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# Politics in science

## High modulation of engagement in intelligent design discourse

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Intelligent design is a pseudoscientific concept conceived in an attempt to bring religion-based teaching into the classroom. As such, it is involved in a constant struggle for dialogic space with the dominant scientific discourse of the theory of evolution. Here, we use a corpus linguistic approach to study how intelligent design discourse uses engagement to forward its creationistic propositions and at the same time limit the propositions of the theory of evolution. The results suggest that intelligent design discourse employs engagement far more frequently than evolutionary biology discourse, mainly to counter opposing propositions and to entertain its own proposition in their stead. The underdog position of ID obligates it to highly modulated engagement in order forward its position, which is ultimately aimed at changing the political decision-making related to the teaching of science.

**Keywords:** scientific discourse, pseudoscience, intelligent design, politics, engagement, corpus linguistics

### 1. Introduction

Intelligent design (ID) is a pseudoscientific concept which states that the biological diversity observed in nature cannot have originated through random mutation and natural selection, as proposed by the scientifically accepted theory of evolution. For the past few decades, intelligent design has been the assumed disguise of creationism in its continuing efforts to denounce science-based explanations of biological diversity in favor of biblical explanations, and the debate between the two sides has been quite fierce. This study does not, however, discuss the validity of intelligent design as its scientific claims have been repeatedly addressed (Carroll 2007; Miller 1996; Young and Edis 2004). Rather, it takes the explicit position that

intelligent design is a fundamentally creationistic concept devised as a part of a political agenda aimed at bringing religion back into science education curricula, and proceeds to analyze the linguistic strategies intelligent design discourse uses to further its position in the intelligent design vs. evolution debate.

In our analysis we focus on the struggle for dialogic space between the two opposing sides, a notion that arises from the idea of dialogic perspective, where all voices in a common discursive sphere exist against the backdrop of other voices and continuously adopt differing stances towards each other (Martin and White 2005, 93). We claim that this struggle for dialogic space is present in the intelligent design vs. evolution debate as well. Further, we argue that the linguistic strategies aimed at gaining dialogic space are political in nature as they are both supported by political activism on financial and institutional grounds and are also aimed at influencing or changing the present state of affairs. Indeed, publicity, opinion making and cultural confrontation have been identified as the explicit aims of the ID movement (Forrest 2001, 16–17). The political activity of the ID movement is perhaps best exemplified by its involvement in the precedent-setting *Kitzmiller v. Dover Area School District*, where ID advocates were defeated following an attempt to influence US legislation to compel the teaching of ID alongside evolution in schools (*Kitzmiller v. Memorandum Opinion* 2004). In this sense the discourse strategies used by ID advocates are both symptoms and outcomes of political competition for the control of the dominant social view on the origin of biological diversity as a ‘field’ (Bordieu 1993) where the voices of ID and the theory of evolution act as agents backed up by their respective social, economic and cultural capital. From this perspective scientific discourses on biological diversity turn out to be arenas of struggle for political goals and agenda. We view this struggle as an instance of politicking rather than politicizing (cf. Palonen 2003) and we claim that an analysis of the ways the voices of the main agents are related to each other can provide an in depth view of the nature of politicking in the ID vs evolution debate (Ibid.).

We perform the linguistic analysis of competing voices by applying the engagement framework (Martin and White 2005, 1–41) which examines the modulation of dialogic space related to competing voices. Engagement has been recently very popular in linguistic studies regarding competing voices, especially in the field of academic writing, however, corpus based usage of this framework is rare (Back 2015; Chatterjee-Padmanabhan 2014; Derewianka 2007; Swain 2007). Engagement postulates that certain linguistic structures can be used to create interpersonal meaning through which the voice of an author interacts, or engages, with other voices. In the intelligent design vs. evolution debate there is a constant tension between the scientific propositions of evolution and the pseudoscientific propositions of intelligent design, and thus engagement is a suitable framework for

studying how these competing discourses attempt to hedge each other out while trying to acquire more dialogic space for themselves. The engagement framework defines the limiting of the dialogic space of opposing propositions as *contraction* and the increase of space as *expansion*, and has described four specific strategies used to create these interpersonal meanings. Two of these strategies, *disclaim* and *proclaim*, are contractive strategies, while the other two, *entertain* and *attribute*, are expansive ones. Here, the use of these four strategies, and their sub-strategies, in intelligent design discourse are examined and compared to the discourse of evolutionary biology, which serves as the baseline discourse.

We study the use of engagement in intelligent discourse by contrasting two popular science books from the opposing sides of the intelligent design vs. evolution debate. *The Edge of Evolution: the Search for the Limits of Darwinism*, by Michael Behe, represents intelligent design discourse, and it is compared to *The Greatest Show on Earth: The Evidence for Evolution*, by Richard Dawkins, which exemplifies the discourse of evolutionary biology. Both texts were digitized for the purposes of this study in order to enable a corpus based investigation, which allows for quantifiable findings of trends on the extent and type of engagement used in the two books.

It is our hypothesis that there are significant differences in the way in which engagement is used in intelligent design discourse compared to the discourse of evolutionary biology, and that intelligent design discourse most likely employs more engagement strategies than its counterpart. However, it is hard to predict in what way these differences manifest. For this reason three specific research questions were formulated:

1. Is there a difference in the frequency of engagement strategy use between the two studied texts?
2. Can intelligent design discourse be characterized as either contractive or expansive compared to evolution discourse?
3. How are different engagement strategies used by intelligent design discourse to modulate the dialogic space related to the intelligent design vs. evolution debate?

