R U ready 4 new subtitles?
Investigating the potential of social translation practices and creative spellings

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In this paper I investigate novel and creative linguistic features used in non-conventional subtitling settings such as fansubbing, arguing that they can be advantageously used in professional subtitling practices for a specific medium, such as the Internet. The integration of txt lingo in subtitling is supported by the recent explosion of social translation practices as a response to an ever-growing audience fragmentation as well as changes in technology which make the integration of several customised subtitling tracks possible. In an attempt to provide empirical evidence to support this argument I present the initial results of a pilot eye-tracker-based experiment to elicit data on the reception of "unregimented" subtitling when offered as an alternative to conventional subtitling from consumers in selected new subtitling contexts.

1. Change in the audiovisual translation landscape and scope for creativity in subtitling

The translation world has been going through dramatic changes over the last few years. They have seen the appearance of commercial online subtitled products, such as Vodafone's *Who Killed Summer?* (Vodafone, 2009), the first drama series to be played across social networks online and on mobile devices using professionally created multilingual subtitles. Advances in technology such as DTV (Digital TV) and Blu-Ray now offer new possibilities for data manipulation, linguistic or otherwise. Changes in information access habits of TV viewers and newspaper readers generally have led to content being made available not only online, but on demand as well. This was predicted as early as 1995 when Nicholas Negroponte, then Director of the Massachusetts Institute of Technology's Media Lab, described a future dominated by customised services where products such as newspapers would be personalised to fit the needs and preferences of individuals rather than the public as a whole (Negroponte, 1995). Moreover, the crowdsourced translation and subtitling sphere has grown in popularity with millions of users involved in online translation and subtitling activities, both as content producers and consumers.

Despite all these shifts, the provision of professional subtitling has, in general, attracted only minimal changes, remaining conventional in essence. This is even more surprising and, I would argue outdated, when the subtitled product is to be distributed on the Internet to an intended audience represented almost exclusively by young adults who have been reported to access and produce information using a variety of linguistic and technical media (Carrington, 2004; Crystal, 2006; Shortis, 2007). I believe that market changes need to be reflected in audiovisual translation and that social translation practices have the potential to become a rich source of inspiration for professionally-created audiovisual translations. This paper will explore only one such aspect, namely the integration of the so-called *txt lingo* in subtitling produced for Internet consumption. In this paper txt lingo refers to the creative spelling practices used in electronically-mediated communication (EMC) (Baron, 2010) to enhance group identity, overcome physical space constraints and simulate spoken language. I contend that market transformations need to be reflected in the way audiovisual translation in general, and subtitling in particular are conducted, requiring a variety of methods to cater for a corresponding variety of users and platforms. Accordingly, one would expect changes in the medium of delivery dictated by an increasingly fragmented audience to trigger changes in the form of the message as well.

I start from the premise that the use of *unregimented* (Shortis, 2007) and usually shorter types of spelling within subtitles—similar to those characteristic of the IM (instant messaging) and text message communities and fansubs (subtitles created by fans), for example C *u, frm, R,* ☺—not only allow a certain liberation from formal audiovisual translation constraints (e.g., maximum number of characters allowed per line), but also provide an alternative linguistic model appropriate for the channel in question. My assumptions are further grounded in the pioneering research by Nornes (1999) into *liberated practices* in subtitling, where he argues that a translation finds its strengths in its abuses, in its daring techniques and in its breaking with standard use. Before him, Lewis had also argued for a new approach "[…] that of the strong, forceful translation that values experimentation, tampers with usage, seeks to match the polyvalences and plurivocities or expressive stresses of the original by producing its own" (Lewis, 1985 as cited in Nornes, 1999, p. 18). Devices such as the use of modified font—getting bigger and bigger as the tonality of the actor rises—, creative spellings or the positioning of the subtitles on the screen to go hand in hand with the narrative are examples of "acts of violence" (Nornes, 2007, p. 156). They allow the audience to interact with and have direct experience of the foreign, by using an inventive approach and eliminating submissive practices ruled by codes, rules and norm. The abusive techniques need not be dominating or invasive, but creative. Nornes suggests that the first evidence of these new practices is to be found in fan communities and speculates on the advantages that these practices may have for other users as well.

