012). The use of *perhaps* is somewhat different, in that it conveys the author's tentativeness regarding what he or she is expressing. Generally speaking, the three adverbs are mainly used in the oral register that readers would recognise as familiar to them. Thus the sensation might be created in which readers feel as if they are being approached by authors, who are seeking to engage their readership. Examples (2) to (4) illustrate these uses:

- (2) or described by any of the above authors catesby has <indeed> represented a bird which he calls turdus minimus [note] catesby (Wilson 1808: 33)

- (3) of the weather regularly shut about noon hence it is <generally> known by the name of go-to-bed-at-noon the princesses' leaf or (Lincoln 1832: 288)
- (4) compared with the earth which lies dark and mean and <perhaps> small in extent far beneath them and on which man (Whewell 1858: 17)

At the other end of the scale, adverbs were found which commit the author to the truth of his or her proposition to a higher degree, in that they are not apparently so neutral as the more common forms. This is the case with *truly* (22), *doubtless* (22) and *sensibly* (25), as exemplified in (5) to (7):

- (5) [quotation] letter xxv comets [quotation] nothing in astronomy is more <truly> admirable than the knowledge which astronomers have acquired of the (Olmstead 1841: 333)
- (6) necessity of order and obedience saying that the enemy had <doubtless> wished to introduce disorder into the camp by depriving them (Sewell 1857: 259).
- (7) large increase in the rate of marine denudation to affect <sensibly> the general result suppose the rate of marine denudation to (Croll 1889: 45).

These findings are presented in a break-down of stance adverbs per discipline, and hence subject-matter, in Figure 2.

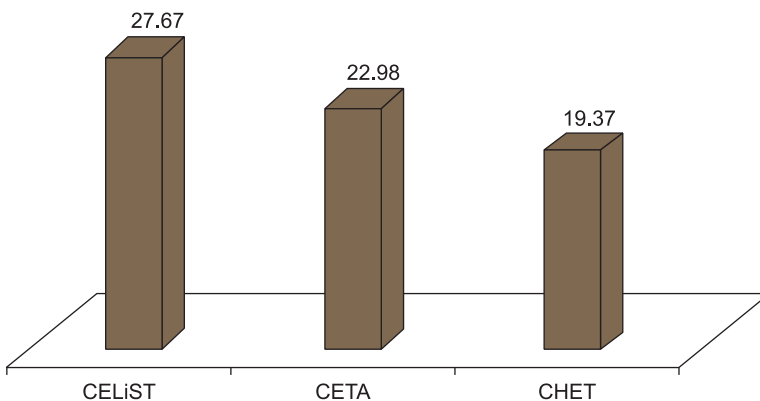


Figure 2. Stance adverbs per discipline

Figure 2 shows the corresponding distribution of stance adverbs in our material. After the normalisation of the word counts, and contrary to what

might have been expected, the samples taken from the Life Sciences corpus show the highest proportion of tokens (27.67). Astronomy texts occupy the second position (22.98) followed by History texts (19.37). This runs contrary to our expectations, in that both Life Sciences and Astronomy are more observational and experimental than History, which is typically more narrative in nature and subject to opinion. As Hyland (2005: 184) argues, “this kind of engagement is far more common in the soft fields because they deal with greater contextual vagaries, less predictable variables, and more diverse research outcomes, readers must be drawn in and be involved as participants in a dialogue to a greater extent than in the sciences”. History, then, admits some sort of speculation and flexibility that is not always possible in Life Sciences or Astronomy, where a writer’s freedom and intervention in the text might be interpreted as a lack of accuracy or specificity.

In what follows, stance adverbs will be examined from the perspective of the author’s geographical provenance and sex, as well as from the perspective of the genre to which the sample belongs.