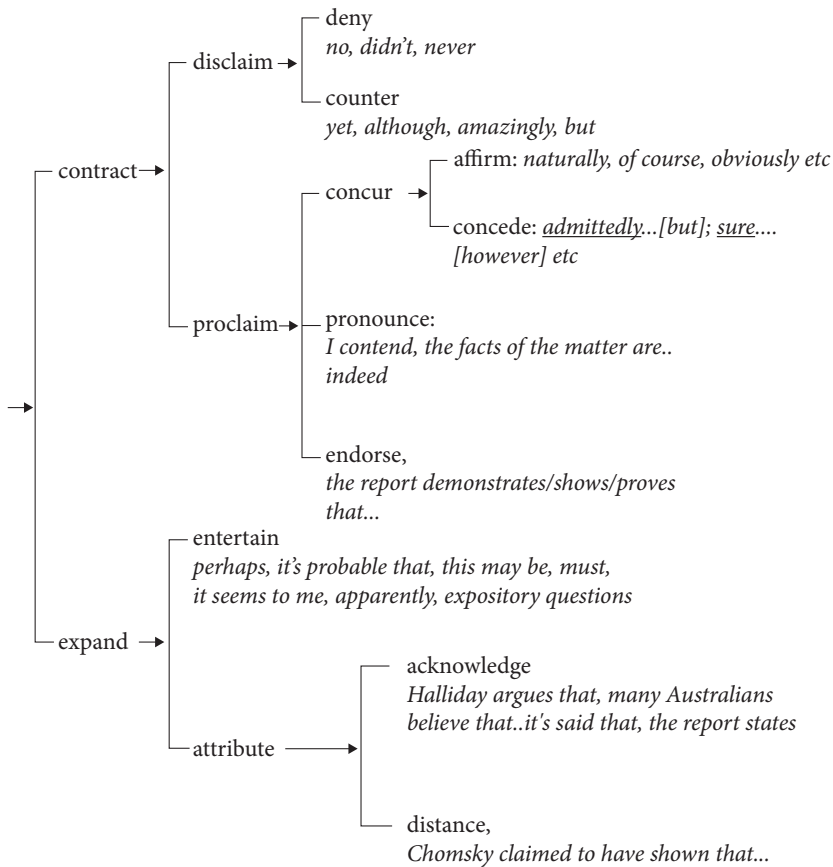
We will proceed by first introducing the engagement framework and the two books used as materials in this study, and then go through the structures denoting different engagement strategies identified in the texts. Finally, we will present the results and discuss them in the context of competition for discursive space in the intelligent design vs. evolution debate as an arena of struggle.

## 2. Methods

The methods we used to study intelligent design discourse is a combination of the engagement framework set out by Martin and White (2005) and corpus linguistics. This approach allows the generation quantifiable data from a large amount of real-life discourse regarding how ID proponents adopt stances towards, or engage, the propositions made by evolutionary biology. Engagement is a domain of the appraisal framework (Martin and White 2005, 92–135), and it characterizes how speakers/writers adopt stances towards different value positions referred to in a text as part of their authorial voice. It is based on the idea that all communication is an interaction with what has been said before on a subject and what is expected to be the reaction to what is being said presently (Martin and White 2005, 92).

Although there are many different strategies and sub-strategies in the engagement system that create versatile intersubjective meanings, they can be broadly split into two categories according to how they modify dialogic space – whether they attempt to limit alternative positions or to make allowances for them. These two categories are called dialogic *contraction* and dialogic *expansion*. The implications of discourse strategies used to modify dialogic space are vast in the case of scientific and pseudoscientific discourse. This is especially relevant in the intelligent design vs. evolution debate, where the explicit aim of the intelligent design community is to present intelligent design as an alternative but equal scientific theory explaining the origin of the biological complexity occurring in nature. A taxonomy of the different engagement strategies as defined by Martin and White (2005) is illustrated below in Figure 1.

The materials used to examine engagement in scientific and pseudoscientific discourse consists of two books from both sides of the intelligent design vs. evolution debate, *The Greatest Show on Earth: The Evidence for Evolution* written in 2009 by Richard Dawkins, and *The Edge of Evolution: the Search for the Limits of Darwinism*, written by Michael Behe in 2007. On the basis of the popularity of the two books we argue that they could be considered to be representatives of the discourses of interest we set out to investigate. We maintain that popularity in these cases also implies influence as these sources are key works of each of the perspectives investigated and as such are widely read and appreciated. Hence the two volumes have a strong role in influencing the ways audiences relate to ID and evolutionary biology. While we acknowledge that the individual authors' own predilections could affect the linguistic style of these books we maintain that a study contrasting these can provide scientifically valid generalizable results on the key linguistic strategies representing proponents of both sides. Our claim for generalizability is based on the importance of 'power' of individual texts (cf. Baker 2006, 19), i.e. the fact that these two works can be considered to be among the



**Figure 1.** Classification of engagement strategies according to Martin and White (2005, 134).

most influential ones in their respective communities. In addition, the popularity of these books also implies that audiences frequently encounter the linguistic styles and discourse strategies in these works (i.e. they are widely read) which can be another argument for their representativeness in their relevant discourses. As this study takes the position that the theory of evolution is the valid scientific explanation for the diversity occurring in nature and that intelligent design is inherently pseudoscientific, *The Greatest Show on Earth* will serve as the baseline discourse against which *The Edge of Evolution* is compared. Both books were converted into electronic format to enable corpus linguistic analysis of engagement. *The Greatest Show on Earth* contains 148,980 words including metatext, while *The Edge of Evolution* has 107,991 words, also including metatext.

