Figurative Language in Science Popularisation:Similes as an Explanatory Strategy in TED Talks

GIUSEPPINA SCOTTO DI CARLO
Università Degli Studi Di Napoli Federico Ii Italy
gpsdc_83@yahoo.it

ABSTRACT

This paper investigates the use of figurative language as one of the main features of TED (Technology, Entertainment, and Design) Talks,a new science popularising genre. Drawing upon Wikberg's (2008) similes classification,which analyses the patternsas ADJ/ADV as, is like N, is like V-ing N, and V like N,the paper examines the use of similes as an explanatory strategy for knowledge dissemination. Focussing on a qualitative and quantitative analysis of the TED talks held between 2006 and 2012,the study shows how TEDsters use similes to compare complex scientific concepts to everyday life experiences;to breach the expert/non expert barrier so that non-experts can participate in the scientific findings;and to look at science as ideas to be discussed rather than information to be passively received. The study also reveals that rather than focussing on culture-bound similes, these audience-oriented talks tend to avoid local cultural references that would not be understood abroad.

Keywords:Science popularisation; TED talks;similes;communicative strategies;figurative language

INTRODUCTION

This paper analyses the use of figurative language in TED talks, which are popularising speeches aiming at knowledge dissemination. In line with research on science popularisation by several other authors (Calsamiglia& van Dyck 2004,Ciapuscio 2003, Hyland 2010, Caliendo 2012), the approach to popularisation adopted here considers it as a *recontextualisation* of knowledge, which is first conceived in a specialised field and then recreatedin a different communicative context for the lay and semi-lay audiences.

TED is a non-profit organisation devoted to the dissemination of *Ideas worth Spreading*, which started out in 1984 as a conference for the diffusion of technology, entertainment, and design (hence TED), and in 2006 it started hosting videos of its conferences on its website (www.ted.com). TED talks differ from other forms of popularisation because they bring experts directly into contact with their audiences, breaking the typical *expert-mediator-audience* triangularisation. In this perspective, other preliminary works on TED talks(Caliendo 2012, Scotto di Carlo 2014, Caliendo& Compagnone 2013) have started to analyse the process that recontextualises scientific speeches into TED talks presented by their own authors. Some peculiar aspects of TED talks that have already been outlined are the inclusion of personal stories, meta-references relating to the TED context, and humorous openings used to breach the typical separation between the expert speakers and the lay audiences; and the replacement of terminology, acronyms, and difficult structures with a series of explanatory strategies (definitions, paraphrases, reformulations), which allow non-experts to understand topics that might be tedious if not explained. However, since this new genre is largely unexplored, this paper will analyse how TEDsters use figurative expressions as an explanatory strategy. This phenomenon seems a distinctive feature of TED talks, differentiating them from canonical scientific presentations. The term *figurative* is used here to indicate language forms "used in some way other than the main or usual meaning, to suggest a picture in the mind or make a comparison" (Longman Dictionary of English

Language and Culture 1992, p. 475). Its features allow relating new knowledge to old knowledge relevant in everyday lives. For this reason, TEDsters use metaphors, analogies, and especially similes, to simplify their ideas, so that less scientifically informed individuals can relate to the scientific findings communicated and they can become part of the discussion. Metaphorical references include several tropes and figures of speech; however, this paper will focus on the analysis of similes, as they are the most suitable figurative element in terms of their study through corpora analysis. While it would be impossible to study metaphors by querying a corpus witha quantitative research tool, similes can be adequately sampled because of their simple and quantitatively retrievable syntactic pattern. An analysis of such features would help clarifythe problems of science popularisation transmission to a general public, and the strategies that speakers use to overcome them. At a deeper level, the way in which speakers analyse and solve lexical obstacles going from scientific to popularised contexts offers a privileged scenario to explore the constitution of discursive identities in interactions between experts and non-experts.

THEORETICAL FRAMEWORK AND CORPUS

According to Wikberg, a simile can be defined as:[…] a figurative expression used to make an explicit comparison of two unlike things by means of the preposition like 'as… as' or the conjunctions 'as', 'as if', 'as though' (2008, p. 127). From a syntactic point of view, Wikiberg's use of the term *explicit* is not fortuitous. It is used to distinguish similes from metaphors, which are intended as *implicit* comparisons, because they are not signalled by an explicit grammar marker. From a semantic point of view, both are forms of comparison having some structure and semantic peculiarities conveying metaphorical meaning, although similes are a much less investigated means of figurative language than metaphors. Pierini (2007, p. 23) describes similes as figures of speech with a tripartite structure comprised of a topic, which is the entity described by the simile; a vehicle, which is the entity to which the topic is compared, a comparison marker, and similarity features shared by the topic and the vehicle. More thoroughly, Čermák (1983, p. 476) distinguishes five components of a simile: the *comparandum* or *topic* is a referent of comparison; a *relator* is usually a verbal element expressing the kind of similarity involved; the *teritum comparationis* is represented by an adjective, verb, a noun or an adverb that specify the characteristics compared; the *comparator* is the formal marker; and the *comparatum* is the model for comparison. The definitions can be seen concretely through the example *Peter is as strong as an ox*, in which 'Peter' is the *comparandum,* 'is' is the *relator,* 'strong' is the *tertium comparationis,* 'as' is the grammatical *comparator,* and finally 'an ox' is the *comparatum.*

Figurative references such as similes are fundamental in science popularisation. They are able to stimulate the audience's imagination, transforming the learning experience into a pleasant event (Vengadasamy 2011). They create a sense of proximity between the speakers and the audience, which perceives the speaker as 'one like them' (Hezaveh 2014). They expand knowledge creating connections between previous experiences and new information. This is possible because, paraphrasing the figurative language of similes is part of everyday life, thoughts, and experiences; exemplifications through simile are:

> […] an inevitable and unconscious part of the process of human thinking; they are
> a foundation for our conceptual system, it is a property of concepts rather than
> words, widely used in the life of ordinary people, most of the time without them
> even noticing it (Lakoff & Johnson 2003, p. 4 – 14).

