The Routledge Handbook of Translation and Technology

The Routledge Handbook of Translation and Technology provides a comprehensive and accessible overview of the dynamically evolving relationship between translation and technology.

Divided into five parts, with an editor's introduction, this volume presents the perspectives of users of translation technologies, and of researchers concerned with issues arising from the increasing interdependency between translation and technology. The chapters in this *Handbook* tackle the advent of technologization at both a technical and a philosophical level, based on industry practice and academic research.

Containing over 30 authoritative, cutting-edge chapters, this is an essential reference and resource for those studying and researching translation and technology. The volume will also be valuable for translators, computational linguists and developers of translation tools.

Minako O'Hagan, PhD, is the Discipline Convenor for Translation Studies at the School of Cultures, Languages and Linguistics at the University of Auckland in New Zealand. She specializes in applied translation studies with a technology focus, including game localization and non-professional translation. Her publications include the co-authored *Game Localization* (2013). Her current research interest lies in exploring the nexus of human and machine in translation.

Routledge Handbooks in Translation and Interpreting Studies

Routledge Handbooks in Translation and Interpreting Studies provide comprehensive overviews of the key topics in translation and interpreting studies. All entries for the handbooks are specially commissioned and written by leading scholars in the field. Clear, accessible and carefully edited, *Routledge Handbooks in Translation and Interpreting Studies* are the ideal resource for both advanced undergraduates and postgraduate students.

For a full list of titles in this series, please visit www.routledge.com/Routledge-Handbooks-in-Translation-and-Interpreting-Studies/book-series/RHTI.

The Routledge Handbook of Audiovisual Translation
Edited by Luis Pérez-González

The Routledge Handbook of Translation and Philosophy
Edited by Piers Rawling and Philip Wilson

The Routledge Handbook of Literary Translation
Edited by Kelly Washbourne and Ben Van Wyke

The Routledge Handbook of Translation and Politics
Edited by Fruela Fernández and Jonathan Evans

The Routledge Handbook of Translation and Culture
Edited by Sue-Ann Harding and Ovidi Carbonell Cortés

The Routledge Handbook of Translation Studies and Linguistics
Edited by Kirsten Malmkjaer

The Routledge Handbook of Translation and Pragmatics
Edited by Rebecca Tipton and Louisa Desilla

The Routledge Handbook of Translation and Technology
Edited by Minako O'Hagan

The Routledge Handbook of Translation and Technology

Edited by Minako O'Hagan

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2020
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
52 Vanderbilt Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
Names: O'Hagan, Minako, 1959– editor.
Title: The Routledge handbook of translation and technology / edited by Minako O'Hagan.
Description: Abingdon, Oxon ; New York, NY : Routledge, 2020. |
Series: Routledge handbooks in translation and interpreting studies |
Includes bibliographic references and index. | Summary: "The Routledge Handbook of Translation and Technology provides a comprehensive and accessible overview of the dynamically evolving relationship between translation and technology. Divided into five parts, with an editor's introduction, this volume presents the perspectives of users of translation technologies, and of researchers concerned with issues arising from the increasing interdependency between translation and technology. The chapters in this handbook tackle the advent of technologization at both a technical and a philosophical level, based on industry practice and academic research. Containing over thirty authoritative, cutting-edge chapters, this is an essential reference and resource for those studying and researching translation and technology. The volume will also be valuable for translators, computational linguists and developers of translation tools"–Provided by publisher.
Identifiers: LCCN 2019014720 | ISBN 9781138232846 (hardcover) | ISBN 9781315311258 (ebook)
Subjects: LCSH: Translating and interpreting–Technological innovations. | Translating and interpreting. | Machine translating.
Classification: LCC P306.97.T73 .R69 2020 | DDC 418/.020285–dc23
LC record available at https://lccn.loc.gov/2019014720

ISBN: 978-1-138-23284-6 (hbk)
ISBN: 978-1-315-31125-8 (ebk)

Typeset in Times New Roman
by Newgen Publishing UK

The book is dedicated to Professor Emeritus John Tiffin
and the late Dr. Peter Toma, who chose New Zealand to test their visions
for the future of education and translation.

Contents

Illustrations

Figures

Tables

Contributors

Nathan Altice is Teaching Professor of Computational Media at the University of California, Santa Cruz, where he teaches game design, game development and digital audio. His research focuses on computational platforms, the history of games and Japanese board games. His first book, *I AM ERROR*, was published by MIT Press in 2015.

Lynne Bowker holds a PhD in Language Engineering from the University of Manchester Institute for Science and Technology. She is Full Professor at the University of Ottawa's School of Translation and Interpretation where she teaches and conducts research in areas relating to specialized translation, language for special purposes and translation technologies. She is the author of *Computer-Aided Translation Technologies* (University of Ottawa Press, 2002) and *Machine Translation & Global Research* (Emerald, 2019).

Sabine Braun is Full Professor of Translation Studies and Director of the Centre for Translation Studies at the University of Surrey (UK). She is a member of the German Institute for Standardization Working Group on Interpreting Services and Technologies. Her research focuses on new methods, modalities and socio-technological practices of translation and interpreting. She has led several multinational research projects relating to video-mediated interpreting.

Colm Caffrey is a Translator-Reviser in the PCT Translation Division of the World Intellectual Property Organization, where his tasks involve the translation and revision of patent related documents, the training of fellows and the external liaison with translation providers. He holds a PhD in Translation Studies from Dublin City University. His current research interests include translator training and the integration of CAT tools into the workplace.

Dragoș Ciobanu is an Associate Professor in Translation Studies in the University of Leeds Centre for Translation Studies, specializing in Computer-Assisted Translation (CAT) tools, collaborative translation and training practices, as well as speech technologies in the translation workflow. He collaborates with Language Service Providers from around the world and trains heads of translation units and senior linguists from EU and UN Institutions to maximize the use of language and project management technologies.

Michael Cronin is 1776 Professor of French at Trinity College Dublin and Director of the Trinity Centre for Literary and Cultural Translation. He is a Member of the Royal Irish Academy, the Academia Europaea and an Honorary Member of the Irish Translators

and Interpreters Association. He is series editor of the Routledge New Perspectives in Translation and Interpreting Studies and he is Editor-in-Chief of the translation journal *MTM*.

Jorge Díaz Cintas is Professor of Translation and founder–director of the Centre for Translation Studies (CenTraS) at University College London. He is the Chief Editor of the series *New Trends in Translation Studies* and is a member of the Language Industry Expert Group of the European Commission. He is the recipient of the Jan Ivarsson Award (2014) and the Xènia Martínez Award (2015).

Stephen Doherty, PhD, is a Senior Lecturer in Linguistics, Interpreting and Translation in the School of Humanities & Languages at the University of New South Wales, Sydney, Australia. His research is based in language, cognition and technology with a focus on the psychology of language and technology. His recent publications include a co-edited volume *Translation Quality Assessment: From Principles to Practice* (Springer, 2018).

Maureen Ehrensberger-Dow, PhD, is Professor of Translation Studies in the ZHAW Institute of Translation and Interpreting. She is currently co-investigator of the project Cognitive Load in Interpreting and Translation, funded by the Swiss National Science Foundation. Her publications on workplace research include 'Challenges of translation process research at the workplace' (MonTI, 2014) and 'Socio-technical issues in professional translation practice' (with Gary Massey, *Translation Spaces*, 2017).

Bert Esselink graduated from the Dutch School of Translation and Interpreting in Maastricht and has been involved in multilingual software and content projects for over two decades. He worked as a localization specialist, focusing on project management, language technology, multilingual marketing and global content management. His book *A Practical Guide to Localization* is used throughout the localization and translation industry. After working for many years with Lionbridge in Amsterdam, he joined SDL as Strategic Account Director in 2017.

Debbie Folaron holds a PhD in Translation Theory/Comparative Literature from Binghamton University. She worked as Telecommunications Manager of a global shipping company in Barcelona and as Language Technology Manager at Eriksen Translations in NYC. She is Associate Professor at Concordia University in Montreal where she teaches localization, project management, translation technologies and translation theories. Her research focuses on translation in the digital age, with special emphasis on under-represented language-cultures.

Spence Green graduated from Stanford with a PhD in computer science under the direction of Chris Manning and Jeff Heer. He has published papers on machine translation, language parsing and mixed-initiative systems and has given talks on translator productivity. Spence is CEO of Lilt.

Arnt Lykke Jakobsen is Professor Emeritus of Translation and Translation Technology at Copenhagen Business School. In 1995 he invented *Translog*, and in 2005 he established the CBS Centre for Research and Innovation in Translation and Translation Technology

(CRITT), which he directed until his retirement at the end of 2013. From 2006 to 2009 he was a principal investigator in the EU Eye-to-IT project.

Miguel A. Jiménez-Crespo holds a PhD in Translation and Interpreting Studies from the University of Granada, Spain. He is a Professor in the Department of Spanish and Portuguese, Rutgers University, and directs the MA and BA programmes in Spanish–English Translation and Interpreting. His publications include *Crowdsourcing and Online Collaborative Translations: Expanding the Limits of Translation Studies* (John Benjamins Publishing, 2017) and *Translation and Web Localization* (Routledge, 2013).

Kyo Kageura, PhD, is a professor at the Graduate School of Education/Interdisciplinary Initiative in Information Studies, University of Tokyo. He serves as an editor of the journal *Terminology* and has published extensively across different fields, including the monograph *The Quantitative Analysis of the Dynamics and Structure of Terminologies* (John Benjamins Publishing, 2012). He runs Minna no Hon'yaku and Minna no Hon'yaku Jisshu – translation aid portals.

Dorothy Kenny is Full Professor of Translation Studies in the School of Applied Language and Intercultural Studies and a member of the Centre for Translation and Textual Studies at Dublin City University. Her publications include *Lexis and Creativity in Translation: A Corpus-Based Study* (St. Jerome, 2001) and the edited volume *Human Issues in Translation Technology* (Routledge, 2017).

Patrick King is the chief editor and a founding director of the New Zealand Translation Centre Ltd. (NZTC). With an MA in German and Russian, he worked as a translator and editor at the government Translation Service until 1985, when he and three colleagues founded NZTC. He is a founding member and past president of the New Zealand Society of Translators and Interpreters.

Samuel Läubli holds an MSc in Artificial Intelligence from the University of Edinburgh. He is a PhD Candidate in Interactive Machine Translation at the University of Zurich, supervised by Martin Volk and Rico Sennrich.

Dave Lewis is an associate professor of Computer Science at Trinity College Dublin and an Associate Director of the ADAPT Centre with responsibility for its collaborative research with industry and the Centre's role in the EDGE Marie-Curie Postdoctoral Fellowship programme. He is an ADAPT Principal Investigator, leading its research on Transparent Data Governance. With over 160 peer-reviewed publications, his research addresses the use of semantic models to manage the data protection and data ethics issues raised by digital content processing.

Peter Llewellyn-Jones qualified as a British Sign Language-English interpreter in 1972 and worked in both conference and Public Service domains. He has developed and taught sign interpreting courses for three UK universities and was the Programme Director of the MA in Interpreting and Translation: BSL-English at the University of Leeds from 2003 to 2012. His extensive publications include the co-authored *Redefining the Role of the Community Interpreter: The Concept of Role Space* (SLI Press, 2014).

Elizabeth Marshman holds a PhD in Translation (Terminology option) from the Université de Montréal. She is Associate Professor at the University of Ottawa's School of Translation and Interpretation, where she teaches primarily in areas relating to terminology and translation technologies. Her main research interests include corpus-based and computer-assisted terminology research, user-centred evaluation of terminology resources and translation technologies, and the place of technologies in translator training.

Gary Massey, PhD, is Professor and Director of the ZHAW Institute of Translation and Interpreting. He was co-investigator on the interdisciplinary project *Cognitive and Physical Ergonomics of Translation* and the preceding *Capturing Translation Processes* project. Currently co-editing the *Bloomsbury Companion to Language Industry Studies* (with Erik Angelone and Maureen Ehrensberger-Dow), his publications on workplace research include 'Socio-technical issues in professional translation practice' (with Maureen Ehrensberger-Dow, *Translation Spaces*, 2017).

Serenella Massidda is a Lecturer in Audiovisual Translation at Roehampton University and Honorary Research Associate at CenTraS at UCL. She holds a European Doctorate in Audiovisual Translation by the University of Sassari. She is the author of *Audiovisual Translation in the Digital Age – The Italian Fansubbing Phenomenon* (Palgrave MacMillan, 2015). She is a professional translator and subtitler, and a member of ESIST (European Association for Studies in Screen Translation).

Alan K. Melby is Professor Emeritus of Linguistics at Brigham Young University, where he serves as Associate Director of the Translation Research Group. He is a certified French-to-English translator, Vice-President of the International Federation of Translators and President of the non-profit LTAC Global. He began working on machine translation in 1970 with extensive publications, including *The Possibility of Language* (John Benjamins Publishing, 1995), in collaboration with C. Terry Warner.

Joss Moorkens is an Assistant Professor at the School of Applied Language and Intercultural Studies at Dublin City University and a researcher affiliated with the ADAPT Centre and the Centre for Translation and Textual Studies. He has authored articles and chapters on translation technology, MT post-editing, translation evaluation, translator precarity and translation technology standards. He co-edited the book *Translation Quality Assessment: From Principles to Practice* (Springer, 2018).

Sharon O'Brien has a PhD in the topic of controlled authoring, machine translation and post-editing. She is Professor of Translation Studies in the School of Applied Language and Intercultural Studies at Dublin City University. Her research centres on translator-computer interaction and crisis translation with numerous publications in translation process research. She is the Principal Investigator of a H2020 EU-funded RISE project – The International Network in Crisis Translation (INTERACT).

Minako O'Hagan, PhD, is the Discipline Convenor for Translation Studies at the School of Cultures, Languages and Linguistics at the University of Auckland. She specializes in applied translation studies with a technology focus, including game localization and non-professional translation. Her publications include the co-authored *Game Localization*

(John Benjamins Publishing, 2013). Her current research interest lies in exploring the nexus of human and machine in translation.

Maeve Olohan is Co-Director of the Centre for Translation and Intercultural Studies, University of Manchester, UK. Her research centres on the socio-materiality of translation practices, past and present. She is author of *Scientific and Technical Translation* (2016) and *Introducing Corpora in Translation Studies* (2004). Her forthcoming monograph on practice theory and translation will be published in Routledge's *Translation Theories Explored* series.

Anthony Pym holds a PhD in Sociology from the École des Hautes Études en Sciences Sociales, Paris. He currently teaches at the University of Melbourne. He is Distinguished Professor of Translation and Intercultural Studies at the Rovira i Virgili in Tarragona in Spain and Extraordinary Professor at Stellenbosch University in South Africa. He is the author of some 11 books in the general area of translation and intercultural communication.

Aline Remael (TricS research group) is Professor Emeritus at the Department of Applied Linguistics/Translators and Interpreters of the University of Antwerp where she is the co-founder of the new Expertise Centre for Accessible Media and Culture. Her main research interests and publications are in AVT/Media Accessibility. She is currently a partner in two European accessibility projects (ADLAB PRO and ILSA). In 2018 she received the ESIST Jan Ivarsson Award.

Nina Reviers (TricS research group) holds a PhD in Translation Studies from the University of Antwerp. She is a practitioner and researcher in the field of Media Accessibility. She is the coordinator of the newly founded Expertise Centre for Accessible Media and Culture in the University of Antwerp. She is an Editorial Board Member of the *Journal of Audiovisual Translation* and Steering Committee member for *Languages and the Media*.

Johann Roturier holds an MA and PhD in Translation Studies from Dublin City University. He is a Senior Principal Research Engineer in Symantec Research Labs where his research is conducted at the intersection of natural language processing, localization and usable security and privacy. He is the author of *Localizing Apps* (Routledge, 2015).

Alina Secară is an Associate Professor in Translation Studies in the University of Leeds Centre for Translation Studies, where she teaches subtitling, captioning and computer-assisted translation. She is also a freelance Stagetext accredited theatre captioner, working with theatres across the UK to create captions for the deaf and hard-of-hearing. She is currently co-managing the Leeds contribution to the EU-funded DigiLing Project (2016–2019) to create multilingual, multimedia e-learning resources for digital linguists.

Michel Simard holds an MSc in Computer Science from McGill University and a PhD in Computer Science from the Université de Montréal. He is a senior research officer at the National Research Council Canada, where he conducts research in areas relating to machine translation, computer-assisted translation and multilingual text processing.

Cristina Valentini is Head of the Terminology Unit in the PCT Translation Division of the World Intellectual Property Organization. Her tasks involve the design and development of terminology databases and guidelines, and terminology workflow management. She holds a PhD in Languages, Cultures and Intercultural Communication from the University of Bologna where she worked as a researcher on topics including occupational health and safety terminology, terminology databases design and multimedia corpora design.

Lucas Nunes Vieira is a Lecturer in Translation Studies with Technology at the University of Bristol, UK. He researches the use of machine translation in human translation workflows, with a focus on the cognitive aspects that surround the use of technology in translation tasks and how this affects processes, products and attitudes. Lucas holds a PhD on machine translation post-editing from Newcastle University (UK).

Sue Ellen Wright is an emerita professor from Kent State University, where she has taught computer applications for translators and German to English scientific and technical translation. She is Chair of the US Technical Advisory Group to ANSI for ISO TC 37, *Language and Terminology.* Her extensive publications on computer assisted terminology management include the *Handbook of Terminology Management* with Professor Gerhard Budin. She holds her doctorate from Washington University.

Masaru Yamada, PhD, is a Professor in the Faculty of Foreign Language Studies at Kansai University. He specializes in Translation and Interpreting Studies with a focus on translation process research (TPR), including machine translation and post-editing, and translation in language teaching (TILT).

Jost Zetzsche is a translation technology consultant, an author and speaker on various aspects of translation and an American Translators Association (ATA)-certified English-to-German technical translator. He holds a PhD in Chinese translation history and linguistics from the University of Hamburg. In 2018 he was awarded an honorary membership of ATA. He is on the editorial board for *MultiLingual*, the *ATA Chronicle* and the *Journal of Internationalization and Localization*.

Acknowledgements

The editor wishes to express her gratitude first and foremost to the contributors across a large geographical span who entrusted me with the fruits of their intellectual labour through this project. I am also grateful for peer-reviewers, among them particularly to Professor Dorothy Kenny. Special thanks go to the Routledge team, especially to Louisa Semlyen whose encouragement and perseverance led to this publication. I am grateful to the School of Cultures, Languages and Linguistics at the University of Auckland for its assistance towards this project. I am grateful to Kiri O'Hagan for her copy-editing assistance.

I would also like to acknowledge the initial contribution made by Professor Tony Hartley.

1

Introduction

Translation and technology: disruptive entanglement of human and machine

Minako O'Hagan

Background

This book builds on the increasing evidence of the impact of technology on contemporary translation, which serves diverse communicative situations across languages, cultures and modalities. The 2018 European Language Industry Association (ELIA) survey of over 1,200 respondents across 55 countries highlighted 2018 'as the year in which more than 50% of both the companies and the individual language professionals reported as using MT' (ELIA 2018: n.p.). Although the ELIA report is cautious not to overstate the penetration of MT, concluding that the use of MT in the translation industry is not yet mainstream, it is clear that technology has already profoundly affected the way translation is produced. Similarly, the wider public is exposed to machine translated texts of varying quality in different scenarios, including user-generated content (e.g., social media postings) and information gisting for personal use (e.g., hotel reviews). Furthermore, portions of the increased production and circulation of translations are attributable to the work of fans, volunteers or activists who have different backgrounds and motivations, yet are operating in parallel to their professional counterparts. The increased visibility of *non-professional translation* (NPT) can be traced to the availability of technology-supported social and collaborative platforms, on which NPT typically operates (see Chapter 14 by Jiménez-Crespo). In this way, technology has contributed to translation of diverse types and quality, accompanied by an increasing awareness in society at large of translation and the role played by technologies in the translation process. More recently, the newest MT paradigm, neural MT (NMT) is making inroads into translation practice and adding to substantial research interests in Translation Studies (TS), as demonstrated in this volume. The influence of technology, ranging from translation-specific technologies such as MT to more general-purpose speech technologies and cloud computing, is far-reaching and calls into question some of the assumptions about who should translate, how and to what level of quality.

Commercially viable translation today is all *computer-aided (or -assisted) translation* (CAT) and has been for some time. This is a term which comes across as somewhat redundant, given the ubiquitous use of computers in text production practices in

general, except that the extent and the nature of the computer aid is constantly shifting. Another frequently used term in the translation industry is *translation environment tools* (TEnTs), which conveys an image of translators' work surroundings being enveloped by technology. Among the newer terms coming into use is *augmented translation* (AT), introduced by Common Sense Advisory (Lommel 2018). AT puts the human translator in the centre (Kenny 2018), supported by an advanced suite of technologies, including automated content enrichment (ACE). This allows automatic searches of relevant information associated with the source content and informs the translator and MT to generate better translation (Lommel *ibid*.). AT and ACE concepts align with AI-supported medicine, which augments human expert judgement with rapid access to vast and relevant key information (see Susskind and Susskind 2015). Such complex technological infrastructure shaping macro and micro translation environments in turn relies on ongoing behind-the-scenes standardization work (see Chapters 2 and 3 by Wright and Roturier respectively) to ensure that all technological elements meet required standards and can therefore interoperate. However, the technology-driven modus operandi and technology-based infrastructure on which translation increasingly rests adds to quality concerns (see Pym in Chapter 26). For example, according to nearly 2,800 respondents to the *SDL Translation Technology Insight Survey* (SDL 2016), quality is currently of the utmost concern for the translation industry.

These snapshots highlight that the human–machine relationship is in a state of flux, with uncharted paths ahead. While human translation shapes and is shaped by technologies, we do not know exactly how this process will unfold. This contributes to a sense of uncertainty among professional translators, which Vieira (2018), following Akst (2013), calls 'automation anxiety' (also see Kenny in Chapter 30). In the midst of ongoing technological transformation, this collected volume is not about translation technology per se. Rather, it is about understanding the dynamic relationship being formed between translation and technology from a range of perspectives. In doing so, it aims to increase our awareness of how contemporary translation is evolving and what it means to be a translator, as the co-existence of human and machine could be qualitatively different in the near future. Such a theme has become a major agenda of the 21st century across different types of work, particularly with AI beginning to affect areas previously considered only fit for humans (Susskind and Susskind 2015, also see Chapter 30 by Kenny). This volume attempts to tackle the topic both at a technical and a philosophical level, based on industry practice and academic research, to present a balanced perspective with TS contributions to a dialogue of global importance.

Historical contexts of research on the nexus of human and machine in translation

For translation, the explicit connection with 'the machine' started in earnest in the 1950s, with research and development (R&D) of MT as a new field for the non-numerical application of computers instigated by the Weaver memo (Weaver 1949) (see Melby in Chapter 25). However, as is well known, the 1966 Automatic Language Processing Advisory Committee (ALPAC) report put an abrupt end to MT R&D, especially in the US, for nearly a decade. Despite this, the frequent references to the ALPAC report in this volume and elsewhere are arguably evidence of its continuing legacy, which is perhaps not all short-sighted and misguided. For example, its support for 'machine-aided translation' has become mainstream in the translation industry under the banner of CAT. Martin

Kay's *translator's amanuensis* (Kay 1980/1997) envisioned an incremental adaptive electronic aid for the human translator. Similarly, Alan K. Melby's work on the *translator's workstation* (Melby 1981) embodied a workbench integrating discrete levels of machine aid. Reviewing these pioneers' concepts, Hutchins (1998: 11) highlighted how, in both cases, the human translator had been placed in control as someone who would use such tools in ways s/he 'personally found most efficient'. The questioning of this centrality of human translators in today's transforming translation workflow (Kenny 2018), further validates the aim of this volume to investigate the relationship between human and machine and its ramifications.

Initially CAT tended to be distinguished from MT on the assumption that in the former, it is the human who translates (e.g., Bowker 2002, Somers 2003), whereas MT is automatic computer translation without human intervention. However, this division has become blurred as MT is increasingly integrated into CAT environments (see Kenny in Chapter 30) where the human translator is presented with translation proposals from (human produced) translation memory (TM) matches, together with MT outputs. Similarly, the increasing practice of post-editing of MT (PEMT) is reflected in a growing body of research which has rapidly reached a critical mass especially in translation process research (see collected volumes such as O'Brien 2014, Carl, Bangalore and Schaeffer 2016).

