

Conference on Barrier-Free Communication

15-16 September 2017

DANIELA EICHMEYER
ALEXANDER KURCH

LIVE SUBTITLING AND SPEECH-TO-TEXT-INTERPRETING:
DIFFERENTIATION AND QUALITY ASSESSMENT

OVERVIEW

- Differentiation: speech-to-text interpretation vs. live-subtitling
- Target groups / degrees of literacy
- Quality
 - NER
 - IRA
 - NTR (interlingual)
 - QIT (intralingual variety)
- Additional Quality Assessment by using text optimization tools
- Fazit

Speech-to-text interpretation vs. Live-Subtitling

Format

Speech-to-text:

- Full screen
- „Subtitles“
- Public screen or individual (electronic) devices

Live-Subtitles

- 1 – 2 lines, exceptionally 3
- Restricted number of characters per line
- TV

Speech-to-text interpretation vs. Live-Subtitling

Simultaneity

Speech-to-text:

- Immediateness
- Corrections visible to audience

Live-Subtitles:

- Time-shift
- Correction before broadcasting

Speech-to-text interpretation vs. Live-Subtitling

Target Group

Speech-to-text:

- Usually clearly defined audience
- Very often 1:1
- Homogeneous

Live-Subtitles:

- Anonymous audience
- Heterogeneous

DEGREES OF LITERACY

Deaf and Hard of Hearing

- Pre-lingual hearing loss
- Post-lingual hearing loss / at which stage
- Elderly people

Hearing audience

- Learners (international students, migrants...)

**Educational level
is not always an
indicator for
degree of literacy!**

QUALITY

What is Quality?

- Never ending story in translation science
- ISO 9000: “degree to which a set of inherent characteristics fulfills requirements”

Quality for whom?

- Fulfill clients' requirements
- You need to know: your clients and their expectations

NER (Romero Fresco, Martinez 2015)

Number of Errors, Edition Errors and Recognition Errors

Algorithm

$$\text{Accuracy} = \frac{N-E-R}{N} \times 100$$

Goal

Reach 98% accuracy rate (SFR)

NER (Romero Fresco, Martinez 2015)

Critics

- Remains at word-level
- 2nd step (analysis of content transfer – “correct edition”) is usually omitted in practice
- Demanding process for STTI (chunking into analyzable sections)
- Developed for speech recognition, conventional method is not so easily assessed using NER

Main Objective of STTI

COMMUNICATION

- Transfer of content / ideas
- Quality assessment should concentrate not only on word level, but on the degree of established communication
- Formal and content based criteria

IRA – Idea-unit Rendition Assessment (Eugeni 2017)

Basic Idea

- Very often, quality assessment of subtitles is reduced to an accounting problem
- Reduction: compression, elimination
- Breakdown into idea-units
- Assessment: rendered / not rendered
- Goal: rendering of 75% (Italian broadcasting company)
- Feasability: Automatic chunking by PerVoice

IRA – Idea-unit Rendition Assessment (Eugeni 2017)

Critics

- Binary decision only – yes or no, no “shades of grey”

Further development → enhanced IRA

- Implementation of weighting (content)
 - Rendered / partially rendered / not or incorrectly rendered
- Formal aspects
 - Syntax, grammar, orthography, punctuation.

NTR (Romero Fresco, Pöchhacker 2017)

Quality Assessment of interlingual live subtitles

- target group: speakers of other languages
- task: transfer of content between languages
- NTR model based on NER model
- Adjustment from E(diting) to T(ranslation) quality parameters

NTR (Romero Fresco, Pöchhacker 2017)

T(ranslation) errors

- separated assessment of content and form (correctness and style)
- „correct“ vs. „effective editions“:
strong deviations of the source text without loss of information
- higher cognitive efforts of STTIs (Dutka et al. 2015) : NTR value of 96 %
- overall assessment beyond numerical score (NTR value)

Interpreting into a language variety?

Live subtitling: standard language into language variety

- target groups:
heterogeneous levels of language proficiency
- task: simplified contents appropriate to recipients' requirements
in terms of information processing
- intralingual translation: standard language into language variety

Interpreting into a language variety?

Example: easy-to-read German (Bredel, Maaß 2016)

- own set of rules and guidelines as a language variety
- restricted use of grammatical categories and vocabulary
- avoid verbose and convoluted construction of sentences
- specifications for punctuation and text layout
 - reduction of language system = selective transfer of contents?

QIT for live subtitles (Jekat, Dutoit 2014)

- 1st step of Qualified Information Transfer model useful?
- descriptive analysis for changes of linguistic structures

types of transfer	Linguistic structures
Reduction	Lexical level
Addition	Morphological level
Variation	Syntactical level

Interpreting into a language variety?