4.1 Comparing authors from both sides of the Atlantic Ocean

Geographical provenance is the first variable to be considered. According to the compilation principles of the *CC*, this refers to the place or places where authors acquired their scientific writing habits, that is, the places where they were educated and trained as scientists. Hence, an author born in Scotland but who attended University in the USA would be considered as an American author in terms of his linguistic habits (Moskowich 2012). The normalised frequency (nf) of stance adverbs in the material from authors educated in Europe (i.e., England, Scotland, and Ireland, according to the labels used in the *Coruña Corpus of English Scientific Writing*) is 25.38 (409,229 words) and from those educated in North America (USA, Canada) is 19.73 (188,505 words)³.

The normalised frequencies in Figure 3 reveal that, although the gap between the two groups is not especially large, the European authors in our corpus use a notably higher number of stance adverbs. In an attempt to

³ In the metadata files geographical variation is indicated with the abbreviations NA for North America and EU for Europe. This binary classification is the first, basic level of distinction. If researchers want to refine their search, two other places of education can be indicated (e.g., Cambridge, England, EU).

explain this, we might usefully consider both the cultural movements of the time and the contemporary trends of thought. Among the movements that permeated academic and cultural life were both Romanticism and Positivism. The latter was, in general terms, an extension of Empiricism, with the need for experimentation, observation and data as central elements. Romanticism, on the other hand, focused on the importance of the individual and his or her capacity to express opinions and ideas of their own. One of the ways of manifesting such personal opinions is the incorporation of stance adverbs into one's discourse. Authors educated in America, we might add, found themselves far from the centre of this movement, with Romantic trends influencing Europe to a greater extent (Nichols 2005). Examples (8) to (10) illustrate the use of stance adverbs by a European writer:

- (8) it's nourishment by vessels <apparently> inserted into it's supporters: this must injure the plants on which it lives materially. [...] In most situations the injury is small, which the supporters of the climbing plants sustain from the assistance they afford to their more feeble brethren, as, <generally>, climbers have roots which strike into the earth, and thence draw nourishment. (Jacson 1835: 38)
- (9) These Classes are therefore distinguished from each other <simply> by the number of stamens in each flower, and may be known upon the first view by their numbers, as expressed by the words prefixed to the Classes: (Jacson 1835: 54)
- (10) This is <certainly> a material defect in the system, which cannot be accounted for in a satisfactory manner. (Jacson 1835: 57)

Stance adverbs appear less frequently in the works by American authors; the following is an example:

- (11) The honeycomb is <truly> a kind of house the bee constructs for itself, to live in and to lay its eggs in, and to fly out of and into at will. (Agassiz 1859: 26)

The number of words of North American and European authors per discipline is set out in Table 3. In it we can observe a preference for Astronomy on the part of North American authors.

These general numbers, however, provide different findings when viewed from the perspective of the use of stance adverbs.