There has been considerable progress made to address the earlier disconnect between MT research and research in TS, although the tendency to exclude professional human translators is still observable 'in certain quarters of MT research' (Kenny 2018: 439). Initially MT research focused on the application of computers to human language, with computer scientists and engineers 'knowingly or unknowingly' attempting to 'simplify the translation process' or 'downplay the nuances of human language' (Giammarresi and Lapalme 2016: 218). But the lack of cross-fertilization can also be blamed on the TS camp, with too few scholars interested in translation technology to widen the scope of translation theory, so that it could consider the increasing integration of technology into the translation process (O'Hagan 2013, Jakobsen and Misa-Lao 2017). In fact, the connection between translation research and MT research can be traced to the 1960s when the idea of equivalence relationships between source and target texts was explored by linguists such as Catford (1965). In particular, Catford's idea of a translation rule as 'an extrapolation of the probability values of textual translation equivalents' (1965: 31) is of direct relevance to subsequent data-driven approaches to MT (Kenny forthcoming), which are based on the use of parallel texts (or bi-texts) (see Simard in Chapter 5). In the 1960s, when Chomsky's linguistic theory (Generative Grammar) was exerting its influence, including on MT, Eugene Nida was among the few early translation theorists cognizant of MT research, and related to it in his foundation work *Toward a Science of Translating* (Nida 1964). In his endeavour to bring theorizing about translation into the scientific arena, Nida applied Chomskian linguistics and the information theory approach to communication (Nida 1964, Nida and Taber 1969). It is relevant to recall the fact that MT R&D precede the development of TS; it was only in 1972 that James Holmes (1972/1988) named the discipline as 'Translation Studies' (abbreviated as TS in this article) and laid the foundations for theorizing translation to 'explain and predict' translation with 'description' as the first step. In the 1980s TS was shifting away from a linguistic focus to a consideration of broader contexts through functionalism. Attention moved from the source to the target text and translation as action, before the cultural turn in the 1990s moved human translation largely outside the scope of interest of MT circles.

Into the 1990s and 2000s technologies played a key role in empirical TS research by providing research tools, including some for corpus analysis. Other tools, such as keyboard logging (e.g., Translog originally developed by Arnt Jakobsen at the Copenhagen Business School in the late 1990s) and eye tracking (see Jakobsen in Chapter 24), were also introduced more widely into TS, and these have been used to better understand translator behaviours and the behaviours of translation users in the context of translation reception; for example, in audiovisual translation (AVT) (see Kruger 2018). In particular, these research tools contributed to the further development of cognitive translation studies as a specialized field of research (see Schwieter and Ferreira 2017), one which is now set to probe neural representation with non-invasive neuroimaging techniques, such as functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) (see Shreve and Diamond 2016: 155).

This brief look back at the trajectory of the connection between translation and technology shows increasing 'border crossings' (Gambier and van Doorslaer 2016) to neighbouring disciplines such as computer science, computational linguistics and now neuroscience.

Aim and scope of the publication

The spread of computers across global markets gave rise to new areas of practice and research in TS, such as localization (see Folaron in Chapter 12). This saw TS scholars engaging more fully in theorizing about technologies by tapping into sociological, cultural or philosophical aspects (see Chapters 23 and 31 by Olohan and Cronin respectively), on the one hand, and cognitive or usability/ergonomic dimensions on the other (see Chapters 21 and 24 by Ehrensberger-Dow and Murphy; and Jakobsen respectively). There is also a large body of knowledge being accumulated in translator training and education focused on technology (see Kenny in Chapter 30). Furthermore, as a result of technological advances, research-led practices are becoming more common in fields such as accessibility and universal design (see Remael and Reviers in Chapter 29). In this way, technology more than anything else started to bring together the interests of academy and industry. Technological dimensions continue to present fresh scope to bridge the gap between translation theory and practice, ideally to respond to ever-present translator suspicions as to the usefulness of theory in actual translation practice – a topic earlier addressed in Chesterman and Wagner (2002) and more recently in Polizzotti (2018). As demonstrated in this volume, the exploration of the relationship between technology and translation is leading to a fresh examination of contemporary translation benefitting not only translators as users of technologies but also those who develop and research translation technology. It is hoped that this volume contributes critical insight into the complex symbiosis between humans and machines so that translation (and interpreting, which is covered to a limited extent in this volume) can serve increasingly diverse communication needs in the best and most sustainable way.

With the above overall goal of the publication, the *Handbook* has a number of specific features. First, it is designed to represent the interests of different stakeholders in the translation industry. The fragmented nature of the translation industry is recognized as it affects the level of implementation and the types of technologies used in translation. The translation industry consists of a large population of freelance translators (see Zetzsche in Chapter 10) and language service providers (LSPs) which range from small-and-medium-sized (see King in Chapter 9) to multinational vendors (see Esselink

in Chapter 7). In addition, often well-resourced public international organizations (see Caffrey and Valentini in Chapter 8) play an important role as early adopters of new technologies. Although not officially part of the industry, non-professional translation is also contributing to translation production, forming part of a participatory culture (Chapters 13 and 14 by Altice and Jiménez-Crespo, respectively). Similarly, the use of translation technology in (second) language learning is part of the picture in the technology and translation alliance (see Chapter 11 by Yamada). The volume therefore reflects different settings for technology uses according to the different segments of the industry as users of translation technology, encompassing contributors who reside outside academia. Secondly, this publication attempts to make sense of the current position of technology from diachronic perspectives. What is considered new technology often had a prior incarnation as a rudimentary prototype or an embryonic concept which needed further maturing, perhaps requiring relevant surrounding technologies and conditions. While historical approaches are well explored in TS research in general, their application in the context of translation technology research has not been traversed to the same extent. In the context of MT, John Hutchins was the first to demonstrate the merit of a historical approach with his comprehensively chronicled *Machine Translation: past, present, future* (Hutchins 1986). The *Routledge Encyclopedia of Translation Technology* (Chan 2015) is a more recent example also with regional foci. Among the many chapters in the present volume which provide a historical trajectory, historical perspectives are more applicable and prominent in certain chapters. For example, Sue-Ellen Wright in her chapter on Standards follows periodization, drawing on Galinski (2004 cited in Wright) to cast a spotlight on key phases of the evolution of approaches and applications of standardization across language, translation and the localization industry. Similarly, Debbie Folaron (Chapter 12), in discussing technical translation as an established practice and localization as a relatively new addition within TS, traces their historical trajectories. The historical approach contexualizes and recontextualizes the development of specialized translation practices in dynamic interaction with technology. Such an approach allows Folaron to present a critical discourse on the links between technology and localization as well as technical translation, enabling the author to systematize the epistemology of the field. In turn, Sabine Braun (see Chapter 16 on technology and interpreting) tracks technological developments in telecommunications which have shaped varied modes of distance interpreting and configurations of technical settings. This richly traces the new demands on professional interpreters to serve different technological constructs as their working environments. Thirdly, this volume addresses a number of substantive matters under Part V as overarching issues that challenge translation practice and research concerned with technology, ranging from quality to ecology. This part, along with the research foci and methodologies addressed in Part IV, aims to provide scholars and industry players with key topics, future avenues for research and analysis and insight into the implications of technologies for translation. Finally, the volume takes into account readers who may not be familiar with the topics addressed by some chapters and provides additional information: a list of relevant standards in Chapter 2, a glossary of terms in game localization in Chapter 13, an explanation of eye tracking technology in Chapter 24 and a list of recent major funded projects relevant to accessibility research in Chapter 29.

In terms of the macro-structure, Part I addresses key underlying frameworks and related technologies as relevant across different modes and areas of translation. Part II examines the adoption of technologies by different user groups. Part III considers the impact of technologies on each of the distinctive areas of translation (and interpretation)

practice. Part IV discusses research settings and methodological issues for selected research areas particularly relevant to the emerging relationships with technology. Part V explores the overarching issues in TS resulting from the increasing influence of technologies. The micro-structure of each chapter has certain key elements that are common across all chapters, yet is not uniform, as the final decision on the key content was left to the liberty of the chapter authors. The cross-referencing to other chapters was mostly added by the editor.

The next section provides an overview of how each contributor addresses their specific topic.

Part I: Translation and technology: defining underlying technologies – present and future

Part I consists of five chapters which explain the fundamental building blocks and related general-purpose technologies key to understanding translation and technology at present and in their emerging guises. In Chapter 2, 'Standards for the language, translation and localization industry', **Sue Ellen Wright** provides a historical overview of how and why standards have developed over time, concerning technology applications in sectors spanning the translation, language and localization industry. Various standards for processes, products and services in today's complex technological world play a key role, including generating the basis for a 'feedback-rich information life cycle' beyond individual documents which may be chunked, repurposed and retrieved. Drawing on Briggs (2004 cited in Wright), Wright stresses, '[s]tandards transform inventions into commercial markets'. This is why international cooperation and expert consensus in a given field are critical in setting standards. Wright uses a historical approach to illustrate the role of standards and connections among them, without which today's technologically interlinked world through the Internet and use of tools in collaborative modes would not have been possible. A closely linked theme is taken up in Chapter 3, 'XML for translation technology', by **Johann Roturier**. Roturier shows how XML forms key backbone file exchange standards to ensure interoperability between translation tools and also the offline portability of tools in different user settings. The significance of XML can be illustrated in the statement, as quoted by Roturier, that 'over 90% of data for translation is generated with XML' (Zydroń 2014 cited in Roturier). Nevertheless, as the chapter explains, dynamic changes including the emergence of non-proprietary open source formats mean that this is a constantly developing area. Translators working especially in areas such as localization face the issues associated with these underlying factors in dealing with translation tools and files. Chapter 4, 'Terminology extraction and management', by **Kyo Kageura** and **Elizabeth Marshman** addresses terminology extraction and management as particularly pertinent in specialized translation (see Chapter 8 by Caffrey and Valentini). Terminology was one of the earliest areas within the translation workflow to have exploited electronic, as opposed to manual, processing, yet efficient terminology management within real-life translation practice remains a challenge. The chapter explains in some detail the different methods used in automatic term extraction (ATE), which is a critical upstream process, but is a computationally complex task to perform. The authors see ATE as a challenge especially in terms of quality, as is the case with collaborative terminology management. Finally, the role of terminology in connection with data-driven MT, including NMT, is briefly discussed, highlighting the importance of terminology quality in the training data. Here the need for human judgement at critical junctures within terminology management

is stressed. Related to the theme of electronic processing of linguistic resources, the following chapter focuses on linguistic data as a bi-product of, and an ingredient for, translation technology. In Chapter 5, 'Building and using parallel text for translation', **Michel Simard** explains the key techniques behind collection, structure, alignment and management involved in parallel text (consisting of an aligned source text and target text pair). These issues gained great importance with the widespread adoption of TM and data-driven MT, which use parallel text as training data. In reference to the more recent word alignment process in NMT, Simard refers to a 'soft' alignment mechanism known as 'attention'. The anthropomorphic use of 'attention' in reference to a computational operation highlights its human-like function, albeit one not always achieved successfully. In turn, the lack of trust by human translators towards MT outputs, as alluded to by Simard, aligns with the findings elsewhere in TS literature (see Chapter 19 by Vieira). The last point signals some fundamental questions that arise when thinking about human–machine cooperation in translation. Further probing the cooperative dimension, the next chapter turns the focus to general-purpose technologies whose relevance to translation is increasing. In Chapter 6, 'Speech recognition and synthesis technologies in the translation workflow', **Dragoș Ciobanu** and **Alina Secară** examine the development and deployment of speech technologies i.e. speech-to-text and text-to-speech and their emerging uses in the translation workflow. While the authors find actual use cases of speech technologies in CAT scenarios are currently limited they point to the way in which speech recognition systems are integrated into live subtitling in 'respeaking' mode (also see Remael and Reviers in Chapter 29). The chapter reports recent empirical research conducted to test productivity gains and quality issues when combining automatic speech recognition systems in the process of translating as well as other tasks, such as revision and PEMT. The results highlight productivity gains as well as accuracy and stylistic issues while also pointing to the need for improvement in achieving a smoother integration of such technologies into CAT tools, together with consideration of task types.

Part II: Translation and technology: users' perspectives

Consisting of five chapters, this section addresses the perspectives of different translation technology users. The chapters represent different sectors of the translation industry. It ranges from large-scale language service providers (LSPs) and public institutions to freelance translators as well as language learners and translation practitioners who are not professional translators, but who benefit from translation technologies. Chapter 7, 'Multinational language service provider as user' by **Bert Esselink** looks into large LSPs for their use of technologies centred on translation management systems (TMS) which are divided into: Process Management and Automation, Project Management and Administration, Customer Management and Commerce, and Translation and Quality Management. The detailed description of the features and functionalities of TMS gives insight into how technologies are used to deliver an optimum translation service to customers by large LSPs. The chapter signals the increasing presence of AI and its likely significant impact in future, including in the area of project management, with implications for substantial change to the current human-based model. In Chapter 8, 'Application of technology in the Patent Cooperation Treaty (PCT) Translation Division of the World Intellectual Property Organization (WIPO)' **Colm Caffrey** and **Cristina Valentini** provide the perspective of a large public institution as a technology user. Patents form one of the most targeted fields of specialized translation heavily facilitated by technology. Caffrey and Valentini describe how TM and terminology

management systems are used in the PCT Translation Division, with its concerted efforts to provide translators with sophisticated terminological support via their terminology portal WIPO Pearl. Such terminological resources are a result of the integration of corpora, MT and machine learning algorithms, which may not be achievable by smaller organizations, let alone freelance translators. The authors further report on WIPO NMT which has been used since 2017 for all of the Division's nine languages, benefiting from a large body of in-domain training data (i.e. parallel corpora) available in-house. However, the authors suggest that the integration of NMT into the workflow means a change in the way translators deal with particular characteristics of NMT output which may be fluent yet contain terminological issues. This in turn implies different ways of using the terminological resources independently according to the need of the translator. Compared to large organizations, smaller translation operators have different settings and contexts in which to consider technologies, as described by **Patrick King** in Chapter 9, 'Small and medium-sized enterprise translation service provider as technology user: translation in New Zealand'. Drawing on his experience as a translator, editor and translation company operator, King explains how a medium-sized LSP in New Zealand is implementing technologies to achieve a productivity gain while maintaining translation quality. In particular, he shares translators' perspectives on new technologies, showing evidence of the openness of (some) translators to using technology, and that of NMT in particular. At the same time, King advises that technology should be assessed 'on its own merit', not simply because it introduces some improvements on the previous version. These days, most LSPs and freelance translators alike operate internationally, yet local contexts are still significant, as in New Zealand where Māori and South Pacific languages have unique requirements. King reminds the reader of the reality of translation service operating requirements, for example, dealing with a range of languages with unequal levels of compatibility with machine-processing. The fragmented translation industry continues to be supported by a large number of freelance translators. In Chapter 10, 'Freelance translators' perspectives' **Jost Zetzsche** opens the discussion by defining what a freelancer is and then moves on to examine key issues which initially delayed the uptake of technologies by freelance technical translators. By tracing a historical trajectory since the 1990s when CAT tools first became widely available, Zetzsche shows why uptake was initially relatively low and how translators changed from careful crafters of text to recycling 'CAT operators' who 'fill-in-the-blanks'. He argues that, at least in certain contexts, some tools are found to be 'stifling instruments for the human sensitivities of the technical translator'. Among the high use general-purpose technologies, Zetzsche highlights freelance translators' use of social media platforms from relatively early on, such as various online translator forums as a means to stay in contact with peers rather than for finding clients. The author points out that freelance translators tend to see the value of technology investment for its immediate link to increased revenue and this is why terminology management is a constantly undervalued element. He observes that MT is more accepted by translators compared to CAT when it was first introduced. Into the future with the increasing use of AI, Zetzsche sees the ideal role of translators as providing support by guiding technology developers. Chapter 11, 'Language learners and non-professional translators as users' by **Masaru Yamada** shifts the focus from the role of technology in official translation service provision to that of second language learning. Yamada explores the link between translation technologies and TILT (Translation in Language Teaching), with language learners and also non-professional translators using such technologies to improve their second language competency. Based on recent research on TILT, the chapter highlights the benefit of using MT output as a 'bad model' to boost language learners' competency through post-editing (PE) tasks. Furthermore, Yamada

draws on research pointing to the benefit of human-like errors made by NMT, which incur a higher cognitive effort in PE compared to errors produced by SMT, which are generally easier (more obvious) to repair. The former are therefore more conducive to learning. The capacity of translation technologies to boost lesser skilled translators' abilities is seen as empowering in this chapter. Yamada suggests the use of translation technologies in TILT could logically link to Computer-aided Language Learning (CALL), providing further research avenues.

Part III: Translation and technology: application in a specific context – shaping practice

The technologization of translation is affecting different translation practices but with specific implications for each specialized area. Part III looks into different translation practices divided into eight chapters. In Chapter 12, 'Technology, technical translation and localization', **Debbie Folaron** takes on technical translation and localization to deconstruct their relationship with technology, taking a historical, methodological and critical approach. Through such lenses the chapter highlights, for example, how the emergence of localization practice has cast this new practice in relation to globalization, as articulated in the industry framework of Globalization, Internationalization, Localization and Translation (GILT). Furthermore, the localization process, which cannot be completed without the use of a technological platform, led to the development of specialized tools, in turn contributing to the formation of localization ecosystem (also see Cronin in Chapter 31). Folaron demonstrates the relevance of a critical digital discourse in shedding light on such practices as localization which is intertwined with digital artefacts. She then calls for TS scholars to engage more with the field of digital studies, which provides scope for the critical analysis of translation practice in an increasingly digital world. In Chapter 13, 'Technology and game localization: translation behind the screens' **Nathan Altice** inadvertently responds to Folaron's call to engage with digital studies with his discussion on localization of video games, especially by fans as non-professional localizers. Focused on the technicity of game hardware and software, Altice identifies a core feature of game localization with the practice of ROM (Read Only Memory) hacking, which involves unauthorized access and modification of a game's ROM by game fans, including the modification of the original language of the product. Characterized by its subversive and highly technical nature, ROM hacking communities continue to be active and visible. Informed by platform studies perspectives within game studies, Altice shows how 'language' is encoded 'graphically, materially and procedurally' by design in both the console/platform (hardware) and the game (software). This topic then naturally links to the following chapter focused on the broader concept of non-professional translation (NPT), which has recently gained considerable research interest in TS. In Chapter 14, 'Technology and non-professional translation (NPT)' **Miguel A. Jiménez-Crespo** examines the phenomenon of NPT, exploring its symbiotic relationship with broader technological developments represented by Web 2.0. The chapter gives close scrutiny to the increasingly visible practices of NPT, such as translation crowdsourcing and online collaborative translation. NPT involves participants who are not 'classically' trained translators, operating as part of translation communities in diverse contexts from pursuing fandom to activism or humanitarian initiatives. The chapter highlights the close correlation between NPT and digital technologies. NPT is characterized by non-uniform uses of translation technologies compared to its professional counterpart. Consequently, human–machine interaction in NPT can often be different from that in professional

translation, adding to the complexity of such relationships in contemporary translation. NPT encroaches on a variety of research foci, ranging from audiovisual translation (AVT) to PEMT, as well as raising questions of quality and ethics, affording scholars multiple lenses of analysis.

Within TS literature, localization and AVT are considered to be the areas most affected by new technologies and as a result having the greatest influence on the theorization of translation (Munday 2016: 275). In Chapter 15, 'Technological advances in audiovisual translation' **Jorge Díaz Cintas** and **Serenella Massidda** reflect on some of the formidable transformations within the rapidly expanding field of AVT. The chapter surveys an increasing body of research on the application of TM and MT in AVT, although the authors point out the benefit of these technologies is currently relatively limited. Cloud subtitling is seen as a new way for professional translators from different geographical locations to work together on collaborative platforms. Cloud-based dubbing and voice-over as end-to-end managed services are shown as rapidly developing examples. The authors explain how the availability of a wide range of tools and platforms is having a democratizing impact on AVT, yet is also heating up the competition among industry participants and causing increased anxiety among professional translators. The authors observe the way technology is altering relationships between stakeholders, highlighting its deep-seated impact.

Translation technologies are seen to be closely associated with (written) translation, yet MT is also core to machine interpreting (MI) which combines MT with speech technologies. In Chapter 16, 'Technology and interpreting', **Sabine Braun** focuses on the field of interpreting, including the rising demand for 'distance interpreting' and the milestones in MI. The chapter provides a comprehensive survey of the historical development of technologies shaping distance and on-site computer-assisted interpreting by humans, introducing different terminology used for different technology application settings and configurations of participant locations. While MI currently cannot service situations requiring highly accurate professional interpreting, Braun suggests that ongoing research, especially into neural networks, provides scope for further development. Highlighting the increasing reports by remote interpreters of psychological and physiological problems, the author stresses that interpreting is a cognitively challenging task and any other distracting issues relating to the lack of physical presence can affect the interpreter's performance. At the same time Braun raises the question of the sustainability of the profession as an important consideration in light of implementing smart technologies. Overlapping with some of these concerns, in Chapter 17 'Technology and sign language interpreting', **Peter Llewellyn-Jones** addresses settings specifically for Deaf people. Beginning with how the invention of the telephone disadvantaged the Deaf community, the author charts the development of spoken-signed language interpreting services via telephone, computer and video links. Comparing the situation in the US to Europe, the UK and Australia, the chapter argues that services such as Video Relay Services (VRS), where all interlocuters are in different locations, or Video Remote Interpreting (VRI), where only the interpreter is in a separate location, should not be developed simply to exploit available technologies; they must be carefully thought through to adequately enable the highly complex cognitive task of sign interpreting. Drawing on the research literature, Llewellyn-Jones illuminates the serious consequences that can result from making decisions purely based on the cost efficiency seen to be achieved by the use of technologies.

As touched on in the earlier chapter by Jiménez-Crespo, technologies are increasingly used to facilitate volunteer translators' involvement in humanitarian causes. A tragic

reminder of the need for 'crisis translation' is the 2017 Grenfell Tower fire, in which the apartment block's multi-ethnic occupants speaking a diverse range of languages were largely unable to receive accurate information in their language in a timely manner. In Chapter 18, 'Translation technology and disaster management', **Sharon O'Brien** homes in on the role of technologies in disaster management and translation, which constitutes a relatively new area of research in TS and elsewhere. O'Brien argues translation is a neglected aspect in disaster management literature and policy, yet its role can be significant. This chapter illustrates the function of translation with the use of technologies serving beyond the 'response' phase of disaster risk management to all of the '4Rs': the pre-disaster phases of 'reduction' and 'readiness' and the stages of 'response' and 'recovery'. However, despite the proven successes with translation technologies in disasters such as in the Haiti Earthquake, technology deployment can be challenging, given issues such as disrupted infrastructure. Additionally, information recipients of written texts may have differing levels of literacy, not to mention cultural and accessibility considerations. Above all, this field highlights the socially significant role of translation, with challenges ahead including ethical considerations, linking to translation ecology thinking (see Cronin in Chapter 31). During the second decade of the new millennium, the use of MT within professional translation has become highly visible, with a raised interest in post-editing, as discussed at the beginning of this introduction and also amply demonstrated by the contributors to this volume. In Chapter 19, 'Post-editing of machine translation', **Lucas Nunes Vieira** gives a comprehensive survey of the growing research interest and industry practice of post-editing of Machine Translation (PEMT). Vieira begins the chapter by reminding us that PE used to be a 'machine-centric' activity in a mode of 'human-assisted machine translation' but is now geared rather towards 'machine-assisted human translation' in CAT environments. Drawing on the literature, Vieira presents the evolution of post-editing as a spectrum from MT-centred (automatic PE) to human-centred PE (interactive/adaptive) (also see Chapter 22 by Läubli and Green). Vieira sees the future of PE as better integrated into the professional translation process, where PE is no longer a discrete task. His conclusion highlights the need for further research into human agency in relation to PE activities and wider CAT environments. Vieira then highlights the role of TS in providing evidence-based findings to temper the hyperbolic claims made by some NMT developers and enables well-informed assessments to be made about technology.

Part IV: Translation and technology: research foci and methodologies

This section consists of five chapters which address specific foci and methodologies adopted to answer research questions probing the relationship between translation and technology.

