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The four year project (2015-19) is a collaboration between the three leading European Research Infrastructures in the social sciences – the European Social Survey (ESS ERIC), the Survey of Health Ageing and Retirement in Europe (SHARE ERIC) and the Consortium of European Social Science Data Archives (CESSDA AS) – and organisations representing the Generations and Gender Programme (GGP), European Values Study (EVS) and the WageIndicator Survey.

Work focuses on three key areas: Addressing key challenges for cross-national data collection, breaking down barriers between social science infrastructures and embracing the future of the social sciences.

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**SERISS Seminar:
Establishing a roadmap for the use of computational linguistics' tools
and translation technologies in survey research.**

Universitat Pompeu Fabra, Barcelona

March 14-15, 2018

Minutes of the seminar

Diana Zavala-Rojas

UPF, ESS ERIC

Summary

This report summarises the presentations and discussion of the SERISS seminar “Establishing a roadmap for the use of computational linguistics’ tools and translation technologies in survey research.” This seminar took place on March 14 and 15, 2018 at Universitat Pompeu Fabra (UPF) in Barcelona. This meeting, with a seminar format, is part of SERISS Work Package 3, which is dedicated to maximising the equivalence of survey items through research in translation. In particular, it is part of Task 3.2 which addresses the feasibility of applying text corpus and computational linguistic methods to survey translation.

The seminar brought together 13 experts in the fields of comparative survey methodology, survey translation, computational linguistics, corpus linguistics, and translation technologies. The program was designed based on desk research and a previous expert meeting as reported in SERISS D3.5 (Zavala-Rojas, 2017a) and SERISS D3.6 (Zavala-Rojas, 2017b). The purpose of this seminar consisted in bridging the gap between these disciplines by these experts giving basic introductions into their respective these fields of expertise and thus forming an interdisciplinary network in the view of later scientific collaboration. The content of the presentations of the SERISS seminar reported here is a key source of information for SERISS Deliverable 3.8.

SERISS seminar: scope and objectives

The SERISS seminar “Establishing a roadmap for the use of computational linguistics’ tools and translation technologies in survey research” took place on March 14 and 15, 2018 at Universitat Pompeu Fabra (UPF) in Barcelona. This meeting, with a seminar format, is part of SERISS Work Package 3, which is dedicated to maximising the equivalence of survey items through research in

translation. In particular, it is part of Task 3.2 which addresses the feasibility of applying text corpus and computational linguistic methods to survey translation.

The seminar brought together 13 experts in the fields of comparative survey methodology, survey translation, computational linguistics, corpus linguistics, and translation technologies. The program was designed according to findings of the research activities conducted by the author of the present document, such findings are reported in SERISS D.3.5 (Zavala, Rojas, 2017a) and SERISS D3.6 (Zavala Rojas, 2017b). Main topics were: translation and translation assessment in comparative surveys (Zavala-Rojas, D.), tools: CESSDA (Kleemola, M.), Translation Management Tool (Martens, M. & Pennings, S.), OmegaT (Briel, D.), linguistic data: parallel corpora (Hareide, L.), and neural machine translation (Ruiz Costa-Jussà, M. and Krišlauks, R.). After an overview describing the task, this deliverable includes the abstracts of the seminar's presentations. Appendix 1 contains the seminar's final agenda, and Appendix 2 includes short biographical information of each of the participants.

SERISS seminar: content

Invited experts from selected areas of translation and language sciences came together to present a basic introduction covering the most important features of the fields they are experts about. A second goal was to form a multidisciplinary network of researchers that would enhance possibilities for collaboration. Knowledge exchange is key to create synergies in science.

