CASE STUDY

Beyond tradition: using systemic functional linguistics in TED talks [version 1; peer review: awaiting peer review]

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Abstract
TED (Technology, Entertainment, Design) is an internationally based open access platform where professionals from various fields are invited to give speeches, and to share ideas with like-minded people. In recent years, topics related to the coronavirus disease (COVID-19) or the COVID-19 pandemic have become the most popular speech topics on TED. This paper selects speech-related topics on TED during the pandemic, by using systemic functional linguistics to study how discourses are expressed on the platform. Unlike traditional textual analyses, content on TED are normally verbalized, requiring original texts to be presented in an understandable format. As a result, this paper focuses on the functional innovation of new forms of expression on TED. In other words, the functional perspective of the presentation in relation to COVID-19 based topics may rely on the explanation of the meta-meaning of the keywords, posting images and other techniques as auxiliary means for expression, to some extent. These auxiliary techniques offer traditional systemic functional linguistics new meanings in terms of ideational and interpersonal aspects.

Keywords
Systemic Functional Linguistics, TED, COVID pandemic, Ideational meaning, Interpersonal meaning
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1. Introduction
Speech has multiple forms, and is a kind of communication between presenters and audiences. With the continuous improvement of new media technology, text-based speeches are presented by speakers through multimodal pragmatic means, giving listeners new ideas, and greatly helping listeners to understand the speech topics at the same time. The need for novel topics, along with in-depth explanations, has led to “pragmatic functional innovation” (Gu, 2004:82) in the process of the presentation.

Studies on speeches have found that sticking to text only cannot satisfy the demand for the deployment of systemic functional linguistics. The use of modern language in words and sentences is stylishly casual and irregular, for instance, the appearance of net-language has constantly refreshed people’s understanding of the original meaning of the word (Li, 2019), while a series of scientific vocabularies (e.g., ‘drive’ as a computing word, ‘monitor’ as a medical word) have to be understood through proper explanations within particular contexts (Gao, 2012). The latter, like topics discussed during the coronavirus disease (COVID-19) pandemic on the TED (Technology, Entertainment, Design) platform, is a case in point. In this sense, the introduction of pictures, PowerPoint, audio and videos may potentially facilitate the effective interactivity in the speech (Feng, 2011).

This paper utilises topics during the COVID-19 pandemic on TED to reinterpret systemic functional linguistics. It argues that topics such as COVID-19 on TED incorporate an updated utilization of systemic functional linguistics. Such an updated utilization, to some extent, lies in excavating the usage of the term “functional”. In other words, words or phrases in systemic functional linguistics contain two-layer meanings: the meaning in lexical grammar and the meaning in semantics (Zhao, 2016:642); within different contexts, the latter can be manifested as variability, deriving ideational meaning or refracting interpersonal meaning in different cases.

In order to explain how the ‘functional’ reinterprets the theory, this paper raises the following questions: how did presenters deal with subjectivity in TED speeches and to what extent can the lexis be treated in a more functional way than they were used in text?

To answer these questions, this paper is structured into five sections. Besides the above contents set as an introductory section, the next section explores the historical development of the theory to show how systemic functional linguistics has been broadly used for various case studies. After a brief introduction of TED in the third section, the fourth section selects topics which were presented on TED during the COVID-19 pandemic, with the aim of analyzing the pragmatic functions of semantics and semiotics of the speeches so as to explore how these topics bring ideational meaning or interpersonal meaning, and thus, to sort out any difference between the old theory and its new usage. Section five concludes that the term ‘functional’ is embodied in both the fractal of the meaning (Zhao, 2016) and relevance of the context (Cai, 1997), providing new pragmatic values for systemic functional linguistics.