In Chapter 20, 'Translation technology evaluation research', **Stephen Doherty** highlights how translation technology evaluation has gained key importance due to the prevalent use of technologies in contemporary translation. In particular, MT and post-editing have provided a strong impetus for this research area with the continuing development of automatic evaluation methods (AEMs) to complement or as an alternative to human-oriented evaluation of MT. Technology evaluation affects different stakeholders who have diverse needs, including technology developers and suppliers as well as providers and buyers of translation products and services, end-users and translation researchers. Doherty argues that despite the often-highlighted differences in purpose and context between evaluation methods used in academia versus in industry settings, the evaluation process is

inherently the same in that the evaluator needs to align the evaluation purpose with the available resources and methods, and the desired format. While advances in technology evaluation research are providing increasingly sophisticated evaluation mechanisms, Doherty calls for further research focused on three areas: universalism and standardization, methodological limitations and education and training. These will allow more inclusive and standardized approaches to meet the needs of the different stakeholders. In Chapter 21, 'Translation workplace-based research' **Maureen Ehrensberger-Dow** and **Gary Massey** provide an up-to-date survey of workplace-based research, which has steadily gained importance in TS over the last decade. This is where research moves out of the translation classroom or laboratory into real life workplaces, filling the gap in the other research settings and providing ecological validity by capturing data from translators in situ. Ehrensberger-Dow and Massey show how increasing technologization has made it relevant to see expert activity as a manifestation of situated cognition, whereby human cognition is assumed to extend beyond individual minds to, for example, interaction with technological artefacts. The chapter articulates the way workplace-based research can highlight with empirical data how technologies can facilitate or disrupt the human translation process. The chapter calls for more transdisciplinary action research to ensure human translators are empowered by working with technologies and not undermined by their technological environments. In Chapter 22, 'Translation technology research and human-computer interaction (HCI)' **Samuel Läubli** and **Spence Green** address translation and technology from the perspective of professional translation as HCI. Focused on users of translation technology, they discuss 'interactive MT' (IMT) as opposed to the 'static' model (also see Vieira in Chapter 19), and examine factors behind the often-negative response of professional translators to PEMT tasks. The chapter draws on empirical evidence to highlight how seemingly trivial User Interface (UI) design issues, such as font size, lack of shortcuts, copy–paste functionality, etc. can hinder efficient human-computer interaction. Similarly, the authors point to the findings in the literature that user irritation relates, above all, to the repeated need to correct the same MT errors. The authors surmise the key challenge in HCI as the limitation of the machinery's ability to learn from (human) users, whereas humans can learn to use 'novel machinery'. Furthermore, 'making the state and effects of adaptation understandable to their users' is part of the challenge in creating adaptive systems. This in turn critically requires the iterative involvement of translators in the development process, a lesson still being learnt from the early MT projects that lacked translator participation. In Chapter 23, 'Sociological approaches to translation technology' **Maeve Olohan** examines the key research questions and methodologies in sociologically-oriented studies on translation technologies. The chapter traces the development of SCOT (social construction of technology) as a field of study to demonstrate how 'science and technology are socially constructed cultures' (Pinch and Bijker 1984: 404 cited in Olohan's chapter), accommodating both successful and failed technologies. In parallel with SCOT the author explains other sociological approaches applied in TS research. Despite the increasing use of sociological approaches in TS research to shed light on translation technologies, Olohan concludes that there is more to pursue in 'sociology of translation', both conceptually and empirically. For example, she argues that critical theory of technology can be fruitfully combined with constructivist approaches to reveal unequal power distributions, which often affect the adoption of technologies. Olohan suggests these lines of inquiry could lead to a further renewal of the traditional conceptualization of translation. Methodological innovations are part of the increasing sophistication of research in TS and eye tracking is one of the key

examples. In Chapter 24, 'Translation technology research with eye tracking', **Arnt Lykke Jakobsen** provides explanations about eye tracking technology and a detailed survey of this popular research tool now used in diverse areas of TS. This chapter shows how eye tracking software can trace with fine granularity the translation process and the dynamics of the translator's interaction with translation technology, for example TM or MT, while performing translation or post-editing. Or it can capture the translation user's response to dynamic text presentation modes, such as in subtitles. Translation is an 'effortful cognitive activity', yet to what extent technological tools add to or lessen such efforts is a question which calls for empirical evidence. Jakobsen suggests eye tracking could provide insight, for example, into reasons for 'the global preference of multimodal, analogic communication' compared to 'unimodal, symbolic communication' despite the assumption that the former is more effortful. While cautioning that not everything about visual attention and cognitive processing is fully explainable from eye tracking data, Jakobsen predicts there are likely to be widening avenues for eye tracking in future as part of mixed-methods research design used with 'qualitative data and neuroscience technologies'.

Part V: Overarching issues

The final section consists of seven chapters which focus on a number of critical overarching issues arising from significant uses of technology in translation. This section covers MT, quality, fit-for-purpose translation, accessibility, reuse of translation data, translator training and translation ecology. In Chapter 25, 'Future of machine translation: musings on Weaver's memo', **Alan K. Melby** explores where the next paradigm of MT is headed, centring on the challenge arising from sub-symbolic deep learning (i.e. its inner workings are non-inspectable to humans) applied in the current generation of NMT. This issue of increased opacity in machine learning is noted by scholars as a cause for concern (see Kenny 2018). As a way to think about future developments of MT, Melby uses a detailed analysis of Warren Weaver's 1949 Memorandum. The chapter treats the early pioneer's concepts presented in the memo as 'seeds' behind the subsequent successive paradigms of MT, from RBMT (Rule-based MT) to SMT (Statistical MT) to the current evolving state of NMT. Melby then considers developments in the intervening times of enabling technologies and surrounding contexts to build his conjecture by mapping the seeds in Weaver to the MT paradigms. With sub-symbolic deep learning, Melby argues, even those who are modelling AI cannot seem to predict exactly what goes on inside the 'black box'. The discussion leads Melby to the question of what it means to 'understand' the text in human and machine translation, which he believes is significant for the next phase of MT, i.e. seeing Weaver's final seed – linking MT to the human brain – sprouting.

Not unrelated to the issue of 'understanding', quality is a key challenge for translators and the translation industry. Pym clarifies the two meanings of 'quality', the first being 'properties' a la Aristotle, if used in the plural, and, in the singular, meaning 'the relative excellence of the thing' for a given purpose. The two meanings are often related, as we are reminded by Pym, with changes of properties leading to changes in the status of excellence, as applicable to the quality of translation technologies. In Chapter 26, 'Quality', **Anthony Pym** addresses translation quality in the context of translation technologies by treating it as 'relations' based on Chesterman (2004 cited in his chapter); namely relations between the translation and the target text, comparative texts, purpose, industrial standards and the translator. For example, with the prevalence of TM and MT in the translation process, Pym highlights the critical need for greater quality control of such technologies

which are exerting 'unspoken forces behind the industrial standards'. In reference to the relation between translation and the translator, Pym argues that a likely consequence of technologization manifesting in more pre- and post-editing for translators, could still be made satisfying for them, if such work was presented as 'authorizing' the final translation. He suggests it is up to translators and their employers to ensure that the work is recognized and rewarded as such. Discussing these relations, the chapter teases out human elements in quality to remind the reader that evaluations of quality 'reside on human values' that are 'built on a fundamental indeterminacy'. As highlighted in his conclusion, Pym draws our attention to 'the human in the machine', so the quality debate is not overshadowed by the technology and the extreme ideological stances both for and against it.

This chapter is followed by the closely related topic of 'Fit-for-purpose translation' in Chapter 27, where the indeterminate nature of quality is explored. Here **Lynne Bowker** discusses translation as a balancing act between the 'triple constraint' used in the project management field of quality, cost and time. Furthermore, the author points to 'a perception problem' in reference to the negative associations of the use of translation tools. Bowker reminds the reader that 'translations can be commissioned for a diverse range of purposes', while a translator's job is to 'choose the strategy best suited to producing a target text that fits the specified purpose'. With the technologization of translation, Bowker highlights, translators need to be able to optimize technologies to best meet different translation purposes, as specified by the clients. This may result in different levels of quality in translation, in conflict with professional ethics, which currently do not provide adequate guidance to translators in respect of the use of technologies. As much as there is a need for client education, Bowker stresses the need for professional translator (re)education to recognize the challenges and not denigrate translators who are catering for 'bulk translation services'. The final thought offered by Bowker is indeed ironic as she suggests: if lesser quality translations produced for different purposes start to affect the quality of the training data for MT, in turn affecting MT quality, fit-for-purpose translation may inadvertently ensure the survival of human translators. Bowker's last point relates to the increasing harvesting of translation as data used for machine learning, as discussed next.

In Chapter 28, 'Copyright and the re-use of translation as data', **Joss Moorkens** and **Dave Lewis** address the increasing secondary use of translation currently treated as a cheap commodity. This is becoming an issue in the advent of data-driven MT and especially for NMT, due to its requirement for a significant amount of training data for machine learning. The authors highlight that the metaphor of 'oil' or 'gold' used for the translation as training data implies they are naturally occurring, which is untrue, giving rise to the question of translation rights. The issue is that this subsequent benefit generated by the original translation is not passed on to the translator who translated the text. In view of the 1889 Berne Convention, which codified the copyright of translation as a derivative work, the authors point out that the current reuse of translation as data was not envisaged in the Convention, nor was its potential liability in relation to NMT. They argue that current copyright laws are not equipped to deal with the situation of the reuse of translation data, while new proposals, such as digital commons with a range of rights, could potentially be applied through professional translation organizations. The authors suggest the latter is more conducive to ensuring the sustainability of the translation industry by improving the redistribution of equity within translation production networks. The authors suggest that this could be realized in collective agreements accruing royalties to the translators, as is already the case among some subtitlers in Nordic countries. However, the chapter

concludes that the forthcoming EU Directive on Copyright in the Digital Single Market is not likely to resolve the issue of translation copyright, which will remain as a key question requiring the attention of translators.

In Chapter 29, 'Media accessibility and accessible design', **Aline Remael** and **Nina Reviers** discuss media accessibility (MA), which has rapidly become integrated into research agendas in TS with practical implications for audiovisual translation (AVT) driven by digitization and globalization. The authors argue that in today's 'highly mediatized society', the accessibility of audiovisual content, and eventually accessible design, has become a central concern for society at large. They assert technology is making it 'theoretically' possible to cater for all types of media users, given the right policy and legislation. MA involves 'translation' of an 'intersemiotic and multi-modal' kind where aurally or visually conveyed information is converted into modes to suit the target audience's needs. For example, subtitles for the Deaf and the hard-of-hearing (SDH) involve a conversion from aural to visual mode where the target audiences can 'read' the dialogue. SDH now includes live subtitling, which is commonly delivered in the form of respeaking, whereby subtitles are generated synchronously through the use of speech recognition. The technology applications in this field are wide-ranging, from speech recognition and synthesis to MT as well as avatars used for sign interpreting. Initiatives on universal design for MA are well underway, with examples such as accessible filmmaking in which accessibility is foregrounded in the filmmaking process itself (Romero-Fresco 2018). Applying an actor-network theory framework, this chapter critically traces the developments taking place in media accessibility in which practice and research interact with technologies exerting considerable force as enablers. In the unpredictable technological milieu, the authors see 'translation' in its broad sense as playing a major role of a key 'actant' to progress this significant social issue of the modern age of technologies towards universal design.

In Chapter 30, 'technology and translator training', **Dorothy Kenny** addresses the issue of translator training in the advent of technologization, comprehensively drawing on the growing literature in the field. Kenny argues 'a nuanced understanding of how technology and translation are intertwined should be a vital ingredient of any broad education in translation studies'. Kenny therefore advocates the view that technological competence need not remain merely 'instrumental' but can make 'a significant contribution to the development of critical citizenship'. The chapter provides a critical analysis of contemporary thinking behind translator training and education, which is then extended to a key concern for the long-term health of the translation industry, including economic factors such as 'technological unemployment' in the advent of AI. In the author's words the next challenge lies in 'the integration of machine learning into translator training', which would signify indeed a paradigm shift in translator education. Implicit in this chapter is ecological thinking, viewing translation and technology as an intrinsic part of the technologizing global world, which relates to the theme of the next final chapter.

In Chapter 31, 'Translation, technology and climate change', **Michael Cronin** interprets the agenda of translation and technology in terms of the big picture, employing ecological perspectives and proposing a new methodological approach based on eco-translation thinking. Cronin maintains that the fate of translation enterprise is inevitably implicated in what happens to technology which is, in turn, linked to accelerated climate change. This chapter constructs an argument through the notion of translation ecology, with the key concept of the 'posthuman' which provides an approach for understanding the deepening relationship developing between humans and digital technologies. Cronin insists on treating technology not as 'an inert tool' but as 'an animated part of the human ecosystem,

a constituent element of the translator's transversal subjectivity'. His ecological thinking in turn gives rise to a renewed perspective on ethical issues, as Cronin asks: 'Is it…ethically responsible and professionally adequate to train translators using technologies that will not be sustainable in an environmentally compromised future?' This line of concern relates to crisis translation settings (O'Brien in Chapter 18), which may only allow low-tech solutions due to the destruction of the communications infrastructure. Also, it relates to the issue raised by Moorkens and Lewis (Chapter 28) in questioning the continuing secondary use of translation as if it is a bottomless resource to feed into MT until it is depleted – or until eventually the translation quality deteriorates as a consequence of fit-for-purpose translation (Bowker in Chapter 27). In this critical age of climate change and rapid technologization, Cronin directs our attention to planetary contexts as a productive way to locate translation through an eco-translation framework, as we grapple with the role of humans in relation to the role of technologies in translation research and practice. Joining Ehrensberger-Dow and Massey (Chapter 21), Cronin advocates for transdisciplinary approaches to be adopted by scholars. This could usefully lead to a re-evaluation of the role of translation and translators in the age of technologization through collaboration with community members and organizations. In this way, Cronin argues, Translation Studies can participate in the critical dialogue at a time of environmental crises brought about by the Anthropocene era.

In summary

This volume sets out to discuss translation and technology as a growing yet disruptive relationship. Together the contributors paint a picture of a profession or an activity that is dynamic and plays important social and ecological roles, sustaining global communication needs for businesses and individuals in public and private spheres. The examples discussed in the volume span NMT, post-editing, ROM hacking, crisis translation in disaster settings, media accessibility and interpreting at a distance for the Deaf community, to name a few. The volume highlights the central position technologies are occupying in translation and in some interpreting practices while drawing the reader's attention to human agency. In all this, as already acknowledged by TS scholars, translation continues to defy an exact definition (Williams 2013: 5–9) and technological factors are only confirming the multiplicity of the practice and concept of translation. From a practising translator's perspective, Mark Polizzotti (2018: xi) describes in his *Sympathy for the traitor: a translation manifesto* the nature of translation work as ambivalent, 'skirt[ing] the boundaries between art and craft, originality and replication, altruism and commerce, genius and hack work'. His manifesto celebrates the variability of human translation and defends the oft-used analogy of a translator as a traitor in the sense that translation decisions are not always deducible from the words in the source text alone. The challenge for 'augmented translation' or any other advanced technology-mediated environment would therefore be to facilitate such a complex, ill-defined human decision-making process. The inquiry into the deepening connection between translation and technology, and also translation by the human and by the machine, will widen the scope for the future development of Translation Studies and the translation profession, as the contributors of this volume eloquently demonstrate. In the spirit of participatory culture, the more stakeholders who partake in the examination of what is happening with the human–machine unison or abrasion in contemporary translation, the more chance we have of grappling with the changes taking place. It is hoped that the diverse observations presented in this volume will provide a fresh impetus for theory building for

scholars, which will enable translators to better navigate increasingly technologized environments that are complex, unpredictable and fragile. This in turn will help us ensure the survival and sustainable evolution of translation, in the advent of algorithm-led intelligence. Finally, the reference to 'entanglement' in the title of this introduction is borrowed from quantum physics. Described by Einstein as 'spooky action at a distance', quantum entanglement refers to the phenomenon where particles separated in space and time are inextricably linked (de Ronde and Massuri 2018). This deep-seated correlation and the synched status of two entities evokes the inescapable bond being formed between the human and the machine. It could be the vision for the future of the refined, if inscrutable, art of translation with human and machine learning enriching each other. This is ultimately related to the question of what it is to be human and a translator in the technologizing age.

Notes

1 See the abbreviations list in the References section for full forms of standards bodies and related acronyms.
2 Even as this article was being written, the core specifications of the treaty changed for the first time (and potentially last) time.
3 The reader should not imagine cassette tapes of any size: at end of day, enterprises would record entire data transactions for the day on a magnetic tape or tapes, often twice the size of a movie reel, and cart them off to some external storage site for safe keeping. In 1980, major institutions and companies had entire floors devoted to the storage of large reels of magnetic tape for data storage.
4 *See* http://rosettaproject.org/blog/02010/jul/21/building-audio-collection-all-worlds-languages/
5 * = Under Development [SC3]
1 TransSearch is commercialized by Terminotix: http://tsrali.com
2 www.linguee.com
3 www.tradooit.com
4 https://context.reverso.net
5 www.taus.net/history
6 http://commoncrawl.org/
1 https://cloud.google.com/speech/docs/languages
2 www.voxforge.org/
3 http://julius.sourceforge.jp/en_index.php
4 www.microsoft.com/en-us/garage/profiles/presentation-translator/
5 In the UK, Ofcom, the UK's communication regulator, sets out targets for broadcasters in their provision of access services – captioning, audio description and sign language – based on revenue and audience share. These targets are expressed as percentages of their total service, and they 'rise from a low level to the ten-year targets prescribed by the Act, that is 80% for subtitling, 5% for signing and 10% for audio description' (Ofcom 2017: 3).
6 https://techcrunch.com/2017/01/04/facebook-video-captions/
7 www.facebook.com/business/news/updated-features-for-video-ads
8 https://slator.com/press-releases/memoqfest-2018-was-a-major-success/
1 The authors jointly discussed and designed the contents and style of the entire paper (co-authoring Introduction, Historical Trajectory and Conclusion). However, Colm Caffrey is mainly responsible for Translation Memories in the Division and Emerging Issues and Cristina Valentini for Terminology in the Division, and Corpora, MT and Machine Learning in WIPO Pearl.
2 As of October 2018, the responsibility for supporting translation and terminology technology throughout WIPO was given to the newly created 'Translation and Terminology Technology Section' in the PCT Translation Division. Similarly, the Terminology Unit, which remains under the Support Section in the PCT Translation Division, has also been given the mandate to harmonize methodology and procedures of terminology work in the Organization.
3 http://www.wipo.int/patentscope/en/
4 Nematus-Theano and Marian are NMT toolkits and AmuNMT is an NMT decoder.

5 For Arabic, data from PCT translations, the International Telecommunication Union and WIPO's Language Division was also used.
6 All averages in this paragraph were calculated using a corpus of 342,847 Japanese-language abstracts.
7 Over 505,000 TUs as of June 2018. While substantial in size, the number of TUs is substantially lower than those used for the WIPO Translate NMT (see Table 8.1). This is to avoid potential performance issues concerning speed and relevance of content.
8 http://www.wipo.int/reference/en/wipopearl
9 See WIPO Pearl for the full list of partners. Universities typically have a terminology module in their curriculum and students' work is revised at different stages before work is finally submitted and integrated in the PCT Termbase (Frérot 2017).
1 Other terms instead of technical are 'functional' or 'commercial'.
2 See segate.sunet.se/cgi-bin/wa?A0=LANTRA-L.
3 See, for instance, the back cover of the *ATA Chronicle* 10/31, 2002.
4 As of November 2018, see proz.com/about.
5 See prozcomblog.com/2013/03/22/cat-tool-use-by-translators-who-is-using.
6 See arts.kuleuven.be/ling/ccl/projects/scate (retrieved November 2018). SCATE is a multi-institutional European research project sponsored by the Belgian Agentschap Innoveren & Ondernemen (see arts.kuleuven.be/ling/ccl/projects/scate/facts).
7 See appstore.sdl.com/list/?search=machine%20translation.
8 See, for instance, Weinberger 2017. Here Olivier Fontana, the Director of Product Strategy and Marketing, Microsoft Translator, discusses a new automated translation feature in PowerPoint. He is quoted with 'The team behind the new feature was inspired by Captain Kirk and company' and 'Our goal is to break the language barrier'.
1 Errors are annotated based on a set of error categories (see Figure 11.1) from MNH-TT (Babych *et al.* 2012), a collaborative translation training platform. This set of categories provides an error typology designed specifically for scaffolding translator competence. It is optimized for translator training and customized for the English–Japanese language combination. See also Yamada (2019) for details.
1 The boundaries between professional and non-professional translation in general are often fluid and not clearly established according to TS literature (i.e. Jääskelainen, Kujamäki and Jukka 2010, Grbič and Kujamäki 2018).
2 Activist translations represents a technology—mediated process in which 'translators enact their agency and affiliations' by means of 'choosing what texts to translate, in which manner, and for what purposes' (Carcelen Estrada 2018: 261). In the context of translation and activism, collaborative practices are currently being used as 'instrument[s] of human political intervention' (Cronin 2010: 102), in a way that the combination of technologies and activism can be used to 'to further human concerns or agendas' (ibid).
3 https://www.ted.com/about/programs-initiatives/ted-translators
4 https://www.viki.com/community
5 https://www.khanacademy.org/contribute
6 https://translate-coursera.org/
7 This process is known as 'scanlation' (Simo and Rosaria 2005), or 'a streamlined manga fan translation practice where officially published pages of manga are first scanned digitally, translated and distributed often through internet channels by fans' (O'Hagan 2008: 162).
8 According to TED's website the tasks of the 'language coordinators' are to 'elevate translation quality', 'support collaboration', 'mentor new volunteers' or 'perform the final proofread of subtitles (approval step)' (TED np.).
9 Unbabel offers both a paid and unpaid/ volunteer option in its platform and can thus accommodate both professional and non-professional participation.
1 It is a convention within the Deaf Community that the word 'Deaf' with a capital 'D' denotes a member of the sign language using Deaf Community, rather than someone who cannot hear or who has lost their hearing and continues to identify with the wider community.
1 www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/ [last accessed 26 Oct. 2017].
2 See: https://mymemory.translated.net/ [last accessed 28 October 2017].

3 See: http://translatorswithoutborders.org/twbnewsletter/04/the-translators-without-borders-translator-survey/ [last accessed 28 Oct. 2017].
4 See: https://reliefweb.int/report/world/reliefweb-glossary-humanitarian-terms [last accessed 28 Oct. 2017].
5 http://app.translatorswb.org/ [last accessed 28 Oct. 2017].
6 Note that at the time of writing The Rosetta Foundation had merged with TWB.
7 www.darpa.mil/program/low-resource-languages-for-emergent-incidents [last accessed: 08 Nov. 2017]
8 Personal communication, Mirko Plitt, TWB, 13/11/2017.
9 http://voicetra.nict.go.jp/en/index.html [last accessed 08 Nov. 2017].
10 www.fujitsu.com/global/about/resources/news/press-releases/2017/0919-01.html [last accessed 08 Nov. 2017].
11 This question is being tackled, at the time of writing, by the H2020-funded INTERACT project (grant agreement No 734211), which is testing and evaluating training materials for citizen translators in disaster settings. Further information is available in: Federici and Cadwell (2018).

1 Examples of other studies examining the feasibility of post-editing relative to 'from-scratch' translation include Carl *et al.* (2011) and Jia, Carl and Wang (2019). For a summary, see Screen (2019).
2 See https://lilt.com/.
3 See https://lilt.com/kb/memory/mt.
4 See https://unbabel.com/translators/ for a similar example.

1 http://producthelp.sdl.com/SDL_TMS_2011/en/Creating_and_Maintaining_Organizations/Managing_QA_Models/LISA_QA_Model.htm
2 A detailed discussion of historical and current approaches to the evaluation of translation quality can also be found in the list of further reading.
3 www.qt21.eu/quality-metrics/
4 www.taus.net/evaluate/dqf-background
5 www.iso.org/standard/59149.html
6 www.kantanmt.com/overview-measure.php
7 www.statmt.org/wmt18/
8 www.mt-archive.info/
9 www.gala-global.org/

1 Barrachina *et al.* (2009) refer to this metric as keystroke ratio (KSR). They also consider the number of mouse actions (MSR) and the total of both keystrokes and mouse actions (KSMR) divided by the number of characters in the final target text.
2 In the International Standard on human-centred design for interactive systems (ISO 9241-210), user experience is defined as 'person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service'.
3 See also Jakobsen's (2003) considerations on the use of Think Aloud Protocols in translation process research.
4 Cleveland and McGill (1984) empirically tested how accurately participants can make 'a quick visual judgement'. They provide an ordering of means for information encoding from most to least accurate: '1. Position along a common scale; 2. Positions along nonaligned scales; 3. Length, direction, angle; 4. Area; 5. Volume, curvature; 6. Shading, colour saturation'.