Table 3. Words per discipline and geographical distribution

	CELiST	CETA	CHET
NA authors	43031	115333	30141
EU authors	160391	86497	162341

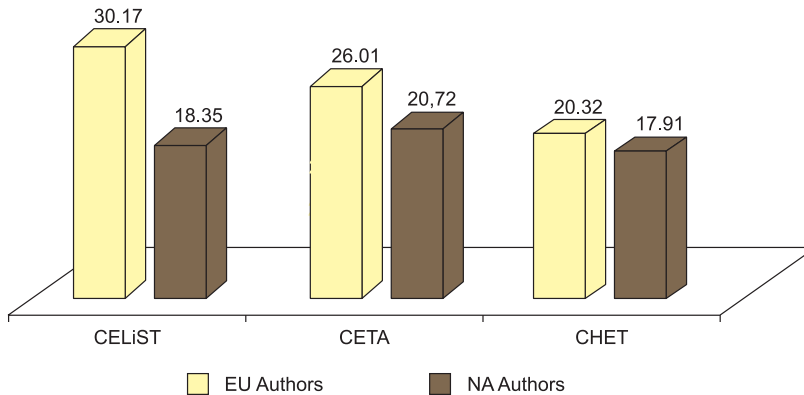


Figure 3. Stance per discipline and geographical distribution

Figure 3 displays the use of the stance adverbs (in normalised frequencies) in each discipline by authors on each side of the Atlantic. We can see that European authors, especially those writing on Life Sciences, show a notable preference for these forms (30.17). By contrast, North American authors express their attitudes towards the message conveyed through stance adverbs most often in Astronomy texts (20.72). Interestingly, authors of both traditions seem to behave in comparable ways when writing on History, with the *CHET* sub-corpus exhibiting the most balanced distribution in the use of these forms (EU 20.32 and NA 17.91): History, a discipline of the Humanities, might, in principle, be seen as more amenable to the expression of authorial views, as mentioned above. Our aim is to complement these findings with information on other variables, starting from genre.

4.2 Genre

The second focus of investigation is the extent to which different genres may have had an effect on the selection of stance adverbs. To this end, we should first revisit the notion of genre. According to Crespo (forthcoming):

Genres can [...] be defined as socio-cognitive slots in the communicative process, which every author fills according to situational or contextual parameters. They can be adapted to the type of addressee and consequently to different levels of technicality (degree of specialisation), and can present a particular rhetorical organisation (format used to display the information).

The samples in our material fall into the following *Coruña Corpus* genres (Crespo, forthcoming): Treatise, Textbook, Article, Lecture, Letter, Essay and Others (this comprising different categories depending on the sub-corpus, since discipline seems to exert some influence on genre choice). In genres, levels of orality vary depending on their target audience. Genres such as Lecture and Letter, for example, are highly oral on this scale. Lectures are intended to be read aloud in direct contact with the audience, and letters are produced in a familiar, personal context⁴. As a consequence, the abundance of adverbs denoting the author's position is not surprising. On the other hand, when authors select genres such as Treatise, Essay or Article, they are not expected to reveal themselves, and for this reason it might be supposed that they will tend to avoid the expression of stance. Thus, the authors in the present corpora may have employed stance adverbs in different ways, so as to suit genre constraints.

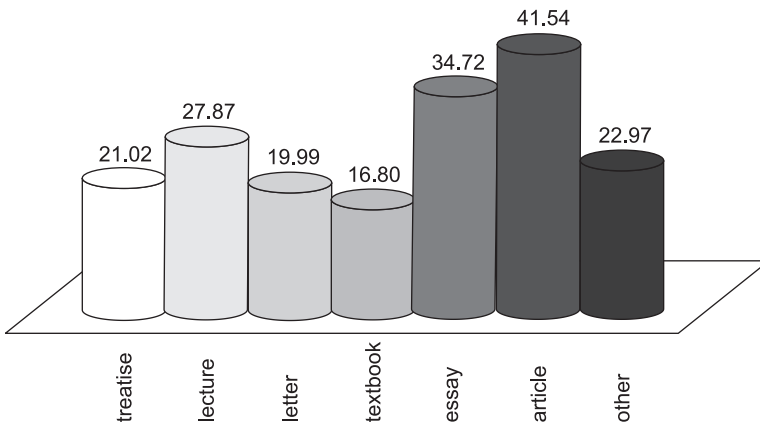


Figure 4. Stance adverbs per genre (nf)

⁴ Although lectures and letters were then improved for publication, they still were conceived of as pieces of work to be delivered orally. In the eighteenth century even letters of a scientific nature were intended to be read aloud in the meetings of societies, at least occasionally.

Figure 4 shows that most stance adverbs can be found in articles (41.54) followed by essays (34.72), then lectures (28.87). This overall distribution is certainly surprising, since most examples appear in genres not characteristically “oral-like”. Articles are intended to convey new discoveries and information and thus to spread knowledge throughout the epistemic community in an efficient way. The dialogic nature of articles responding to previous texts by other authors allows for a quick, self-built stream of thought. This knowledge is later consolidated in the writing of treatises and textbooks, each for a different audience.