For this reason, similes are one of the best explanatory strategies in the process of recontextualisation of a popularising context such as TED.

From a study on the BNC corpus, Wikberg has identified four simile patterns of English similes:

A) As ADJ/ADV as – this type includes the majority of comparisons. In fact, examples such as *as free as a bird c*omprise the majority of the material in his research

B)Is like N – this category includes the aforementioned examples with deletion of tertiumcomparationis, such as *like a hot knife through butter.*

C)Is like V-ing N – this category includes the aforementioned gerund phrases (*like shooting a fish in a barrel*). The gerund is always followed by a noun, be it singular (*a fish)* or plural (*like fighting snakes).*

D)V like N– including examples *bleed like a stuck pig* or *eat like a horse (*2008, p. 134).

As this categorisation seemed the most suitable for a quantitative/qualitative analysis, it was used to analyse a corpus consisting in the 1386 TED talks presented in English between 2006 and 2012, whose transcripts included a total amount of*3,261,073*tokens[1]. The corpus is divided into five macro-areas: Arts and Design, Business, Education and Culture, Politics and Global issues, and Science and Technology, as can be seen in Table 1 below:

TABLE 1.Corpus of TED talks 2006/2012

TED Talks 2006/ 2012 Corpus			
Field	Abbreviation	TED Talks	Tokens
Arts and Design	(AR/DS)	342	732,795
Business	(BS)	135	332,533
Education and Culture	(ED/CL)	293	706,584
Politics and Global Issues	(POL/GL)	370	891,007
Science and Technology	(SC/TC)	246	598,154
Total		*1,386*	*3,261,073*

The quantitative analysis will use a corpus linguistics tool, AntConc 3.2, for a preliminary observation of the similes, querying the corpus for the specific similes markers. This tool allows for word and keyword frequency generation, concordance distribution plots, and tools for clusters, n-grams, and collocate analysis andhas been fundamental for the interrogation of the corpus, to retrieve the simile patterns from it. However, it must be remembered that when approaching figurative language and attempting a combination with corpus analysis, it is very important to bear some contextual and relational factors in mind, and this is the reason why quantitative data retrieval was combined with qualitative observations and manual information retrieval.In fact, the markers *like* and *as* can have

several meanings not related to similes. As indicated by Wikberg, the word *like* can have the functions of:

A) 'Similar to': *Keeping a secret in the Manse* is like hiding a fire under straw.

B) 'Such as': As children, we all got up to tricks like pinching a few apples*or knocking on someone's door and   running away.*

C) **'Typical of'**: *That's just like Maisie* to turn up half an hour late to her own party!

*D)***'As if'**: It looks like I'm going to be in the office until late tonight.

*E)***Pragmatic marker**: 'cos what I need is like a block of wood. (2008, p. 130)

For this reason, the list obtained through AntConc was manually cleaned to verify the correctness of the results, and Aasheim's (2012, p. 51) classification of *comparata* was used for further qualitative analysis of the data. Although the analysis of similes in such a vast corpus has not been easy, as it required manual analysis for disambiguation, an investigation on similes could be important for a corpus-based research on the popularising genre of TED talks, as greater attention has usually been given to other features and to written forms of popularisation. Second, since similes are expected to be a much represented sample of popularised discourse, it would be interesting to study them to contribute to a better understanding of the language of TED talks.

FINDINGS

As previously mentioned, TED talks use several forms of figurative expressions to convey complex concepts in terms of ordinary everyday experience.Concrete exemplifications through similes let the audience understand issues that could be otherwise difficult to communicate. They "provide wit to the writer's creativity and attract the reader in an evocative way"(Rovira2008, p. 2), closing the gap between the abstract world of science and the tangible world of everyday life.In order to proceed with the analysis of the similes, the corpus was thus queried using AntConc 3.2., on the basis of Wikberg's (2008) similes classification, according to which similes can be divided into four categories depending on their pattern:

A) Is + like = (a) Noun
B) As + Adjective/Adverb + as
C) Is + like + Verb-ing + (a) (Noun)
D) Verb + like + (a) Noun

The query investigated both simple similes (3-gram similes having a single noun as a *comparata*, e.g. 'Love is like oxygen') and elaborated similes (multi-gram similes with extended nominal groups, such as 'Leadership is like a panicle of rice'). The first section of the analysis focussed on the *Is+like+ (a) Noun*pattern, including all occurrences with a frequency ≥1. The structure has been slightly broadened as to replace the verb form *is* with the TO BElemma, thus including the third plural form *are*, as well as all the past and future

forms of the verb *to be*. The second step inthequalitative analysis of the resultswas to give an insight into the most frequent types of *comparata* that TEDsters strategically use to convey complex concepts. Therefore, drawing upon Aasheim's (2012, p. 51) classification of *comparata*, the quantitative analysis was integrated with qualitative data. The classification scheme applied divided the *comparata* into five categories, including several sub-categories:

A) Proper nouns: an Alice (like an Alice in Wonderland)
B) Human (sub-categories: age, occupation, status, profession): baby, infant, old lady, queen, servant etc.
C) Nature (sub-categories: natural phenomenon, natural object): flower, owl, thunderstorm, stone, sun etc.
D) Man-made objects: bazooka, bracelet, bullet, book, etc.
E) Mythology: banshee, phantom, fairy princess, angel, zombie etc.