These communities use devices that derive not only from the linguistic code but also from music and icons (e.g., the use of various symbols such as crescendo < and emoticons) which makes the communication multi-modal. Fansubbers and crowdsourcing subtitlers often use unconventional positioning of the subtitles, varied fonts, colours and customisable verbosity of the lines combined with non-standard spellings to create a collage of "distorted" practices in the overall discourse. The integration of creative subtitles that combine techniques used in fansubbing and txt language (Crystal, 2006; Díaz Cintas & Muñoz Sánchez, 2006; O'Hagan, 2008; Pérez González, 2006; Shortis, 1997) can be appropriate and more efficient than conventional subtitling, as some contexts require a more informal style that "does not create a clash of expectations" (McCarthy, 2003). A language needs diversity in order to survive the linguistic demands of a changing society (Crystal, 2009) so EMC with its txt lingo may well be a great opportunity for language revitalisation. Moreover, txt forms may provide a solution to the physical constraints which characterise subtitling, allowing more information to be conveyed within the same physical bounds thanks to condensed word forms. I contend this to be an effective alternative if offered to an audience already familiar with txt lingo. Finally, as signalled in Baron (2010), this study is further motivated by a change in focus in the research community from determining the characteristics of any such creative linguistic phenomenon to evaluating the actual impact it can have on human linguistic and social practices.

2. The diversity and richness of social communities

Research into fansubbing and crowdsourcing of translation (O'Hagan, 2008; Perrino, 2009), as well as studies in fields as diverse as patent reviews, journalism and computing (Howe, 2008) have investigated differences in practice between professional and non-conventional settings, and observed the richness of techniques and approaches used in the latter. Participants involved in the production of material in these settings create expectations about the content and the form of the message they are transmitting. Practices used in social translation communities such as Facebook and TED.com (a non-profit organisation committed to spreading innovative ideas about technology, entertainment and design) exhibit traces of both linguistic and typographical abuses described by Nornes (1999). In fansubbing, as mentioned above, this includes the use of varied fonts, emoticons, colours, and customisable verbosity of the lines combined with non-standard txt language spellings (Crystal, 2006; Díaz Cintas and Muñoz Sánchez, 2006; Pérez González, 2006; Shortis, 2007). The sheer number of participants involved in such non-conventional settings highlights the potential of these practices.

In a 2008 study, O'Hagan investigates the most salient feature differentiating a fan translator from a professional translator. She concludes that it is orthographic devices that are most frequently used to recreate the stereotypical profile of a source manga character. These typically consist of elongated vowels and consonants (*Reeeally, meee, I'lll*) to visually mimic their phonetic rendering or the tonality and emphasis put on them. These findings are also supported by Baron (2010), who writes that Internet language has the power to strengthen "the role of writing as a representation of informal spoken language" (p. 177).

These abusive techniques, as defined by Nornes (1999) can occur naturally in an environment which displays a powerful linguistic variety and identity. For example, the subtitles and translations produced online on an anime-dedicated platform are likely to display linguistic variations, creating a collage of "distorted" practices known and used in that community. This collage not only reflects the linguistic tradition of that community but it suits its expectations as well. Rather than investigating the various abusive techniques listed above, the present article concentrates on the use of txt language spellings when applied to the subtitles of a clip intended for Internet broadcast and specifically targeted at a generally young, txt-producing audience.

3. Investigating creative spellings

One of the reasons why studies on social media are growing in popularity is that more readers can identify with the very practices which are being researched. Just by navigating in one's phone SMS inbox one can quickly recognise the characteristics of language used in both the texts sent and those received. Expectations regarding the use of complex forms such as *btwn* and *b4* together with emoticons and instances where *2* is used instead of *to* will differ from person to person. Such individual differences raise a number of questions: Are these forms unique to your particular distance communication threads or do you share them with a wider linguistic community? Are you alone in using just a few creative forms in your messages? Is the frequency of emoticons in your texts indicative of your gender?

Based on a corpus of approximately 70,000 text messages, Fairon et al. (2006) investigated the special features of txt language in French and built a typology of techniques used. The techniques observed operate at both morphological and syntactic levels and include use of phonetic rendering of characters (*cette soirée →7swaré*), phonetic orthographies (*quand→ kand*), expressive graphemes (*oooohhhhhh, aaaaaarghhh*), abbreviations, truncations, acronyms (*laugh out loud→ lol*) and truncated phrases.

A study investigating English txt language orthography (Shortis, 2007) lists similar devices, classifying them into three categories according

to motivational principles. Firstly, features used for reasons of economy include omission of vowels *(good→ gd*), letter and number homophones *(are→ r*), and consonant reduction (*immediately→ imedtly*). Secondly, to simulate spoken language, Shortis picks out devices such as pronunciation spelling (*going→ goin*), reduplication to stretch sounds for emphasis (*Soooooooo*) and capitals to indicate paralinguistic details such as tonality. And finally, the incorporation of graphical and kinaesthetic devices such as emoticons, colours, movement and alphabetical constructions to shift the focus from the linguistic sign to the visual and graphical. Crystal (2006) provides an extensive classification of linguistic forms in identifying six features of textese, namely logograms *(@)* and pictograms *(☺),* initialisms (*NP*), omitted letters (*btwn*), non-standard spellings (*thru*), shortening (*mo*) and genuine novelties (*b4*).