The first part of the seminar, after the general welcome and *tour de table*, consisted of participants presenting their areas of expertise. The first presentation was “**Translation and translation assessment in comparative surveys**”. Zavala Rojas, D. presented the importance of questionnaire translation in survey research and survey data. The second presentation was about the “**Translation Management Tool**”, in which Martens, M. and Pennings, S. explained the basic functionalities of this tool to manage the translation process of several social survey projects. After this, Hareide, L. in “**Parallel Corpora**”, introduced the audience to the concept of *comparable parallel corpora* as data that allows multilingual hypothesis testing in empirical linguistic studies. In the last presentation of Day 1, Briel, D. presented the open source translation memory tool “**OmegaT**”, focusing on cross-lingual text retrieval functionalities.

Day 2 presentations were “**Multilingualism and Machine Translation Tools & CESSDA**” in which Kleemola, M. gave a general introduction about CESSDA ERIC, focusing specifically on the know-how about multilingualism. Ruiz Costa-Jussà, M. in “**Introduction to Neural Machine Translation**” presented a non-technical introduction to this subfield in computational linguistics that is the state-of-the-art in machine translation. Finally, in “**Addressing NMT challenges in training with limited data**” Krišlauks, R. guided the audience on current developments in neural machine translation, focusing specifically on models that use limited amount of domain-specific data. The link between computer assisted translation (CAT) tools and machine translation was also covered. The content of the presentations is summarised below. A repository with all presentations can be accessed at: <https://seriss.eu/resources/sen/>. Day 2 also included a “**SERISS project's meeting**”, in which researchers representing survey projects that are part of SERISS discussed specific challenges in applied survey translation.

Presentation abstracts

Translation and translation assessment in comparative surveys (Zavala-Rojas, D.)

This presentation aims to guide the audience to answer the question: Why is translation so relevant for comparative survey research? The presentation starts by defining comparative survey research from a measurement perspective, pointing out what are the potential effects of translation decisions

in measurement equivalence across cultures/countries participating in a large-scale survey project. Then, we focus on defining and matching the concepts of *functional equivalence* in statistics and in translation sciences. Linked to these concepts, the golden standard procedure to translate survey questionnaires is presented: Translation, Review, Adjudication, Pretesting, Documentation (TRAPD) method (Harkness, 2003) is briefly introduced, followed by a summary of current challenges on the implementation of this procedure. Finally, current research lines and innovations in the field of 'survey translation' are summarised.

Translation Management Tool (Martens, M. and Pennings, S.)

The Translation Management Tool has been developed by CentERdata (Tilburg, the Netherlands) to manage the translation process of large international surveys and therefore to potentially integrate easily in many survey development processes. The presentation aims to introduce the TMT and have a discussion on how to further advance on the management tool.

Parallel corpora (Hareide, L.)

This presentation is a brief tour of the landscape of Corpus linguistics. The presentation is divided into two parts. In the first, the question 'What are parallel corpora?' is answered from a theoretical perspective. In the second part, applications of parallel corpora are presented, showing applications of these data in linguistic hypotheses testing.

OmegaT – Translation memory (Briel, D.)

OmegaT is a free and open-source computer aided translation (CAT) tool. For a number of years, OmegaT has proven itself to be the most popular open-source CAT tool used by professional translators. The presentation starts by introducing some concepts on computer-aided translation, translation memories and free software. It then highlights the main features of OmegaT, illustrated by live demos of the application. It continues by explaining how data can be exchanged with other CAT tools. Next, the possible way translation memories can be organised is presented. This is followed by the introduction of team projects, a unique feature of OmegaT that allows sharing projects on the Internet. Last, the subject of technical support is broached.

An Introduction to Neural Machine Translation (Ruiz Costa-Jussà, M.)

In the last years, deep learning has revolutionized artificial intelligence applications. Machine Translation (MT) has not remained invariant to this revolution. Integration of deep learning in MT has brought the development of a totally new approach called Neural MT. This talk covers an introduction to this new approach of neural MT including motivation, basic architecture, strengths and weaknesses and recent advances in the field.

Neural Machine Translation, current developments (Krišlauks, R.)