The engagement strategies used in scientific and pseudoscientific discourse were analyzed using a corpus linguistic approach. A list of engagement structures

was derived from a random selection of fifteen pages from both studied books, from which all engagement incidences were identified and linked to their corresponding structures. To ensure a balanced sampling, only those pages that were full of the author's text were qualified, that is, pages containing pictures, headings, diagrams, and large block quotations were not accepted. The pages were selected arbitrarily from all parts of both books in order to make the selection representative of the texts in their entirety, that is, to avoid some sections, such as introductions for instance, being over-represented in the data. The average amount of words per page in the studied books was roughly the same, and thus, the amount of text used to identify engagement strategies was approximately the same in both books. Altogether, 104 occurrences related to specific engagement strategies were identified from the thirty randomly selected pages of material. There was a fair amount of repetition in the identified structures, and the final number of different types of engagement structures selected to be corpus linguistically studied was thirty-one (Table 1). If the identified structure contained a verb structure, its plural and past tense lexemes were also included in the final corpus linguistic search. In addition to this, common contractions of the be-verb and some auxiliary verbs, such as *isn't* as the contraction of *is not* and *don't* as the contraction of *do not*, were on the list of searched structures. A complete table with all the identified structures is presented below.

The frequency of all used engagement strategies in the study materials was calculated using a concordance tool, AntConc (Anthony 2014). The frequencies of strategies in both books were then compared to analyze the dialogic expansion and contraction in both studied discourses, and the statistical significance of these differences were calculated using a Log-likelihood test based on Rayson and Garside (2000). The frequency of all used strategies was also compared to the total number of words used in either material to normalize the data, and to receive an estimate of the extent of the modification of dialogic space in the studied discourses. The concordance tool was also used to identify context words that were used to limit the engagement strategy structure searches primarily to pieces of discourse related to the theory of evolution and intelligent design. This was done by ranking the words used in both texts by their frequency and subsequently isolating the ones connected to the intelligent design vs evolution debate. The final list included the following context words: cell(s), mutation(s), life, evolution, gene(s), random, DNA, selection, species, Darwin, natural, animals, human, evolutionary, evidence.

Table 1. Engagement structures identified in the data

<b>Disclaim strategies</b>			
<b>Strategy</b>	<b>Structure</b>	<b>Strategy</b>	<b>Structure</b>
<b>Deny</b>	is not/isn't/there's no is no/are no/was no/ were no are not/aren't was not/wasn't were not/weren't does not/doesn't do not/don't did not/didn't cannot/can't	<b>Counter</b>	while although yet
<b>Proclaim strategies</b>			
<b>Strategy</b>	<b>Structure</b>	<b>Strategy</b>	<b>Structure</b>
<b>Concur</b>	of course obviously admittedly	<b>Pronounce</b>	indeed fact is/was fact are/were is/was/are/were clear
<b>Endorse</b>	study/studies	show/shows/showed/shown demonstrate/demonstrates/demonstrated explain/explains/explained point out/points out/pointed out	
<b>Entertainment strategies</b>			
<b>Strategy</b>	<b>Structure</b>		
<b>Entertain</b>	perhaps possibly may seem/seems		
<b>Attribution strategies</b>			
<b>Strategy</b>	<b>Structure</b>	<b>Strategy</b>	<b>Structure</b>
<b>Acknowledge</b>	say/says/said argue/argues/argued explain/explains/explained demonstrate/demonstrates/demonstrated point out/points out/pointed out	<b>Distance</b>	claim/claims/claimed insist/insists/insisted



### 3. Results and Analysis

The results indicate that the use of engagement strategies as a whole is more prevalent in *The Edge of Evolution* than in *The Greatest Show on Earth* (Figure 2). In total there were 3,488 instances of engagement use per million words in *The Edge of Evolution* compared to 2,372 instances per million words in *The Greatest Show on Earth*. The use of engagement strategies is thus approximately 49% higher in *The Edge of Evolution* than in *The Greatest Show on Earth*.