All three authors argue that, while several variations can co-exist for the same initial word, one form will always find greater popularity. One of the most interesting findings of these studies is that the use of creative spellings is less frequent than previously believed. This is supported by further studies carried out by Baron who investigates the "talk on IM" (2010, p. 45) and text messages, using undergraduates or very recent graduates at the American University, Washington D.C. Baron concludes that in IM abbreviations—which in her study include initialisms, omitted letters, non-standard spellings, and genuine novelties—"proved to be quite sparse" (2010, p. 45). "Out of 11,718 words, only 31 were EMC abbreviations" (Baron, 2010, p. 59). She also discovers a gender variation in the use of emoticons, with females using more than twice as many emoticons as males. For texting, emoticons were very infrequent and abbreviations were equally sparse.

EMC is shaped by using linguistic tools and technology to fit the topics, the platforms and the users. The characteristics of this writing are first informally created then replicated and further elaborated through immersion, giving the user an active role in the creation of this text practice. I believe the producers and recipients of written messages today have sufficient linguistic maturity to differentiate between txt lingo and standard language and select those contexts appropriate to each. As David Crystal highlights, EMC offers an unprecedented variety in the "communicative options available in our linguistic 'wardrobe'" (2009, p. 96) but the key point is knowing how to manage it to our advantage. I suggest that subtitlers could successfully manipulate these linguistic possibilities by providing creative subtitling solutions to Internet clips which display informal discourse and are aimed at a 20-40 year old technology savvy audience, producers and consumers of electronically-mediated information. The target group selection is motivated by prior studies investigating the age background of texters in several countries (Ling, 2005; Crystal, 2008). They report teenagers and young adults up to mid-20s to be the most enthusiastic group of users and highlight that texting is also very popular among individuals in the mid-30s to 40 category.

4. Cn y rd ths? Creativity and readability

The widespread belief that "a deviation from, and even more the conscious challenge of, orthographic norms has the potential of signalling distance from or negation of dominant culture" (Androutsopoulos, 2000, p. 515) seems too simplistic to define txt users' linguistic behaviour. As suggested by Androutsopoulos (2000, p. 515), even if a significant part of txting practices are consciously employed to mark an oppositional sociocultural stance, txting is also very frequently used for specific communicative purposes, such as attracting attention in an advertisement. The ability of txt language connoisseurs to participate easily in both conventional and new forms of text and literary practices is not simply a sign of negation but a negotiation of the orthography used for social functions and the context surrounding that communication. Myers explains that those creating and consuming linguistic products in such contexts "don't just create a genre, they create a social world" (2010, p. 21). One of the defining characteristics of this world is its linguistic diversity and this acts as a filter to guard against intruders. In subtitling, unregimented spellings should therefore be introduced only in those contexts and addressed only to those audiences capable and willing to decode them. Each community will create an identity based, among other factors, on linguistic choices. "The motivation to use them goes well beyond the ergonomic, as their playful character provides entertainment value as an end in itself as well as a means of increasing rapport between participants" (Crystal, 2009, p. 129). Crystal (2008, 2009) discusses the subject of txt lingo in great detail and demonstrates its creative aspect by providing an insight into the txt producing process and its history.

Not only are decisions concerning creative spellings consciously taken but txt forms are less frequent than previously believed (Shortis, 2007). Further evidence that decisions are consciously taken and that redundancy is well balanced by textese users is given by Crystal (2006), who reports preservation of apostrophes, regardless of the effort it takes to insert them. Nevertheless he stresses that apostrophes are inserted only when clarity is at risk—for example *we're* and not *were*, but *Im* rather than *I'm*. In addition, it could be argued that the choice is refined more locally depending on a user's preferences and the situation, as variations exist within txt lingo. The existence of local variation is supported by data from IM and text corpora (Baron, 2010; Fairon et al., 2006; Shortis, 2007; Tagg, 2009) which list several creative forms used for the same standard word form.

This awareness and ability to distinguish between boundaries of standard and non-standard makes it obvious that misuse and the danger of these practices permeating very formal contexts are relatively limited. Statistically-based studies report that abbreviations, acronyms, and emoticons are less prevalent in young people's IM and txt than previously suggested (Tagliamonte & Denis, 2008). The participants involved in this

study were aged between 15 and 20 and were all born and raised in Canada. Moreover, speculations that non-standard spellings have a negative effect on children acquiring the standard spelling overlook the creative element that such spellings offer and the chance for users to experiment and identify with visual representations of language in ways that are not permitted in conventional settings. On several occasions Crystal (2006, 2009) reports research dispelling such myths that abbreviations are used routinely in school assessments or that children will start using txt lingo in all situations. Its use will always reflect the aims and intentions of the users as well as the medium. Therefore, if used in carefully identified contexts, these practices have the potential to help users overcome challenges, be they technical, such as the physical constraints encountered in IM or in subtitling, or linguistic, such as visually mimicking the phonetic rendering of a phrase.