Neural machine translation (NMT) has shown remarkable progress in recent years, however, training an NMT system in a scenario of limited data still remains challenging. This talk focuses on the importance of ensuring the quality of the datasets used in training an NMT system and the possibilities of incorporating out-of-domain and monolingual data in NMT training. The typical techniques used in domain adaptation and data augmentation are covered. Finally, it is sketched out how a typical translation system deployment looks like and what extra requirements are imposed to be able to integrate the system in a computer-assisted translation (CAT) tool, while also looking on the process of using NMT translations in a CAT tool from a translator's point of view.

SERISS Task 3.2 Meeting

On Day 2, survey experts from SHARE, the ESS, the ESS Translation Expert Panel, the EVS, and software developers working currently on the TMT (CentERdata) met to discuss challenges and current strengths in the translation process of large scale survey research projects. This meeting served for a useful exchange of knowledge between survey experts. The minutes reported here serve also as a valuable qualitative source of information for D3.8 that will suggest a roadmap to incorporate some applications from translation technologies and computational linguistics into survey translation.

Participants: Behr, D., DeCastellarnau, A., Dorer, B., Luijckx, R. (virtual attendance), Martens, M. Pennings, S., Pettinicchi, Y., Zavala-Rojas D. (see Appendix 2 for biographies and affiliations).

Participants discussed the usefulness and challenges of creating parallel corpora of survey questions, taking as raw data survey questions already in the TMT database.

On the positive side, this would allow for the eventual incorporation of different methods and applications in survey translation processes, for instance, cross-lingual text retrieval e.g. translation memories. One of the main challenges is harmonisation of data between survey projects, and 'dynamic' survey items i.e. items that change depending on previous answers or demographic profile of respondents.

Participants focussed on translation memories as a useful application that can be incorporated in the translation process. Open questions were how to make compatible this and any other possible applications with the translation of questionnaires in the TMT. For instance, incorporating computer assisted translation tools in a process that is managed by the TMT. Several open source tools could be explored, for instance, OmegaT or MateCat <https://www.matecat.com/>

The importance of making parallel corpora available for the research community was also highlighted.

It was discussed that when exploring how to incorporate CAT tools, this should be accompanied by an assessment of how the translation and translation workflow is affected.

The main conclusion was that exploring CAT functionalities is seen as positive, but ideally, they should support and enhance tools that are already developed specifically for survey projects, e.g. TMT and current best practice procedures e.g. TRAPD.

Conclusions and future work

In this report we summarised the content of the "SERISS Seminar: Establishing a roadmap for the use of computational linguistics' tools and translation technologies in survey research." The survey experts present at this meeting were very positive about exploring the tools and methods presented in the seminar: mainly cross-lingual text retrieval, parallel corpora and machine translation.

The presentation about cross-lingual text retrieval helped to clarify concepts in CAT tools, methods and the distinction between parallel corpora and translation memories.

The presentation about parallel corpora helped to understand what data allows for hypothesis testing in linguistic studies and how these data are used in CAT tools.

The presentations about neural machine translation helped to better understand the methods behind common commercial tools of machine translation, which are their limitations and potential.

The content of the presentations of the SERISS seminar reported here is a key source of information

for Deliverable 3.8, the final one in SERISS Task 3.2 that will present a roadmap for exploring translation technologies and tools in computational linguistics in survey translation.

Link to the repository of presentations

<https://seriss.eu/resources/sen/>

References

Harkness, J. A. (2003). Questionnaire translation. In J. A. Harkness, F. J. R. van de Vijver, & P. P. Mohler (Eds.), *Cross-cultural survey methods* (pp. 35–56). Hoboken: Wiley & Sons.

Zavala-Rojas, D. (2017a). *First SERISS Symposium on synergies between survey translation and developments in translation sciences. Minutes of the expert meeting*. Retrieved from https://seriss.eu/wp-content/uploads/2017/12/SERISS-Deliverable-3.5_Report-on-first-translation-symposium-.pdf

Zavala-Rojas, D. (2017b). *Report of the state of the art on tools in computational linguistics and computer-aided translation for enhancing survey translation*.