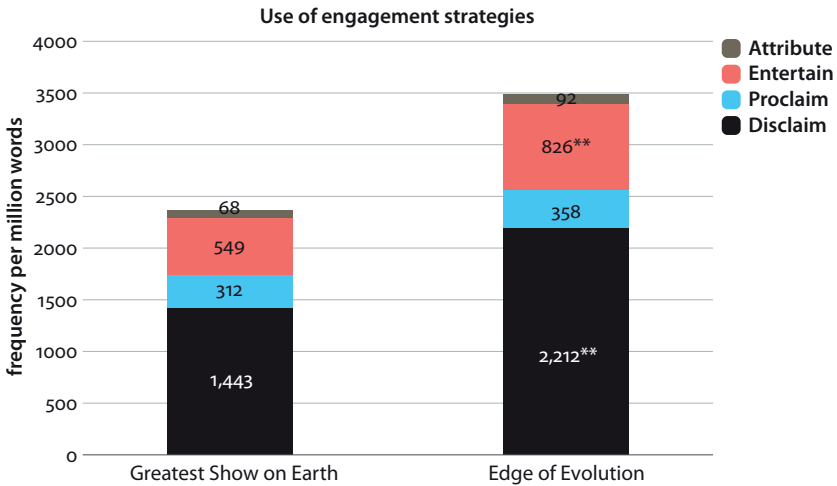


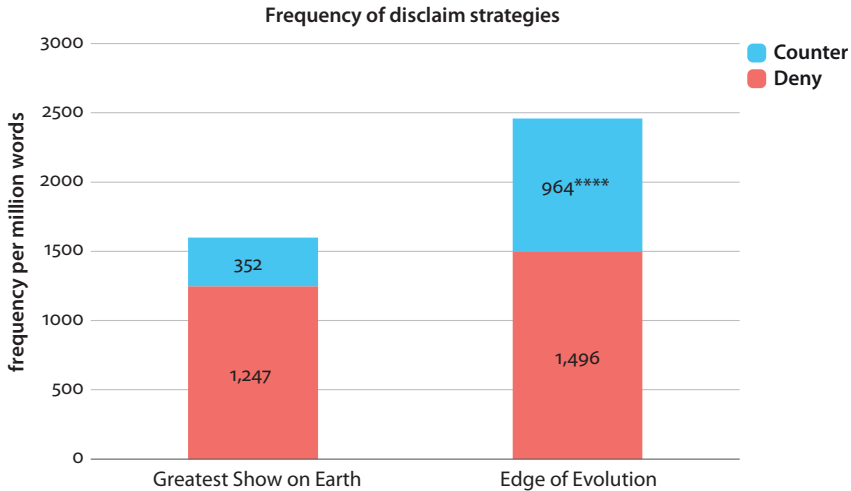
Figure 2. Frequency of engagement strategies in the studied texts.

\*\* denotes  $p < 0.01$ .

The difference is present in all of the four engagement strategies, but it is the more prevalent use of *disclaim* and *entertain* that accounts for most of the difference between the two texts. As one of these two sub-categories is a contractive strategy and the other an expansive strategy, it cannot be maintained that *The Edge of Evolution* would be more contractive or expansive than *The Greatest Show on Earth*. The results, therefore, hint at a more complex difference of engagement in the discourses of these two texts. In the following chapters we will discuss in more detail both the quantitative and qualitative differences of the use and interplay of these strategies in the studied texts in engaging the opposing voice in the ID vs. evolution debate.

The use of *disclaim* strategies, as mentioned above, is more common in *The Edge of Evolution* than in *The Greatest Show on Earth*. The occurrence of *disclaim* as a whole is approximately 54% higher in *The Edge of Evolution* and the difference is statistically significant (see Figure 2). The *disclaim* strategy, however, is divided into two sub-strategies, *deny* and *counter*, and the results show that the increased

occurrence of *disclaim* is mostly due to its sub-strategy *counter* (Figure 3). In fact, while *denial* is approximately 19% more common in *The Edge of Evolution*, *countering* is used almost three times as frequently in *The Edge of Evolution* than in *The Greatest Show on Earth*.



**Figure 3.** Frequency of disclaim sub-strategies in the studied materials.  
\*\*\*\* denotes  $p < 0.0001$ .

In addition to occurring with a similar frequency, *denial* also seems to work in much the same way in both texts. Structures related to *denial* are used rhetorically in some cases, but most commonly these structures are used to contract the dialogic space given to the voices of the opposing side. The example below presents a typical structure used in this way:

- (1) The chaotic interplay of genes is not constructive at all.  
(The Edge of Evolution)

In addition to simple *denial*, multiple *denial* structures are commonly encountered in groupings in the studied text. In this way the contractive strength of the utterances in question can be amplified.

- (2) The Darwinian world-view **does not** denigrate the higher human faculties, **does not** 'reduce' them to a plane of indignity. It **doesn't** even claim to explain them at the sort of level that will seem particularly satisfying, in the way that, say, the Darwinian explanation of a snake-mimicking caterpillar is satisfying.  
(The Greatest Show on Earth)

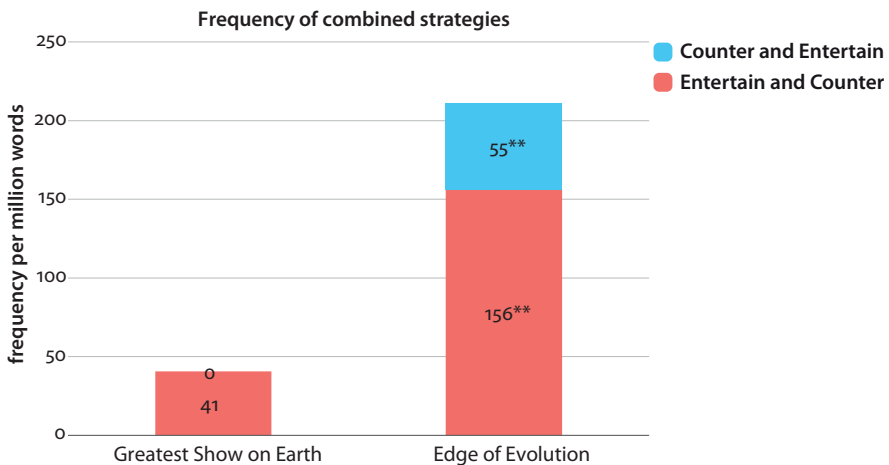
The contractive sub-category *counter*, in contrast to *denial*, makes up a large difference seen in the *disclaim* strategy, and in fact is responsible for the greatest

difference of all engagement strategy use between *The Edge of Evolution* and *The Greatest Show on Earth*. The way in which these structures were used did not, for the most part, differ largely between the texts. Unlike in *denial*, where the alternative voice that is being rejected can be inferred, in *countering* the alternative voice is spelled out in more detail before being rejected. This type of structure, presented below, was typical for both texts.