2. The broad use of systemic functional linguistics in practice
Systemic functional linguistics were established by Michael Alexander Kirkwood Halliday in the late 1950s (Chang, 2012; Gong, 2011; Yang, 2015). Halliday (1970) believed that textual analyses of each part in a setting topic (literal or audiovisual) correspond to a meta-function, that is, textual, ideational and interpersonal functions are interrelated in sentences or passages to confirm the focus point of the theory. One of Halliday’s representative works, *Studies in English Language*, was published to show the meanings in semantics and lexical-grammar, and the relation in between the two meanings was explained as realization instead of constituency, identifying that meta-function and strata were the most prominent features of the language (Yang, 2015:24).

2.1 The theory of stratification
There are many researchers who have been expanding the usage of the two features based on different research topics. For example, in China, stratificational grammar has been particularly applied to educational and communicative fields. In *Genre Studies in Systemic Functional Linguistics*, Gong Changhua (2011) researched discourse genres and found that the study of the structure of linguistics and the characteristics of language expression explores the reasons for using the formation of the language. For instance, since speaking, reading, listening, and writing are the four fundamental skills for language learners, practicing listening and reading skills while immersed in a situation that is relevant to their learning goals might aid students in understanding the target language more rapidly (Cai, 1997:18). Likewise, the speaking and writing courses aim at cultivating a shared cognitive environment so that students are purposely trained to express both sentence meaning and utterance meaning clearly (Gu, 2004:82).

Lou Qi and Zhang Wei’s (2009) research focused on the interpersonal function of meta-pragmatics. They believed that an author could clearly speak out thoughts or ideas via meta-discourse so as to build up interpersonal relations with his readers. What Lou and Zhang highlighted is the tone, the clause, or the attitude the author chose to communicate with his
readers, not merely the content he wrote, as the former could constitute an independent linguistic structure. Thus, Lou and Zhang proposed a ‘dual-order linguistic perspective’ in their work that helped describe the conversational implicatures and the communicative intention of the author.

It can be seen from the above case studies that language can be read in three levels: linguistic material (in written texts or audiovisual formation), lexical grammar and context. While scholars are likely to emphasize the central position of the lexical grammar when they research on teaching and communication cases, as Xu Laijuan argues:

“Studies of the Linguistics shall be notified that the focus point lies in understanding lexical grammar of the passage. It is through explanation of the lexicon, or the grammatic usage of the words, phrases or sentences can students learn meanings of the passage, using the language to communicate with each other and make their expressions understandable.” (Xu, 2014:104)

The above studies additionally illustrate a coherent relationship between semantics and the context. In other words, one can convey the meaning through certain contexts. However, with the continuous development of using formations for expression, there might not necessarily a corresponding coherence between lexicon meaning and pragmatic meaning. In The Limitations of Systemic Functional Linguistics: The Case of Online Expressions, Li Xingying discussed the lexicon and sound features of online languages and found that the meaning of online words or phrases could hardly be explained in lexicon meaning, rather, they represent discursive expressions of the netizens (Li, 2019:145).

“The net words contain two realizations of the semantic meaning. Unlike normal stratifications set by three levels, netizens form their discourses through the sound, which can be translated into different characters. In other words, the meaning of the online expressions is firstly reflected in the sound layer, and then it is understood in lexical grammatic system, shaped as homonyms or abbreviations.” (Li, 2019:147)

The ‘irregular’ understanding of the meaning coined by netizens suggest that analyses of the context is rather important; while in the process of understanding the meaning, the notion of the ‘fractal’ (Zhao, 2016) in shaping the meaning should also be noted, as the meaning (ideational, interpersonal, and textual) may have the potential to be expanded or projected.