1 According to Google Scholar, the McCulloch and Pitt paper had been cited over 15,000 times by late 2018.
2 A recent commentary on Shannon's work, including the notion of a Noisy Channel, is available in an MIT news article (http://news.mit.edu/2010/explained-shannon-0115).
3 Unicode allows multiple languages to be stored in the same file without the fragile representations of non-English text used previously (e.g., ISO 2022). ISO 2022 was fragile because it was 'stateful'. The interpretation had to begin at an escape character, which could be far away from the desired text. Thus, a single-bit error in an escape character could cause hundreds or even thousands of subsequent bytes to be misinterpreted. Early computers and word processors used single-byte approaches without escape characters, mostly EBCDIC and ASCII, which allowed only English characters and punctuation. They included a few accents (e.g., acute, grave, circumflex and tilde)

separate from the character they modified, to be represented directly, but no accented characters could be represented as a single code point.
4 A bitext is a source text with a corresponding translation; segmented and aligned, usually at the sentence or paragraph level. For more information, see Harris (1988) and Melby (2015).
5 For this work, Kilby shared the year 2000 Nobel Prize in physics: see www.nobelprize.org/prizes/physics/2000/summary/
6 For major updates to Lamb's approach see Lamb (1999, 2016).
7 The programme of the January 2019 conference of the Linguistic Society of America (www.linguisticsociety.org/node/9647/schedule) indicates that pursuing a universal deep structure underlying all languages is not part of the current research agenda for theoretical linguists.
8 For more on the history of neural networks and the influence of McCulloch and Pitt's article, see Rojas (2013). For in-depth information about McCulloch, see a recent biography by Abraham (2016) and an analysis of McCulloch's article (Piccinini 2004).
1 I use the term *start text* rather than *source text* because technologies mean that translations are these days produced from translation memories, glossaries and machine-translation proposals, all of which are as much a 'source' as the text the translator actually starts from. The term also brings us into line with what is said in neighbouring languages: *Ausgangstext*, *texte de départ*, *texto de partida*, for example.
1 Dormehl (2016: 156) commented that if 'data is the oil of the digital economy, then we need to place a proper valuation on it'.
2 This practice, in which translations are 'produced not from the original, but from an existing translation in another language' is common for minor language subtitling (Gottlieb 1994: 117).
3 LSPs commonly expect or impose discounts for 'perfect and near matches' from a TM when paying a translator per word for a translation (García 2006: 97).
4 Early NMT systems usually comprized several types of neural network and an 'attention mechanism', which predicted likely collocates for words. The transformer model focuses on this attention mechanism, dispensing with many of the other neural networks. Vaswani *et al.* (2017) found this model to produce superior results, leading to its popularization within the MT research community.
1 A list of some major projects is provided separately with annotations.
1 See, for example, arguments summed up in Kenny (1999:65–66) and Bowker (2015: 89–90).
2 On the broad distinction between translator training and translator education, see Bernardini (2004).
3 Most commentators would include the following under 'computer-aided translation' tools: translation memory tools – with their associated quality assurance and text analysis tools – and terminology management tools.
4 Probably the first mention of the ALPS Translation Support System being used in academia relates to its deployment in Computer-Aided Language Learning (Corness 1986).
5 Another early intervention in this field is that of L'Homme (1999).
6 The University of Limerick's now superseded MSc in Multilingual Computing and Localisation, founded in 1997, was billed in 2015 as the first and the longest running postgraduate localization education programme in the world (www.localisation.ie/education/, last accessed Jul. 31, 2017).
7 See, for example, Freigang (2001). The MA in Translation Studies at Dublin City University, founded in 1992, had also begun offering a dedicated module in software localization by 1997, alongside its already established module in translation technology. By 2000, the Monterey Institute of International Studies, California and Kent State University in Ohio were also offering training in localization and project management to language and translation students (Esselink 2000:10).
8 Somers (2001: 25) observes that a small number of papers that had appeared in the 1980s on the subject of machine translation and teaching were 'rather general in nature'.
9 Language Engineering for Translators' Curricula. See www.iai-sb.com/forschung/content/view/37/50/ and www.iai-sb.com/docs/D22.pdf [last accessed Jul. 31, 2017].
10 www.leeds.ac.uk/arts/info/125053/centrefortranslationstudies/1807/researchandinnovation/5 [last accessed Jul. 31, 2017]
11 www.leeds.ac.uk/arts/info/125053/centrefortranslationstudies/1807/researchandinnovation/7 [last accessed Jul. 31, 2017]

12 www.leeds.ac.uk/arts/info/125053/centrefortranslationstudies/1807/researchandinnovation/6 [last accessed Jul. 31, 2017]
13 http://mellange.eila.jussieu.fr/index.en.shtml [last accessed Jul. 31, 2017]
14 www.certt.ca [last accessed Jan. 31, 2019]
15 http://linguistech.ca [last accessed Jan. 31, 2019]
16 https://ec.europa.eu/info/education/european-masters-translation-emt/european-masters-translation-emt-explaineden#documents [last accessed Jul. 31, 2017]
17 The importance of the involvement of the European Union in initiatives to support translation, translation technology and translator training cannot be underestimated. No doubt much of this involvement serves the political interests of the Union, which is concerned with protecting institutional multilingualism at the same time as controlling the associated costs, and for whom youth unemployment and migration present major challenges. The maintenance of a healthy language industry, the prioritization of employability as an educational outcome (in the Bologna process and initiatives such as the EMT network), and the control of translation costs through increased technologization, all serve to meet these challenges.
18 www.ressources.univ-rennes2.fr/service-relations-internationales/optimale/ [last accessed Jul. 31, 2017]
19 www.instb.eu [last accessed Jan. 31, 2019]
20 Note that there is no consistency between commentators in the terminology used to describe what I call here 'procedural' and 'conceptual' knowledge.
21 Note also that in other fields, for example mathematics education, there is evidence that conceptual and procedural knowledge support each other, and grow iteratively (Rittle-Johnson and Scheider 2015). In the absence of relevant research in the acquisition of translation technology competence, we might hypothesize that conceptual and procedural knowledge are also mutually reinforcing in our field.
22 The affective dimension is also prevalent in work concerned with technology acceptance. See, for example, Koskinen and Ruokonen (2017).
23 Assertions about the likely automation of even non-routine, cognitive jobs are now legion. Most are based on an analysis conducted in 2013 and published as Frey and Osborne (2017). Surowiecki (2017) provides a sceptical response.

References

Akst, D. (2013) 'Automation anxiety', *Wilson Quarterly* Summer 2013, Available online: http://archive.wilsonquarterly.com/essays/automation-anxiety [last accessed 26 Feb. 2019].

Bowker, L. (2002) *Computer-aided translation technology: a practical introduction*. Ottawa: University of Ottawa Press.

Carl, M., S. Bangalore and M. Schaeffer (eds) (2016) *New directions in empirical translation process research: exploring the CRITT TPR-DB*. Cham: Springer.

Catford, J. (1965) *A linguistic theory of translation*. Oxford: Oxford University Press.

Chan, S-W. (ed.) (2015) *The Routledge encyclopedia of translation technology*. London & New York: Routledge.

Chesterman, A. and E. Wagner (2002) *Can theory help translators?: a dialogue between the ivory tower and the wordface*. Manchester: St. Jerome Publishing.

de Ronde, C. and C. Massuri (2018) A new objective definition of quantum entanglement as potential coding of intensive and effective relations. Available online: https://arxiv.org/abs/1809.00202 [last accessed 31 Jan. 2019].

ELIA (European Language Industry Association) (2018) *Expectations and Concerns of the European Language Industry*. Available online: www.euatc.org/images/2018_Language_Industry_Survey_Report.pdf [last accessed 2 Feb. 2019].

Gambier, Y. and L. V. Doorslaer (eds) (2016) *Border crossings: translation studies and other disciplines.* Amsterdam & Philadelphia: John Benjamins Publishing.

Giammarresi, S. and G. Lapalme (2016) 'Computer science and translation: natural languages and machine translation' in Y. Gambier and L. V. Doorslaer (eds), *Border crossings: translation studies and other disciplines.* Amsterdam & Philadelphia: John Benjamins Publishing, 205–224.

Holmes, J. (1972/1988) 'The name and the nature of translation studies' in *Translated!: papers on literary translation and translation studies*. Amsterdam: Rodopi, 67–80.
Hutchins, J. (1986) *Machine translation: past, present, future*. New York: Halsted Press.
Hutchins, J. (1998) 'The origins of the translator's workstation', *Machine Translation* 13(4): 287–307.
Jakobsen, A. and B. Mesa-Lao (eds) (2017) *Translation in transition: between cognition, computing and technology*. Amsterdam & Philadelphia: John Benjamins Publishing.
Kay, M. (1980/1997) 'The proper place of men and machines in language translation', Technical Report CSL-80-11, Xerox Palo Alto Research Center (PARC). Reprinted in *Machine Translation* 12: 3–23.
Kenny, D. (2018) 'Machine translation' in P. Rawling and P. Wilson (eds) *The Routledge handbook of translation and philosophy*. London & New York: Routledge, 428–445.
Kenny, D. (forthcoming) 'Machine translation' in M. Baker and G. Saldanha (eds) (2019) *The Routledge encyclopedia of translation studies*, 3rd ed. London & New York: Routledge.
Kruger, J-L. (2018) 'Eye tracking in audiovisual translation research' in L. Pérez-González (ed.), *The Routledge handbook of audiovisual translation*. Abingdon & New York: Routledge, 350–366.
Lommel, A. (2018) 'Augmented translation: a new approach to combining human and machine capabilities, in J. Campbell, J. Doyon, A. Yanishevsky and D. Jones (eds) *Proceedings of Association for Machine Translation for Americas (AMTA) 2018*, vol. 2: MT Users' Track. Boston: AMTA, 5–13. Available online: www.aclweb.org/anthology/W18-1905 [last accessed 23 Nov. 2018].
Melby, A. K. (1981) 'Translators and machines – can they cooperate?' *Meta* 26(1): 23–34.
Munday, J. (2016). *Introducing translation studies: theories and applications*, 4th ed. Abingdon & New York: Routledge.
Nida, E. (1964) *Toward a science of translating: with special reference to principles and procedures involved in Bible translating*. Leiden: Brill.
Nida, E. and C. Taber (1969) *The theory and practice of translation*. Leiden: Brill.
O'Brien, S. (ed.) (2014) *Post-editing of machine translation: Processes and applications*. Newcastle upon Tyne, England: Cambridge Scholars Publishing.
O'Hagan, M. (2013) 'The impact of new technologies on translation studies: a technological turn?' in C. Millán and F. Bartrina (eds) *The Routledge handbook of translation studies*. London & New York: Routledge, 503–518.
Polizzotti, M. (2018) *Sympathy for the traitor: a translation manifesto*. Cambridge, Massachusetts: MIT Press.
Romero-Fresco, P. (2018) 'Accessible filmmaking: translation and accessibility from production' in L. Pérez-González (ed.), *The Routledge handbook of audiovisual translation*. Abingdon & New York: Routledge, 498–515.
Schwieter, J. W. and A. Ferreira (eds) (2017) *The handbook of translation and cognition*. Hoboken, NJ: Wiley-Blackwell.
SDL Technology Insights (2016). Available online: www.sdltrados.com/download/translation-technology-insights-executive-summary/103906/ [last accessed 25 Jan. 2019].
Shreve. G. M. and B. J. Diamond (2016) 'Cognitive neurosciences and cognitive translation studies: about the information processing paradigm' in Y. Gambier and L. V. Doorslaer (eds), *Border crossings: translation studies and other disciplines*. Amsterdam & Philadelphia: John Benjamins Publishing.
Somers, H. L. (ed.) (2003) *Computers and translation: a translator's guide*. Amsterdam & Philadelphia: John Benjamins Publishing.
Susskind, R. and D. Susskind (2015) *The future of the professions: how technology will transform the work of human experts*. Oxford: Oxford University Press.
Vieira, L. N. (2018) 'Automation anxiety and translators' *Translation Studies.* Online First. DOI: 10.1080/14781700.2018.1543613.
Weaver, W. (1949) Translation. Reprinted in: W. N. Locke and A. D. Booth (eds), *Machine translation of languages*. New York: The Technology Press of MIT, 15–23.
Williams, J. (2013) *Theories of translation*. New York: Palgrave Macmillan.
Filip, David (2019) 'Localization Standards Reader 4.0'. *Multilingual: language tech business*. #181 30 (1, January/February). Available online: https://magazine.multilingual.com/ [last accessed 18 Jan. 2019]. | *Filip's in-depth article offers a highly technical, comprehensive overview of standards governing the localization process, including relevant Internet management standards, text encoding,*

translation and terminology-related management and interchange standards, quality metrics and standards designed for implementing specific locale-related details.

ISO 17100:2015/Amd. 2017. *Translation services – Requirements for translation services | Provides requirements for the core processes, resources and other aspects for the delivery of quality translation services according to specifications and supports demonstration of conformity, including capability of processes and resources to deliver translation services that meet the client specifications.*

GALA Compendium, 2016. https://web.archive.org/web/20160305195016 / http://lsrp.galacrisp.org/#aboutthissite.html. | *This comprehensive and informative web resource was originally published by GALA-CRISP, but has been taken down as of 08/04/2018. This web archive version is from March, 2016, so some pieces of information are outdated, but the scope of the information remains exceptional. The current GALA webpages are better than most resources, and many items are downloadable:* www.gala-global.org/translation-and-localization-industry-standards.

AFNOR (2018) 'Un peu d'histoire: AFNOR a 90 ans!'. Available online: https://fr.linkedin.com/pulse/un-peu-dhistoire-afnor-90-ans-olivier-gibert [last accessed 2 Jul. 2018].

ANSI (2018) 'Through history with standards'. Available online: www.ansi.org [last accessed 2 Jul. 2018].

ASCII (2005) 'ASCII Code – The Extended ASCII Table', Available online: https://ascii-code.com [last accessed 2 Jul. 2018].

ASTM (2018) 'The history of ASTM International'. Available online: www.astm.org/about/history_book_html#chapterOne [last accessed 2 Jul. 2018]

BIPM (1875-Present) 'Measurement Units: The SI', Bureau International des Poids et Mesures. Available online: www.bipm.org/en/measurement-units/ [last accessed 9 Jul. 2018].

Brandel, M. (1999) '1963: The Debut of ASCII'. Available online: www.cnn.com/TECH/computing/9907/06/1963.idg/index.html [last accessed 9 Aug. 2018].

Briggs, B. (2004) 'The importance of TMX for translation tool buyers' [No longer available] www.languagepartners.com

BSI (2018) 'Our history'. Available online: www.bsigroup.com/en-US/about-bsi/Our-history [last accessed 2 Jul. 2018].

Burchardt, A. (2016) '*Harmonization of DQF and MQM sets the stage for a standard translation quality metrics'. Available* online: www.slideshare.net/TAUS/harmonization-of-dqf-and-mqm-sets-the-stage-for-a-standard-translation-quality-metrics-aljoscha-burchardt-dfki [last accessed 24 Jul. 2018].

Campo, A. (2013) *The reception of Eugen Wüster's work and the development of terminology.* Département de linguistique et de traduction. Faculté des arts et des sciences, Université de Montréal.

Ellis, W. (1988) 'Management of technical terminology in standards organizations', in R. Strehlow (ed.) *Standardization of terminology: principles and practices*. V.II. STP991. Philadelphia: ASTM, 62–75.

Felber, H. (1984) *Terminology manual*. Paris: Unesco, Infoterm.

Galinski, C. (2004a) '30 Years of Infoterm', Infoterm. Internal document.

Galinski, C. (2004b) '50 Years ISO/TC 37 'Terminology and other language resources: A history of 65 years of standardization of terminological principles and methods', Internal ISO TC 37 document.

Görig, A. (2017) 'The 8 most used standards and metrics in translation quality evaluation'. Available online: http://blog.taus.net/the-8-most-used-standards-and-metrics-for-translation-quality-evaluation [last accessed 24 Jul. 2018].

ICU International Components for UNICODE (2018) ICU 62 (The premier library for software internationalization). Available online: http://site.icu-project.org/download/62#TOC-Release-Overview [last accessed 12 Jul. 2018].

IEC (2015) 'Electro LISA: LISA OSCAR Standards', *The GALA website*. Available online: www.gala-global.org/lisa-oscar-standardsv [last accessed 23 Jun. 2018].

IEC (2018a) 'Elektropedia: The World's Online Electrotechnical Vocabulary'. Available online: www.electropedia.org/ [last accessed 3 Jul. 2018].

IEC (2018b) 'IEC 61360 – Common Data Dictionary' (CDD – V2.0014.0016). Available online: https://cdd.iec.ch/CDD/iec61360/iec61360.nsf/TreeFrameset?OpenFrameSet). [last accessed 5 Aug. 2018].

IEC (2018c) 'Who we are'. Available online: www.iec.ch. [last accessed 30 Oct., 2018].
IEEE (2018) 'The Open Group Base Specifications, Issue 7: [POSIX] Locale'. 2001–2004. IEEE Std 1003.1, 2004 Edition. Available online: http://pubs.opengroup.org/onlinepubs/9699919799/ [last accessed 12 Jul. 2018].
IETF BCP 47. (2009) 'Tags for Identifying Languages' in M. Davis (ed.) Available online: https://tools.ietf.org/html/bcp47#section-2.2.3 [last accessed 12 Jul. 12, 2018].
Ishida, R. (2014) 'Language tags'. Available online: www.w3.org/International/articles/language-tags/ [last accessed 10 Jul. 2018].
ISO (2018a) 'ISO/TC 37/SC 4: Language resource management' Available online: www.iso.org/committee/297592/x/catalogue/ [last accessed 4 Jul. 2018].
ISO (2018b) 'We're ISO. We develop and publish international standards' Available online: www.iso.org/standards.html [last accessed 7 Aug. 2018].
Klump, C. (2018) 'Technical Communication – Vocabulary: Why a standard is badly needed', DIN/ISO, Internal Publication.a5.
LISA (2015) 'LISA OSCAR Standards', The GALA website. Available online: www.gala-global.org/lisa-oscar-standardsv [last accessed 23 Jun. 2018].
LISA (2008) 'Localization Industry Standards Association Standards' (Wayback Machine Web Archives). Available online: https://web.archive.org/web/20110101203038/www.lisa.org/Standards.30.0.html [last accessed 14 Jul. 2018].
LISA (2004) 'LISA best practice guide: quality assurance – The client perspective' (Wayback Machine Web Archives). Available online: https://web.archive.org/web/20110101203038/ www.lisa.org/Standards.30.0.html [last accessed 15 Jul. 2018].
LoC (Library of Congress) (2009) 'What is a marc record, and why is it important?'. Available online: www.loc.gov/marc/umb/um01to06.html [last accessed 11 Jul. 2018].
Lommel, A. (2006) 'Localization standards, knowledge- and information-centric business models, and the commoditization of linguistic information', in: K. Dunne (ed.) *Issues in localization*. Amsterdam & Philadelphia: John Benjamins Publishing, 223–240.
Lommel, A. A. Burchardt and H. Uszkoreit (eds) (2015). *Multidimensional Quality Metrics (MQM) Definition*. Available online: www.qt21.eu/mqm-definition/definition-2015-12-30.html [last accessed 24 Jul. 2018].
Luxbacher, G. (2017) 'Neue Monografie: DIN von 1917 bis 2017: Normung zwischen Konsens und Konkurrenz im Interesse der technisch-wirtschaftlichen Entwicklung', Available online: www.din.de/de/din-und-seine-partner/presse/mitteilungen/neue-monografie-din-von-1917-bis-2017–251158 [last accessed 2 Jul. 2018].
Martincic, C. J. (1997) 'IT standards: A brief history of ISO'. Available online: www.sis.pitt.edu/mbsclass/standards/martincic/isohistr.htm [last accessed 2 Jul. 2018].
Melby, A. K. (1991) 'MicroMATER. A proposed standard format for exchanging lexical / terminological data files', *Meta*, 36 (1), 135–160.
Melby, A., K. D. Schmitz and S. E. Wright (2001) 'Terminology interchange', in G. Budin. and S. E. Wright (eds) *The handbook of terminology management*: *applications-oriented terminology management*, Amsterdam & Philadelphia: John Benjamins Publishing, Vol. II, 613–642.
Morey, S., M. W. Post and V. A. Friedman (2013) 'The language codes of ISO 639: a premature, ultimately unobtainable, and possibly damaging standardization', PARDISEC RRR Conference, December 2013. Available online: www.academia.edu/4725536/The_language_codes_of_ISO_639_A_premature_ultimately_unobtainable_and_possibly_damaging_standardization?auto=download [last accessed 7 Aug. 2018].
NPR (2003) 'Alphabetitian to the world: An interview with Michael Everson'. Available online: http://archives.wbur.org/theconnection/2003/11/20/alphabetician-to-the-world.html [last accessed 1 Nov. 2018].
OASIS (2018) 'Advancing open standards for the information society'. Available online: www.oasis-open.org [last accessed 15 Jul. 2018].
OVE (2018) 'Historical evolution'. Available online: www.ove.at/en/standardization-oek/standardization/history/ [last accessed 3 Jul. 2018].
Page, C. H. and P. Vigoureux (1975) *The International Bureau of Weights and Measures: 1875–1975* (Translation of the BIPM Centennial Volume), Washington, D.C.: US Department of Commerce, National Bureau of Standards Special Publication 420, U.S. Government Printing Office.
SIL (2018a) 'About SIL'. Available online: www.sil.org/about [last accessed 12 Jul. 2018].

SIL (2018b). 'Ethnologue'. Available online: www.ethnologue.com/ [last accessed 12 Jul. 2018].
SKOS (2004) 'Simple Knowledge Organization System'. Available online: www.w3.org/2004/02/skos/ [last accessed 2 Aug. 2018].
SKOS (2012) www.w3.org/2004/02/skos/intro [last accessed 2 Aug. 2018].
Standards Lists (2018, dynamically updated) 'Arranged by standards number'; 'Arranged by TC37 sub-committee'; 'Arranged by topic': www.ttt.org/standards-lists/ [last accessed 29 Dec. 2018].
Technopedia (2018) 'Top-level Domain (TLD)'. Available online: www.techopedia.com/definition/1348/top-level-domain-tld. [last accessed 1 Nov. 2018].
TEI (2018a) 'The Text Encoding Initiative'. Available online: www.tei-c.org/ [last accessed 10 Jul. 2018].
TEI (2018b) 'Text Encoding Initiative: History'. Available online: www.tei-c.org/about/history/ [last accessed 4 Jul. 2018].
TEI (1994/1999) *TEI P3. Guidelines for Electronic Text Encoding and Interchange,* in C. M. Sperberg-McQueen and L. Burnard (eds), Chicago and Oxford: ACH, ACL, ALLC. Available online: www.tei-c.org/Vault/GL/P3/index.htm [last accessed 10 Jul. 2018].
TerminOrgs (2018) 'Terminology for Large Organizations'. Available online: www.terminorgs.net/ [last accessed 14 Jul. 2018].
Trojar, M. (2017) 'Wüster's view of terminology', *Slovfesnski jezik –Slovene Linguistic Studies,* 11, 55–85.
UNICODE (2018a) 'What is UNICODE?'. Available online: www.unicode.org/standard/WhatIsUnicode.html [last accessed 6 Jul. 2018].
UNICODE (2018b) 'CLDR 33.1 (Unicode Common Locale Data Repository, Specifications)'. Available online: http://cldr.unicode.org/index/downloads/cldr-33-1 [last accessed 12 Jul. 2018].
Vinay, J.-P. and J. Darbelnet (1973) *Stylistique comparée du français et de l'anglais,* Paris: Didier.
Wikipedia (2016) 'ISO TC 37'. Available online: https://en.wikipedia.org/wiki/ISO/TC_37 [last accessed 3 Jul. 2018].
Wright, S. E. (2001) 'Data categories for terminology management', in G. Budin, G. and S. E. Wright (eds), *The handbook of terminology management*: *applications-oriented terminology management*, Vol. II, Philadelphia & Amsterdam: John Benjamins Publishing, 572–599.
Wright, S. E. (2004) 'Assessment, quality assurance, and standards', Currently withdrawn web report.
Wright, S. E. (2006a) 'Standards for the language industry', *Post-Conference Proceedings of Terminology, Computing and Translation, 26–27 March 2004*, An International Conference at the University of Wales Swansea, in P. Ten Hacken (ed.), 19–39.
Wright, S. E. (2006b) 'The creation and application of language industry standards', in K. Dunne (ed.), *Issues in localization*. Amsterdam & Philadelphia: John Benjamins Publishing, 241–280.
Wright, S. E. (2013. 'Standardization in human language technology', in C. A. Chappelle (ed.) *The encyclopedia of applied linguistics*, Hoboken: Wiley-Blackwell, 5378–5385. Print and Electronic.
Wright, S. E. (2017) 'Whither TC 37: Moving Forward on All Fronts', Keynote presentation, ILKR, Industry Meets Language and Knowledge Resources, Vienna, June, 2017
Wüster, E. (1991) *Einführung in die Allgemeine Terminologielehre und terminologische Lexikographie* (Abhandlungen zur Sprache und Literatur), Wien: Schriftenreihe der Technischen Universität Wien.
Arnaboldi, F. (2018) 'XML security cheat sheet', Available online: www.owasp.org/index.php/XML_Security_Cheat_Sheet [last accessed 23 Oct. 2018].
Bray, T. (2017) 'The JavaScript Object Notation (JSON) Data Interchange Format: RFC 8259', Available online: https://tools.ietf.org/html/rfc8259 [last accessed 23 Oct. 2018].
Closs, S. (2016) *DITA the topic-based XML standard: a quick start*, Switzerland: Springer International Publishing.
Davis, M. (2018) 'Unicode® Standard Annex #29: Unicode Text Segmentation', Available online: www.unicode.org/reports/tr29/ [last accessed 23 Oct. 2018].
DePalma, D. (2012) 'Language technology standards should support entire supply chain', *Multilingual* 23(3): 40.
Du, J., J. Roturier and A. Way (2010) 'TMX Markup: A challenge when adapting SMT to the localisation environment', *Proceedings of EAMT 2010 – 14th Annual Conference of the European Association for Machine Translation*, Saint-Raphaël, France.