<div align="center">

IS+LIKE+ (A) NOUN SIMILES

</div>

The first category includes *proper nouns*,i.e. *comparata* denoting a unique entity or a proper name of a well-known fictional character or person, e.g. *as like an Alice* (in Wonderland). There were only a few occurrences of this structure in the corpus:

> 1) Me talking about emotion *is like Gandhi* talking about gluttony.
> 2) Blowfish *is like the Incredible Hulk*.
> 3) In commitment devices you *are like Odysseus* and the first mate in one person.
> 4) That (industrial design) *is like an Anish Kapoor* flowing through a Richard Serra.
> 5) This (the metaphor of the selves) *is like Odysseus* hearing the song.
> 6) We (using the internet) *are like Hansel and Gretel* leaving breadcrumbs of our personal info.

The same can be said for the category of *mythology*, which includes *comparata* denoting objects and creatures of imaginary worlds, myths, fairy tales, and other types of folk art:

> 1) It (A dream) *is like the voices* of the dead.
> 2) Camels *are like angels*.
> 3) They (The 99 Islamic cartoon) *were like superhero* kind of flying out of what was happening around the world.
> 4) Hybrids *are like mermaids*.

Both categories are not frequentlyused in the corpus, because they are both quite culture-bound. In fact, TEDsters are surely aware that the diffusion of their talks goes beyond the borders of the country in which the talks actually take place. Local cultural references would not be understood by those who belong to other cultures. For this reason, these two categories tend to be very limited, unless they are referring to very famous people like Gandhi (referred to in Example 1 above).

The second group, referring to humans, can be further divided into several sub-categories. The first is *Human/Age*, with *comparata* denoting human beings in different time periods of life (e.g. Like a child). None of the similes found in the corpus could be classified as part of this sub-group. Few occurrences referred to *Human Professions*, comprising *comparata* denoting human beings' vocations or businesses (Examples 11 and 12).The*Human/Occupation* group included *comparata* denoting human beings with regard to the activities in which they are engaged or describing their lifestyles (e.g. 'Like an alcoholic',

'like a hippie') (see Examples 13 and 14). The last sub-category included*Human/Status*,with*comparata* that denote human beings with regard to their social or professional relation with other human beings (e.g. 'Like a mother', 'like a sister', 'like a lord') (see Example 15). The similes belonging to the human category are grouped in Examples 11 to 15 below:

1) Scientists *are like explorers*.
2) (A stem cell) *is like a skier* at the top of a mountain.
3) It (a memory context) *is like a bunch of people* sitting around taking the SATs.
4) We (the sceptics' society) *are like the Bunko squads*.
5) A car *is like your mother-in-law*.

While this group was quite limited, the most consistent categories included either man-made or natural objects. The human artefacts group or *Man-Made Objects*category included vehicles denoting all types of man-made objects. It represents the majority of the *comparata* used for this pattern, as can be seen in Table 2 below.

TABLE 2.*Is like + (a) MAN-MADE OBJECT* similes

Is like + (a) MAN-MADE OBJECT Similes in TED 2006/2012	
(A cell culture media*) is like their (cell) food*.	The flash (of single/celled algae) *is like a scream for help.*
It (the medical system for wounded soldiers in Iraq) *is like a tube.*	The front door of your office *is like a Cuisinart.*
It (the DAF gene) *is like a baseball glove.*	The genome *is like the blueprint of your body.*
It (the image of his finger) *was like ironcorrugated.*	The mid/ocean ridge *is like a Yellowstone National Park.*
Reserves *are like savings accounts.*	The universe *is like a box of gas.*
A white noise *is like a 'shhhhhhhhhhhh'.*	This (Bertie County) *is like Times Square of Windsor.*
A word *is like an archaeological artefact.*	This (microprocessor) *is like brain science.*
A word without its source *is like a cut flower.*	This (squid) *is like the stealth bomber of the ocean.*
A world without reserves *is like a debit account.*	This (TED) *is like the failure conference.*
Anger *is like gasoline.*	This (the calving face) *is like a major office building.*
Apps *are like little digital reminders.*	Trees *are like straws.*
Brains *are like spaghetti.*	Edges *are like knife blades.*
Brains *are like waffles.*	It (a gyroscope) *was like a library.*
Branches of neurons *are like the wires of a brain.*	Lunch *is like the recess for work.*
Consciousness *is like a mirror.*	Television *is like the global campfire.*
Designers *are like sponges.*	Second life *is like the wild west.*

It can be observed that most of these similes are used to explain scientific discoveries or inventions comparing them to everyday life objects. They explain a complex or at least

non-common concept through an example referring to things that are concretely part of the audiences' lives. Another high percentage of similes are part of the nature group, precisely of the *Natural Objects* sub-category, including all objects that are not man-made:

TABLE 3. *Is like + (a) NATURAL OBJECT* similes

Is like + (a) NATURAL OBJECT similes in TED 2006/2012	
It (dried food waste to the worms) *was like vegetable jerky.*	Mosses underneath live epiphytes *are like peat moss in your garden*
Leadership *is like a panicle of rice.*	A path *is like an acorn*
Love *is like oxygen.*	Disability *is like an elephant in a room*
Love *is like twelve Ethiopian goats standing still in the morning light.*	Dubai *is like a hand that supports anyone*
Marines *are like my West Highland Terrier.*	Each star *is like a Sun*
Memes *are like viruses.*	This (East Borneo) *was like a biological desert*
We *are like the birds* that adapt.	Government *is like a vast ocean*
He (James Bond) *was like a moth to the flames.*	

Another nature sub-category includes *Natural Phenomena*, denoting all nature-driven phenomena, such as hurricanes, whirlpools, fogs:

1) It (a poem) *was like a thunderous train of air*
2) Sculptures *are like waves*
3) Disease *is like a root fire*
4) Dreams *are like torment*
5) It (the fact that Jews were dying in the camps) *was like sex*, you didn't have to be told.

From a quantitative point of view, as we can see from this first classification, the two largest categories of the *Is+like+ (a) Noun* pattern are the group including man-made objects (47,7% of the occurrences attributable to this first pattern) and the one including natural objects, (22,3%). This can be explained by their reference to everyday life, which the other categories do not possess. The distribution within the other categories is as follows: 8, 9 % of the pattern refers to well-known proper nouns, 7, 5% refers to humans, 7, 5% includes similes expressed through natural phenomena, and finally 5, 9% expresses similes through fictional characters. The total amount of similes expressed through the *is+like+ (a) Noun* pattern is 4, 19 % of all the similes found in the corpus.

AS ADJ AS N SIMILES

The second category analysed was the *as ADJ as N* simile pattern. It differs from the *TO BE like a/an N* simile in the way that it operates with two different parts of speech as *comparata* – adjectives and nouns instead of only nouns. Therefore, it is interesting to see not only which *comparata* are used in this pattern, but also what are the traits that are compared through the adjectives. For this reason, the analysis of adjectives in the *as ADJ as N* simile is built upon a traditional classification of adjectives adopted from Biber et al. (2002, p. 197). According to this classification, adjectives can be classified either as descriptors, expressing colours, size, time (chronology, age and frequency), evaluation (judgement, emotion, emphasis), miscellaneous (covering the other characteristics not included in the previous categories), or as classifiers: relational/classification/restrictive (in relation to other referents), affiliative (national or social group of a referent), topical/other (defining the subject area of a noun). The following table analyses the occurrences of this pattern, specifying the classification of

the *comparata* and of the adjectives used (see Table 4).From a quantitative point of view, the total amount of similes expressed through this pattern is 2, 5 % of the similes found in all the corpus.

TABLE 4. *As ADJ as N*similes in TED 2006/ 2012

*As ADJ as (a) N*similes in TED 2006/ 2012			
A 60-sec film can be *as powerful as a haiku.*	Evaluative Man-made	It (this paradigm) is *as solid as a rock.*	Miscellaneous Nature-made
A cold war is not *as good as a cold peace.*	Evaluative Man-made	It (bamboo) grows *as high as a coconut tree.*	Size Nature-made
A manta ray that looked *as big as the plane I was flying in.*	Size Man-made	It's (buttress on a Chronos tree) is *as big as any of the biggest trees east of the Mississippi.*	Size Nature-made
An earth plane would be *as thin as paper.*	Size Man-made	It's (the loudest car stereo) *as loud as a 747 jet.*	Relational Man-made
An enormous room *as dark as a cave.*	Relational Nature-made	Our computers will be *as primitive as the Apollo's are for today.*	Relational Man-made
Animals *as big as office buildings.*	Size Man-made	Smiling is *as stimulating as receiving up to 16,000 pounds Sterling in cash.*	Evaluative Man-made
As *complex as programming robotics*.	Evaluative Man-made	Something *as basic as happiness.*	Relational Abstract
Child seats are *as effective as seat belts.*	Evaluative Man-made	Something *as elegant as a tree.*	Evaluative Nature-made
Doing emotional due diligence is just *as important as doing financial due diligence.*	Evaluative Man-made	The global village is *as big as a planet*, and *as small as a village post office.*	Size Man-made
Ducks and geese and turkeys are basically *as dumb as dumps.*	Evaluative Man-made	The outside can get almost *as hot as the surface of the Sun.*	Miscellaneous Nature-made
Human groups are nowhere near *as cohesive as beehives.*	Miscellaneous Nature-made	The rates of happiness are about *as flat as the surface of the moon.*	Miscellaneous Nature-made
I am *as happy as when I am in the clouds.*	Evaluative Natural phenomenon	The uniqueness of a project *as unique as a person.*	Miscellaneous Nature-made
I would be as isolated as a hermit.	Miscellanous Human	They (The first cars) went twice *as fast as a horse and carriage.*	Miscellaneous Nature-made
I'm *as shallow as a baking pan.*	Miscellanous Man-made	They're *as smart as chimpanzees.*	Evaluative Nature-made
It (A good story) is *as simple as "Once upon a time... "*	Evaluative Man-made	This thing is *as big as a steam locomotive.*	Size Man-made
It (building a library of fingerprints of every virus is *as easy as shooting fish in a barrel.*	Evaluative Man-made	We're not quite *as good as nature* yet.	Evaluative Nature-made
It (happiness) is *not nearly as important as health.*	Evaluative Natural phenomenon	Your fantasy of looking *as cool as Tom Cruise.*	Evaluative Proper noun
It (happiness) *is not nearly as important as love.*	Evaluative Natural phenomenon		