So, is there a case for introducing txt lingo in subtitling? Are there similarities between text messages, IM and a subtitled product to allow for txt practices which are already established on the first two platforms to be incorporated into the third? The use of *squeeze text* (Carrington, 2004), another term for txt lingo, in subtitling can be motivated by three principles described by Werry (1996 as cited in Shortis, 2007) that apply to txt, IM platforms and subtitling environments. The first and most obvious one is represented by features of economy and text entry reduction, as all three contexts are regulated by strict space limitations that is, around 39 characters per line in subtitling and 160 characters per SMS while IM environments, even if not as strictly conditioned, seem to average in practice at around 5.6 words per transmission (Baron, 2010). Second, spelling by simulating spoken language has already been explored with some success for the translation of dialects in interlingual subtitling and the transfer of orality features in monolingual subtitling (Werry, 1996 as cited in Tagliamonte & Denis, 2008). Finally, all three environments feature a shift to multimodal visual and graphical effects and iconicity in which the linguistic sign is pushed into the periphery of meaning making. One aspect, i.e., the use of emoticons, has already been proposed and used with reasonable success in monolingual subtitling (Civera, 2005; Neves, 2005) and its use in SDH encouraged by the Spanish Standard UNE 153010 (Lorenzo, 2010, p. 134).

Having established the theoretical possibilities for integrating txt lingo into subtitling, I will now present the set-up and initial observations of an experiment to elicit data on the reception of "unregimented" subtitling when offered as an alternative to conventional subtitling, from consumers in selected new subtitling contexts such as Internet and mobile technology.

5. Experiment

Eye-tracking has been used successfully in neurolinguistic and psycholinguistic research into the study of reading processes (Rayner &

Pollatsek, 1989). More recently, diagnostic studies of audiovisual translation in language acquisition (d'Ydewalle et al., 1991; d'Ydewalle & De Bruycker, 2007), interlingual subtitling processing (Jensema et al., 2000) and reception of live subtitling (Romero-Fresco, 2009) have highlighted its versatility. The most frequent goal of eye movement analysis is to draw a map of its characteristics in terms of salient movements and their duration. Especially if it can be accompanied by user surveys, eye-tracking data is believed to be the best way of studying reading behaviour (Duchowski, 2003; Perego et al., 2010; Romero-Fresco, 2009;).

In the present experiment eye-tracking technology is used to monitor, assemble and analyse audience physiological response when viewing both conventional and creative (i.e., including txt lingo) subtitles. This includes observations about duration of fixations inside and outside the subtitling area, number of back and forth shifts or attention shifts (between image and subtitle) and regressive eye movements (in the subtitle) in two scenarios. This reading component is accompanied by post-experiment retrospective comments from the participants related to clip comprehension as well as appropriateness of the subtitling techniques encountered in an Internet environment.

This preliminary empirical study is designed to motivate reflections on the validity of integrating creative subtitles into specific environments as well as on the readability of textisms in subtitling.

5.1. Materials and design

The stimulus for the experiment consists of a short extract from a 2009 French documentary *Surfeurs du Paradis*. This source material was selected as the documentary itself originally targeted viewers belonging to an age group similar to that of my intended target audience, namely 20 to 40 and technology savvy, moreover the subject, surf championships, was also believed to be of interest to this group. Finally, the language style used made it appropriate to our target medium, Internet broadcast. Two English subtitle tracks were prepared for this clip following identical technical parameters. These were the same reading speed, i.e., 720 characters per minute, the same centre justification, a maximum of 39 characters per line and the same rules regarding timing over shot changes. The subtitle onset corresponded to the voice onset. The two subtitling tracks shared the same timing codes and presentation, since the creative subtitles were based on the standard, conventional subtitles. The variations included in the creative file consisted of the replacement of key terms from the conventional file with their txt lingo equivalents. Each creative subtitle contained one, two or several txt forms which, in their turn, could be simple logograms *(@)* and omitted letters (*hs, ths, smthg, cn, frm, yr, u, r*) or non-standard spellings (*dont, sum*) and genuine novelties (*b4, gr8*). 53 one-line and two-line subtitles out of the 80 corresponding to the short clip underwent txt

modifications and were therefore included in the analysis. As a result of the txt spellings applied the creative version displayed 5% fewer characters than the standard one, with 96 out of a total of 662 words affected. Only minimal creative spelling amendments were applied to the creative subtitling track since, for this study I particularly wanted to preserve identical presentation styles in the two subtitling files. D'Ydewalle et al. (1991, 2007) report proportionally more shifts recorded in two-liners and more viewing time spent on two-line as opposed to one-line subtitles, whose presentation is experienced as quicker. Therefore, the only variable in this experiment were the txt lingo amendments, and all other parameters remained constant.