The lowest level of use is in textbooks (16.8), which conforms to our expectations. Textbooks merely present concepts which have already gained acceptance in the expert community through work published in other formats as part of the exchange of ideas that contributes to “the advancement of learning”.

The use of stance adverbs per discipline, however, shows an imbalance in distribution. The two disciplines belonging to the field of Natural and Exact Sciences (Life Sciences and Astronomy) show their highest frequencies in the genre Article, whereas the sole discipline from the Humanities (History) does this in the genre of Lecture (47.86). Figure 5 below provides normalised frequencies for stance adverbs in each discipline and genre⁵.

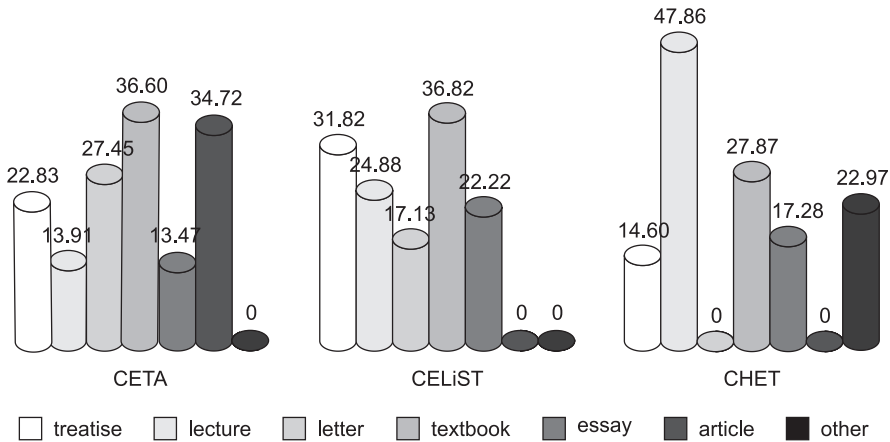


Figure 5. Stance adverbs per genre and discipline

⁵ All the genres represented in each sub-corpus show a greater or lesser number of cases. In those cases in which a particular genre is not represented in the corpus the value for the genre is 0.

The reason for this distribution may be explained by two factors. First, in this particular survey articles were used first as a genre in the fields of the Natural and Exact Sciences. Second, as mentioned earlier, they represent “knowledge in progress” which can be debated and challenged, and in this sense they admit the expression of authorial comment more readily than other genres. The authors contained in *CHET* were involved in a non-observational, non-experimental kind of science which allows for a wider range of linguistic elements denoting personal interpretation. We have already noted that lectures rank high on the orality scale, and that the immediacy of orality goes hand in hand with stance.

The lowest occurrence of stance adverbs in *CETA* is in textbooks (13.47), closely followed by lectures (13.91). Again, there seem to be two factors playing a part here: the implications of the genre itself, which may disfavour expressions of stance, and the implications of subject-matter, which imposes some constraints on language.

Turning to *CELiST*, the genre with the lowest occurrence of stance forms here is the genre Letter (17.13). Our samples have been taken from *A First Lesson in Natural History*, by Agassiz (1859) and *An Introduction to the Natural History and Classification of Insects, in a Series of Familiar Letters* by Priscilla Wakefield (1816). Curiously, both texts address the same kind of readership, young ladies, with the purpose of teaching them entomology and marine zoology. Although their format is, in principle, similar to that of a conventional letter, their orientation resembles that of textbooks. It is for this reason that the language used in them is more assertive and somehow lacks authorial stance. Finally, Treatise is the genre with the lowest occurrence of stance adverbs in the *CHET* sub-corpus. This is to be expected, since we are dealing here with well-established knowledge, directed to members of the epistemic community whose competence is expected to be comparable to that of the authors.