Appendix 1: SERISS Seminar - Final Agenda



SERISS Seminar on “Establishing a roadmap for the use of computational linguistics’ tools and translation technologies in survey research”
14 & 15 March 2018, Room Auditori Mercè Rodoreda (23s05), UPF¹

<i>Wednesday, March 14, 2018 [13.00-19:00] Convener: Diana Zavala-Rojas</i>
LUNCH* [13:00-14:00]
WELCOME AND TOUR DE TABLE [14.00-14.10]
1. Translation and translation assessment in comparative surveys [14.10-15.00] Diana Zavala-Rojas, European Social Survey (ESS ERIC)
2. Translation Management Tool [15.00-15.30] Maurice Martens and Sebastiaan Pennings, CentERdata
3. Parallel corpora [15.30-16.30] Lidun Hareide, Møreforsking Molde
COFFEE BREAK* [16.30-17.00]
4. OmegaT – Translation memory [17.00-18.00] Dider Briel, OmegaT
DINNER*² [19.00]

* Lunch, coffee breaks and dinner expenses will be covered by UPF.

¹ Universitat Pompeu Fabra, Campus Ciutadella, Building Mercè Rodoreda.
Address: Ramon Trias Fargas, 25-27, 08005 Barcelona (Spain).

² Restaurant “La Llabor dels Orígens (Born)”. Carrer de la Vidrieria, 6, 08003 Barcelona



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Appendix 1. (Cont.) Final agenda



<i>Thursday, March 15, 2018 [9.00-14.00] Chair: Diana Zavala-Rojas</i>
5. SERISS partners meeting [09.00-10.00]
6. Archiving and maintenance of Tools in CESSDA [10.00-10.30]
COFFEE BREAK* [10.30-11.00]
7. An Introduction to Neural Machine Translation [11.00-12.00] Marta Ruiz Costa-Jussà, Universitat Politècnica de Catalunya
8. Neural Machine Translation, current developments [12.00-13.00] Rihards Krišlauks, Tilde
CLOSURE DAY 2 [13.00-13.10]
LUNCH* [13.10-15.00]

* Lunches, coffee breaks and dinner expenses will be covered by UPF.

List of participants

Day 1

Dorothee Behr
 Didier Briel
 Anna DeCastellarnau
 Brita Dorer
 Lidun Hareide
 Mari Kleemola
 Maurice Martens
 Sebastiaan Pennings
 Yuri Pettinicchi
 Diana Zavala-Rojas

Day 2

Dorothee Behr
 Anna DeCastellarnau
 Brita Dorer
 Tom Emery (Virtual attendance)
 Lidun Hareide
 Mari Kleemola
 Ruud Luijkx (Virtual attendance)
 Maurice Martens
 Sebastiaan Pennings
 Yuri Pettinicchi
 Marta Ruiz Costa-Jussà
 Diana Zavala-Rojas



Appendix 2: Short biographical information of participants

Behr, Dorothee. Senior researcher, ESS ERIC CST, GESIS

Dr. Dorothee Behr is a senior researcher at GESIS – Leibniz Institute for the Social Sciences in Mannheim (Germany). Her research and services focus on translation and translation assessment methodology for cross-national and cross-cultural surveys. As a member of various international consortiums (PIAAC Cycles 1 and 2, ESS 5, EVS 2017), she has been responsible for setting up translation processes, developing translation guidelines (methods, content, IT tools), or integrating the translation perspective into instrument development. She regularly gives workshops on the development and translation of questionnaires. Besides translation, she has worked extensively on cross-national web probing – a mixed-method approach that helps to identify reasons for lack of equivalence in items based on open-ended answers. She holds a degree in translation studies and a doctorate on applied translation studies (questionnaire translation). She is a member of the Translation Expert Panel of the European Social Survey European Research Infrastructure Consortium (ESS ERIC).

Briel, Didier. Project manager of OmegaT.