Rayner et al. (2006) and Pollatsek and Rayner (2006) stress that the fixation of eyes on a location is also determined by word frequency. They also show that low frequency words often induce immediate regressions back to earlier parts of the sentence. The results of Moran's study (2008) show that the average fixation duration on subtitles which include high frequency words is lower than in the low frequency condition, and that the number of fixations in the non-text area is higher in the high frequency condition. The influence of word frequency on reading speed is further documented by Jensema (1998) and other factors cited as having an effect on fixation are word length, lexical ambiguity, phonological coding, semantic relationships (Pollatsek & Rayner, 2006) and predictability of a word in that context. As the source clip and standard English subtitles did not contain any technical or exotic terms nor lexical ambiguities, it was essential that the txt subtitles match this level of familiarity. This was achieved by using corresponding high frequency txt forms and cohesive structures. I based my selection of txt variations to be included in the creative subtitle track on a corpus of 190,000 sms messages (Tagg, 2009). More specifically, the txt forms included in the subtitles came from the top 150 creative sms spellings in this corpus, therefore assumed frequent enough in this context. Since users of textisms are not constrained to follow a priori rules, and given that IM users and fansubbers can easily migrate from one practice to another as a result of careful reading of the social practices and circumstances (Bourdieu, 1990), these forms do not enforce any particular usage of creative language and subtitling techniques but simply provide examples of practice which are frequent and likely to be familiar to the members of these communities and therefore to the experiment participants.

5.2. Participants and experiment set-up

Four participants took part in this small-scale experiment and ethical approval was obtained in advance. The subjects were all native English speakers, with no knowledge of French, aged between 29 and 40 years. They had experience watching subtitled programmes, good vision and two

were especially selected for their familiarity with txt language. Their reading skills were considered to be above average as all four participants had postgraduate qualifications. No participant took part in more than one experiment and they were tested individually. Two subjects were assigned to each of the two conditions in which the clip was shown. In Condition 1, the French clip was shown with French soundtrack and standard English subtitles. In Condition 2, the same clip was shown with French soundtrack and English subtitles which included creative spellings. As a reader's aim and perspective were shown to influence text processing (Kaakinen et al., 2003) I carefully designed the information provided to participants at the beginning of the experiment. Similar to other eye-tracking subtitling studies (Caffrey, 2009; d'Ydewalle & De Bruycker, 2007; Jensema, 1998) participants were told in advance that they would be taking part in an eye-tracking experiment. On the day they were told they were going to watch a subtitled French film and instructed to watch the material in the same way as they would at home. Telling the participants in advance that they are going to participate in an eye-tracking experiment and providing a brief description of the equipment, is not only ethical but it helps avoid any surprises or suspicions from the participants (Nielsen & Pernice, 2009).

On the day, they were seated in front of the computer, and after a short 5-point calibration of the eye-tracker to the individual subject the experiment begun. At the end of their session each participant was informed about the intent of the experiment and asked to comment on the experience. My post experiment session included questions to establish if they fully understood the content of the clip and to assess if they deemed acceptable the creative presentation of subtitles for the medium in question.

5.3. Apparatus

The equipment used was a Tobii X120 eye-tracker with its analysis software Tobii Studio, and the clips were shown on a 19 inch monitor at a viewing distance of 60cm. A non-invasive tracker, Tobii allows for binocular tracking, which minimizes the risk of data invalidation by continuing to track even if one eye is hidden from the field of view of the tracker due to head motion (head motion tolerance 30x22x30cm). This allows for a more natural behaviour of participants during the experiments. The tracker records the position of the eyes using X and Y coordinates and calculates the number and length of fixations. As a standard definition of fixation parameters does not exist, for this study I considered a fixation as having a minimum of 100 milliseconds, with a fixation radius, i.e., the smallest distance in pixels that can separate fixations, of 30, which is the recommended settings for situations with mixed content stimuli (Tobii Manual, 2006).

6. Analysis

Involving a number of cognitive processes, reading takes place at different levels with multiple processes occurring simultaneously. As first analysed by Emile Javal in 1880 and explained in Rayner and Pollatsek, reading is not linear but happens as "a series of jumps" (saccades) between which "the eyes remain relatively still, for about a quarter of a second, in what is referred to as a fixation" (1989, p. 6). In an audiovisual environment such as the one analysed here, the processing of information requires multiple attention shifts between text and images, different processing strategies for the two main visual sources of information, and the construction of meaning by putting all the information together (Perego et al., 2010, p. 247).