4.3 Female vs male stance strategies

The third variable we have chosen as a possible influence on the use of stance adverbs in scientific writing is the sex of the author. We see that men use more stance adverbs than women, although differences are not enormous: 24.65 vs. 18.77 in normalised frequencies.

In general terms, we would have expected more use of stance adverbs in female writing, in that women have sometimes been characterised as

more outgoing than men and during the period in question needed to be more tentative in their claims due to their position in society (Guereña 2008; Lareo 2010). Nevertheless, according to the normalised frequencies in Figure 6, women seem to imitate the writing patterns imposed by the predominant androcentric view of science, including the more or less overt presence of the author (Crespo 2011; Crespo – Moskowich forthcoming). It seems worth noting, however, that on closer inspection the three most frequent stance adverbs in the corpus (namely, *generally*, *perhaps* and *indeed*) are used differently by men and women. Male authors use *generally*, *indeed* and *perhaps* in descending order, while women use them in nearly reverse order of frequency (*indeed*, *perhaps* and *generally*), although in general women authors seem less amenable to the use of stance adverbs. The corresponding number of tokens for each of these forms and normalised frequencies are set out in Table 4:

Table 4. Most frequent forms as used by both male and female authors

Stance adverb	Female	Female (nf)	Male	Male (nf)
Generally	29	5.4	152	2.72
Indeed	39	7.72	146	2.61
Perhaps	34	6.73	120	2.14

Clearly, women do resort to the commonest stance adverbs, but what is most notable is that while being more moderate in their use of stance adverbs in general, they incorporate these specific three forms into their discourse with astonishing regularity as compared to men. This can perhaps be explained on the grounds that women follow male patterns, but do so in an exaggerated way as a means of attaining a measure of self-assuredness. In the same vein, the genre preferred by women is Treatise (7 samples), which suggests that they feel more comfortable conveying generally accepted knowledge, to the point that they may then introduce personal remarks: indeed, the highest number of stance adverbs occurs in treatises. There might be another plausible explanation for this differentiated pattern in the data: the subtle subversion that could derive from the unconscious development of a sort of female scientific discourse distinct from the predominant (male) one, partly generated from their particular use of stance adverbs.

Figure 6 illustrates how the use of stance adverbs by each sex may at the same time be determined by subject-matter. Indeed, the highest of the six values here corresponds to the only woman writing on Astronomy in our data (Agnes Mary Clerke). The reason why stance adverbs occur more often in this text may lie in the need to express some sort of self-affirmation, in face of the social limitations of women's roles at the time⁶. The two most frequent forms in Clerke's sample are in fact the emphasisers *indeed* (8 tokens) and *certainly* (5 tokens).

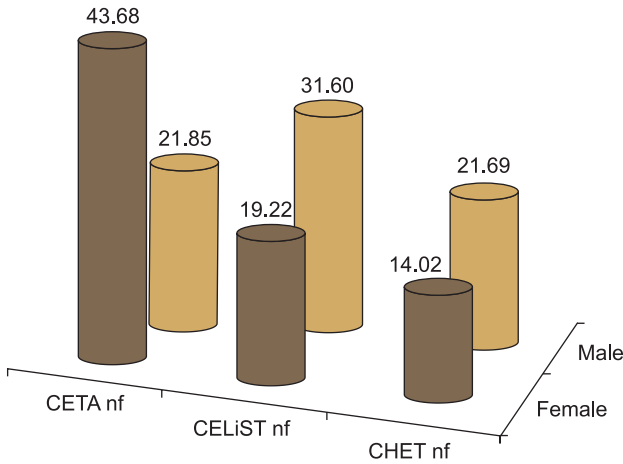


Figure 6. Stance adverbs by discipline and sex of authors

Men, on the contrary, use more stance adverbs when writing about Life Sciences, their use of these in *CELiST* being 31.6. The overall raw count for *generally* is 102 tokens (this adverb is the one women tend to use least), which may imply a desire to include or convince the audience on the part of male authors (see above). It is a consensus-seeking form, and with the use of this inclusive *generally* the author lets the audience participate in his argument and share his views. In *CHET* the most frequent stance adverb is *indeed* with 63 tokens (41 forms by male writers and 22 by female writers). The fact that this is the most abundant form is no doubt related to the use women make of it: on normalising these frequencies, we see that although women produced less than half the words in the corpus, they are responsible in large part for

⁶ Until very recently women were forbidden to look at the stars at night (Herrero-López 2007).

the abundance of *indeed*. This may be due to their assertive character in this particular discipline.