Information transfer with deviating linguistic structures (Maaß 2016)

- drastic shifts of linguistic structures incl. shifts of meaning
- paraphrasing, reformulation and generalization (variation and reduction)
- explanations of difficult words and exemplification (addition)

Interpreting into a language variety?

QIT and NTR for quality assessment?

- use of alignment software to join and disjoin words and phrases
- Description of changing linguistic structure: QIT
- Error grading of content and form: NTR formula
 - content: weighing information loss by types of transfer + effective editions
 - form: adherence to language variety specifications (correctness and style)

Interpreting into a language variety?

Analysis of subtitles with authoring tools (Siegel, Lieske 2015)

- implementation of syntactic rules and vocabulary (terminology database)
 - Parameters for automatic analysis of the target text
- check adherence of rules and vocabulary for specific variety
- identification of violations and recommendations for improvement
- numeric comprehensibility index of text in subtitles

Processes of quality assessment

Recipient-oriented:

- testing comprehension of texts in subtitles with recipients in focus
- checking correlations (Romero-Fresco; Pöchhacker 2017)
 - recipients' subjective rating of subtitling quality (Tirinnanzi 2012)
 - analysts' subjective rating with QIT and NTR
 - results of authoring tool analysis

Research questions:

- challenges for recipients' perception:
bilingual and bimodal reception (visual/auditory)
- authoring tools: distinct set of rules for different target groups
- inter-annotator agreement and methodology (NTR and QIT): new values?
- specific training of easy-to-read live subtitlers:
 - internalization of rule sets and vocabulary possible by training?
 - different cognitive loads as in the case of interlingual live-subtitling?

FAZIT

- There are some first models for quality assessment available
- Necessary:
 - Further development
 - Consciousness of users and providers

THANK YOU FOR YOUR ATTENTION

**Daniela Eichmeyer
Universität Wien
de@delfinterpreter.com**

**Alexander Kurch
alexander.kurch@web.de**

Bibliography

- Bredel, Ursula, und Maaß, Christiane (2016): „Leichte Sprache theoretische Grundlagen, Orientierung für die Praxis.“ Berlin: Dudenverlag.
- Dutka, Łukasz; Szarkowska, Agnieszka; Krejtz, Krzysztof, und Pilipczuk, Olga (2015): Investigating the competences of interlingual respeakers – a preliminary study. http://avt.ils.uw.edu.pl/files/2015/10/PLM_Interlingual-respeaking_final1.pdf [05.07.2017]
- Eugeni, Carlo (2017 forthcoming): „La sottotitolazione intralinguistica automatica. Valutare la qualità con IRA, Come 2 (1).“
- Gambier, Yves (2006): “Le sous-titrage: une traduction sélective?” In: Tommola J. And Y. Gambier (Eds.) Translation and Interpreting. Training and Research. Turku: University of Turku, S. 21-37.

Bibliography

- Jekat, Susanne, und Dutoit, Lilian (2014): „Evaluation of live subtitles (respeaking)“. *Subtitling and Intercultural Communication: European Languages and beyond*. Hg. Beatrice Garzelli und Michela Baldo. Pisa: ETS, 329-340.
- Norberg, Ulf; Stachl-Peier, Ursula, Tiittula, Liisa (2015): „Speech-to-text interpreting in Finland, Sweden and Austria“. *The International Journal of Translation and Interpreting Research*, 7(3), 36-49. <http://trans-int.org/index.php/transint/article/view/418/211> [05.07.2017]
- Romero-Fresco, Pablo, Martínez, Juan (2015). “Accuracy rate in live subtitling: The NER model”. In J. Díaz Cintas & R. Baños (Eds.), *Audiovisual translation in a global context: Mapping an ever-changing landscape*. Basing- stoke: Palgrave Macmillan. S. 28-50.

Bibliography

- Siegel, Melanie, und Lieske, Christian: „Beitrag der Sprachtechnologie zur Barrierefreiheit: Unterstützung für Leichte Sprache“. Hg. Jekat, Susanne J., Heike E. Jüngst, Klaus Schubert, und Claudia Villiger. „Themenheft Barrierefreie Sprache in der digitalen Kommunikation für Öffentlichkeit, Institutionen und Unternehmen.“ trans-kom. 8 (1), 2015, 40-78.
http://www.trans-kom.eu/bd08nr01/trans-kom_08_01_03_Siegel_Lieske_Barrierefrei.20150717.pdf [30.08.2017]
- Tirinnanzi, Serena (2012): *Qualität beim Schriftdolmetschen: Anforderungen aus Sicht der Schriftdolmetscher und der Adressaten im Vergleich*. Unveröffentlichte Masterarbeit. München: Hochschule für Angewandte Sprachen München.