My experiment was to analyse the trade-off between image processing and text processing in the two conditions and how variations in the text forms might affect this exchange. Of particular interest to this study was to determine the fixation durations within subtitles, each defined as an individual Area of Interest (henceforth AOI), as opposed to the rest of the screen for the period of time a subtitle was displayed. One hypothesis was that the *squeeze text* subtitle version, with its fewer characters to process, would allow the viewer more time to focus on other parts of the screen as opposed to the standard subtitled clip experience, which would permit the viewer only short glimpses outside the subtitle area. My assumption is that when more cognitive resources are allocated to the reading of subtitles, the processing of the visual information outside the subtitling area suffers.

I analysed the resulting data using three relevant eye movement parameters as identified by Megaw and Richardson (1979), namely fixation duration, number of fixations and direction of eye movements, and compared gaze data across the two participant groups. For analysis purposes in Tobii Studio recordings need to be devided into segments called scenes. Using Tobii Studio, the four participants' gaze recordings were split into scenes, based on the original subtitle durations, and within every scene the corresponding subtitle was marked as an AOI. This was performed for all 53 subtitles analysed.

6.1. Fixation duration

The fixation duration (total or average length of fixations) represents the most frequent parameter used in eye-tracking studies. Previous eye-tracking studies on subtitling found that average fixation durations in audiovisual viewing tend to be shorter than those found in normal reading, with d'Ydewalle & de Bruycker (2007) reporting a mean fixation duration of 178 ms per word and d'Ydewalle et al. (1985) reporting a duration of 124 ms per word. These fixation durations are considerably shorter than the

mean fixation duration for normal silent reading of English (i.e., text only) reported in Rayner (1998) of 225 ms.

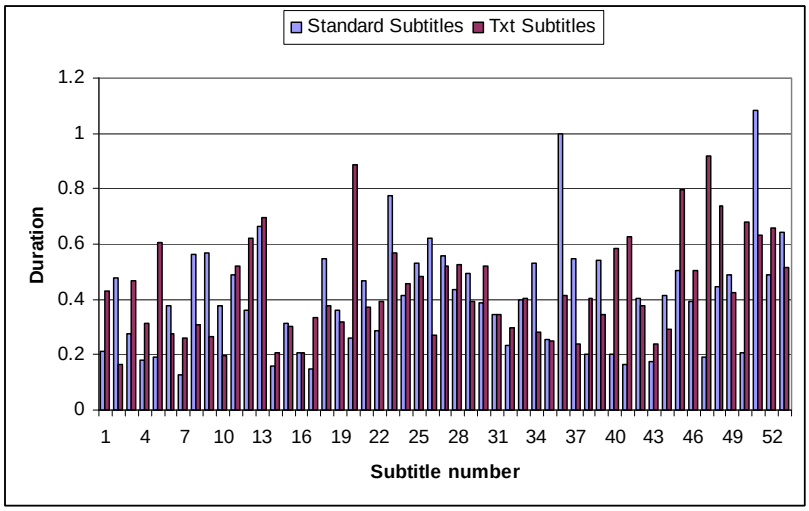

Figure 1: Mean fixation duration outside AOIs, per subtitle.

Figure 1 shows the duration in seconds, as mean of the two participants per condition, for all the fixations outside an AOI (i.e., subtitle) for the 53 scenes in the two conditions. The analysis of the data shows that in approximately 55% of subtitles, participants in Condition 2, i.e., txt subtitles, spent more time outside the subtitling area, than participants in Condition 1 viewing standard subtitles. This tendency seems to be accentuated from subtitle 40 onwards. The repetition of a low-frequency txt form which may not have been 100% recognised at the beginning, especially as many creative variations may exist for the same word, has a positive impact on the reading speed, as documented in numerous research papers (Chaffin et al., 2001, in Stab & Rayner, 2007; Rayner et al., 1995). Therefore, I suggest that a certain element of learning intervenes, thus increasing the participants' familiarity and reading ease with the txt forms used as they advance in the clip.

6.2. Number of fixations and mean fixation duration

Studies show that there is a correlation between the number of fixations and the subjects' reading experience (Anders, 2001; Chapman & Underwood 1998, both cited in Duchowski, 2003). The subjects who are more familiar with reading display an increased number of fixations and a decreased mean duration; by fixating for a shorter period of time, they can cover a wider area.