5. Concluding remarks

Authorial presence in Late Modern scientific writing can be detected, among other linguistic devices, through the use of stance adverbs. We are aware of the restrictions of the current study, in which we have not searched for all the possible types of stance adverbs but have limited ourselves to an initial list proposed by Quirk et al. (1985) and Biber (1988). Nevertheless, some preliminary conclusions can be drawn from the findings. Not all the types from this list have been traced in the corpora examined, and many more occur just once. This gives the impression of a high degree of lexical richness to express stance through this word class. Yet, the three most frequent items, *indeed*, *generally* and *perhaps*, all transmit a particular author position: emphasis, inclusiveness and tentativeness, respectively. These are the main traces that authors leave in their texts to render themselves visible. It is also remarkable that we have found a dissimilarity of frequencies across disciplines, with Life Sciences showing the highest rates of occurrence and History the lowest. This runs contrary to our expectations, and no coherent explanation appears feasible until we turn to the variables of sex and genre.

In terms of the analysis of these two variables, the data have revealed that European authors use more stance adverbs than their North American counterparts, which may be explained both by the distance from the geographical centre of scientific writing (and its implicit regulatory culture) and by the influence of contemporary cultural movements, such as Romanticism, which had a great impact on all spheres of life. In addition, it is worth noting that the subjectivity and personal opinion of individual authors emerges in those genres that appeared to be more dynamic (articles, essays and lectures). Such formats allow for discussion and prompt interaction. This sort of scientific exchange is the site for debate, where scientific truths can be tested and challenged, then to be recorded in more traditional, written formats. Finally, we have found that female writers use fewer stance adverbs than male authors in general, but in terms of the specific forms *generally*, *indeed* and *perhaps* their use is remarkably higher. We have to consider that women's position in society was certainly inferior to that of men at the time, and that their struggles to be considered "equals" could be linguistically manifested in the emulation of male scientists' patterns when writing about science.

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APPENDIX

List of stance adverbs proposed by Quirk et al (1985)

admittedly	candidly	disturbingly	incorrectly
amazingly	certainly	doubtless	incredibly
amusingly	clearly	evidently	indeed
annoyingly	cleverly	figuratively	indisputably
apparently	conceivably	flatly	indubitably
appropriately	confidentially	foolishly	inevitably
approximately	conveniently	fortunately	ironically
arguably	correctly	frankly	justly
artfully	crudely	funnily	likely
assuredly	cunningly	generally	literally
astoundingly	curiously	happily	luckily
avowedly	decidedly	honestly	manifestly
bluntly	definitely	hopefully	maybe
briefly	delightfully	incontestably	mercifully
broadly	disappointingly	incontrovertibly	metaphorically

naturally
obviously
oddly
patently
perhaps
personally
plainly
pleasingly
possibly
predictably
preferably
presumably
privately
prudently

purportedly
really
reasonably
refreshingly
regrettably
remarkably
reportedly
reputedly
rightly
roughly
sadly
seemingly
sensibly
seriously

shrewdly
significantly
simply
strangely
strictly
supposedly
surely
suspiciously
thankfully
tragically
truly
truthfully
unarguably
undeniably

understandably
unexpectedly
unfortunately
unhappily
unjustly
unluckily
undoubtedly
unquestionably
unreasonably
unwisely
wisely
wrongly