2.2 The meta-functional theory

The particularity of the above online language reflects how people use language on social media to build or change interpersonal relations (Locher & Graham, 2010:2). Such particularity can be seen as a new understanding of the interpersonal meaning in communication. The new understanding indirectly elucidates the motivations and mechanisms underlying the use of the meta-function in systemic functional linguistics, as Kristin Davide and Anne-Marie Simon-Vandenbergen cited:

“The notion of ‘interpersonal’ meaning, which this thematic issue is concerned with, has to be situated within the ‘metafunctional’ theory which Halliday and his students have been developing since the mid 1960’s. The basic tenet is that all main linguistic systems (such as transitivity, modality and thematic organization, to name but a few) can be analyzed as serving one of three kinds of very general functions, or ‘META’-FUNCTIONS: the ideational, the interpersonal and the textual.” (Kristin & Anne-Marie, 2015:3)

This concept of interpersonal meaning had a big influence on Hallidayan, especially on how they used the notion to analyse discourse and language change. For example, He Fangzhi (2009) argued in her Meta-functional Analyses of the Humor in Verbal Communication, that vocabulary could be used for expression in general, while she took Friends as an example to note that the use of the verbs could be somehow exaggerated to produce humorous effects in expression.

Likewise, Hakibou Abdoulaye’s study on Half of a Yellow Sun (2022) aimed to describe the interpersonal meaning of the narrative through revealing interpersonal realizations by looking at the mood system and modality. Hakibou thus argued that declarative mood could be used as an expression of certainty so as to show the function of textual semiotics.

As can be seen from the above examples, either humorous expressions or declarative moods, they are the functional usage of the systemic functional linguistics, as Chang Chengguang argues:

“Expression can be seen as a way of ‘doing things’, which has semantic potential. Since systematic functional linguistics emphasizes function rather than structure of the language, to some extent, the expression can also be embodied with ‘behavioral potential’.” (Chang, 2012:19)

In recent years, expressions embodied with behavioral potential have become a normal trend in international business meetings. Liu Ping, Chen Jialiang and Yang Linlin’s research focuses on Interpersonal Functions of Metapragmatic Expressions in International Business Meetings (2022), and they suggest that such meetings are goal-oriented activities;
the process of the communication is constrained by multiple factors such as business organization, multiculturalism and language proficiency of the communicators. While the researchers have found that linguistic resources and pragmatic strategies are actively used to manage and regulate business communication, all of which can be seen as behavioral-based functional potential.

From the above illustrative description of the meta-function and semantic exploration presented by scholars, there are two concepts that need to be noted. The first is that, the lexical meaning can be expanded in certain context, due to the fractals of the meaning in systemic functional linguistics. In addition, interpersonal meaning emphasizes auxiliary functions such as how speakers perform “speech act” with certain attitude, mood and purpose to reflect the real meaning. The two concepts: “fractal” and “auxiliary functions” used in systemic functional linguistics will be in-depth explored by the analyses of the COVID-19-related topics on TED in the following section, and the aim is to break down the traditional understanding of systematic functional linguistics in the grammatical and empirical categories.

3. An introduction to TED

TED is a nonprofit organization devoted to spreading ideas, usually in the form of short talks. It was established by Richard Saul Wurman who was a popular graphic designer (Hong & Liang, 2013:12). TED was founded in 1984 as a result of the TED Conference. The conference used to draw a lot of intellectually interested individuals who wanted to express their thoughts in a public setting. In 2005, TED introduced the TED Global Conference and promoted topics on a wide range of new themes, extending to embrace the fields of education, culture, business, and the arts in addition to technology, entertainment, and design. Since 2006, TED has created a collection of speeches that have been captured over the years called TED Talks. These talks are posted to the internet and made freely downloadable and viewable to audiences across the world. As of March 2013, there were more than 1400 TED Talks videos available on the organization’s official website, which helped TED progressively gain popularity (Hong & Liang, 2013:12-13).

Firstly, topics in TED involve educational meaning, however, they are quite different from traditional lessons given in classrooms, nor are they as similar as online learning portals, take NetEase as an example of a cloud classroom, it focuses on teaching the knowledge, but the teaching target is in selling the courses. Secondly, topics in relation to technology, culture or economics involve in-depth knowledge, they enlighten people to share ideas in terms of criticism and creation. For instance, Ken Robinson’s presentation, Do Schools Kill Creativity? was lauded by online users, and it sparked a discussion over the various definitions of the term “creativity.” In other words, by looking at the role of the school from various perspectives, netizens questioned the wisdom of its “creativity” policy, claiming that the idea of “creativity” would be acceptable in educational settings and should be promoted across many areas.