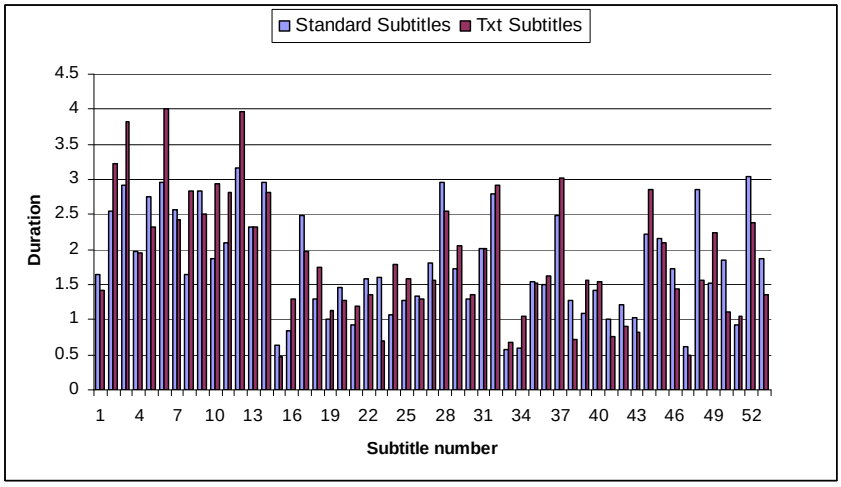

Figure 2: Mean fixation duration inside AOIs, per subtitle

In this experiment, in 28 out of 53 cases the txt subtitles had more fixations and their mean fixation length was, as shown in Figure 2, less than that of the participants in Condition 1. Even if it is not quantitatively significant overall, this trend is even more pronounced towards the end of the clip, as explained above. Moreover, analysis of the fixation duration inside the AOIs shows that peaks in the mean data, which might suggest difficulty when reading a particular creative word or cluster, are almost evenly shared between the two conditions. Pollatsek and Rayner state unequivocally that "one of the most robust findings in studies of eye movements and reading is that the ease or difficulty associated with understanding a word during reading clearly affects how long readers fixate on that word" (2006, p. 621). I therefore interpret the fact that the presence of creative forms did not trigger unusually long fixations and in more than 50% of cases where the mean was lower than in Condition 1, to indicate that frequent txt forms did not pose a significant challenge to the participants but allowed reading to occur naturally.

Table 1: Means and standard deviations of the two parameters overall, inside and outside of the subtitling area

	Fixation Time Total (ms)			
	Mean		*Std. Dev*	
	Outside AOI	AOI	Outside AOI	AOI
C1	409.037	1890.339	201.263	746.930
C2	437.943	1857.094	179.838	886.792

Table 2: Fixation counts for the two parameters, inside and outside of the subtitling area

	Fixation Count			
	Total		*Mean*	
	Outside AOI	AOI	Outside AOI	AOI
C1	386	684	6	11
C2	370	793	6	12.5

Analysis of the means of the two parameters indicates that fewer fixations are recorded inside the AOIs for Condition 1 and the effect is significant ($F(2,53) = 0.9804$, $p < 0.05$). The proportion of the fixation time devoted to the subtitled area did not differ significantly between the two conditions (C1: $M = 1890.339$, C2: $M = 1857.094$, $t = 0.419$) and the effect was not significant either ($F(2,53) = 1.4095$, $p = 0{,}1095$). Therefore, no definite conclusion regarding the ease of processing text in C2 as opposed to C1 can be drawn. Nevertheless, as explained above, these preliminary results seem to indicate that the presence of txt forms did not impede the reading process, which followed a normal trajectory.

6.3. Direction of eye movements

Switching attention from the visual image to the subtitle area and reading the subtitles happens "effortlessly and almost automatically" (d'Ydewalle & De Bruyker, 2007, p. 196). Nevertheless, certain factors lead to disruptions in the reading of an audiovisual text. In a pioneering study carried out in the early 1980s, Baker singles out three situations which can trigger "false alarms" and therefore disrupt a normal subtitling reading process. The first type of false alarm happens when "the subtitle in question overruns a shot-change on the background video, and the viewer's point of regard is seen to regress to an early point in the subtitle" (Baker, 1982, p. 129). The second occurs when there is a lack of synchrony between the subtitle and the visual and audio, in particular when these predate the subtitle. The third kind of false alarm happens when a long subtitle display

time leads the viewer to anticipate a new subtitle before it arrives, therefore only attracting re-reading of the subtitle with a long duration. Moreover, more recent studies established that the fixation of eyes on a location is also determined by how frequent the word is; so variations in the frequency of words also lead to disruptions in the reading process. Rayner et al. (2006) show that low frequency words often induce immediate regressions back to earlier parts of the sentence.

Shillcock (2007) found that "regressions are more likely to occur in a difficult text or during reinterpretation or to correct a long forward saccade" (p. 98). Such "corrective" regressions have nevertheless been shown to represent only 10% of the overall number of regressions (Stab & Rayner, 2007), therefore the majority of regressions can be considered linked to word frequency, length and predictability.