Didier Briel is the project manager of OmegaT since 2014 but has been contributing since 2006. He had a first career in computing, notably as product architect, technical director and marketing and strategy director within European enterprise software vendors. Didier became a translator and a consultant in 2004, and he is also a member of the Société française des traducteurs. In parallel to his translator activities, he provides consulting, training, support and development services, mostly on free translation environments. He presented OmegaT in numerous conferences, and is the author of “Les outils libres du traducteur, un écosystème à apprivoiser” (The translator's free tools, an ecosystem to tame) and “Du développement à la traduction: les projets en équipe d’OmegaT” (From development to translation: OmegaT’s team projects) published in Traduire, SFT's journal.

DeCastellarnau, Anna. Researcher, ESS ERIC CST, UPF [Convener]

Anna DeCastellarnau is a researcher of the Advanced Survey Quality Methods (ASQME) research group at the Research and Expertise Centre for Survey Methodology (RECSM), Universitat Pompeu Fabra (UPF) in Barcelona. She is the project leader of the Survey Quality Predictor (SQP) and as such represents it in the Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS) project. As a member of the European Social Survey (ESS) Core Scientific Team (CST), she focuses on the assessment of measurement quality in the ESS. Currently, Anna is also an external Ph.D. student at Tilburg University. Her research focuses on the relationship between the formulation of survey questions and the measurement quality.

Dorer, Brita. Head of the Translation Team, ESS ERIC CST, GESIS

Brita Dorer is a researcher at GESIS, specialized in the field of questionnaire translation and adaptation. She is heading the translation team of the ESS. Her scientific interests include the quality of questionnaire translations and adaptations, translation and assessment methods, translatability of source questionnaires/advance translations, intercultural aspects of questionnaire translation and translation process research. She is currently preparing a PhD on advance translations carried out for improving the translatability of survey questionnaires in the ESS ERIC. She holds a degree in English, French and Italian translation studies from Johannes-Gutenberg-University Mainz, FTSK Germersheim, where she also worked as a freelance lecturer for English-to-German and French-to-German translation. She has been involved in translating survey questionnaires into German, such as the ESS ERIC, the ISSP, the PIAAC and the Survey of Health, Ageing and Retirement in Europe (SHARE).

Emery, Tom. Project manager of Generations and Gender Programme (GGP)

Tom Emery is a social scientist specializing in demographic change and specifically in intergenerational relations. He is currently the Project Manager for the GGP based at the Netherlands Interdisciplinary Demographic Institute (NIDI) in The Hague. In this position he oversees the day to day management of the program and contributes to its long-term development. His research focuses on the developing relationships and exchange between generations in the context of ageing societies.

Hareide, Lidun. Senior researcher at Møreforskning Molde

Lidun Hareide is a senior researcher at the semiprivate research center Møreforskning Molde in Norway. She has a PhD in translation studies, corpus linguistics and comparative grammar from the University of Bergen and is co-author of "Corpus Methodologies Explained – an Empirical approach to Corpus Linguistics" (Ji, Oakes, Li and Hareide 2016, Routledge). Her main field of research in linguistics is on the translation of so called "unique items", that is grammatical concepts that do not exist in the source language, and she also does research on education and language related issues.

Kleemola, Mari. Deputy director of the Finish Social Science Data Archive (FSD)

Mari Kleemola is development manager and deputy director at the Finnish Social Science Data Archive (FSD) at the University of Tampere, Finland. FSD is the Finnish national Service Provider for CESSDA ERIC. Her interests include research data management, metadata, digital preservation, certification of repositories and trust, and she is a member of CoreTrustSeal Board and DDI Alliance Expert Committee. Recently she has been actively involved in building CESSDA's services, and currently she leads CESSDA's Tools & Services Working Group and the CESSDA Metadata Management Project.

Luijckx, Ruud. Chair of the Methodology Group, EVS

Ruud Luijckx is an associate professor at the department of Sociology of Tilburg University (the Netherlands), an associate member of Nuffield College, Oxford, and a research fellow at the department of Sociology and Social Research of Trento University (Italy). He is the chair of the Methodology Group of EVS.