It must be said that the qualitative analysis of this pattern has been quite challenging, as the border between simile and mere literal comparison is quite subtle. In fact, Wikberg uses the expression *comparative structures* for this group, without expressly naming its elements as similes. This is probably due to the fixed frame formed by the correlative *as… as*, combined with high frequency adjectives. More than *simile*, which is a denomination applicable only to some of these examples, it might be better to talk about a *comparative structure*, keeping the term *simile* for the other patterns. In fact, the table excludes ready-

made literal combinations like *as far as, as soon as, as well as*, which leave no space for figurative usage. Some of these most frequent comparative strings include the word *possible*, as in *as quick as possible* or *as ADV as [personal pronoun] can/could*, ('as best as I could'), which are literal expressions. Some are lexicalised similes, while others are occasional lexicalised adverbial similes.

A closer look atthe classification of the adjectives used in this pattern revealed that most of them are evaluative adjectives. As seen in previous studies (Scotto di Carlo, 2014), this is typical of TED, because this type of adjectives is used in argumentation and persuasion. They can reveal the speakers' attitude by highlighting the interpersonal relations between the speaker and the audience. While in academic and scientific discourse, semantic choices of emotional values towards people's behaviour are institutionalised as judgements, and feelings towards aesthetics are toned down into appreciation values (Martin 2000, p. 156), in TED talks, the speakers clearly express their evaluation of aesthetic appreciation and emotive reactions, adding their personal involvement in what they are saying. In TED talks, aesthetic and emotive adjectives seem to perform a heuristic but also pedagogical function, because both the speakers and the audience are involved in a psychological and cultural path of learning. First, the use of these types of adjectives allows the speakers to convey their knowledge while humanising the intellectual experience, getting close to what the audience feels. As a speaker, the overall goal is to create an emotional experience shared with the audience, by being aware of the full range of emotions. The speaker decides the emotions that have to be evoked, and how they can be elicited. On the other hand, these adjectives will not only allow the audience to more likely understand the speaker's perspective, but they will also guide it to accept claims and calls-to-action. Thus, aesthetic and emotive adjectives are crucial in knowledge dissemination, especially in TED talks, as they appeal to the audience's sense of identity and emotions, to spread *ideas*.

Therefore, in similes, TEDsters also use vivid, descriptive subjective adjectives to establish a connection with the audience. Moreover, the analysis of the *comparata* confirms the use of everyday life aspects belonging either to the man-made or nature-made objects. They seem to be necessarily drawn from the social milieu of the audience, so they tend to reflect large-scale cultural assumptions. This corroborates Harré's (2004) thesis, according to which similes and other metaphorical comparisons are indispensable elements related to scientific creativity and imagination, because:

> New scientific theories try to provide a better understanding of reality. -In order to do that, these theories must be intelligible. That intelligibility must ultimately derive from the intelligibility of the novel entities and forms conceived in the creative scientific imagination. The novel entities and forms introduced by the theory become intelligible only if we interpret them in terms of the old entities and forms already available. But, the only way to do this is by means of metaphors or analogies taking the entities and forms already available as a basis. So, analogies and metaphors are indispensable for scientific theories (2004, p. 99)

VERB+LIKE+ (A) NOUN AND *IS+LIKE+VERB-ING + (A) (NOUN)* SIMILES IN TED 2006/2012

The last two groups use verbs as *comparata*, respectively *VERB+-ing* (including 1,3% of all the similes found in the corpus) and *VERB+ like* forms (82,2%, thus the major group of occurrences found in the corpus), as reported in Tables 5 and 6 below.

TABLE 5. *TO BE like + VERB + ing* similes in TED 2006/2012

TO BE like + VERB+ ing similes in TED 2006/2012	
A restaurant telling you that all the fish is farmed *is like being at war and giving somebody your secret code.*	It (speaking) *was like breathing.*
Adding co2 to the air *is like throwing another blanket on the bed.*	It (the leopard's first hunt) *was like watching a graduation.*
Authoritarian governments *are like asking all the winners of the lottery have you won the lottery and they say yes we won the lottery.*	It (reading trickster makes this world) *was like being psychoanalyzed.*
Bombing for peace *is like fucking for virginity*.	It (the next day I left for Rwanda *was like taking the express to hell.*
Buying people out of slavery *is like paying a burglar to get your television back.*	Losing that ice *is like losing the soil in a garden.*
Conducting *is like holding a small bird.*	Opening of the tallest tower in the world *is like adding a finger to the hand that makes everything happen.*
Entering Blur *is like stepping into a habitable medium.*	Scanning a book *is like taking a digital photograph.*
Getting closer to the laws of energy *is like peeling the skin of an onion.*	Talking about the developing world *is like having two chapters in the history of the US.*
Governing a great country *is like cooking a small fish.*	Time spent with you *is like chasing and catching small birds.*
Having one third of the U.S. public for free *is like having a license to print money and a barrel of free ink.*	Undruggable genome *is like calling a computer unsurfable.*
It (bringing Robicseek and Milliken together) *was like introducing Mothra to Godzilla.*	Writing a word in Arabic *is like crafting an equation.*
It (exposing American babies to mandarin for 2 months) *was like having Mandarin relatives.*	