Esselink, B. (2000) *A practical guide to localization*, Amsterdam & Philadelphia: John Benjamins Publishing.

Ferrier, G. (2007). *NET internationalization: the developer's guide to building global windows and web applications*, Upper Saddle River, NJ: Addison-Wesley.

Filip, D. (2012) 'The localization standards ecosystem', *Multilingual* 23(3): 29–36.

Forcada, M. L. (2014) 'On the annotation of TMX translation memories for advanced leveraging in computer-aided translation', *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC-2014)*. Reykjavik, Iceland: European Language Resources Association.

Gough, J. (2010) 'A troubled relationship: The compatibility of CAT tools', Available online: www.taus.net/think-tank/articles/translate-articles/a-troubled-relationship-the-compatibility-of-cat-tools [last accessed 12 Oct. 2018].

Guazzelli, A., M. Zeller, W. Lin, W and G. Williams (2009) 'PMML: An open standard for sharing models', *The R Journal*, 1(1):60–65.

Guillemin, P. and S. Trillaud (2012) 'What has become of LISA's OSCAR standards?, *Multilingual* 23(3): 38–41.

Heimes, C. (2017) defusedxml (version 0.5), Available online: https://github.com/tiran/defusedxml [last accessed 23 Oct. 2018].

Hudík, T. and A. Ruopp (2011) 'The integration of Moses into localization industry', in M. L. Forcada, H. Depraetere and V. Vandeghinste (eds) *Proceedings of the 15th Conference of the European Association for Machine Translation*, Leuven, Belgium, 47–53.

ITS 2.0. (2013) 'Internationalization Tag Set (ITS) Version 2.0: W3C Recommendation 29 October 2013', Filip, D., S. McCance, D. Lewis, C. Lieske, A. Lommel, J. Kosek, F. Sasaki and Y. Savourel (eds), Available online: www.w3.org/TR/its20/ [last accessed 23 Oct. 2018].

Melby, A. K., A. Lommel, N. Rasmussen and J. Housley (2012) 'The Language Interoperability Portfolio (Linport) Project: Towards an open, nonproprietary format for packaging translation materials', *The Journal of Internationalization and Localization* 2, 21–35.

Microsoft. (2018) Microsoft terminology collection, Available at: www.microsoft.com/en-us/language/Terminology [last accessed 23 Sept. 2018].

Miller, C. (2017) *Cross-platform localization for native mobile apps with Xamarin*, New York: Apress.

Navigli, R. and S. Ponzetto (2012) 'BabelNet: the automatic construction, evaluation and application of a wide-coverage multilingual semantic network', *Artificial Intelligence*, 193, 217–250.

OAXAL 1.0. (2009) 'Reference Model for Open Architecture for XML Authoring and Localization 1.0: OASIS Committee Specification, Zydroń, A. and D. Saldana (eds), Available online: www.oasis-open.org/committees/download.php/35736/OASIS%20Open%20Architecture%20for%20XML%20Authoring%20and%20Localization%20Reference%20Model%20%28OAXAL%29.pdf [last accessed 23 Oct. 2018].

Okura, S., Y. Yamamoto, H. Ito, M. Kato, M. Shimazu and F. Bond (2011) 'UTX 1.11, a Simple and Open User Dictionary/Terminology Standard, and Its Effectiveness with Multiple MT Systems', *Proceedings of the 13th Machine Translation Summit*, Xiamen, China, 587–594.

Petty, D. (2017) 'XML vs. JSON: A security perspective', Available from: https://blog.securityevaluators.com/xml-vs-json-security-risks-22e5320cf529 [last accessed 23 Oct. 2018].

Roturier, J., L. Mitchell and D. Silva (2013) 'The ACCEPT post-editing environment: A flexible and customisable online tool to perform and analyse machine translation post-editing'. In S. O'Brien, M. Simard, and L. Specia (eds), *Proceedings of the 2nd Workshop on Post-Editing Technology and Practice (WPTP-2)*, Nice, France119–128.

Savourel, Y. (2001) *XML internationalization and localization*. Indianapolis, Ind: Sams.

Savourel, Y. (2014) 'An introduction to XLIFF 2.0', *Multilingual* 25(4): 42–47.

Schaffer, M. (2014) 'Introduction to the IEEE 1874 open manual format, oManual', *IEEE Consumer Electronics Magazine* 3(4):13–14.

SRX 2.0. (2008). 'SRX 2.0 Specification', Pooley, D. and R. M. Raya, R. M (eds), Available from: https://web.archive.org/web/20090709131535/www.lisa.org:80/fileadmin/standards/srx20.html [last accessed 24 Oct. 2018].

Stewart, J. (2018). 'Interoperability based on Linport', *Multilingual* 29(2): 27–29.

TBX 2008. (2008) 'Systems to manage terminology, knowledge, and content – TermBase eXchange (TBX)', Available online: www.gala-global.org/sites/default/files/uploads/pdfs/tbx_oscar_0.pdf [last accessed 24 Oct. 2018].

TerminOrgs. (2014) 'TBX-BASIC Specification', Available online:www.terminorgs.net/downloads/TBX_Basic_Version_3.1.pdf [last accessed 24 Oct. 2018].
Tingley, C. (2017) 'JLIFF: Where we are, and where we're going', Presentation at FEISGILTT 2017, Available online: www.slideshare.net/ChaseTingley/jliff-where-we-are-and-where-were-going [last accessed 24 Oct. 2018].
W3C. (2008) 'Best Practices for XML Internationalization: W3C Working Group Note, 13 February 2008', Savourel, Y., J. Kosek, J and R. Ishida (eds), Available online: www.w3.org/TR/xml-i18n-bp/ [last accessed 23 Oct. 2018].
Walsh, N. (1999) *DocBook: the definitive guide*. Sabastopol, CA: O'Reilly & Associates.
Wright, S. E. (2018) 'TBX dialects: making exchange work for you – ISO 30042 – TermBase eXchange', in B. Ahrens, L. Link, U-B. Schilly and U. Wienen (eds), Festschrift für Klaus-Dirk Schmitz, Berlin: Frank & Timme, 225–243.
XLIFF 2.0. (2014) 'XLIFF Version 2.0: OASIS Standard', T. Comerford, D.Filip, R. M. Raya, and Y. Savourel (eds), Available online: http://docs.oasis-open.org/xliff/xliff-core/v2.0/xliff-core-v2.0.html. [last accessed 23 Oct. 2018].
Zydroń, A. (2014a) 'Cloud translation process, current and future', *Multilingual* 25(1): 34–37.
Zydroń, A. (2014b) 'GMX-V: Slaying the word count dragon', *Multilingual* 25(5): 33–36.
Abekawa, T. and K. Kageura (2009) 'QRpotato: A system that exhaustively collects bilingual technical term pairs from the Web', *Proceedings of the third international universal communication symposium*. Tokyo, 115–119.
Ananiadou, S. (1994) 'A methodology for automatic term recognition', *Proceedings from COLING 1994*. Kyoto, 1034–1038.
Arcan, M., M. Turchi, S. Tonelli and P. Buitelaar (2017) 'Leveraging bilingual terminology to improve machine translation in a CAT environment', *Natural Language Engineering*, *23*(5), 763–788.
Bourigault, D. (1992) 'Surface grammatical analysis for the extraction of terminological noun phrases', *Proceedings from COLING 1992*, Nantes, 977–981.
Bowker, L. (2011) 'Off the record and on the fly: Examining the impact of corpora on terminographic practice in the context of translation', in A. Kruger, K. Wallmach & J. Munday (eds), *Corpus-based translation studies: Research and applications*, London: Continuum, 211–236.
Bowker, L. (2014) 'Terminology and translation', in H. J. Kockaert and F. Steurs (eds), *Handbook of terminology*, Vol. 1, Amsterdam & Philadelphia: John Benjamins Publishing, 304–323.
Byrne, J. (2007) 'Caveat translator: Understanding the legal consequences of errors in professional translation', *The Journal of Specialised Translation*, *7*, 2–24.
Cabré, M. T. (2003) 'Theories of terminology: Their description, prescription and explanation', *Terminology*, *9*(2), 163–199.
Castilho, S., J. Moorkens, F. Gaspari, I. Calixto, J. Tinsley and A. Way (2017) 'Is neural machine translation the new state-of-the-art?', *The Prague Bulletin of Mathematical Linguistics*, *108*, 109–120. doi: 10.1515/pralin-2017-0013
Dagan, I. and K. W. Church (1997) 'Termight: coordinating humans and machines in bilingual terminology acquisition', *Machine Translation*, *12*(1–2), 89–107.
Daille, B., E. Gaussier and J-M. Langé (1994) 'Towards automatic extraction of monolingual and bilingual terminology', *Proceedings from COLING 1994*, Kyoto, 515–521.
Daille, B. (2017) *Term variation in specialised corpora: Characterisation, automatic discovery and applications*. Amsterdam & Philadelphia: John Benjamins Publishing.
Fung, P. and K. McKeown (1997) 'Finding terminology translation from non-parallel corpora', *Proceedings from the 5th international workshop on very large corpora,* Beijing, 192–202.
Gaussier, E. (1998) 'Flow network models for word alignment and terminology', *Proceedings from COLING 1998,* Montreal, 444–450.
Gomez Palou Allard, M. (2012) *Managing terminology for translation using translation environment tools: Towards a definition of best practices,* Unpublished Doctoral Thesis, Ottawa: University of Ottawa. Available online: http://dx.doi.org/10.20381/ruor-5747. [last accessed 18 Jan. 2019]
Hisamitsu, T., Y. Niwa, S. Nishioka, H. Sakurai, O. Imaichi, M. Iwayama and A. Takano (2000) 'Extracting terms by a combination of term frequency and a measure of term representativeness', *Terminology*, *6*(2), 211–232.
International Organization for Standardization (2003) ISO 16642:2003 *Computer applications in terminology – Terminological markup framework*, Geneva: ISO.

International Organization for Standardization (2008) ISO 30042:2008 *Systems to manage terminology, knowledge and content – TermBase eXchange (TBX)*, Geneva: ISO.
Kageura, K. (2014) 'Terminology and lexicography', in H. J. Kockaert and F. Steurs (eds) *Handbook of terminology*, Vol. 1. Amsterdam & Philadelphia: John Benjamins Publishing, 45–59.
Kageura, K. and B. Umino (1996) 'Methods of automatic term recognition: A review', *Terminology*, *3*(2), 259–289.
Karwacka, W. (2014). 'Quality assurance in medical translation', *The Journal of Specialised Translation*, *21*, 19–34.
Koehn, P. and R. Knowles (2017) 'Six challenges for neural machine translation', *Proceedings of the first workshop on neural machine translation*. https://arxiv.org/pdf/1706.03872.pdf [last accessed 30 Jan. 2019].
Kudashev, I., I. Kudasheva and L. Carlson (2010) 'TermFactory: A platform for collaborative ontology-based terminology work', in A. Dykstra and T. Schoonheim (eds) *Proceedings of the 14th EURALEX international congress*, Leeuwarden, The Netherlands, 931–936.
L'Homme, M-C. (1994) 'Terminology management in a machine-translation environment', *Terminology*, *1*(1), 121–135.
Lockwood, R. (2000) 'Machine translation and controlled authoring at Caterpillar', in R. C. Sprung (ed.) *Translating into success: Cutting-edge strategies for going global in a multilingual age*, Amsterdam & Philadelphia: John Benjamins Publishing, 187–202.
Luhn, H. P. (1957) 'A statistical approach to mechanized encoding and searching of literary information', *IBM Journal of Research and Development*, *2*(2), 159–165.
Manning, C., P. Raghavan and H. Schütze (2008) *Introduction to information retrieval*, Cambridge: Cambridge University Press.
Melby, A. K. (2008) 'TBX-Basic: Translation-oriented terminology made simple', *Revista Tradumática*, *6*. Available online: www.fti.uab.cat/tradumatica/revista/num6/articles/02/02.pdf [last accessed 18 Jan. 2019].
Melby, A. K. (2012) 'Terminology in the age of multilingual corpora', *The Journal of Specialised Translation*, *18*, 7–29.
Melby, A. K. (2014) 'TBX: A terminology exchange format for the translation and localisation industry' in H. J. Kockaert and F. Steurs (eds), *Handbook of terminology*, Vol. 1, Amsterdam & Philadelphia: John Benjamins Publishing, 393–424.
Mellinger, C. D. (2017) 'Translators and machine translation: Knowledge and skills gaps in translator pedagogy', *The Interpreter and Translator Trainer*, *11*(4), 280–293.
Morin, E., B. Daille, K. Takeuchi and K. Kageura (2010) 'Brains, not brawn: The use of "smart" comparable corpora in bilingual terminology mining', *ACM Transactions on Speech and Language Processing*, *7*(1), paper 1.
Reynolds, P. (2014) 'Machine translation, translation memory and terminology management', in H. J. Kockaert and F. Steurs (eds), *Handbook of terminology*, Vol. 1, Amsterdam & Philadelphia: John Benjamins Publishing, 276–287.
Rico, C. (2013) 'From hacker spirit to collaborative terminology: Resourcefulness in humanitarian work', *Translation Spaces*, *2*(2), 19–36.
Rychtyckyj, N. (2007, Fall), 'Machine translation for manufacturing: A case study at Ford Motor Company', *AI Magazine*, *28*(3), 31–43.
Sager, J. C. (1990) *A practical course in terminology processing*, Amsterdam & Philadelphia: John Benjamins Publishing.
Tonoike, M., M. Kida, T. Takagi, Y. Sasaki, T. Utsuro and S. Sato (2006) 'A comparative study on compositional translation estimation using a domain/topic-specific corpus collected from the Web', *Proceedings of the 2nd international workshop on Web as corpus,* Trento, 11–18.
Warburton, K. (2014) 'Managing terminology in commercial environments', in H. J. Kockaert and F. Steurs (eds) *Handbook of terminology*, Vol. 1, Amsterdam & Philadelphia: John Benjamins Publishing, 360–392.
Warburton, K. (2014a) *Narrowing the gap between termbases and corpora in commercial environments*, Unpublished Doctoral Thesis, Hong Kong: City University of Hong Kong. DOI: 10.13140/RG.2.1.3491.2800.
Warburton, K. (2017, Spring). 'Quality of terminology resources: A pragmatic approach', *Circuit*, *134*. Available online: www.circuitmagazine.org/dossier-133/quality-of-terminology-resources-a-pragmatic-approach. [last accessed 18 Jan. 2019]

Arrouart, C. and C. Bédard (2001) 'Éloge du bitexte', *Circuit*, 73, 30.
Artetxe, M., G. Labaka, E. Agirre and K. Cho (2017) 'Unsupervised neural machine translation', *arXiv preprint arXiv:1710.11041*.
Bahdanau, D., K. Cho and Y. Bengio (2014) 'Neural machine translation by jointly learning to align and translate', *arXiv preprint arXiv:1409.0473*.
Bédard, C. (2000) 'Mémoire de traduction cherche traducteur de phrases', *Traduire*, 186, 41–49.
Biçici, E. and M. Dymetman (2008, February) 'Dynamic translation memory: using statistical machine translation to improve translation memory fuzzy matches', *International Conference on Intelligent Text Processing and Computational Linguistics*. Berlin & Heidelberg: Springer, 454–465.
Bowker, L. (2005) 'Productivity vs. quality. A pilot study on the impact of translation memory systems', *Localisation Focus*, 4(1), 13–20.
Brown, P. F., J. C. Lai and R. L. Mercer (1991, June) 'Aligning sentences in parallel corpora', *Proceedings of the 29th annual meeting of the Association for Computational Linguistics (ACL '91)*. Association for Computational Linguistics,169–176.
Brown, P. F., V. J. D. Pietra, S. A. D. Pietra, and R. L. Mercer (1993) 'The mathematics of statistical machine translation: Parameter estimation', *Computational linguistics*, 19(2), 263–311.
Brown, P. F., J. Cocke, S. A. D. Pietra, V. J. D. Pietra, F. Jelinek, J. D. Lafferty, R. L. Mercer and P. S. Roossin (1990) 'A statistical approach to machine translation', *Computational linguistics*, 16(2), 79–85.
Cao, Q. and D. Xiong (2018) 'Encoding Gated Translation Memory into Neural Machine Translation', *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 3042–3047.
Carpuat, M., Y. Vyas and X. Niu (2017) 'Detecting cross-lingual semantic divergence for neural machine translation', *Proceedings of the First Workshop on Neural Machine Translation.* Association for Computational Linguistics, 69–79.
Chen, S. F. (1993, June) 'Aligning sentences in bilingual corpora using lexical information', *Proceedings of the 31st annual meeting on Association for Computational Linguistics*. Association for Computational Linguistics, 9–16.
Dyer, C., V. Chahuneau and N. A. Smith (2013) 'A simple, fast, and effective reparameterization of IBM Model 2', *Proceedings of the 2013 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*. Human Language Technologies, 644–648.
Gale, W. A. and K. W. Church (1993) 'A program for aligning sentences in bilingual corpora', *Computational Linguistics*, 19(1), 75–102.
Goutte, C., M. Carpuat and G. Foster (2012) 'The impact of sentence alignment errors on phrase-based machine translation performance', *Proceedings of the 10th Conference of the Association for Machine Translation in the Americas* (AMTA).
Harris, B. (1988) 'Bi-text, a new concept in translation theory', *Language Monthly*, 54 (March), 8–10.
Hieber, F., T. Domhan, M. Denkowski, D. Vilar, A. Sokolov, A. Clifton and M. Post (2017) 'Sockeye: A toolkit for neural machine translation', *arXiv preprint arXiv:1712.05690*.
Isabelle, P., M. Dymetman, G. Foster, J. M. Jutras, E. Macklovitch, F. Perrault, X. Ren and M. Simard. (1993, October) 'Translation analysis and translation automation', *Proceedings of Fifth International Conference on Theoretical and Methodological Issues in Machine Translation (TMI '93): MT in the Next Generation*, 15–22.
Junczys-Dowmunt, M., R. Grundkiewicz, T. Grundkiewicz, H. Hoang, K. Heafield, T. Neckermann, F. Seide, U. Germann, A. F. Aji, N. Bogoychev and A. Martins (2018) 'Marian: Fast neural machine translation in C++', *arXiv preprint arXiv*:1804.00344.
Kay, M. and M. Röscheisen (1993) 'Text-translation alignment', *Computational linguistics*, 19(1), 121–142.
Khayrallah, H. and P. Koehn (2018) 'On the Impact of Various Types of Noise on Neural Machine Translation', *arXiv preprint arXiv*:1805.12282.
Kilgarriff, A., V. Baisa, J. Bušta, M. Jakubíček, V. Kovář, J. Michelfeit, P. Rychlý and V. Suchomel (2014) 'The Sketch Engine: ten years on', *Lexicography* 1(1), 7–36.
Klein, G., Y. Kim, Y. Deng, J. Senellart and A. M. Rush (2017) 'OpenNMT: Open-source toolkit for neural machine translation', *arXiv preprint arXiv*:1701.02810.
Koehn, P., H. Khayrallah, K. Heafield and M. L. Forcada (2018) 'Findings of the WMT 2018 shared task on parallel corpus filtering', *Proceedings of the Third Conference on Machine Translation*: *Shared Task Papers*, 726–739.

Koehn, P. and J. Senellart (2010, November) 'Convergence of translation memory and statistical machine translation', *Proceedings of the Association for Machine Translation in the Americas (AMTA) Workshop on MT Research and the Translation Industry*, 21–31.

Koehn, P. (2005, September) 'Europarl: A parallel corpus for statistical machine translation', *Proceedings of the 10th Machine Translation Summit (MT Summit X)*, 79–86.

Lample, G., M. Ott, A. Conneau, L. Denoyer and M. A. Ranzato (2018) 'Phrase-based & neural unsupervised machine translation', *arXiv preprint arXiv*:1804.07755.

Lamraoui, F. and P. Langlais (2013) 'Yet another fast, robust and open source sentence aligner. Time to reconsider sentence alignment?', *Proceedings of the 14th Machine Translation Summit (MT Summit XIV)*, 77–84.

Langlois, L. (1996, October) 'Bilingual concordances: A new tool for bilingual lexicographers', In *Proceedings of the Second Conference of the Association for Machine Translation in the Americas* (AMTA '96), 34–42.

Liang, P., B. Taskar and D. Klein (2006, June) 'Alignment by agreement', *Conference of the North American Chapter of the Association of Computational Linguistics: Proceedings of the Main Conference (HLT-NAACL 2006)*. Association for Computational Linguistics, 104–111.

Macklovitch, E., M. Simard and P. Langlais (2000, May) 'TransSearch: A Free Translation Memory on the World Wide Web', In *Proceedings of the 2nd International Conference on Language Resources & Evaluation* (LREC 2000).

Martín Mor, A. (2018) 'Do translation memories affect translations? Final results of the TRACE project', *Perspectives*, DOI: 10.1080/0907676X.2018.1459753.

McLaren, K. (2014) 'Bilinguisme législatif: regard sur l'interprétation et la rédaction des lois bilingues au Canada', *Ottawa Law Review*, 45(1), 21–58.

Melby, A. K. (1981) 'A bilingual concordance system and its use in linguistic studies', *Proceedings of the Eight Lacus Forum*, 541–549.

Moore, R. C. (2002, October) 'Fast and accurate sentence alignment of bilingual corpora', In *Proceedings of the Third Conference of the Association for Machine Translation in the Americas* (AMTA '98), 135–144.

Nagao, M. (1984) 'A framework of a mechanical translation between Japanese and English by analogy principle', In *Proceedings of the International NATO Symposium on Artificial and human intelligence*, 173–180.

Newmark, P. (1988). *A textbook of translation* (Vol. 66). New York: Prentice Hall.

Och, F. J. and H. Ney (2000, October) 'Improved statistical alignment models', *Proceedings of the 38th Annual Meeting of the Association for Computational Linguistics* (ACL 2000). Association for Computational Linguistics, 440–447.

Peter, J. T., A. Nix and H. Ney (2017) 'Generating alignments using target foresight in attention-based neural machine translation', *The Prague Bulletin of Mathematical Linguistics*, 108(1), 27–36.

Pym, A. (2011) 'What technology does to translating', *Translation and Interpreting*, 3(1),1–9.

Resnik, P. (1998, October) 'Parallel strands: A preliminary investigation into mining the Web for bilingual text', In *Proceedings of the Third Conference of the Association for Machine Translation in the Americas (AMTA '98)*, 72–82.

Simard, M. and P. Isabelle (2009) Phrase-based machine translation in a computer-assisted translation environment. *Proceedings of the Twelfth Machine Translation Summit (MT Summit XII)*, 120–127.

Simard, M. and E. Macklovitch (2005 March) 'Studying the human translation process through the TransSearch log-files', In *Proceedings of the Association for the Advancement of Artificial Intelligence (AAAI) Spring Symposium on Knowledge Collection from Volunteer Contributors*, 70–77.

Simard, M., G. F. Foster and P. Isabelle (1992) 'Using cognates to align sentences in bilingual corpora', *Proceedings of the Fourth International Congress on Theoretical and Methodological Issues in Machine Translation (TMI-92)*, 67–81.

Smith, J. R., H. Saint-Amand, M. Plamada, P. Koehn, C. Callison-Burch and A. Lopez (2013) 'Dirt cheap Web-scale parallel text from the Common Crawl', *Proceedings of the 51st Annual Meeting of the Association for Computational Linguistics* (Vol. 1), 1374–1383.

Tiedemann, J. (2009) 'News from OPUS-A collection of multilingual parallel corpora with tools and interfaces', *Recent Advances in Natural Language Processing* (5): 237–248.

Toral, A., M. Poch, P. Pecina and G. Thurmair (2012) 'Efficiency-based evaluation of aligners for industrial applications', *Proceedings of the 16th Annual Conference of the European Association for Machine Translation (EAMT 2012)*. Fondazione Bruno Kessler, 57–60.

Vaswani, A., S. Bengio, E. Brevdo, F. Chollet, A. N. Gomez, S. Gouws, L. Jones, Ł. Kaiser, N. Kalchbrenner, N. Parmar and R. Sepassi (2018) 'Tensor2tensor for neural machine translation', *Proceedings of the 13th Conference of the Association for Machine Translation in the Americas* (AMTA 2018 – Vol. 1: MT Researchers' Track), 193–199.