Today, TED shares ideas from a very broad spectrum, from global issues to business and science in beyond 100 languages, just as the slogan goes on its official site, “Ideas Worth Spread”. The following section will take topics during the COVID-19 pandemic as representative of novel speeches, and to see how such speeches are presented on TED, how speakers expressed their viewpoints, and how the feature of their speeches and presentations relate to the use of systemic functional linguistics.

4. The use of functional approach in the COVID-19 based topics on TED

The features of TED introduced above see it as a communicative platform in which speakers discuss topics to exchange ideas, express viewpoints on the world and build interpersonal interactions with audiences. In order to achieve a communicative purpose, speakers are likely to adopt various presentation techniques and methods to enable audiences to understand their viewpoints and resonate with them. In this regard, the mood and modality systems which are used as functional approaches seem to be outdated to some extent, that is to say, the means of the realization of the meta-discourse can be diverse in speech-based topics.

4.1 Semantics and contextual situation

In English, semantics is used to express meanings under particular contexts. The representative traditional Semiotic Triangle Theory holds that meaning associates word with referent in the minds of the speakers through conventional concepts so as to build interactive relations, or, to set reasonable ways for the hearers to understand the meaning of the word (Gu, 2004:80). Take TED, in Dina Katabi’s A New Way to Monitor Vital Signs (that Can See Through Walls), the presenter said: “And we are going to monitor him as he moves.” The term ‘monitor’ here, as a verb, is used in medical context, the meaning of it is to use medical device to trace the patient’s health status.

The above example is not simply about the definition of the term in semantics; but it argues that since the lexical system has been always in constant flux over the time, then determining the exact meaning of a word needs to put the word into its semantic fields (Cai, 1997:15).
The COVID-19 pandemic has been caused by a global disease that has been described by several international organizations or media as the most severe crisis since World War II1 (Guan, 2020), and it can be seen as the worst public health event in history (Wang & Lei, 2022:30).

Seeing the opportunity, TED has also grasped the topic during the pandemic and invited various experts to come to the platform to give speeches, providing detailed explanations on the cause, the treatment and the prevention of the epidemic.

David Heymann is a professor of infectious disease epidemiology at the London School of Hygiene and Tropical Medicine. He gave a speech What We Do (and Don't) Know About the Coronavirus on TED on February 27, 2020.

From reading the title we know that David aimed at explaining the term “coronavirus” and, in his lecture, David frequently mentioned the words “disease”, “infection”, “virus”, “people” and so on, trying to demonstrate what caused the coronavirus and how these words relate to COVID-19 during the pandemic.

David proposed warning messages in his talk while, the coronavirus and how these words relate to COVID-19 during the pandemic.

For instance, in explaining the term “disease”, David used the following methods. The first is to introduce the symptom: “This looks like a very mild disease, like a common cold, in the majority of people.” The second is to define the symptom: “pulmonary disease”. The description of the two symptoms distinguishes coronavirus from the common cold. Meanwhile, David proposed warning messages in his talk — “It’s clear we know how it transmits, we don’t know how easily it transmits in humans, in communities or in unenclosed areas” so as to imply that coronavirus related to the term “contagion”.

It can be seen that when David tried to define the term “disease”, he focused on how to connect the word with coronavirus. In other words, the meaning of “disease” can be defined variously due to its diverse symptoms and the hints of the harmfulness in transmission; all of which can be seen as contextual factors to impact on understanding of “coronavirus”.

As a result, expression of the lexical information in a speech is different from the one explained in the dictionary. The difference may come from the context that the speaker sets for the topic. Thus, the function of the context is to help listeners understand specific meanings of the common words.