TABLE 6. *VERB + like* similes in TED 2006/2012

VERB + like similes in TED 2006/2012 (and frequencies)							
848	TO LOOK like	7	Eat like	2	Flung like	1	Fits like
245	TO FEEL like	6	TO CHANGE like	2	Imaging like	1	Glow like
29	TO ACT like	6	Sounded like	2	Paint like	1	Love like
19	TO WORK like	5	Walk like	2	Placed like	1	Morphed like
13	TO DO like	4	TO APPEAR like	2	Raining like	1	Raised like
13	TO SMELL like	4	Planted like	2	Stabilizing like	1	Read like
11	TO THINK like	3	Designed like	1	Abandoned like	1	Rotate like
10	Shaped like	3	TO MOVE like	1	Arrived like	1	Seems like
10	TO TALK like	3	TO PLAY like	1	Built like	1	Swear like
9	TO BECOME like	3	Speaking like	1	Conduct like	1	Used like
9	TO BEHAVE like	3	Tastes like	1	Draw like		
8	TO LIVE like	2	Bending like	1	Dreams like		
8	Treated like	2	Born like	1	Ended like		

The verbs used in the first table add depth and explanations to descriptions of action illustrated in the *comparandum,* by connecting them to common experiences. In particular, it is interesting to observe the second table, for its high presence of what Cacciari defines as perception similes:

> Referential literary language is fundamentally inadequate to describe the qualities and nuances of many of our perceptions and body experiences (visual haptic, kinesthetic and so on). Metaphors, including similes, provide a possible contribution to filling this gap between the complexity of the perceptual world and the limitations of our repertoire to describe it.(1998, p. 187)

This is actually what can be observed in TED. Looking at Tables 5 and 6, it can be noticed that most of these verbs are perceptuals and statives. According to Biber et al (1999), the verbs *to look* and *to feel* are very common in fiction and least common in academic discourse. This feature makes TED talks similar to the genre of fiction, because they inform while engaging the audience in an entertaining way. It is important to notice that this feature is also dependent on the specific context of TED, which is not only a conference, but it is also disseminated online. This means that the experts have to recontextualise their talks adapting them to the media they will be diffused by. Fiction-like features like these verbal similes aim at making TED's content attractive to a broader online audience. In some cases, the use of these similes creates a synaesthesic effect; for instance, many occurrences include expressions with *look, taste, smell*, or *feel*. In the following examples, the use of descriptive adjectives and verb similes allows the audience to perfectly imagine the situation, re-living it:

> 1) In 2006, a few months after, I went Ivory Coast -- Western Africa. Now, talk of a divided place -- the country was cut in two. You had a rebellion in the North, the government in the South -- the capital, Abidjan -- and in the middle, the French army. This *looks like a giant hamburger*. You don't want to be the ham in the middle.(Patrick Chappatte: The power of cartoons-July 2010).
>
> 2) This thing that looks like a peacock hit a windscreen is Bill Cheswick's map of the Internet. He traces the edges of the individual networks and then color codes them. (Clay Shirky: How social media can make history-June 2009).
>
> 3) The nature had really reclaimed the whole complex. And, in a way, I wanted the human figure in the picture to become a part of that nature. When I got comfortable in the space, it also felt like a big playground. I would climb up the tanks and hop across exposed beams as if I went back in time and became a child again. (Miru Kim's underground art- DECEMBER 2008).
>
> 4) Then Apple released the Alex voice, which was the best I'd heard. It knew things like the difference between an exclamation point and a question mark. When it saw a period, it knew how to make a sentence sound like it was ending instead of staying up in the air. (Roger Ebert: Remaking my voice-MARCH 2011).

AS IF SIMILES AND *NOUN-LIKE* SIMILES

In addition to Wikberg's classification, there are other two categories of similes not included in his classification, but that can be considered simile patterns:

> ***Look/feel as if/though***– the conjunction is followed by an adverbial clause of manner (*as if/though one has slept in the suit for a week)* and not by a noun as in the preceding categories.
> ***Noun-like nouns***- the combination of a noun and the word 'like' create a new, one- word simile.

From a quantitative point of view, 8,6 % of the similes used found in the corpus follow the *Noun+Like* structure, and 1,12 % belong to the *As if + Adjective/VERB (-ing)* pattern. These types of structures play the role of suggesting and representing more than describing and naming, as can be seen in Tables 7 and 8.

TABLE 7. *As if* Similes in TED 2006/ 2012

As if Similes in TED 2006/ 2012	
The tides of waste matter come in, it sounds *as if a whole storm is approaching you.*	By uttering a sound, a baby can get objects to move across a room *as if by magic*, and maybe even into its mouth.
I approach photographing these icebergs *as if I'm making portraits of my ancestors.*	Smile to feel *as if you just had a whole stack of high-quality chocolate without incurring the caloric cost.*
The press uses words like "discovered" or "caught" or "found out", *as if there's some sort of criminal act being committed.*	Smile *as if you found 25 grand in a pocket of an old jacket.*
"Rose forced herself to go", *as if there were two entities inside Rose's head.*	Find something that will make you feel *as if you are in another world.*
Eldridge has decided to treat his cornets *as if they were trilobites, or snails, and to do a morphological analysis.*	It's *as if the people in this room were plonked on a desert.*
Treat your enemies *as if they were precious jewels.*	Live your real life *as if we've run out of oil.*
Internet is *as if we are all sitting together in a theater, but we can only see amongst the fog the people around us.*	"Live each day *as if it is your last".*
Before cancer It was *as if I was living in a stagnant pool and cancer dynamited the borders between me and the world.*	"Learn *as if you'll live forever".*
The Earth's awesomely complex climate system *as if it had a thermostat, making the planet not too hot or too cold.*	Stop treating the planet *as if it were some kind of business in liquidation.*