Vaswani, A., N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez, Ł. Kaiser, and I. Polosukhin (2017) 'Attention is all you need', *Advances in Neural Information Processing Systems*, 5998–6008.

Véronis, J. (2000) 'From the Rosetta stone to the information society', *Parallel Text Processing*. Dordrecht: Springer, 1–24.

Wagner, R. A. and M. J. Fischer (1974) 'The string-to-string correction problem', *Journal of the ACM (JACM)*, 21(1), 168–173.

Wu, D. (1994, June) 'Aligning a parallel English-Chinese corpus statistically with lexical criteria', *Proceedings of the 32nd Annual Meeting on Association for Computational Linguistics (ACL '94)*. Association for Computational Linguistics, 80–87.

Zens, R., F. J. Och, and H. Ney (2002, September) 'Phrase-based statistical machine translation', in M. Jarke, G. Lakemeyer, J. Koehler (eds) *KI 2002: Advances in Artificial Intelligence. KI 2002. Lecture Notes in Computer Science*, vol 2479. Springer, Berlin, Heidelberg. 18–32.

3PlayMedia (2015) 'Eight benefits of transcribing & captioning videos'. Available online: www.3playmedia.com/2015/04/21/8-benefits-of-transcribing-captioning-videos/ [last accessed 4 Mar. 2018].

Agrifoglio, M. (2004) 'Sight translation and interpreting: A comparative analysis of constraints and failures', *Interpreting* 6(1): 43–67.

Aparicio, A., M. Benis and G. Cross (2001) 'ITI 2001 rates & salaries survey', London: Institute of Translation and Interpreting.

Bangalore, S. (2014) 'Speech technology and computer assisted translation', *International Workshop on Translation, Bilingualism and Translation Technology*, CRITT, Copenhagen, Denmark.

Baumeister, R. F., E. Bratslavsky, M. Muraven and D. M. Tice (1998) 'Ego depletion: is the active self a limited resource?' *Journal of Personality and Social Psychology* 74(5): 1252–1265.

Brousseau, J., C. Drouin, G. Foster, P. Isabelle, R. Kuhn, Y. Normandin and P. Plamondon (1995) 'French speech recognition in an automatic dictation system for translators: The TransTalk Project', *Proceedings of Eurospeech*. Madrid, Spain.

Brown, P. F., S. F. Chen, S. A. Della Pietra, V. J. Della Pietra, A. S. Kehler and R. L. Mercer (1994) 'Automatic speech recognition in machine-aided translation', *Computer Speech & Language* 8(3): 177–187.

Ciobanu, D. (2014) 'Of dragons and speech recognition wizards and apprentices', *Tradumàtica: Tecnologies de La Traducció* 12: 524–538.

Ciobanu, D. (2016) 'Automatic speech recognition in the professional translation process', *Translation Spaces* 5(1): 124–144.

CIOL and ITI (2011) '2011 Rates and Salaries Survey for Translators and Interpreters', London: Chartered Institute of Linguists and Institute of Translation and Interpreting.

CIoL, EC and ITI (2017) 'UK Translator Survey'. Available online: https://ec.europa.eu/unitedkingdom/sites/unitedkingdom/files/ukts2016-final-report-web_-_18_may_2017.pdf [last accessed 23 Dec. 2018].

Díaz Cintas, J. and A. Remael (2007) *Audiovisual translation: subtitling*, Manchester: St Jerome Publishing.

Dragsted, B. and I. Hansen (2009) 'Exploring translation and interpreting hybrids. The case of sight translation, *Meta* 54(3): 588–604.

Dragsted, B., I. M. Mees and I. G. Hansen (2011) 'Speaking your translation: students' first encounter with speech recognition technology', *The International Journal for Translation & Interpreting Research* 3(1): 10–43.

Dumouchel, P., G. Boulianne and J. Brousseau (2011) 'Measures for quality of closed captioning', in A. Şerban, A. Matamala and J. M. Lavaur (eds) *Audiovisual translation in close-up: practical and theoretical approaches,* Bern: Peter Lang: 161–172.

Ehrensberger-Dow, M. and G. Massey (2014) 'Cognitive ergonomic issues in professional translation', in J. Schwieter and A. Ferreira (eds) *The development of translation competence: theories*

and methodologies from psycholinguistics and cognitive science. Newcastle upon Tyne: Cambridge Scholars Publishing, 58–86.

Ehrensberger-Dow, M. and A. Hunziker Heeb (2016) 'Investigating the ergonomics of the technologized translation workplace', in R. Muñoz Martín (ed) *Re-embedding translation process research,* Amsterdam & Philadelphia: John Benjamins Publishing: 69–88.

ELIA, EUATC, EMT, GALA, FIT Europe and LINDweb (2018) '2018 Language Industry Survey – Expectations and Concerns of the European Language Industry'. Available online: http://elia-association.org/blog/2018-european-language-industry-survey/. [last accessed 23 Dec. 2018].

European Commission (2015) 'European Accessibility Act – Employment, Social Affairs & Inclusion'. Available online: http://ec.europa.eu/social/main.jsp?catId=1202 [last accessed 23 Dec. 2018].

European Commission (2016) 'Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies'. Available online: http://data.europa.eu/eli/dir/2016/2102/oj/eng [last accessed 23 Dec. 2018]

Garcia Martinez, M., K. Singla, A. Tammewar, B. Mesa-Lao, A. Thakur, M. Carl and S. Bangalore (2013) 'SEECAT: ASR & Eye tracking enabled computer-assisted translation', in *Proceedings of the 17th Annual Conference of the European Association for Machine Translation: EAMT2014*, Croatia: 81–88.

Graham, R., P. Romero Fresco, A. Lambourne, R. Holmes and T. Middleton (2015) 'StageTEXT: CaptionCue. Research and Development Report'. Available online: http://tinyurl.com/pghryw3 [last accessed 23 Dec. 2018]

Helsinki University of Technology (1997) 'History and Development of Speech Synthesis'. Available online: http://research.spa.aalto.fi/publications/theses/lemmetty_mst/chap2.html [last accessed 28 Oct. 2018]

International Organization for Standardization (2015) 'ISO 17100:2015 – Translation services – Requirements for translation services'. Available online: www.iso.org/standard/59149.html [last accessed 23 Dec. 2018]

Jelinek, F. (2005) 'Some of my best friends are linguists', *Language Resources and Evaluation* 39 (1): 25–34.

Lambourne, A. and L. Bywood (2016) 'Automated Detection and Correction of Errors in Real-time Speech-to-text', in *ASLING Conference Proceedings*, London, UK.

Lamere, P., P. Kwok, W. Walker, E. B. Gouvea, R. Singh, B. Raj and P. Wolf (2003) 'Design of the CMU sphinx-4 decoder', in *Proceedings of the 8th European Conference on Speech Communication and Technology,* Geneva, Switzerland: 1181–1184.

Linn, A. (2016) 'Historic Achievement: Microsoft researchers reach human parity in conversational speech recognition'. Available online: https://blogs.microsoft.com/ai/historic-achievement-microsoft-researchers-reach-human-parity-conversational-speech-recognition/ [last accessed 23 Dec. 2018]

Mesa-Lao, B. (2014) 'Speech-Enabled Computer-Aided Translation: A Satisfaction Survey with Post-Editor Trainees', in *Proceedings of the EACL 2014 Workshop on Humans and Computer-assisted Translation,* Gothenburg, Sweden: 99–103.

MultiLingual (2018) 'Record number of attendees flock to Silicon Valley for LocWorld35', *MultiLingual* 29(1): 8–9.

O'Brien, S., M. Ehrensberger-Dow, M. Connolly and M. Hasler (2017) 'Irritating CAT tool features that matter to translators', *HERMES – Journal of Language and Communication in Business*, (56): 145–162.

Ofcom (2017) Ofcom's Code on Television Access Services. Available online: www.ofcom.org.uk/__data/assets/pdf_file/0020/97040/Access-service-code-Jan-2017.pdf [last accessed 23 Dec. 2018].

van den Oord, A., S. Dieleman, H. Zen, K. Simonyan, O. Vinyals, A. Graves and K. Kavukcuoglu (2016) 'WaveNet: A Generative Model for Raw Audio'. Available online: http://arxiv.org/abs/1609.03499 [last accessed 23 Dec. 2018].

Orero, P. and S. Braun (2010) 'Audio description with audio subtitling – an emergent modality of audiovisual localisation', *Perspectives* 18(3): 173–188.

O'Shaughnessy, D. (2008) 'Invited paper: automatic speech recognition: history, methods and challenges', *Pattern Recognition* 41(10): 2965–2979.

Papineni, K., S. Roukos, T. Ward and W-J. Zhu (2002) 'BLEU: A Method for Automatic Evaluation of Machine Translation', in *Proceedings of the 40th Annual Meeting on Association for Computational Linguistics ACL,* Stroudsburg, PA, USA: 311–318.

Pierce, J. R., J. B. Carroll, E. P. Hamp, D. G. Hays, C. F. Hockett, A. G. Oettinger and A. Perlis (1966) *Language and Machines: Computers in Translation and Linguistics*. Washington, DC, USA: National Academy of Sciences/National Research Council.

Ray, R. (2017) 'Localizing apps for multilingual conversations', *MultiLingual* 28(9): 44–46.

Remael, A. (2009) 'Respeaking at the University of Antwerp and Antwerp University College: Research and training', in *Proceedings of the 2nd International Seminar on Real-Time Intralingual Subtitling,* Universitat Autònoma de Barcelona.

Romero-Fresco, P. (2011) *Subtitling through speech recognition: re-speaking*, Manchester: St. Jerome Publishing.

Romero-Fresco, P. (2018) 'Re-speaking: subtitling through speech recognition', in L. Perez-Gonzalez (ed.) *The Routledge handbook of audiovisual translation studies*, Abingdon & New York: Routledge, 96–113.

Romero-Fresco, P. and F. Pöchhacker (2017) 'Quality assessment in interlingual live subtitling: The NTR model', *Linguistica Antverpiensia* (16): 149–167.

Safar, L. (2017) 'Multilingual technologies soar in travel and hospitality', *MultiLingual* 28(4): 43–47.

Seligman, M., A. Waibel and A. Joscelyne (2017) 'TAUS Speech-to-Speech Translation Technology Report'. De Rijp:TAUS BV.

Secară, A. (2018) 'Surtitling and captioning for theatre and opera', in L. Perez-Gonzalez (ed.) *The Routledge handbook of audiovisual translation studies*, Abingdon & New York: Routledge, 130–144.

Shen, J., R. Pang, R. J. Weiss, M. Schuster, N. Jaitly, Z. Yang and Y. Wu (2017) Natural TTS Synthesis by Conditioning WaveNet on Mel Spectrogram Predictions. Available online: http://arxiv.org/abs/1712.05884 [last accessed 23 Dec. 2018]

Szarkowska, A. (2011) 'Text-to-speech audio description: towards wider availability of AD', *The Journal of Specialised Translation* (15): 142–162.

Tzoukermann, E. and C. Miller (2018) 'Evaluating automatic speech recognition in Translation', in *Proceedings of the 13th Conference of the Association for Machine Translation in the Americas (Volume 2: User Papers)*. Association for Machine Translation in the Americas, Boston, MA: 294–302.

VocalEyes (2017) 'VocalEyes to partner on transformational new theatre access technology'. Available online: http://vocaleyes.co.uk/vocaleyes-to-partner-on-transformational-new-theatre-access-technology/ [last accessed 23 Dec. 2018]

Wendt, C. (2016) 'Behind Skype's machine interpreting', *MultiLingual* 27(6): 45–49.

Zapata, J. and A. Søeborg Kirkedal (2015) 'Assessing the Performance of Automatic Speech Recognition Systems When Used by Native and Non-Native Speakers of Three Major Languages in Dictation Workflows', in *Proceedings of the 20th Nordic Conference of Computational Linguistics*, 201–210.

Zapata, J., S. Castilho and J. Moorkens (2017) 'Translation Dictation vs. Post-editing with Cloud-based Voice Recognition: A Pilot Experiment', in *Proceedings of the MT Summit XVI – The 16th Machine Translation Summit*, Nagoya, Japan.

DERCOM COTI project. Home Page. Available online: www.dercom.de/en/projects[last accessed 28 Dec. 2018].

GALA TAPICC Initiative. Home Page. Available online: www.gala-global.org/tapicc-translation-api-class-and-cases-initiative [last accessed 28 Dec. 2018].

Green, S. (2016) 'Beyond Post-Editing: Advances in Interactive Translation Environment'. Available online: www.atanet.org/chronicle-online/featured/beyond-post-editing-advances-in-interactive-translation-environments [last accessed 28 Dec. 2018].

Lommel, A. (2018) 'Multidimensional Quality Metrics (MQM) Issue Types: DRAFT 2018-10-04.' Available online: www.w3.org/community/mqmcg/2018/10/04/draft-2018-10-04/ [last accessed 28 Dec. 2018].

Massardo, I., J. van der Meer and M. Khalilov (2016) *TAUS translation technology landscape report*, De Rijp: TAUS.

Pielmeier, H. and A. Lommel (2017) 'Will AI Eliminate the Need for Project Managers?' – CommonSenseAdvisory report.

Sargent, B. (2016) 'TMS Revolution: Year of the Connector', *CommonSenseAdvisory report*.
Sargent, B. and D. DePalma (2014) 'Translation Management Systems for Enterprises and LSPs' *CommonSenseAdvisory report*.
TAUS DQF. Home Page. Available online: www.taus.net/evaluate/dqf-background [last accessed 28 Dec. 2018].
Zetzsche, J. (2015) *Translation technology: What's still missing and what has been fixed?* – Compiled by Jost Zetzsche 2015.
Zetzsche, J. (2016) 'Translation Technology – What's Still Missing and What Has Been Fixed?'. Available online: www.ecpdwebinars.co.uk/downloads/translation-technology-whats-still-missing-and-what-has-been-fixed/[last accessed 28 Dec. 2018].
Zetzsche, J. and J. DeCamp (2015) 'The history of translation technology in the United States', in S. W. Chan (ed) the *Routledge encyclopedia of translation technology*. Oxford & New York: Routledge, 375–392.
Chambers, D. (2000) *Automatic bilingual terminology extraction: A practical approach*, *Translating and the Computer 22: Proceedings of the Twenty-second International Conference*, London: Aslib. Available online: http://mt-archive.info/Aslib-2000-Chambers.pdf [last accessed 05 Sept. 2018].
Doherty, S. (2016) 'The impact of translation technologies on the process and product of translation', *International Journal of Communication* 10: 947–969.
Foo, J. (2012) *Computational Terminology: Exploring Bilingual and Monolingual Term Extraction,* Doctoral thesis, Linköping University, Sweden.
Frérot, C. (2018) 'Enseignement de la terminologie appliquée à une formation universitaire professionnalisante: illustration d'une collaboration avec l'Organisation Mondiale de la Propriété Intellectuelle', online journal *Myriades* 4: 35–52. Available online: http://cehum.ilch.uminho.pt/myriades/static/volumes/4-3.pdf [last accessed 30 Oct. 2018].
ISO (International Organization for Standardization). 1999. ISO 704: 1999. *Terminology Work – Principles and Methods*. Geneva, CH: ISO.
ISO (International Organization for Standardization). 1999. ISO 12620: 1999. *Computer Applications in Terminology – Data Categories*. Geneva, CH: ISO.
ISO (International Organization for Standardization). 2000. ISO 1087-1:2000. *Terminology Work – Vocabulary – Part 1: Theory and Application*. Geneva, CH: ISO.
Kinoshita, S., T. Oshio and T. Mitsuhashi (2017) *Comparison of SMT and NMT trained with large Patent Corpora: Japio at WAT2017*, *Proceedings of the 4th Workshop on Asian Translation*, Taipei, 140–145.
Lagoudaki, E. (2006) 'Translation Memories Survey 2006: users' perceptions around TM use', *Translating and the Computer* 28: 1–29.
Le, Q. and T. Mikolov (2014) 'Distributed representation of sentences and documents', *Proceedings of the 31st International Conference on Machine Learning*, Beijing, 1188–1196.
O'Brien, S. (1998) 'Practical experience of computer-aided translation tools in the localization industry', in L. Bowker, M. Cronin, D. Kenny and J. Pearson (eds) *Unity in diversity?: current trends in translation studies*, Manchester: St. Jerome, 115–122.
O'Hagan, M. (2016) 'Massively open translation: unpacking the relationship between technology and translation in the 21st century', *International Journal of Communication* 10: 929–946.
Olohan, M. (2016) *Scientific and technical translation*, London & New York: Routledge.
Pouliquen, B. (2017a) 'WIPO Translate: Patent Neural Machine Translation Publicly Available in ten languages', *PSLT*, Nagoya. Available online: www.researchgate.net/publication/320058012_WIPO_Translate_Patent_Neural_Machine_Translation_publicly_available_in_10_languages [last accessed 05 Sept. 2018].
Pouliquen, B. (2017b) 'WIPO Translate: Patent Neural Machine Translation Publicly Available in ten languages', *PSLT Proceedings of MT Summit XVI*, vol. 3: Workshop Track, Nagoya, 5–8
Sager, J. (1990) *A practical course in terminology processing,* Amsterdam & Philadelphia: John Benjamins Publishing.
Snover, M., B. Dorr, R. Schwartz, L. Micciulla and J. Makhoul (2006) 'A study of translation edit rate with targeted human annotation', *Proceedings of the 7th Biennial Conference of the Association for Machine Translation in the Americas (AMTA-2006)*, Cambridge, Massachusetts, 223–231.
Shuttleworth, M. and E. Lagoudaki (2015) 'Translation Memory Systems: Technology in the Service of the Translation Professional'. Available online: www.researchgate.net/publication/268348851/download [last accessed 05 Sept. 2018].

Valentini, C., G. Westgate and P. Rouquet (2016) 'The PCT termbase of the World Intellectual Property Organization: designing a database for multilingual patent terminology', *Terminology* 22(2): 171–200.

Valentini, C. (2016) 'Quality control in terminology management', in H. Erdmann Thomsen, A. Pareja-Lora and B. Nistrup Madsen (eds) *TermBases and Linguistic Linked Open Data, Proceedings TKE 2016*, 12th International conference on Terminology and Knowledge Engineering, Copenhagen: Copenhagen Business School, 34–43.

WIPO (2010) 'WIPO patent drafting manual', *IP Assets Management Series*, Geneva: World Intellectual Property Organization.

WIPO (2014) *What is a patent?* Geneva: World Intellectual Property Organization.

WIPO (2018) *Patent Cooperation Treaty Yearly Review 2018*, Geneva: World Intellectual Property Organization.

Yamada, M. (2011) 'The effect of translation memory databases on productivity' in A. Pym ed. *Translation Research Projects 3*, Tarragona: Intercultural Studies Group, 63–73.

Aldridge, W. (1983) 'Translation in New Zealand', in C, Picken, (ed.), *The translator's handbook*, London: Aslib, 154–159.

Caldwell, P., S. Castilho, S. O'Brien and L. Mitchell (2016) 'Human factors in machine translation and post-editing among institutional [Transcript]', *Translation Spaces* 5:2, 222–243.

Dillinger, M. (2017) Interview by T. Beckworth *The ATA Chronicle* 47(2). Available online: www.atanet.org/chronicle-online/none/interview-with-mike-dillinger-machine-translation-pioneer/#sthash.vSECzvgQ.dpbs [last accessed 20 Dec. 2018]

Fenton, S. and P. Moon (2004) 'Survival by translation: the case of Te Tiriti o Waitangi', in S. Fenton (ed), *For Better or Worse: Translation as a tool for change in the South Pacific*, Manchester: St. Jerome, 37–61.

Fung, Y. M. (2018) *Post-editing in the wild: An empirical study of Chinese-to-English professional translators in New Zealand*. PhD Thesis. University of Auckland, New Zealand.

Government Survey (2017) Confidential unpublished survey report on interpreters and translators working in New Zealand and overseas conducted between July and August in 2017 as part of the Language Services Assistance project.

Hofmann, M. (2010) 'Why translation matters, by Edith Grossman: Review', *Daily Telegraph*, 15 May 2010.

Hofstadter, D. (2018) 'The Shallowness of Google Translate', *The Atlantic*, 30 January. Available online: www.theatlantic.com/technology/archive/2018/01/the-shallowness-of-google-translate/551570/ [last accessed 14 Oct. 2018]

King, M. (2003) *The Penguin history of New Zealand*, Auckland: Penguin Books.

Lommel, A., A. Burchardt and V. Macketanz (2018) 'Will neural technology drive MT into the mainstream?', *Multilingual* 29:1, 28–35.

O'Hagan, M. (1996) *The coming industry of teletranslation*, Clevedon: Multilingual Matters.

Salmond, A. (1997) *Between worlds. Early exchanges between Maori and Europeans 1773–1815*, Auckland: Penguin Books.

Vignjevic, B. (2017) *Neural Machine Translation – Has the Future Finally Arrived?* [Blog post], 10 November. Available online: https://www.interpretme.co.nz/single-post/2017/11/10/Neural-Machine-Translation-%E2%80%93-Has-the-Future-Finally-Arrived [last accessed 14 Oct. 2018].

Zetzsche, J. (2017) 'DeepL questions', *The ATA Chronicle* 46(6), 30.

Beatty, J. (2017) Eighteen open source translation tools to localize your project. Available online: opensource.com/article/17/6/open-source-localization-tools [last accessed 18 Jan. 2019].

Briel, D. and J. Zetzsche (2017) 'Speaking with OmegaT's project manager', *ATA Chronicle* 46(6): 32–33.

Dudi, P. (2016) 'Word Counts, The Trados Discount Model & Weighted Words', *LinkedIn*. Available online: linkedin.com/pulse/word-counts-trados-discount-model-weighted-words-petro-dudi [last accessed 18 Jan. 2019].

Fox, J. (2013) 'If I use a CAT tool will I get paid less for my translations?'. *Between Translations*. Available online: foxdocs.biz/BetweenTranslations/if-i-use-a-cat-tool-will-i-get-paid-less-for-my-translations [last accessed 18 Jan. 2019].

Garcia, I. (2003) 'Standard bearers: TM brand profiles at Lantra-L', *Translation Journal* 7(4). Available online: www.translationjournal.net/journal/26tm.htm [last accessed 18 Jan. 2019].

Garcia, I. (2005) 'Long term memories: Trados and TM turn 20', *The Journal of Specialized Translation* (*JoSTrans*) 4(2). Available online: jostrans.org/issue04/art_garcia.php [last accessed 18 Jan. 2019].

Garcia, I. (2006) 'Translators on translation memories: a blessing or a curse?', in A. Pym, A. Perekrestenko and B. Starink (eds) *Translation technology and its teaching (with much mention of localization)*, Tarragona: Intercultural Studies Group, Universitat Rovira i Virgili, 97–105.

Garcia, I. (2009) 'Beyond translation memory: computers and the professional translator', *Journal of Specialised Translation (JoSTrans)*. 12/2. Available online: jostrans.org/issue12/art_garcia.php [last accessed 18 Jan. 2019].

Garcia, I. (2015) 'Computer-aided translation: systems', in S-W. Chan (ed.) *Routledge encyclopedia of translation technology*, Oxford & New York: Routledge.

Goldsmith, E. (2014) 'Looking for pirated Trados?' *Signs & Symptoms of Translation*. Available online: signsandsymptomsoftranslation.com/2014/06/23/pirated-trados/ [last accessed 18 Jan. 2019].

Krawutschke, P. (1987) 'The proposed ATA program accreditation', *Translation Excellence: Assessment, Achievement, Maintenance*. Vol. 1, ATA Scholarly Monograph Series. Binghamton: University Center at Binghamton, 30–43.

Melby, A. (2002) 'Technology in the education of a translator', *in* G. G. Champe (ed.) *Programs translation studies*, Alexandria: American Translators Association, 78–87.

Neto, T. (2018) 'Speech recognition is in your back pocket (or wherever you keep your mobile phone)', *The ATA Chronicle* 46(3), 2017, 31–33.

Newman, A. (2009) 'Translators wanted at LinkedIn. The pay? $0 an hour'. *New York Times* June 28.

Ó Broin, U. (2010) 'What a difference a year makes: Remember the LinkedIn firestorm?' *Multilingual Insights*. June 16. Available online: multilingual.com/what-a-difference-a-year-makes-remember-the-linkedin-firestorm [last accessed 18 Jan. 2019].

Rode, T. (2000) 'Translation Memory: Friend or Foe?', *International Journal for Language and Documentation*. April. 12–13.

Sofer, M (2012) *The global translator's handbook*. Lanham: Taylor Trade Publishing.

Steurs, F. and I. van der Lek-Ciudin and T. Vanallemeersch (2017) How translators work in real life: SCATE observations. Available online: ccl.kuleuven.be/scate/TEF.pdf [last accessed 18 Jan. 2019.]