Krišlauks, Rihards. Software developer and researcher at Tilde

Rihards Krišlauks is a developer and researcher at the Machine Translation group at Tilde, a language technology and localisation service providing company based in Riga, Latvia. He's carrying out applied research in Neural Machine Translation (NMT), with a focus on morphologically rich languages. His work also includes development of fast, production-ready solutions for integrating NMT models into Tilde's machine translation pipeline and development of natural language processing tools. Rihards has a Master's degree in Computer Science from University of Latvia, there his academic interests centered around reinforcement learning and theoretical computer science.

Martens, Maurice. Software developer of TMT at CentERdata.

Maurice Martens is a software developer at CentERdata (since 2004) in Tilburg, the Netherlands, where he concentrates on web-based systems. Maurice is presently working on various projects at CentERdata: from the modernizing of existing systems to the development of customized solutions. One of these is the Translation Management Tool (TMT) within the Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS) project. He studied Technical Mathematics and Information Technology and has a Master's degree in Business Administration Mathematics. Maurice has a great deal of experience with different programming languages and environments.

Pennings, Sebastiaan. Scientific programmer of TMT at CentERdata.

Sebastiaan Pennings is a scientific programmer at CentERdata, where he is involved in the development and support of software related to SHARE, ESS and EVS. Moreover, he is currently working on the Translation Management Tool (TMT) within the Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS) project. He studied computer science at the Avans University of Applied Sciences in's-Hertogenbosch and obtained his Master's in Game and Media Technology at Utrecht University. As a software engineer he worked as a developer of simulator software for dredger operator training and applications in support of Building Information Modeling, including a web platform.

Pettinicchi, Yuri. Survey specialist, SHARE

Yuri Pettinicchi is a survey specialist working for SHARE (Survey of Health, Ageing and Retirement in Europe) at Munich Center for the Economics of Aging (MEA) - Max-Planck-Institute for Social Law and Social Policy. For the last two years he has been taking care of the translation procedures. His work is about managing 28 country teams dealing with 40 country-specific languages. Previously he worked for survey projects at Goethe University (Frankfurt) and Ca' Foscari University (Venice). He was part of the questionnaire development and operation teams of small-scale survey (one language in one country). These surveys investigated household finance related issues such as financial literacy, expectations and inter-generational transfers. He obtained my Ph.D in Economics from the University of Venice in 2012."

Ruiz Costa-Jussà, Marta. Telecommunication engineer at UPC.

Marta Ruiz Costa-Jussà is a telecommunication engineer by the Universitat Politècnica de Catalunya (UPC, Barcelona). She received her PhD from the UPC in 2008. Her research experience is mainly in Machine Translation. She has worked at LIMSI-CNRS (Paris), Barcelona Media Innovation Center (Barcelona), Universidade de São Paulo, Institute for Infocomm Research (Singapore) and Instituto Politécnico Nacional (Mexico). She has participated in 18 European and Spanish national projects. She has organized 10 workshops in the areas of MT and IR, taught several tutorials and seminars, and published more than 100 papers in international scientific journals and conferences. She has been cooperating with several companies as a scientific consultant. Currently, she is a Ramón y Cajal Research Fellow at UPC and she is leading the Spanish project of DeepVoice and the Chistera project of ALLIES.

Zavala-Rojas, Diana. Research fellow, ESS ERIC CST, UPF [Convener]

Diana Zavala-Rojas is a survey methodologist interested in all aspects of the survey lifecycle, holding a doctorate in comparative survey methodology. She is a member of the CST and the Translation Expert Task Group of the ESS ERIC collaborating on questionnaire design, translation process, measurement quality and cross-national measurement equivalence. She is also researcher in the SERISS project, studying the feasibility of applying computational linguistic methods, CAT and MT to survey translation. Her current research lines focus on 1) quality of cross-cultural survey data, analyzing the effects of minority languages in the reliability and validity questions. 2) Language effects in surveys by studying multilingual measurement equivalence. 3) Survey translation and, 4) correction for measurement errors in survey research. Other research interests are experimental designs in survey research and structural equation modelling.