- (3) **Although** Darwin’s theory is far and away most biologists’ favored account for the appearance of design in life, a minority of biologists think it’s woefully inadequate and prefer other unintelligent explanations. (The Edge of Evolution)
- (4) After a hundred million years it may be hard to believe that the descendant animals ever had rabbits for ancestors. **Yet** in no generation during the evolutionary process was the predominant type in the population far from the modal type in the previous generation or the following generation. (The Greatest Show on Earth)

It was also common in both texts to encounter *countering* in connection with *denial*. This type of structure, shown in Example 5, uses the effect of two contractive engagement strategies on an opposing proposition at once.

- (5) **Although** the parasite can digest the protein part of hemoglobin – breaking it down to amino acids which it reuses to help construct copies of itself – it **can’t** use the heme part of hemoglobin. (The Edge of Evolution)



**Figure 4.** Frequency of combined disclaim and entertain engagement strategies in the studied texts.

\*\* denotes  $p < 0.01$ .

There were, however, also qualitative differences in the way *countering* was used. When examined together with the expansive strategy *entertain*, two distinct types of combined structures were identified. Of these two strategies combining *countering* and *entertainment*, one was present only in *The Edge of Evolution*, and the other was used four times more frequently than in *The Greatest Show on Earth* (Figure 4).

The first combination strategy involves the use of *entertainment* to first present an opposing view as one of many within a large amount of options and then *countering* it. This strategy, named here “entertain and counter”, functions to contract discourse in a very strong manner. It typically takes a structure where the *entertainment* and *countering* in connection with an opposing view is followed by a phrase functioning as a *denial* of the entertained position in conjunction with the preceding *countering* structure, as is seen below. This combined structure is similar to *countering* in connection to a *denial* structure as presented above in Example 5, except that it features an extra *entertainment* structure in between.

- (6) At the end of such studies, **while** some interesting results **may** be at hand, **it’s** usually **impossible** to generalize from them. (The Edge of Evolution)
- (7) **Although** at the time the molecules **may** have been following standard physical laws, **no** law or general conditions were sufficient to cause the origin of life. (The Edge of Evolution)

The second combination strategy is used in the opposite way. It starts by *countering* an opposing view and then presents a new proposition using *entertainment*. This “counter and entertain” strategy typically presents a rejected proposition, thus contracting the dialogic space given to that proposition, followed immediately by a structure that expands the possibility of another, preferred, voice. Thus it minimizes an undesired voice and partly substitutes it with a new proposition.

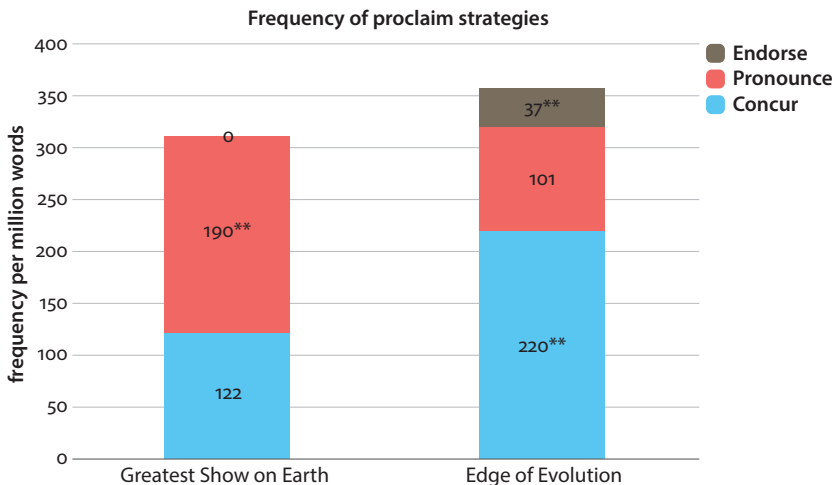
- (8) [...] **although** the authors think other planets **may** sport primitive bacterial life, ours **may** be the only planet able to support intelligent life. (The Edge of Evolution)

In addition to its use in combination strategies, the frequency of *entertainment* used as an individual strategy was also significantly more prevalent in *The Edge of Evolution* (Figure 2). Similar to *disclaim*, *entertain* was used approximately 50% more frequently in *The Edge of Evolution* than in *The Greatest Show on Earth*. As is to be expected, *entertainment* was typically used in the texts to present a proposition as one of a myriad of other options. It has to be noted, however, the use of *entertainment* often makes the entertained proposition seem more preferable than the other inferred propositions as can be seen from the example below:

- (9) But the evolutionary process itself **seems** to pick itself up and resume its recurrent flowering, with undiminished freshness, with unabated youthfulness, as epoch gives way to epoch. (The Greatest Show on Earth)

Together with the increased prevalence of *countering* (Figure 3), the increased prevalence of *entertainment* constitutes the greatest part of the total increase of engagement in *The Edge of Evolution* compared to *The Greatest Show on Earth*. This suggests that the *countering* of the propositions of the theory of evolution and the *entertaining* of creationistic intelligent design propositions in their stead seems to be the major preoccupation of ID discourse.