Velguth, M. (2002) 'A comparison of translator training programs' *in* G. G. Champe (ed.) *Programs Translation Studies*, Alexandria: American Translators Association, 8–31.

Vitek, S, (2017) 'Is Trados Co-Responsible for the Falling Rates in the Translation Industry?' *Patenttranslator's Blog: Diary of a Mad Patent Translator*. Available online: patenttranslator.wordpress.com/2017/06/11/is-trados-co-responsible-for-the-falling-rates-in-the-translation-industry [last accessed 18 Jan. 2019].

Weinberger, M. (2017). A new Microsoft PowerPoint feature is straight out of 'Star Trek'. *Business insider*: May 18. Available online: businessinsider.com/microsoft-powerpoint-translator-coming-later-this-year-2017-5 [last accessed 18 Jan. 2019].

Wheatley, A. (n. d) eCoLoRe (eContent Localization Resources for Translator Training). Available online: www.translationdirectory.com/article450.htm [last accessed 18 Jan. 2019].

Yahoo groups (2000). Available online: groups.yahoo.com/neo/groups/ts2000_users/conversations/messages/369 [last accessed 18 Jan. 2019].

Zaros, R. (2010) 'TM and MT in the real world: should translators be angry?', *Translation Commentator*. Available online: translationcommentator.blogspot.com/2010/12/tm-and-mt-in-real-world-should.html [last accessed 18 Jan. 2019].

Zetzsche, J. (2003) Are we stupid? *ATA Chronicle* 3(32), 22–23.

Zetzsche, J. (2012) *The Translator's Tool Box: A Computer Primer for Translators*. December 2012. Available online: archive.constantcontact.com/fs090/1101859302759/archive/1110049675259.html [last accessed 18 Jan. 2019].

Zetzsche, J. (2013) *The Translator's Tool Box: A Computer Primer for Translators*. November 2013. Available online: archive.constantcontact.com/fs168/1101859302759/archive/1115814647766.html [last accessed 18 Jan. 2019].

Zetzsche, J. (2015) Translation technology, in C. McKay, *How to Succeed as a Freelance Translator*, Two Rat Press, 131–156.
Zetzsche, J. (2018). *The Translator's Tool Box: A Computer Primer for Translators*. Edition 13.5. Winchester Bay: International Writers' Group.
Anderson, D. (1995) 'Machine translation as a tool in second language learning', *CALICO 13(1)*: 68–97.
Austermühl, F. (2016) 'Don't Mind the Gap: Using Technology to Empower English L2 Translators', Invited talk for an special open seminar, *e-LINC (English Instruction Network Center)*, Faculty of Foreign Language Studies, Kansai University, 18 May 2016.
Babych, B., A. Hartley, K. Kageura, M. Thomas and M. Utiyama (2012) 'MNH-TT: a collaborative platform for translator training', *Proceedings of Translation and the Computer 31*, 1–18. Available online: www.mt-archive.info/Aslib-2012-Babych.pdf [last accessed/consulted 23 Dec. 2017].
Ball, R. V. (1989) 'Computer-assisted translation and the modern languages curriculum', *The CTISS File 8*: 52–55.
Bédard, C. (1998) 'Ce qu'il fut savoir sur les mémories de traduction', *Circuit 60*: 25–26.
Belam, J. (2001) 'Transferable skills in an MT course', *MT Summit VIII Workshop on Teaching Machine Translation*, Santiago de Compostela, Spain. Available online:www.mt-archive.info/MTS-2001-Belam.pdf [last accessed 20 Oct. 2018].
Belam, J. (2002) 'Teaching machine translation evaluation by assessed project work', *EAMT 6th Annual Conference Workshop Teaching Machine Translation*: 131–136. Available online:www.mt-archive.info61⁄4EAMT-2002-TOC.htm [last accessed 23 Jan. 2018].
Belam, J. (2003) 'Buying up to falling down: A deductive approach to teaching post-editing', *MT Summit IX Workshop on Teaching Translation Technologies and Tools*: 1–10, New Orleans.
Benfield, J. and C. Feak. (2006) 'How authors can cope with the burden of English as an International Language', *Chest 129(6)*: 1728–1730.
Bennett, K. (2013) 'English as a lingua franca in academia', *The Interpreter and Translator Trainer 7(2)*: 169–193.
Bennett, K. (2014) 'The political and economic infrastructure of academic practice: the 'semi-periphery' as a category for social and linguistic analysis', in K. Bennett (ed.) *The semi-periphery of academic writing:* discourses, communities and practices, London: Palgrave Macmillan, 1–12.
Bowker, L. (2002) *Computer-aided translation technology: a practical introduction*, Ottawa: University of Ottawa Press.
Braine, M. (1971) 'On two types of models of the internalization of grammars', in D. Slobin (ed) *The ontogenesis of grammar*, New York: Academic Press, 153–186.
Breuer, E. (2015) *First language versus foreign language: fluency, errors and revision processes in foreign language academic writing*, Frankfurt am Main: Peter Lang.
Cook, G. (2010) *Translation in language teaching*, Oxford: Oxford University Press.
Council of Europe (2018) *Common European Framework of Reference for Languages: Learning, teaching, assessment*, Cambridge: Cambridge University Press. Available online: https://rm.coe.int/1680459f97 [last accessed 21 Oct. 2018].
Crystal, D. (1997) *The Cambridge cyclopedia of language*, Cambridge: Cambridge University Press.
DeCesaris, J. (1995) 'Computerized translation managers as teaching aids', in C. Dollerup and V. Appel (eds) *Teaching translation and interpreting 3: New horizons*, Amsterdam: John Benjamins Publishing, 263–269
Dragsted, B. (2004) *Segmentation in Translation and Translation Memory Systems: An Empirical Investigation of Cognitive Segmentation and Effects of Integrating a TM System into the Translation Process* (Unpublished doctoral dissertation). Copenhagen Business School: Samfundslitteratur.
Ellis, R. (1990) *Instructed second language acquisition*, Oxford: Blackwell.
Escartín, C., S. O'Brien, M. Goulet and M. Simard (2017) 'Machine translation as an academic writing aid for medical practitioners', *MT Summit XVI, vol.1: Research Track*: 254–267.
Fotos, S. (1993) 'Conscious raising and noticing through focus on form: grammar task performance versus formal instruction', *Applied Linguistics, 14(4)*: 385–407.
French, R. (1991) 'Machine translation', in W. Brierley and I.R. Kemble (eds) *Computers as a tool in language learning*, Chichester: Ellis Horwood Limited, 55–69.
Gally, T. (2017) 'Machine translation and 2nd-language writing', *A Colloquium at Komaba Campus of the University of Tokyo*.

García, I. (2010) 'Is machine translation ready yet?', *Target 22(1)*: 7–21.
Garcia, I. and M. Pena (2011) 'Machine translation-assisted language learning: writing for beginners', *Computer Assisted Language Learning 24(5)*: 471–487.
Gee, J. and R. Hayes (2011) *Language and learning in the digital age*. New York, NY: Routledge.
Haugh, M. (2017) 'Translation Technology is Useful, but should not Replace Learning Languages', *The Conversation*, 16 October. Available online: https://theconversation.com/translation-technology-is-useful-but-should-not-replace-learning-languages-85384 [last accessed 1 Jan. 2018].
Hatim, B. and I. Mason (1990). *Discourse and the translator*, London: Longman.
Hewson, L. (2013) 'English as a lingua franca: translation's defining moment?', *The Interpreter and Translator Trainer 7(2)*: 257–277.
Heyn, M. (1998) 'Translation memories: insights and prospects', in L. Bowker, M. Cronin, D. Kenny and J. Pearson (eds) *Unity in diversity?: current trends in translation studies,* Manchester: St. Jerome, 123–136.
Hunzkier Heeb, A. (2016) 'Professional translators' self-concepts and directionality. Indications from translation process research', *The Journal of Specialised Translation 25*: 74–88.
Kay, M. (1980) 'The proper place of men and machines in language translation', *Machine Translation 12*: 3–23.
Kerr, P. (2014) *Translation and own-language activities*, Cambridge: Cambridge.
Kliffer, M. (2005) '*An experiment in MT post-editing by a class of intermediate/advanced French majors*, *EAMT, 10th annual conference*, Budapest, Hungary: 160–165.
Kościuczuk, T. (2016) 'L2 translation: to teach or to discourage?' *Journal of Translator Education and Translation Studies*, (1)1: 4–22. Available online:www.tetsjournal.org/TETS/2016/01_01/Paper_2_1_1.pdf [last accessed 20 Oct. 2018].
Krashen, S. (1982) *Principles and practice in second language acquisition*, Oxford: Pergamon.
Krashen, S. (1985) *The input hypothesis: issues and implications*. London: Longman.
Kubota, M. (1994) 'The role of negative feedback on the acquisition of the English dative alternation by Japanese college students of EFL,' *Institute for Research in Language Teaching Bulletin 8*, 1–36.
La Torre, M. (1999) 'A web-based resource to improve translation skills', *ReCALL 11(3)*: 41–49.
Laviosa, S. (2014) *Translation and language education: pedagogic approaches explored*. New York: Routledge.
Lillis, T. and M. Curry (2010) *Academic writing in a global context: the politics and practices of publishing in English*, London & New York: Routledge.
Long, M. (1991) 'Focus on form: a design feature in language teaching', in K. de Bot, R. Ginsberg and C. Kramsch (eds.) *Foreign language research in cross- cultural perspectives*, Amsterdam & Philadelphia: John Benjamins Publishing, 39–52.
Long, M. (1996) 'The role of the linguistic environment in second language acquisition', in W. Ritchie and T. Bhatia (eds) *Handbook of second language acquisition*, New York: Academic Press, 39–52.
Malmkjær, K. (2004) *Translation in undergraduate degree programmes*, Amsterdam & Philadelphia: John Benjamins Publishing.
McNeill, D. (1966) 'Developmental psycholinguistics', in F. Smith and G. Miller (eds) *The genesis of language,* Cambridge, MA: MIT Press, 15–84.
Mirai Hon'yaku (2017) *Introducing the NMT Engine With Writing English Writing Ability Of Over TOEIC 900 (TOEIC900 ten Ijo no Eisaku-bun Nouryoku o Motsu Shinso-Gakushu ni yoru Kikai Hon'yaku Enjine o Release)*, Available online: https://miraitranslate.com/uploads/2017/06/2d5778dcdee47e4197468bc92235217 9.pdf [last accessed 1 Jan. 2018].
Nagao, M. (1984) 'A framework of a mechanical translation between Japanese and English by analogy principle', in A. Elithorn, and R. Banerji (eds) *Artificial and human intelligence*, North-Holland: Elsevier Science, 173–180.
Niño, A. (2008) 'Evaluating the use of machine translation post-editing in the foreign language class', *Computer Assisted Language Learning 21(1)*: 29–49.
O'Brien, S. (2006) 'Eye-tracking and translation memory matches', *Perspectives: Studies in Translatology 14(3)*, 185–205.
O'Brien, S. (1998) 'Practical experience of computer-aided translation tools in the localization industry'. in L. Bowker, M. Cronin, D. Kenny and J. Pearson (eds) *Unity in diversity?: current trends in translation studies*, Manchester: St. Jerome, 115–122.

O'Hagan M. (2011) 'Introduction: community translation: translation as a social activity and its possible consequences in the advent of Web 2.0 and beyond', *Linguistica Antwerpensia 10*: 1–19.
Pavlović, N. (2008) 'Directionality in translation and interpreting practice: report on a questionnaire survey in Croatia', *Translation Research Projects 1*: 79–96.
Pinker, S. (1989) 'Resolving a learnability paradox in the acquisition of the verb lexicon', in M. Rice and R. Schiefelbusch (eds) *The teachability of language*, Baltimore: H. Brookes, 13–61.
Pokorn, N. (2005) *Challenging the traditional axioms. Translation into a non-mother tongue*, Amsterdam & Philadelphia: John Benjamins Publishing.
Pym, A. (2011) 'What technology does to translating', *Translation & Interpreting 3*: 1–9.
Pym, A., K. Malmkjær and M. del Mar Gutiérrez-Colón Plana (2013) *Translation and Language Learning: The Role of Translation in the Teaching of Languages in the European Union: TLL Project.* Available online:www.termcoord.eu/wp-content/uploads/2013/08/European_Commission.pdf [last accessed 1 Jun. 2018].
Pym, A. (2017) 'Dokode haguruma ga kurui hajimeta noka', in K. Takeda (ed) *Hon'yaku Tsuuyaku no shin chihei (New horizon in Translation & Interpreting Studies)*, Tokyo:Koyo sobou, 163–189.
Sakamoto, A., B. Rodríguez de Céspedes, S. Berthaud and J. Evans (2017) *When Translation Meets Technologies: Language Service Providers (LSPs) in The Digital Age – Focus Group Report*, University of Portsmouth. Available online: www.iti.org.uk/attachments/article/1087/Portsmouth%20Focus%20Group%20Report.pdf [last accessed 20 Oct. 2018].
Schmidt, R. (1990) 'The role of consciousness in second language learning', *Applied Linguistics, 11*:129–158.
Schmidt, R. (1993) 'Awareness and second language acquisition', *Annual Review of Applied Linguistics 13*: 206–226.
Schmidt, R. (1995) 'Consciousness and foreign language learning: a tutorial on the role of attention and awareness in learning', in R. Schmidt (ed.) *Attention and awareness in foreign language learning*, Honolulu, HI: University of Hawai'i at Manoa, 1–63.
Schmidt, R. and S. Frota (1986) 'Developing basic conversational ability in a second language: a case study of an adult learner of Portuguese', in R. Day (ed.) *Talking to learn: conversation in second language acquisition*, Rowley, MA: Newbury House, 237–322.
Shei, C-C. (2002) 'Teaching MT through pre-editing: Three case studies', *6th EAMT Workshop Teaching Machine Translation*: 89–98. Available online:www.mt-archiveinfo61/4EAMT-2002-TOC.htm [last accessed 23 Jan. 2018].
Shuttleworth, M. and M. Cowie (1997) *Dictionary of translation studies*. Manchester, St. Jerome Publishing.
Snell-Hornby, M. (2010) 'Mind the GAB! ! The hazards of translation studies adopting a global language!', *The Linguist June/July*: 18–19.
Somers, H. (2003) 'MT in the classroom', in H. Somers (ed) *Computers and translation: a translator's guide,* Amsterdam: John Benjamins Publishing, 319–340.
Somers, H. (2004) 'Does Machine Translation Have a Role in Language Learning?', Paper presented at UNTELE 2004: L'autonomie de l'enseignant et de l'apprenant face aux technologies de l'information et de la communication, Teacher and Learner Autonomy vis-a-vis Information Communication Technology Universiteé de Technologie de Compie` gne, March 19, Compie` gne.
Spada, N. (1997) 'Form-focused instruction and second language acquisition: a review of classroom and laboratory research', *Language Teaching 29*: 1–25.
VOA. (2016) *How Will Machine Translators Change Language Learning?*, December 18. Available online: https://learningenglish.voanews.com/a/how-will-machine-translation-change-the-future-of-language-training-and-learning/3634810.html [last accessed 1 Jan. 2018].
White, L. (1990) 'Implications of learnability theories for second language learning and teaching', in M. A. K. Halliday, J. Gibbons and H. Nicholas (eds) Learning, keeping and using language. Amsterdam: John Benjamins Publishing, 271–286.
Whyatt, B. and T. Kościuczuk, (2013) 'Translation into a non-native language: the double life of the native-speakership axiom', *In mTm 5*: 60–79.
Yamada, M. (2012) 'Revising text: An empirical investigation of revision and the effects of integrating a TM and MT system into the translation process.' PhD Thesis, Rikkyo University, Tokyo.
Yamada, M. (2014) 'Can college students be post-editors? An investigation into employing language learners in machine translation plus post-editing', *Machine Translation 29(1)*: 49–67.

Yamada, M. (2019) 'The impact of Google Neural Machine Translation on post-editing by student translators', *The Journal of Specialised Translation 31*: 87–106.
Achtelig, M. (2012) *Translating technical documentation without losing quality*, Zirndorf: indoition publishing e.K.
Bárcena, E., T. Read and J. Arús (eds) (2014) *Languages for specific purposes in the digital era*, Cham: Springer.
Blanke, T. (2014) *Digital asset ecosystems: rethinking crowds and clouds*, Kidlington: Chandos.
Brentjes, S. (2016) 'Translation and transmission of ancient scientific texts', in G. L. Irby (ed.), *A companion to science, technology, and medicine in ancient Greece and Rome,* 1st edition, Malden: John Wiley & Sons, 988–1008.
Briscoe, G., S. Sadedin and P. De Wilde (2011) 'Digital ecosystems: ecosystem-oriented architectures', *Natural Computing* August. DOI: 10.1007/s11047-011-9254-0.
Byrne, J. (2006) *Technical translation. Usability strategies for translating technical documentation*, Dordrecht: Springer.
Byrne, J. (2012) *Scientific and technical translation explained*, Manchester: St. Jerome.
Cronin, M. (2003) *Translation and globalization*, London: Routledge.
Cronin, M. (2006) *Translation and identity*, Abingdon: Routledge.
Cronin, M. (2013) *Translation in the digital age*, London: Routledge.
Desblache, L. (ed.) (2001) *Aspects of specialised translation*, Paris: La Maison du Dictionnaire.
Desjardins, R. (2017) *Translation and social media. In theory, in training and in professional practice*, London: Palgrave Macmillan.
Dunne, K. J. (ed.) (2006) *Perspectives on localization*, Amsterdam: John Benjamins Publishing.
Dunne, K. J. (2014) 'Localization and the (r)evolution of translation', in S. Bermann and C. Porter (eds.) *A companion to translation studies*, Chichester: John Wiley & Sons, 147–162. https://doi.org/10.1002/9781118613504.ch11
Dunne, K. J. and E. S. Dunne (eds) (2011) *Translation and localization project management*, Amsterdam: John Benjamins Publishing.
Esselink, B. (1998) *A practical guide to software localization: for translators, engineers and project managers*, Amsterdam: John Benjamins Publishing.
Esselink, B. (2000) *A practical guide to software localization*, Amsterdam: John Benjamins Publishing.
Finch, C. A. (1969) *An approach to technical translation. An introductory guide for scientific readers*, Oxford: Pergamon Press.
Folaron, D. and H. Buzelin (2007) 'Introduction: connecting translation and network studies', in *Meta* 52:4, 605–642. https://doi.org/10.7202/017689ar
Folaron, D. (2012) 'Digitalizing translation', *Translation Spaces* 1:1, 5–31.
Gambier, Y. and H. Gottlieb (eds) (2001) *(Multi-)media translation. Concepts, practices and research*, Amsterdam: John Benjamins Publishing.
Gea-Valor, M. L., I. García Izquierdo, and M. J. Esteve (eds) (2010) *Linguistic and translation studies in scientific communication*, Bern: Peter Lang.
Gouadec, D. (2007) *Translation as a profession*, Amsterdam: John Benjamins Publishing. Translated and slightly adapted from French, (2002) *Profession: traducteur*, Paris: La Maison du Dictionnaire.
Gross, A. G., J. Harmon and M. Reidy (2002) *Communicating science: the scientific article from the 17th century to the present*, New York: Oxford University Press.
Hann, M. (1992) *The key to technical translation*, Vol. 1 *Concept Specification*, Vol. 2 *Terminology/ Lexicography*, Amsterdam: John Benjamins Publishing.
Hartley, T. (2009) 'Technology and translation', in J. Munday (ed.) *The Routledge companion to translation studies*, London: Routledge, 106–127.
Hoft, N. (1995) *International technical communication: how to export information about high technology*, New York: John Wiley & Sons.
ICVA [International Council of Voluntary Agencies] (2016, June) Developed by S. El Taraboulsi, J. Schell, and R. Gorgeu, and informed through ICVA member feedback and guidance. 'Localisation in Humanitarian Practice' available online: www.icvanetwork.org/resources/localisation-humanitarian-practice [last accessed 30 Dec. 2018].
Imhausen, A. and T. Pommerening (eds) (2016) *Translating writings of early scholars in the ancient Near East, Egypt, Greece and Rome: methodological aspects with examples. Beiträge zur Altertumskunde, 344*, Berlin: De Gruyter.

Jilani Saudagar, A. K. and H. V. Mohammad (2018) 'Augmented reality mobile application for Arabic text extraction, recognition and translation', *Journal of Statistics and Management Systems* 21:4, 617–629. Available online: https://doi.org/10.1080/09720510.2018.1466968 [last accessed 30 Dec. 2018].

Jiménez-Crespo, M. A. (2013) *Translation and web localization*, London: Routledge.

Jiménez-Crespo, M. A. (2017) *Crowdsourcing and online collaborative translations*, Amsterdam: John Benjamins Publishing.

Kaldellis, A. and N. Siniossoglou (eds) (2017) *The Cambridge intellectual history of Byzantium*, Cambridge: Cambridge University Press.

Kallinikos, J., A. Aaltonen, and A. Marton (2010) 'A theory of digital objects', in *First Monday*, 15:6, 7 June. Available online: https://firstmonday.org/ojs/index.php/fm/article/view/3033/2564 [last accessed 30 Dec. 2018].

Matis, N. (2010) *How to Manage your Translation Projects*, www.translation-project-management.com. Translated from French, (2010) *Comment gérer vos projets de traduction*, Liège: edipro.

Montgomery, S. L. (2000) *Science in translation. Movements of knowledge through cultures and time*, Chicago: University of Chicago Press.

O'Hagan, M. and D. Ashworth (2002) *Translation-mediated communication in a digital world: facing the challenges of globalization and localization*, Clevedon: Multilingual Matters.

Olohan, M. (2009) 'Scientific and technical translation', in M. Baker and G. Saldanha (eds) *Routledge encyclopedia of translation studies*, 2nd Edition, London: Routledge, 246–248.

Olohan, M. (2013) 'Scientific and technical translation', in C. Millán and F. Batrina (eds) *The Routledge handbook of translation studies*, London: Routledge, 425–437.

Olohan, M. (2016) *Scientific and technical translation*, London: Routledge.

Osborn, D. (2010) *African languages in a digital age. Challenges and opportunities for indigenous language computing*, Ottawa/Cape Town: IDRC and HSRC Press.

Pinchuck, I. (1977) *Scientific and technical translation*, London: André Deutsch Ltd.

Pym, A. (2004) *The moving text. Localization, translation, and distribution*, Amsterdam: John Benjamins Publishing.

Pym, A. (2014) *Exploring translation theories. 2nd edition*, London: Routledge.

Quah, C. K. (2006) *Translation and technology*, London: Palgrave/Macmillan.

Roby, C. (2015, March 04). Latin Didactic, Scientific, and Technical Literature. *Oxford Handbooks Online.* Ed. Available online: www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199935390.001.0001/oxfordhb-9780199935390-e-100. [last accessed 19 Dec. 2018].

Roturier, J. (2015) *Localizing apps. A practical guide for translators and translation students,* London: Routledge.

Savourel, Y. (2001) *XML internationalization and localization*, Indianapolis: Sams.

Scarpa, F. Translated and adapted by M. A. Fiola (2010) *La traduction spécialisée. Une approche professionnelle à l'enseignement de la traduction*, Ottawa: Les Presses de l'Université d'Ottawa.

Schiaffino, R. (2018, February 20). Infographic: Software Tools for Translation [Blog post]. Available online: www.aboutranslation.com/2018/02/infographic-software-tools-for.html [last accessed 30 Dec. 2018].

Schubert, K. (2005) 'Translation studies: Broaden or deepen the perspective?', in H. V. Dam, J. Engberg and H. Gerzymisch-Arbogast (eds) *Knowledge systems and translation*, Berlin: Mouton de Gruyter.

Serón-Ordóñez, I. and A. Martín-Mor (eds) (2016) *Translation and mobile devices*, Special Issue, 14, *Tradumàtica*. Available online: https://revistes.uab.cat/tradumatica/issue/view/n14 [last accessed 30 Dec. 2018].

Singh, N. and A. Pereira (2005) *The culturally customized web site*, Burlington: Elsevier Inc.

Somers , H. (ed.) (2003) *Computers and translation. A translator's guide*, Amsterdam: John Benjamins Publishing.

St. Amant, K. and F. Sapienza (eds) *Culture, communication, and cyberspace: Rethinking technical communication for international online environments*, Amityville: Baywood Publishing.

Van der Meer, J. and A. Joscelyne (2017) *Nunc est Tempus***,** December, TAUS.

Wright, S. E. (2011) 'Scientific, technical, and medical translation', in K. Malmkjaer and K. Windle (eds) *The Oxford handbook of translation studies*, Oxford: Oxford University Press, 243–261.

Wright, S. E. and G. Budin (1997) *Handbook of terminology management*, Vol. 1 and (2001) Vol. 2. Amsterdam: John Benjamins Publishing.