TABLE 8. *Noun+Like* similes in TED 2006/ 2012

	Noun+Like similes in TED 2006/ 2012						
1 **4**	Earth-like planets		Catacomb-like basement	1	Human-like gait	1	Santa Claus-like figure
7	Sun-like stars	1	Cell-like structure	1	Human-like looks	1	Sea-like lake
4	Grid-like firing pattern	1	Chicken-like product	1	Human-like robot	1	Shark-like photograph
3	Oven-like device	2	Chimpanzee-like skeleton	1	Human-like sexual behaviour	1	Shrimp-like animal
2	Ape-like ancestors	1	Court-like definition	1	Hurricane-like wind	1	Silk-like venom
2	Bird-like skull	1	Crocodile-like creatures	1	Jewel-like light	1	Sim City-like virtual view
2	British-like hubris	1	Cube-like structures	1	Jungle-like area	1	Simpson-like juvenile way
2	Capitalist-like thing	1	Desert-like land	1	Jupiter-like planet	1	Slavery-like practices
2	Fan-like scans	1	Dinosaur-like mammals	1	Kelp-like forest	1	Soul-like concerns
2	Hive-like rash	1	Disk-like structure	1	Law-like level	1	Spaghetti-like plastic strands
2	Leaf-like structures	1	Earth-like geological formations	1	Life-like legs	1	Square-like screens
2	Mammal-like reptiles	1	Earth-like life	1	Machine-like persistence	1	Taliban-like beard
2	Muse-like effect	1	Embryonic-like cells	1	Manifesto-like urban design project	1	Tar-like substance
2	Predator-like organisms	1	Factory-like conditions	1	Marks-like symbol	1	TED-like questions
2	Sheep-like criteria	1	Fish-like sign	1	Moonscape-like landscape	1	Tower-like trusses

2	Sheet-like solar sail	1	Fish-like symbols	1	NASCAR-like fascination	1	Truss-like elements
2	Velcro-like thing	1	Flu-like symptoms	1	Opera-like lifestyle	1	Tuba-like horns
2	Wall-like suit	1	Garden-like creation	1	Organ-like instrument	1	Unicorn-like animal
1	Adobe-like surface	1	Ghost-like structures	1	Parental-like authority	1	Volantor-like helicopter
1	Adult-like brain	1	God-like broccoli	1	Peacock-like grandeur	1	Wax-like substance
1	Ballet-like display	1	God-like poker	1	Pearl-like effect	1	YouTube-like site
1	Basket-like objects	1	God-like system	1	Photosynth-like processes	1	Zen-like presentation
1	Blink-like moment of clarity	1	Google-like search	1	Pirate supply-like stuff	1	Zen-like thought
1	Blob-like form	1	Gun-like machine	1	Platform-like areas		
1	Bomb-like cloud	1	Hair-like structures	1	Ring-like structures		
1	Book-like laptop	1	Human-like ancestor	1	Rope-like structure		

By using these structures, the speaker can describe attitudes, behaviours, or states of mind without extreme precision, but rather comparing it to similar experiences that the audience is already familiar with. Also in these cases, the speaker chooses similes suggesting a well-known physical or psychological situation. However, in contrast with conventional similes, the comparison is not between two different objects sharing a property but between two different situations of life.

In conclusion, it must be noticed that almost none of the similes included in the corpus are part of the so-called lexicalised similes, confirming their practical use as an explanatory and not literary function. The use of these similes as an explanatory device conjures the risk of getting the audience bored by common clichés, or even too rich, extravagant, and peculiar vocabulary. Using similes like these means bridging the communication gap between the speakers and the audience. In this case, it is possible to argue that they should be used more frequently in popularisation, because they help develop connections and stimulate visual imagery, narrowing the gap between experts and non-experts.

CONCLUSION

This study has explored how scientific discourse is recontextualised in the popularising context of TED talks. The analysis has revealed that these talks use a specific and carefully crafted repertoire of similes to enhance the comprehensibility of these speeches among broad, non-expert audiences.Similes comparing complex scientific concepts to everyday life experiences allow non-experts to engage with the ideas and participate in the future relevance of scientific findings. They are able to stimulate the audience's imagination, transforming the learning experience into a pleasant event, while breaching the experts and non-experts barrier. It was observed that most of the similes belonging to the *is like a noun* group express a comparison using man-made or nature-made objects that are concretely part of the audiences' everyday lives, while only a few occurrences refer to proper nouns, mythological features, or humans in general. This supposedly occurs because these *comparata* are culture-bound and thus local cultural references would not be understood outside the borders of the countries in which TED conferences take place. As for the adjectives involved in the similes, it can be concluded that most of them are evaluative adjectives. This is in line with TED's philosophy, because these audiences-oriented talks do not concentrate on the speaker's

identity and reputation, but rather on the relationship that the experts have with the content of the talk and on how they are personally involved in the topic of the speech.