In addition to the strong tendency to *counter* and *entertain*, ID discourse also uses the *proclaim* strategy to modify the dialogic space surrounding the ID vs evolution debate in a way that differs from the baseline discourse of evolutionary biology. Although the total frequency of *proclaiming* was relatively similar in both studied texts this did not mean that there were no differences between the texts in regard to this strategy. Quite the contrary, the differences in the use of the three *proclaim* sub-strategies revealed interesting variations in the discourse styles of the studied texts. In fact, it is within the contractive *proclaim* strategy where the only sub-strategy used more frequently in *The Greatest Show on Earth* can be found (see Figure 5). This sub-strategy, *pronounce*, explicitly brings the author's own position to the forefront, and is used in *The Greatest Show on Earth* almost twice as frequently as in *The Edge of Evolution*.



**Figure 5.** Frequency of proclaim sub-strategies in the studied materials.

\* denotes  $p < 0.05$  and \*\*  $p < 0.01$ .

There is also a difference in the type of structures that the use of *pronouncement* is associated with. In *The Greatest Show on Earth*, *pronounce* is used in a straightforward manner to contract dialogic space in a way that supports the author's position:

- (10) Darwin's theory of evolution is **indeed** a 'scheme or system of ideas or statements'.  
(The Greatest Show on Earth)

In *The Edge of Evolution*, on the other hand, *pronouncement* occurs fairly commonly with another contractive strategy, *counter*. This usage is characterized by the *pronounce* structure agreeing with a strong position that cannot be challenged, but then including it as a part of a larger *countering* structure used to limit the amount of dialogic space given to that position, as seen in the two samples below. The fact that the use of *pronouncement* was so rare in *The Edge of Evolution* to begin with, linked with the highly prevalent nature of *countering* in it, further strengthens the overall *countering* nature of intelligent design discourse.

- (11) The fact that natural genetic engineering processes are **indeed** quite active, as Lenski and others have shown, **yet** malaria and HIV have made no good use of them in 1020 tries, strongly suggests they have very limited utility.  
(The Edge of Evolution)

- (12) A third possibility is that, **although** mutation is **indeed** random, at many critical historical junctures the environment somehow favored certain explicit mutations that channeled separate molecular parts together into coherent systems.  
(The Edge of Evolution)

On the other hand, the sub-strategy *concur* is used almost twice more prevalently in *The Edge of Evolution*. There is, however, not much difference in the way it is used. Both texts use *concur* to describe a position in a way that makes it seem unquestionable, thus making the difference in the two discourses quantitative rather than qualitative:

- (13) But **of course** that would not be random; it would be intentional.  
(The Edge of Evolution)
- (14) The human hand and the bat hand are **obviously** – no sane person could deny it – two versions of the same thing. (The Greatest Show on Earth)

The use of the third *proclaim* sub-strategy, *endorse*, once again showed statistically significant differences between the studied texts, with no identified occurrences in *The Greatest Show on Earth*. The frequency of the strategy was fairly low, with only 37 occurrences per million words in *The Edge of Evolution*, and thus it was not a major factor in the overall use of engagement in the text. Also, *endorsement* seems

to be used in *The Edge of Evolution* to report rather dry facts, instead of taking a stance on the intelligent design vs. evolution debate:

- (15) One **study showed** that cells that contain a mutant, fragile kinesin-II can form cilia at lower temperature (about 68°F) where the mutant protein works. (The Edge of Evolution)

Similarly, the *attribution* strategy did not show large differences between the studied texts. For one, the *attribution* strategy with its sub-strategies *distance* and *acknowledge* was a minor one with a frequency of use under a hundred times per million words (Figure 2). Also, there were no statistically significant differences between their frequencies of use between the two texts. Therefore, it can be stated with relative safety that *attribution* did not contribute markedly to the differences in engagement between the two discourses.

Taken together, the results show that although there was a statistically significant increase in the use of engagement strategies in *The Edge of Evolution*, the difference was neither contractive nor expansive. In fact, *The Edge of Evolution* employed both types of strategies more frequently than *The Greatest Show on Earth*. *The Edge of Evolution* can therefore be described highly modulated in regard to engagement rather than expansive or contractive. There were, however, significant and interesting differences in the frequency of use of most of the sub-strategies of engagement, and also in the way some of them were used to signify engagement and to modify the dialogic space surrounding the ID vs. evolution debate in a more nuanced manner.

#### 4. Discussion

From a discourse analytical point of view the intelligent design vs. evolution debate can be seen as an arena of struggle where the opposing sides compete for dialogic space in the discourse related to the origin of the complexity of life. Therefore, this debate represents the linguistic materialization of political networks of social practices that are constituted via social semiosis, i.e. competing discourses in the Faircloughian sense. Furthermore, in line with Gee (1999, 6–8) we maintain that discourse does not simply refer to the way language is used, but to the larger context of discourse where language use can be seen as an integral part of enacting identity. Thus, the discourse on the origin of life can be seen as an important factor defining the identity of western societies, and the advocating of intelligent design as a part of a political agenda attempting to change the current secular state of affairs through science curricula.