In How COVID-19 Transformed the Future of Medicine, Daniel Kraft mentioned the adjective “medical” in different paragraphs. At the beginning of the speech, Daniel said, “… the convergence of ever smaller interconnected devices now riding 5G is creating not just an Internet of Things but an Internet of Medical Things”, connecting pharmaceutical reform with digital health. In addition, the sentence that “Now exponential technologies packed into our smart devices are becoming increasingly medicalized” again associated medical industry with smart devices. Daniel even described the diagnosis of COVID-19 patients as a “medical selfie”, further enhancing the intelligent function of the medical industry.

From reading the above sentences we can see that, in the process of explaining the word “medical”, Daniel added a lot of new information such as “Internet of Medical Things”, “medicalized”, and “medical selfie”. These new messages are not just acted as rhetorical elements, but they delineated the contextual scope of the topic, and encapsulated Daniel’s viewpoint that the digital health system achieved “the real potential to reshape and scale health care at our pandemic age”.

4.2 Semiotics and nonverbal-based context

As can be seen from the above analyses of the two words (“disease”, and “medical”), the determining of semantics should consider their meaning under certain context. That is to say, the meaning of the two words in their vocabulary system may be different from the ones defined in different contexts, while listeners can understand their actual meaning because they too, place the words into the “semantic fields” (Gu, 2004:81) in conjunction with the context, especially verbal context to get the speakers’ meaning.

As TED is a speech-based platform, speakers use words and sentences to present their ideas, which also reflect their conversational implicatures with communicative values. In this sense, determining semantic meaning should also consider the role of nonverbal contextual factors, for instance, the speakers’ speech act.

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Matt Walker gave a speech *4 Ways the COVID-19 Pandemic Changed the Way We Sleep*, which only lasted two minutes. While Matt posted several pictures during his speech, he clearly explained four changed ways of sleep in COVID-19 pandemic.

At the very beginning, Matt mentioned that “the COVID pandemic changed sleep in at least four different ways: “quantity, quality, timing and dreaming”. By posting a photo, Matt effectively communicated to the audience the erratic nature of sleep. In Matt’s picture, the clock and pillow were located at the upper left and right corners respectively. An image like that illustrates how individuals typically go to bed at the appropriate time. However, the sun and moon were in the bottom left corner of the image in the same frame, hinting at the phenomenon of people sleeping irregular hours. The fabric that corresponded to the pillow was scattered, with colours in dark green, bright purple, dark blue, and bright yellow interspersed to create contrast and further hint at the scenario of people sleeping restlessly. Likewise, Matt used another two pictures to indicate the change in sleep quality during the COVID-19 pandemic: one represented the normal state of a woman who fell asleep at night. Dark blue served as the image’s basis colour, dark green was employed for the pillow as comforter, and the woman was dozing on her side. Yet Matt’s next picture shifted the color of the bedroom mostly from dark blue to light gray, along with a change of her sleeping position, all of which indicated a worse trend in sleep quality. Then Matt commented: “indeed, in the US, almost 60 percent of people felt that the quality of their sleep had become worse during the pandemic.” Thus, Matt’s emphasis on “60 percent of people” can be seen as presupposition to claim his explanation of the word “change” which was given the meaning of getting worse.

Unlike the speeches illustrated in the previous section, here Matt used pictures as symbolic deixis in explaining the meaning of the word “change”. Such a symbolic deixis relates to the pragmatic usage of semiotics, enabling audiences to understand the meaning of the speaker’s utterance.

The example of Matt’s use of pictures to present his topic also showed that his purpose of making a speech is to interact with his audiences. Kemi DaSilva-Ibru, a women’s health specialist, gave a topic *The Shadow Pandemic of Domestic Violence During COVID-19* on TED. Similarly to Matt, Kemi also offered pictures when she talked to her audiences, but the purpose of using the pictures might be slightly different from Matt.