Table 3: Fixations (F), Regressions (R) and Shifts (S) per subtitle for C1 and C2

Subtitles C1	**F**	**R**	**S**	**Subtitles C2**	**F**	**R**	**S**
I'll be as quick as you are.	6	1	1	I'll b as quick as u r.	6	0	2
[I]f you don't do something just because you don't like it.	13	3	1	[I]f u don't do smthg jst cos u don't like it.	15	4	1
If I had to do that, I would.	8	0	2	If I had 2 do tht, I wud.	7	0	2

In the Table 3 above I present selected information on back and forth shifts (between image and subtitle) and regressive eye movements (in the subtitle), as a full analysis is beyond the scope of this article. These initial observations, suggest that the use of txt forms in subtitles did not disturb the viewing process as they did not induce a greater number of regressive movements in the txt subtitles than did normal subtitles. Moreover, the number of shifts was either maintained or increased, which suggests that both vertical (non-text area) and horizontal (subtitle) processing took place.

6.4. Questionnaire

These findings are also supported by the results of a short questionnaire distributed to the participants at the end of the eye-tracking experiment. The first two questions referred to content specific information to check comprehension and all four participants were successful in providing the correct answers. The third and fourth related to the display and the linguistic forms included. While all reported feeling comfortable with the display time and position of the subtitles, the participants in Condition 2 commented on their surprise at seeing txt lingo in subtitles. After the initial surprise reaction, they reported no problems reading and understanding the forms included. This is also supported by the eye-tracking data as explained above. Moreover, in answering the fifth and final question the two participants in Condition 2 expressed their enthusiasm regarding the

introduction of creative practices for short online videos. One reason given was that these txt forms reflect the spoken and written practices they engage in daily and have become part of their linguistic identity. I can conclude from these remarks and the eye-tracking data that the txt language subtitles presented in this experiment were not only intelligible—the participants did not report difficulty in identifying the concepts the creative forms related to—but also presented a linguistic form viewers could easily identify with. As Crystal puts it "we are beginning to train a new generation of English speakers who are more aware of linguistic diversity and more tolerant of differences in linguistic behaviour" (Crystal, 2009, p. 48).

7. Further discussion and conclusion

The initial results of this experiment inspire confidence regarding the use of txt spellings in specially selected subtitling environments such as the Internet. Not only did the current study show that frequent creative spellings do not hinder the viewing process as a whole, but it also suggests that they might permit a fuller experience of the film, by allowing the viewers to spend more time fixating outside the subtitled area. It is known that traditionally this is only possible if time allows it as "caption reading dominates eye movement; viewing the screen action tends to be secondary" (Jensema et al., 2000, p. 284). In a recent study of a drama, Perego et al. (2010) claim that there is no trade-off between scene recognition and subtitle recognition. However, as indeed acknowledged later on in their study, this exchange may be age- and genre-dependent, therefore the results may be expected to differ for different age groups as well as a documentary or game show as opposed to drama. Moreover, the scene change investigated by Perego et al. (2010) is very much an aspect of the peripheral vision, which typically fails to make the identification of more subtle changes such as body expression of characters on screen possible. Therefore, comprehension of linguistic information aside, if more time is spent on the subtitles, less is available for the processing of aspects such as body language and expressions that contribute to the overall meaning of the audiovisual product. It could moreover be possible that txt forms may provide a solution to the physical constraints which characterise subtitling, allowing for more information to be presented or for less time to be allocated to the duration of subtitles.

Even if too limited to allow for generalisations regarding the processing of txt forms in general, this small-scale pilot experiment afforded a first glimpse of subtitles with txt lingo in action and, most importantly it allowed initial observations showing that participants were comfortable reading frequent txt varieties. In the hope that a more extensive analysis will benefit from the ground this first set of investigations has broken, I plan a more ambitious experiment exposing larger participant groups to even more diverse txt forms from emoticons to initialisms,

skipped letters and letter and number homophones. As mentioned at the beginning of the article, I do not suggest that this type of subtitling be applied to all products, only that it should be considered as an alternative to professional subtitles for short clips which are aimed at a Internet-savy and txt producing audience of a certain age group.

As highlighted in MultiLingual Computing (2009), there is an increasing awareness of the richness of community translation contexts. It is my belief that the shift in position from periphery to centre and the growing attention social translation practices have been receiving over the last few years is a clear sign that they will, sooner or later, shape the way more conventional practices are carried out. Media such as IM and SMS are still novel and only with time will we be able to measure the impact they may eventually exert as suggested by Baron:

> If it took at least thirty-five years after the invention of the telephone to decide it was reasonable to issue a dinner invitation by phone, we should hardly be surprised that best practices for networked computers and mobile communication devices are far from worked out. (Baron, 2010)

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