For many decades the control of this dialogic space has largely belonged to members of the mainstream scientific community who have based their use of language on well-developed scientific arguments, but it is the aim of the proponents of intelligent design to change this. This makes their intentions political in the sense of Palonen (2003) and as this intention is an explicit one, their (discursive and material) actions could be considered as examples of politicking. As Barbara Forrest has pointed out, the mission of the intelligent design movement is “to get ‘intelligent design theory’ into the academic world and into public life as the chief competitor of the theory of evolution” (Forrest 2001, 31). The originator of the intelligent design movement, Philip E Johnson has also expressed this struggle for dialogic space, but in far more bellicose words:

Christians in the 20th century have been playing defense.... They’ve been fighting a defensive war to defend what they have, to defend as much of it as they can.... It never turns the tide. What we’re trying to do is something entirely different. We’re trying to go into enemy territory, their very center, and blow up the ammunition dump. What is their ammunition dump in this metaphor? It is their version of creation.  
(Johnson in Benen 2000)

It is thus justifiable to say that the campaign undertaken by intelligent design proponents for the acceptance of intelligent design as a valid scientific theory is not scientifically motivated, but rather, a deliberate attempt to bring religion into decision-making by politicizing the teaching of science. This connects the struggle for dialogic space on the question of the origin of life to the Culture Wars (Thomson 2010, 3–12), which can be seen as a wide-ranging battle fought between conservative and liberal thought for the right to define the cultural identity of the United States, and to some extent, of many other Western societies as well.

In the intelligent design vs evolution debate much of the struggle between the two discourses manifests through the modulation of engagement, by which ID advocates attempt to further their position in differing ways. The pervasive use of *countering* in ID discourse is most like related to its attempt to limit the dialogic space occupied by the dominant discourse of evolution. Charles, for example, has identified *yet*-structures with similar components as structures used in *countering* as a “grudging acceptance of the work of others” before pointing out its limitations (Charles 2009, 162). The widespread use of *countering* in *The Edge of Evolution*, then, is quite possibly related to its attempt to gain ground in the discursive arena by limiting the space of the opponent. In this sense these engagement strategies function to depoliticize the opponent’s arguments (cf. Muntigl 2002, 51). This view is supported by Martin and White’s (2005, 118–119) statement that *disclaim* strategies are commonly aligned against a third party voice, in this case the opposite side of the intelligent design vs. evolution debate.



Martin and White (2005, 121) together with Pagano (1994, 251) also suggest, however, another type of relationship created by *countering*, where the author seeks to align himself/herself with the putative reader of the text. This appears to be another possible explanation for the three-fold increase of *countering* in *The Edge of Evolution*. The author is perhaps using *countering* as a strategy to create a feeling of solidarity between himself and the reader by construing a shared paradigm that is skeptical of evolution. Thus it can be viewed as an attempt to gain legitimacy from the audience in the discursive field. This aligning use of *countering* raises an interesting question regarding the combined use of the *denial* and *countering*, which was identified in this study, and which is in line with earlier research by Martin and White (2005, 120). This combined use of the *disclaim* sub-strategies would allow an author to disalign himself from a third party voice while at the same time align himself with at least part of the readers creating a united front against a dominant discourse, which as a result is made to appear oppressive.

*Countering* also occurred much more commonly combined with *entertainment* in the *Edge of Evolution*. The combined *counter and entertain* strategy seems to function as an amalgamation of *countering* and *entertainment* where both strategies are used on a single proposition in the same manner as they would be used separately. Within the confines of one engagement structure the dialogic space given to an unfavored proposition, i.e. evolution, is contracted and then the dialogic space is re-expanded to introduce a new alternative proposition, i.e. intelligent design (see Example 15). The combined *counter and entertain* strategy thus appears to be a very useful tool in situations where the objective is to forward an unacknowledged proposition to the detriment of an accepted one, such as the intelligent design point of view in the ID vs. evolution debate. This conclusion is supported by the fact that while this combined structure was not used very frequently in *The Edge of Evolution*, it was not encountered even once in *The Greatest Show on Earth*.

The function of the combined *entertain and counter* strategy, however, seems to be more rhetorical in nature, rather than a direct reflection of the power position of the two sides of the intelligent design vs. evolution debate. In *entertain and counter* an unfavored proposition is presented using an *entertainment* structure thereby implying a number of other alternatives, and then *countered* with a proposition favored by the author. This type of progression from expansive dialogue towards the contraction of dialogic space is according Tang (2009, 182) common in the staging of academic arguments, that is, it can be viewed as (at least partly) caused by generic conventions. The fact that the use of *entertain and counter* is significantly more common in *The Edge of Evolution* than in *The Greatest Show on Earth* seems to speak of the obligation of ID proponents as challengers to present their proposition in a rhetorically convincing manner. Additionally, *entertainment*

on its own is also used in *The Edge of Evolution* in its most typical function, as an attempt to expand evolution discourse to include ideas founded on ID. In this sense, the use of *entertainment* is a feature which aims to expand the field rather than just occupy it. Accordingly, these types of structures been previously identified to mark a proposition as ‘unacknowledged by the discourse community’ (Myers 1989, 12). Furthermore, *entertainment* has also been suggested in some cases to signify lack of authority (Tang 2009, 174–185), strengthening the point of view that the increased use of *entertainment* in *The Edge of Evolution* appears to be a reflection of ID discourse attempting to change the ideological landscape surrounding the intelligent design vs. evolution debate and challenge the central position of the theory of evolution within it.