In Kemi’s talk, a group of key words constantly appeared such as “pandemic”, “lockdown”, “freedom”, “safety”, and so on. These words are not used to describe the situation of the COVID-19 pandemic, but they relate to the word “violence”. As Kemi introduced in her talk, in the first two weeks of the lockdown in Lagos State, the emergency calls from domestic violence cases were continuous at this time. Kemi shared a photo of a white telephone on the left and a dozen little white lights on the right that were both glowing red, raising the audience’s awareness of violence against women.

The same themes keep popping up in Kemi’s speech. Since the topic mentions that women in Africa have suffered violence during their quarantine period, audiences certainly look forward to hearing effective solutions to help these women get out of their house. Kemi suggested in her talk that her team successfully “trained 1,300 of the community-based gatekeepers in addressing the cases of violence against women during the lockdown”, offering the necessary assistance to women to receive care. Then a group of young ladies wearing dark blue uniforms can be seen in Kemi’s illustration, standing in the midst of the line while donning masks and projecting an air of authority.

In this sense, the pictures Kemi posted were consistent with her narrations, while the examples of red lights heralding an increase in violence against women and the building of community-based team heralding the protection of women during the lockdown might aim at illustrating that the speaker’s representation of the content was consistent with the listeners’ perception, resulting in their believing in these representations (Cai, 1997:17-18) of the two related events.

5. Conclusion
This paper primarily attempts to provide readers with a means of analyzing COVID-19-related topics on TED by using the theory of systemic functional linguistics. Specifically, the work analyzed both semantic and semiotic functional usage from several presenters who discussed the theme. In identifying the terms (i.e., “disease”, “medical”) and their relative meanings, along with the presenting of events or activities, functional principles of ideational meaning and interpersonal meaning were particularly manifested.

Firstly, speakers focused on linking semantics with the context, which potentially helped them explain the ideational meaning of the keywords. In other words, speakers were likely to grasp the meta keywords and presented them as compound phrases (i.e., “common cold”, “pulmonary disease”, “Internet of Medical Things”), or short sentences. These phrases or sentences appeared under the contexts which were associated with their logical-based semantic patterns, and in this way, the ideational meaning of the original keywords was expanded (e.g., from “disease” to “transmitted disease”). This expanded meaning signals the fractal of the ideational meaning (Zhao, 2016:642).
Secondly, speech is different from the general text-based content; it contains a multimodal discursive environment, and its language includes both verbal and non-verbal symbols which come together to create a semantic environment. The sample pictures (e.g., frequent phone calls) posted by the speakers were integrated with the ideational meaning of the keywords (e.g., “violence against women”), phrases and short sentences mentioned by them, indicating a semantic consistency (Matthiessen, 2007:35) between the pictures and the discursive texts. In this sense, images also formed an expressive layer (Halliday & Matthiessen, 1999:25), constituting a denotive semiotic system to describe, illustrate or summary of the textual meaning.

Thirdly, from the above extended understanding of the ideational meaning of COVID-19-based topics, it can be seen that keywords used by the speakers are not equal to their inherent lexical meaning, they contain communicative values of the topics in which specific utterance meanings are generated to reflect the communicative intention of the speakers. This in turn prompts the idea that speakers associated their words and sentences with the COVID-19-based topics as relevant context so that audiences could understand what they were talking about. The ideational meaning of the keywords or phrases which speakers presented was in relevance with their opinions (e.g., “pulmonary disease”) or attitude (e.g., “addressing the cases of violence against women”) to explore their emotional responses, while such emotional responses can also be seen as interpersonal meaning in this sense.

Meanwhile, from the presentations of the COVID-19-based topics on TED, it can be seen that speakers not only share content or ideas but viewpoints and attitudes, and this finding implicates the importance of the logical meta-function in systemic functional linguistics, providing an alternative research method for topics such as analyses of the accountability of the propositions, or the effectiveness of verbal communication.

Data availability
Source data for this study was taken from the following four TED presentations:

1. David Heymann, *What We Do (And Don’t) Know About the Coronavirus* (https://www.ted.com/talks/david_heymann_what_we_do_and_don_t_know_about_the_coronavirus)

References


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