Of course, a general analysis like this does not allow drawing completely exhaustive and generalisable conclusions, especially for a complex genre like TED. Further study is still needed to understand how exactly such and other discourse structures are involved in the acquisition of new popularised knowledge. An intention for further research is to study other types of exemplification strategies used in these talks, to obtain a more comprehensive view of the popularisation process. However, while the description of TED as a new hybrid genre is far from being fully explored, in a world in which formal cultural institutions no longer detain the centrality of knowledge dissemination, these talks reveal the importance of the establishment of a common goal among the experts and the audience. As Hyland (2010) explains, science should be considered a communicative activity, in which science involves ideas to be discussed rather than information to be received. The results of the study have shown that similes do perform a central function in the recontextualisation of science in TED, as they help to conceptualise abstract or unfamiliar knowledge in a more comprehensible manner, while bridging the communication gap with the final audience. At the same time, from an interaction stance, the analysis of similes as a popularising strategy gives an insight into the constitution of discursive identities in interactions between experts and non-experts, as "our social identities are not static or structurally determined, but contextually situated and interactionally emergent" (Matoesian 1999, p. 492).

ENDNOTES

[1.]This corpus has been originally built for a recent research project of the department of Modern Philology of the Federico II University of Naples (Italy), headed by Giancarmine Bongo, G. Caliendo, and M. Rasulo, to which the author has collaborated. All the excerpts used as examples throughout the work are fully available at: www.TED.com

REFERENCES

Aasheim, I. (2012). *A contrastive study of similes in English and Norwegian*. Masteroppgave, University of Oslo.

Antconc software. Retrieved June 28, 2014 fromhttp://www.antlab.sci.waseda.ac.jp/software.html

Biber, D., Johannson, S. Leech, G. Conrad & S. Finegan, Edward (1999). *Longman grammar of spoken and written language*. London: Pearson Longman.

Biber, D., Leech, G.& Conrad, S. (2002). *Longman student grammar of spoken and written English*. Pearson Education Limited.

Cacciari,C. (1998). Compactness and conceptual complexity of conventionalised and creative metaphors in Italian, *Syntax Sem*, *31*, 405-425.

Caliendo, G. (2012). The popularisation of Science in web-based genres. In G. Caliendoand G. Bongo (Eds.). *The language of popularisation: Theoretical and descriptive models, (pp. 101-132)* Bern: Peter Lang.

Caliendo, G. &Compagnone A. (2013). From the classroom to the stage. A contrastive analysis of university lectures and TED talks, *International Conference CLAVIER 2013 -Discourse in and through the Media-* at Università degli Studi di Modena e Reggio Emilia (November 6-8, 2013).

Calsamiglia, H. & Van Dijk, T. (2004). Popularisation discourse and knowledge about the genome. *Discourse and Society*, *15/4*, 369-389.

Čermák, F. (1983).*Slovníkčeskéfrazeologieanidiomatiky: Přirovnání*. Praha: Academia.

Ciampuscio, G. (2003). Formulation and reformulation procedures in verbal interactions between experts and (semi) laypersons. *Discourse Studies*, v. 5, n. 2, pp. 207-33.

Harré, R. (2004). *Modeling: Gateway to the unknown*. Amsterdam, Elsevier.

Hezaveh, L. R., Abdullah, N. F. L. & Yaapar, M. S. (2014). Revitalizing identity in language: A Kristevan psychoanalysis of *Suddenly Last Summer*. *GEMA Online® Journal of Language Studies*, *14*(2).

Hyland, K. (2010). Constructing proximity: Relating to readers in popular and professional Science. *Journal of English for Academic Purposes9*, 116-127.

Lakoff, G. &Johnson, M. (2003).*Metaphors we live by*. *Chicago: University of Chicag*o.

Laszlo,*P.* (1993). *La vulgarisation scientifique*. Presses Universitaries de France: Paris.

Longman (1992). *Longman dictionary of English language and culture*. Harlow: Longman.

Martin, J.R. (2000). Beyond exchange: Appraisal systems in English. In Thompson & Hunston (Eds.). *Evaluation in text*. New York: Oxford University Press, 142-175.

Matoesian, G.M. (1999). The grammaticalisation of participant roles in the constitution of expert identity. *Language in Society*, *28*.04, 491-521.

Pierini, P. (2007). Simile in translation: From description to translation, *CÍRCULO de LingüísticaAplicada a la Comunicación, 29*, p. 27.

Rovira, S. C. (2008). Metaphors of DNA: A review of the popularisation processes. *Public Understanding of Science*, *7*(1), 1-7.

Scotto Di Carlo, G. (2014). New trends in popularisation: Ethos, pathos, and logos strategies in TED talks. *Acta Scientiarium/ Language and Culture.* Retrieved June 28, 2014 from http://periodicos.uem.br/ojs/index.php/ActaSciLangCult/index

Scotto Di Carlo, G. (*In press*, October 2014). The role of proximity in online popularisations: The case of TED talks. *Discourse Studies*. Retrieved June 29, 2014 from http://dis.sagepub.com/

TED- Ideas worth Spreading. Retrieved June 20, 2014 fromwww.ted.com

Vengadasamy, R. (2011). Metaphors as ideological constructs for identity in Malaysian short stories. *3L; Language, Linguistics and Literature, The Southeast Asian Journal of English Language Studies. 17*(SI), 99-107.

Wikberg, K. (2008). Phrasal similes in the BNC. *Phraseology: An Interdisciplinary Perspective*, 127-142.