The contractive engagement strategy *proclaim*, however, is not used so much as to challenge opposing propositions and make room for new ones, but rather to legitimize the position supposedly held by each side in the ID vs evolution debate. The *concur* sub-strategy is frequently used in *The Edge of Evolution* and seems to work much in the same way as the aligning use of *countering*, by creating a common ground between the author and the reader, attempting to legitimize the author’s position. These types of appeals for shared knowledge are common in academic discourse according to Hyland who states that they are used “to position readers within the apparently naturalized and unproblematic boundaries of disciplinary understandings” (Hyland 2009: 124). The increased use of *concurring* in *The Edge of Evolution* may therefore signal an attempt at trying to make ID fit within the boundaries of valid science on the issue, that is, to secure its place in the field. On the other hand, it can also be seen as a communicative strategy of the author pandering to a specific audience which shares his fundamentally creationistic ideas, ‘preaching to the choir,’ as it is. Most likely the strategy is used by the author so often to achieve both these goals at once. *The Greatest Show on Earth* also uses engagement to legitimize its position in the debate by utilizing *pronouncing* to show that it is in the dominant position in the debate. As Martin and White point out, using *pronouncement* always carries with it a certain possibility of interpersonal cost due to the fact that by *pronouncing* the author is personally vouchsafing the position being advanced (Martin and White 2005, 128). It would seem natural that the risk for paying the interpersonal cost in the currency of academic credibility is smaller when the author of an utterance is in a dominant position within his discipline. Ramona Tang has similarly found that the use of the *pronounce* strategy adds to the authority of an author and underlines the author’s conviction in the position he/she is advancing (Tang 2009, 183).

*Endorsement* was also found to be used more frequently in *The Edge of Evolution* than in *The Greatest Show on Earth*. This would seem to suggest that using an outside authority to narrow dialogic space is a more popular strategy

in the intelligent design text, but there are two factors which prohibit finalizing this conclusion. Firstly, although the difference between the frequencies of use of endorsement in the two studied texts was statistically significant, the frequency was still quite low, meaning that it was not an important strategy in the context of all used strategies. Secondly, there appears to be a possible problem in the manner in which *endorsement* is classified in Martin and White's engagement framework, which arises from the fact that the structures used to create *endorsement* resemble the structures used to create *attribution*, which have significantly differing functions. Martin and White have recognized this themselves (Martin and White 2005, 126), but go on to make the point that the difference is created by the verb used to report the speech of the third party voice. The examples they use (Ibid. 134) to illustrate *attribution*, "*the report states that...*" and *endorsement*, "*the report shows that...*" demonstrate that differentiating these two strategies onto the two opposing poles of expansiveness and contractiveness is not unambiguous. Because of these issues it is best not to make any far-reaching conclusions related to *endorsement*, or to *attribution* for that matter. This is especially poignant since a corpus linguistic method was used, as it relies quite heavily on quantification and the exact linguistic context of each occurrence can be in some cases somewhat difficult to analyze.

Taken together, the struggle for dialogic space in the ID vs. evolution debate truly cannot be described in a one-dimensional way regarding merely its expansiveness and contractiveness. Although the use of many contractive engagement strategies in *The Edge of Evolution* is significantly increased compared to *The Greatest Show on Earth*, so is the use of the expansive engagement strategy *entertainment*. In addition to this, the contractive strategy *pronounce* occurred at a much higher frequency in *The Greatest Show on Earth* than in *The Edge of Evolution*. Adding to this mixture of engagement strategy use is the increased prevalence of the combined strategies, which contain structures related to both contraction and expansion.

Perhaps, instead of labeling ID discourse either contractive or expansive, it should be called highly modulated. In the context of engagement, modulation is here taken to mean a change in the frequency of engagement structures in a text or discourse when interacting with another text or discourse on the same theme. It should not be confused with the term modulation as it is used within the systemic functional linguistics framework to describe structures referring to the inclination or obligation of doing something (Halliday and Matthiessen 2014, 178), but rather a more general attitude towards the extent of dialogical space relating to the actuality of a specific proposition. In other words, there is a stronger focus on redefining the field than filling it with content or occupying it. From this point of view, intelligent design discourse would then be considered highly modulated compared

to the discourse of evolutionary biology, as it makes frequent, concentrated efforts to disalign itself from evolutionary biology discourse by countering its propositions while entertaining its own propositions at the same time. The explanation for the high modulation of engagement of intelligent design discourse most likely lies in its academic underdog position in the ID vs. evolution debate. But at the same time it also implies that ID discourse is more interactive or active in the political sense. High modulation of engagement obligates the voices of ID to the modification of the dialogic space related to the debate in order to differentiate itself from the accepted mainstream view of evolution while aligning itself with readers holding creationistic beliefs. High modulation is also beneficial for ID discourse in its attempt to phrase its purported position as a serious and credible challenger to the currently accepted theory.

Based on these results, the study of engagement features seems suitable for detecting discourses engaged in politicking and politization, as the struggle for dialogic space can be seen as a textual proxy for political struggle. In the ID vs. evolution debate ID discourse uses a mixture of contractive and expansive engagement strategies to limit the dialogic space given to the prevailing proposition that the complexity of life evolved through natural selection, and to expand the dialogic space allocated to its own pseudoscientific proposition that the complexity of life has its origin in the actions of an “intelligent designer.” The reason for this high modulation of engagement in ID discourse can be traced back to its position as a challenger, and its underdog position obligates intelligent design discourse to the heavy use of engagement in order forward its position, which is ultimately aimed at changing the political decision-making related to the teaching of science.

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