Wright, S. E. and L. D. Wright, Jr. (1993) *Scientific and technical translation*, Amsterdam: John Benjamins Publishing.
Yunker, J. (2002) *Beyond borders: web globalization strategies*, Ashland: Byte Level Research.
Yunker, J. (2017) *Think outside the country. A guide to going global and succeeding in the translation economy*, Ashland: Byte Level Research.
Yuste Rodrigo, E. (ed.) (2008) *Topics in language resources for translation and localisation*, Amsterdam: John Benjamins Publishing.
Zetzsche, J. (2017) *The translator's tool box. A computer primer for translators*, Version 13, March, International Writers Group.
Alshlyh, A. (2017) Dragon_Warrior_(Arabic)_v101. Available online: www.romhacking.net/translations/2967/ [last accessed 27 Jan. 2019]
Altice, N. (2015) *I am error*. Cambridge: MIT.
Archive Team. IPS (binary patch format). Available online: http://fileformats.archiveteam.org/wiki/IPS_(binary_patch_format) [last accessed 27 Jan. 2019]
Consalvo, M. (2016) *Atari to Zelda: Japan's videogames in global contexts*. Cambridge: MIT.
darkhorse_log. (2014) '懐かしすぎるファミコンソフトのスタート画面ばかり集めたコレクションムービー*PRESS START* [Assembled Movie Collection of Start Screens from Beloved Famicom Software]'. Available online: http://gigazine.net/news/20140129-famicom-start-screen/ [last accessed 27 Jan. 2019]
DiDO. (2008). Super Mario Bros. Available online: www.romhacking.net/translations/1248/ [last accessed 27 Jan. 2019]
Hamouda, Y. (2014) قلب اتجاه سريان النصوص في العاب النينتندو-NES text scroll effect Right To Left hack. Available online: www.youtube.com/watch?v=HOYBzDseVU4 [last accessed 27 Jan. 2019]
Klepek, P. (2017) The Modder Who's Finally Translating 'Dragon Quest' into Arabic. Available online: https://waypoint.vice.com/en_us/article/3dxye9/the-modder-whos-finally-translating-dragon-quest-into-arabic [last accessed 27 Jan. 2019]
Nes Dev Wiki. (2018) CNROM. Available online: https://wiki.nesdev.com/w/index.php/CNROM [last accessed 27 Jan. 2019]
Nintendo of America. (2018) Legal Information (Copyrights, Emulators, ROMs, etc.). Available online: www.nintendo.com/corp/legal.jsp [last accessed 27 Jan. 2019]
RHDNBot. (2015) Translations: New Translations Added to the Database. Available online: www.romhacking.net/forum/index.php?topic=20002 [last accessed 27 Jan. 2019]
Yacht Club Games. (2016) Japan Localization. Available online: http://yachtclubgames.com/2016/07/japan-localization/ [last accessed 27 Jan. 2019]
Ambati, V., S. Vogel, and J. Carbonell. (2012) 'Collaborative workflow for crowdsourcing translation', in *Proceeding CSCW '12 Proceedings of The ACM 2012 Conference On Computer Supported Cooperative Work*, 1191–1194. Available online: www.cs.cmu.edu/~jgc/CollaborativeWorkflowforCrowdsourcingTranslationACMCoCSCW2012.pdf [last accessed 6 Dec. 2018].
Ameri, S. and K. Ghazizadeh. (2015) 'A norm-based analysis of swearing rendition in professional dubbing and non-professional subtitling from English into Persian'. *Iranian Journal of Research in English Language Teaching* 3: 78–96.
Antonini, R., L. Cirillo, L. Rossato and I. Torresi (eds) (2017). *Non-professional interpreting and translation.* Amsterdam & Philadelphia: John Benjamins Publishing.
Anastasiou, D., and R. Gupta (2011) 'Comparison of crowdsourcing translation with machine translation'. *Journal of Information Science* 37 (6): 637–659.
Arend, T. (2012) 'Social Localisation at Twitter: Translating the World in 140 characters'. Paper presented at the *17th Annual LRC Internationalisation and Localisation Conference,* University of Limerick. Accessed March 1st, 2018. Available online: www.youtube.com/watch?v=eGb5-MLcLr0 [last accessed 6 Dec. 2018].
Baker, M. (2016) 'The prefigurative politics of translation in place-based movements of protest: subtitling in the Egyptian revolution'. *The Translator* 22 (1): 1–21.
Banks, J. (2009) 'Co-creative expertise: Auran Games and Fury – A Case Study'. *Media International Australia* 130: 77–89.
Bey, Y., K. Kageura, and C. Boitet. (2005) 'A framework for data management for the online volunteer translators' aid system QRLex'., in *Proceedings of the 19th Pacific Asia conference on*

language, information and computation, Taiwan, 51–60. Available online: www.aclweb.org/anthology/Y05-1005 [last accessed 6 Dec. 2018].

Bey, Y., K. Kageura and C. Boitet (2006) 'The TRANSBey prototype: An online collaborative wiki-based CAT environment for volunteer translators', in E. Yuste (ed.), *Proceedings of the third international workshop on language resources for translation work, research & training LR4Trans-III*, Paris: ELRA,49–54.

Bold, B. (2011) 'The power of fan communities: An overview of fansubbing in Brazil'. *Cuadernos de Traduçao* 11: 1–19. Available online: www.maxwell.vrac.puc-rio.br/18881/18881.PDF [last accessed 6 Dec. 2018].

Camara, L. (2015) 'Motivation for collaboration in TED Open Translation', *International Journal of Web-Based Communication* 11 (2): 210–229.

Carcelen Estrada, A. (2017) 'Translation and activism', in J. Evans and F. Fernandez (eds) *Routledge handbook of translation and politics*, London: Routledge 234–269.

Carson-Berdsen, J., H. Somers and C. Vogel. (2009) 'Integrated language technology as a part of next generation localization'. *Localisation Focus* 81: 53–66.

Cronin, M. (2010) 'The cracked looking-glass of servants: translation and minority languages in a global age', in M. Baker (ed.) *Critical readings in translation studies*, London & New York: Routledge, 249–262.

Delwiche, A. and J. J. Henderson. (2012) 'Introduction: what is participatory culture?' In A. Delwiche and J. J. Henderson (eds) *The participatory cultures handbook*, New York & London: Routledge, 3–9.

DePalma, D. and N. Kelly. (2011) 'Project management for crowdsourced translation: how user-translated content projects work in real life', in K. Dunne and E. Dunne (eds) *Translation and localization project management: the art of the possible*, Amsterdam & Philadelphia: John Benjamins Publishing, 379–408.

Désilets, A. (2007) 'Translation wikified: How will massive online collaboration impact the world of translation?', in *Proceedings of Translation and the Computer 29*. Avaialbe online: www.mt-archive.info/Aslib-2007-Desilets.pdf [last accessed 6 Dec. 2018].

De Wille, T. (2017) *Competence and Motivation in Volunteer Translators: the Example of Translation Trommons*. PhD Thesis. University of Limerick, Ireland.

Díaz Cintas, J. (2015) 'Technological strides in subtitling' in S. Chan (ed.) *Routledge encyclopedia of translation technology*, London: Routledge, 632–643.

Díaz Cintas, J. and P. Muñoz Sánchez. (2006) 'Fansubs: audiovisual translation in an amateur environment'. *Journal of specialised translation* 6: 37–52.

Dombek, M. (2014) *A Study into the Motivations of Internet Users Contributing to Translation Crowdsourcing: The Case of Polish Facebook User-Translator*s. Unpublished Doctoral Thesis. Dublin City University.

Eagle, N. (2009) 'Txteagle: Mobile crowdsourcing'. *International Conference on Internationalization Design and Global Development* 5623: 447–456. Available online: http://realitycommons.media.mit.edu/pdfs/hcii_txteagle.pdf [last accessed 6 Dec.2018].

Exton, C., W. Asanka, J. Buckley and R. Schäler, R. (2009) 'Micro crowdsourcing: a new model for software localisation'. *Localisation Focus: The International Journal of Localisation* 8: 82–89.

Feitosa, M. (2009) *Legendagem comercial e legendagem pirata: um estudo comparado. PdD Thesis*. Universidade Federal Minas Gerais, Brazil.

Filip, D., and E. ÓConchuir. (2011) 'An Argument for Business Process Management in Localisation'. *Localisation focus: the international journal of localisation* 10: 4–17.

García, I. (2015) 'Cloud marketplaces: procurement of translators in the age of social media'. *Jostrans* 23: 18–38. Available online: www.jostrans.org/issue23/art_garcia.pdf [last accessed 6 Dec. 2018].

Google. (2008). 'Google in Your Language'. Available online: https://googleblog.blogspot.com.au/2008/08/google-in-your-language.html [last accessed 6 Dec. 2018].

Grbić, N. and P. Kujamäki (2018) 'Professional vs. non-professional: how boundary work shapes research agendas in translation and interpreting studies', in H. Dam, M. Nisbeth and K. K. Zethsen (eds) *Moving boundaries in translation*, New York & London: Routledge 113–131.

Hu, C., P. Resnik, Y. Kronrod, V. Eidelman, O. Buzek and B. B. Bederson (2011) 'The Value of Monolingual Crowdsourcing in a Real-World Translation Scenario: Simulation using Haitian

Creole Emergency SMS Messages', *Proceedings of the sixth workshop on statistical machine translation*. Available online: www.cs.umd.edu/hcil/monotrans/publications/wmt11monotrans.pdf [last accessed 6 Dec. 2018].

Jääskeläinen, R., P. Kujamäki, and M. Jukka (2011) 'Towards professionalism – or against it?: dealing with the changing world in translation research and translation education' *Across Languages and Cultures* 12 (2): 143–156.

Jakobsen, A. L., and B. Mesa-Lao (2017) 'Introduction', in A. L. Jakobsen, and B. Mesa-Lao (eds) *Translation in transition: between cognition, computing and technology*, Amsterdam & Philadelphia: John Benjamins Publishing 1–16.

Jenkins, H. (2006) *Fans, bloggers, and gamers: exploring participatory culture*. New York: NYU Press.

Jiménez-Crespo, M. A. (2013) 'Crowdsourcing, corpus use, and the search for translation naturalness: a comparable corpus study of Facebook and non-translated social networking sites'. *TIS: Translation and Interpreting Studies* 8: 23–49.

Jiménez-Crespo, M. A. (2017a) *Crowdsourcing and online collaborative translations: expanding the limits of translation studies*. Amsterdam & Philadelphia: John Benjamins Publishing.

Jiménez-Crespo, M. A. (2017b) 'Mobile apps and translation crowdsourcing: The next frontier in the evolution of translation'. *Tradumática* 14: 75–84. Available online: http://revistes.uab.cat/tradumatica/article/view/167/pdf_31[last accessed 6 Dec. 2018].

Jiménez-Crespo, M. A. (2018) 'Crowdsourcing and translation quality: novel approaches in the language industry and Translation Studies', in J. Moorkens (ed.) *Translation quality assessment: from principles to practice*. Berlin: Springer, 69–93.

Kelly, N. (2009) '*Freelance Translators Clash with LinkedIn over Crowdsourced translators*'. *Common Sense Advisory Blogs.* Available online: www.commonsenseadvisory.com/Default.aspx?Contenttype=ArticleDetAD&tabID=63&Aid=591&moduleId=391[last accessed 6 Dec. 2018].

Kordoni, V., Bosch, Antal van den, Kermanidis, Katia Lida, Sosoni, Vilelmini, Cholakov, Kostadin, Hendrickx, Iris, Huck, Matthias and A. Way. (2016) 'Enhancing access to online education: Quality machine translation of MOOC content', in *Proceedings of the 10th edition of the Language Resources and Evaluation Conference*, Portorož, Slovenia. Available online: www.cis.lmu.de/~mhuck/public/papers/380_Paper.pdf [last accessed 6 Dec. 2018].

Levy, P. (1997) *Collective intelligence*. New York: Basic Books.

Luczaj, K. M. and K. Cwiek-Rogalska (2014) 'Fansubbers. The case of the Czech Republic and Poland'. *COMPASO* 52: 175–198. Available online: http://compaso.eu/wpd/wp-content/uploads/2015/02/Compaso2014-52-Luczaj-et-al.pdf [last accessed 6 Dec. 2018].

Mahmud, F. and H. Aris (2015) 'State of mobile crowdsourcing applications: A review'. *Proceedings of the Software Engineering and Computer Systems ICSECS,* 2015, 27–32. DOI: 10.1109/ICSECS.2015.7333118.

Martinez-Gomez, A. (Forthcoming) 'Non-professional interpreting', in M. Baker and G. Saldanha (eds) *Encyclopedia of translation studies,* New York & London: Routledge.

Massida, S. (2015) *Audiovisual translation in the digital age: the Italian fansubbing phenomenon.* London: Palgrave McMillan.

Matielo, R. and E. Espindola (2011) 'Domestication and foreignization: an analysis of culture-specific items in official and non-official subtitles of the tv series *Heroes*'. *Cadernos de Tradução* 271: 71–93.

McDonough-Dolmaya, J. (2012) 'Analyzing the crowdsourcing model and its impact on public perceptions of translation', *The Translator* 182: 167–191.

McDonough-Dolmaya, J. (2015) 'Revision history: translation trends in Wikipedia'. *Translation Studies* 8 (1): 16–34.

Mesipuu, M. (2012) 'Translation crowdsourcing and user-translator motivation at Facebook and Skype'. *Translation Spaces* 1: 33–53.

Mitchell, L. (2015) *Community Post-Editing of Machine-Translated User-Generated Content.* PhD thesis, Dublin City University, Ireland.

Mitchell, L., S. O'Brien and J. Roturier (2014) 'Quality evaluation in community post-editing'. *Machine Translation* 28: 237–262.

Moorkens, J., S. O'Brien and J. Vreeke (2017) 'Developing and testing Kanjingo: A mobile app for post-editing'. *Tradumatica* 14: 58–65. Available online: http://revistes.uab.cat/tradumatica/article/view/168/pdf_23 [last accessed 6 Dec. 2018].

Morera-Mesa, A. (2014) *Crowdsourced Translation Practices from the Process Flow Perspective*. PhD Dissertation. University of Limerick, Ireland.

Morera-Mesa, A., J. J. Collins and D. Filip (2014) 'Selected crowdsourced translation practices', *Proceedings of ASLIB Translating and the Computer* 35. Available online: www.mt-archive.info/10/Aslib-2013-Morera-Mesa.pdf [last accessed 2 Mar. 2016].

Morera, A., L. Aoudad and J. J. Collins (2012) 'Assessing Support for Community Workflows in Localisation'. *Business Process Management Workshops, Series Lecture Notes in Business Information Processing* 99, 195–206.

Munro, R. (2010) 'Crowdsourced Translation for Emergency Response in Haiti: the Global Collaboration of Local Knowledge'. *AMTA Workshop on Collaborative Crowdsourcing for Translation*. Available online: www.mt-archive.info/AMTA-2010-Munro.pdf [last accessed 6 Dec. 2018].

Muñoz Sánchez, P. (2009) 'Video game localisation for fans by fans: the case of rom hacking'. *Journal of Internationalization and Localization* 1: 168–185.

O'Brien, S. and R. Schäler. (2010) 'Next Generation Translation and Localization. Users are Taking Charge', in *Proceedings from Translating and the Computer Conference*, 17–18 November 2010, London. Available online: http://doras.dcu.ie/16695/1/Paper_6.pdf [last accessed 6 Dec. 2018].

O'Hagan, M. (2009) 'Evolution of user-generated translation: fansubs, translation hacking and crowdsourcing'. *The Journal of Internationalization and Localization* 1: 94–121.

O'Hagan, M. (2011) 'Introduction: community translation: translation as a social activity and its possible consequences in the advent of Web 2.0 and beyond'. *Linguistica Antverpiensia* 10: 1–10.

O'Hagan, M. (2013) 'The impact of new technologies on translation studies: a technological turn?', in C. Millán-Varela and F. Bartrina (eds) *Routledge handbook of translation studies,* London: Routledge, 503–518.

O'Hagan, M. (2017) 'Deconstructing translation crowdsourcing with the case of a Facebook initiative', in D. Kenny (ed.) *Human issues in translation technology: IATIS yearbook*, London: Routledge, 25–44.

Orrego-Carmona, D. (2012) 'Internal Structures and Workflows in Collaborative Subtitling'. *First International Conference on Non-professional Interpreting and Translation.* Università di Bologna, May 17–19. Available online: http://isg.urv.es/publicity/doctorate/research/documents/Orrego/Orrego-Carmona_Structures-Workflows_NPIT1.pdf [last accessed 6 Dec. 2018].

Pérez-González, L. and Ş. Susam-Saraeva (2012) 'Non-professionals translation and interpreting'. *The Translator* 18(2): 149–165.

Pym, A. (2011) 'Translation research terms: a tentative glossary for moments of perplexity and dispute', in A. Pym (ed.) *Translation research projects 3*, Tarragona: Intercultural Studies Group, 75–110.

Ray, R. (2011) 'HootSuite's Crowdsourced Translation Project'. *Multilingual,* 2011. Available online: http://dig.multilingual.com/20111011/DEEBC8B850FF305E58D7314914696DFC/20111011.pdf [last accessed 6 Dec. 2018].

Raymond, E. S. (2001) *The cathedral and the bazaar*. Sebastopol: O'Reilly and Associates.

Rogl, R. (2017) 'Language disaster relief in Haiti: volunteer translator networks and language technologies in disaster relief', in R. Antonini, L. Cirillo, L. Rossato and I. Torresi (eds) *Non-professional interpreting and translation: state of the art and future of an emerging field of research*, Amsterdam & Philadelphia: John Benjamins Publishing, 231–258.

Shimohata, S., M. Kitamura, T. Sukehiro and T. Murata (2001) 'Collaborative Translation Environment on the Web'. In *Proceedings from Machine MT Summit 8*, 331–334. Available online: www.mt-archive.info/MTS-2001-Shimohata.pdf [last accessed 6 December 2018].

Sosoni, V. K. L. Kermanidis, M. Stasimioti, T. Naskos, E. Takoulidou, M. van Zaanen, S. Castilho, P. Georgakopoulou, V. Kordoni and M. Egg (2018) 'Translation Crowdsourcing: Creating a Multilingual Corpus of Online Educational Content. In *Proc. of the Int. Conf. on Language Resources and Evaluation (LREC*), Miyazaki, Japan. Available online: www.lrec conf.org/proceedings/lrec2018/pdf/677.pdf [last accessed 6 Dec. 2018].

Surowiecki, J. (2004) *The wisdom of crowds*. New York: W. W. Norton & Company, Inc.

Toffler, A. (1980) *The third wave*. London: Pan Books.

Torres-Hostench, O., J. Moorkens, S. O'Brien and J. Vreeke (2017) 'Testing interaction with a mobile MT post-editing app', *Translation and Interpreting* 9 (2): 138–150.

Wang, D. (2017) 'Funsubbing in China – with reference to the fansubbing group YYets'. *Jostrans* 28: 165–189.

Wikipedia. (2018) 'History of Wikipedia'. Wikipedia, last modified August 2018. https://en.wikipedia.org/wiki/History_of_Wikipedia [last accessed 6 Dec. 2018].

Yan, R, G. Mingkun, E. Pavlick and C. Calliston-Burch (2014) 'Are Two Heads Better than One? Crowdsourced Translations via a Two Step Collaboration of Non-Professional Translators and Editors' in *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics*, 1134–1144. Baltimore, Maryland, USA, June 23–25. Available online: www.aclweb.org/anthology/P14-1107.pdf [last accessed 6 Dec. 2018].

Zaidan, O. F. and C. Calliston-Burch (2011) 'Crowdsourcing Translation: Professional Quality from Non-Professionals', in *Proceedings of the 49th Annual Meeting of the Association of Computational Linguistics*, 1120–1129. Available online: www.cs.jhu.edu/%7Eozaidan/AOC/turk-trans_Zaidan-CCB_acl2011.pdf [last accessed 6 Dec. 2018].

Zbib, R. G. Markiewicz, S. Matsoukas, R. Schwartz and J. Makhoul (2013) 'Systematic Comparison of Professional and Crowdsourced Reference Translations for Machine Translation', in *Proceedings of NAACL-HLT 2013,* 612–616. Available online: http://clair.eecs.umich.edu/aan/paper.php?paper_id=N13-1069#pdf [last accessed 6 Dec. 2018].

Aliprandi, C., C. Scudellari, I. Gallucci, N. Piccinini, M. Raffaelli, A. del Pozo, A. Álvarez, H. Arzelus, R. Cassaca, T. Luis, J. Neto, C. Mendes, S. Paulo and M. Viveiros (2014) 'Automatic live subtitling: state of the art, expectations and current trends', *NAB Broadcast Engineering Conference*, 1–7. Available online: www.researchgate.net/publication/268069711_Automatic_Live_Subtitling_state_of_the_art_expectations_and_current_trends [last accessed 25 Jan. 2019].

Armstrong, A., A. Way, C. Caffrey, M. Flanagan, D. Kenny and M. O'Hagan (2006) 'Improving the quality of automated DVD subtitles via example-based machine translation'. *Proceedings of Translating and the Computer 28,* London: Aslib, 1–13. Available online: www.mt-archive.info/Aslib-2006-Armstrong.pdf [last accessed 25 Jan. 2019].

Athanasiadi, R. (2017) 'Exploring the potential of machine translation and other language assistive tools in subtitling', in M. Deckert (ed.) *Audiovisual translation – research and use,* Bern: Peter Lang, 11–28.

Baños, R. (2018) 'Technology and audiovisual translation', in S. Chan (ed.) *An encyclopedia of practical translation and interpreting,* Hong Kong: Chinese University Press, 15–41.

Becket, A. (2017) 'Accelerationism: how a fringe philosophy predicted the future we live in', *The Guardian*, 11 May. Available online: www.theguardian.com/world/2017/may/11/accelerationism-how-a-fringe-philosophy-predicted-the-future-we-live-in [last accessed 25 Jan. 2019].

Böhme, G. (2008/2012) *Invasive technification. Critical essays in the philosophy of technology,* transl. by Cameron Shingleton, London: Bloomsbury.

Brouns, F., N. Serrano Martínez-Santos, J. Civera, M. Kalz and A. Juan (2015) 'Supporting language diversity of European MOOCS with the EMMA platform', *Proceedings of the European MOOC Stakeholder Summit 2015*, 157–165. Available online: http://dspace.ou.nl/bitstream/1820/6026/1/emoocs2015-emma-final.pdf [last accessed 25 Jan. 2019].

Brown, A. and J. Patterson (2017) 'Designing subtitles for 360° content', *BBC, Research & Development*, 26 October. Available online: www.bbc.co.uk/rd/blog/2017-03-subtitles-360-video-virtual-reality [last accessed 29 Dec. 2018].

Bruns, A. (2008) 'The future is user-led: the path towards widespread produsage', *Fibreculture Journal* 11: 1–10.

Bywood, L., P. Georgakopoulou and T. Etchegoyhen (2017) 'Embracing the threat: machine translation as a solution for subtitling', *Perspectives* 25(3): 492–508.

Chaume, F. (2012) *Audiovisual translation: dubbing*, Manchester: St Jerome.

De Sousa, S., W. Aziz and L. Specia (2011) 'Assessing the post-editing effort for automatic and semi-automatic translations of DVD subtitles', *Proceedings of Recent Advances in Natural Language Processing*, 97–103.

Díaz Cintas, J. (2015) 'Technological strides in subtitling', in S. Chan (ed.) *Routledge encyclopedia of translation technology,* London: Routledge, 632–643.

Díaz Cintas, J. (2018) ' "Subtitling's a carnival": new practices in cyberspace', *The Journal of Specialised Translation* 30: 127–149.

Díaz Cintas, J. and P. Muñoz Sánchez (2006) 'Fansubs: audiovisual translation in an amateur environment', *The Journal of Specialised Translation* 6: 37–52.

Etchegoyhen, T., L. Bywood, M. Fishel, P. Georgakopoulou, J. Jiang and G. van Loenhout (2014) 'Machine translation for subtitling: a large-scale evaluation', *Proceedings of the Ninth International Conference on Language Resources and Evaluation LREC* 2014, Paris: ELRA, 46–53.

Fernández-Torné, A. and A. Matamala (2015) 'Text-to-speech vs. human voiced audio description: a reception study in films dubbed into Catalan', *The Journal of Specialised Translation* 24: 61–88.

Georgakopoulou, P. (2012) 'Challenges for the audiovisual industry in the digital age: the ever-changing needs of subtitle production', *The Journal of Specialised Translation* 17: 1–26.

Green, S. (2018) 'How digital demand is disrupting dubbing', *M&E Journal,* March. Available online: www.mesalliance.org/2018/03/15/journal-digital-demand-disrupting-dubbing [last accessed 25 Jan. 2019].

Hanoulle, A., V. Hoste and A. Remael (2015) 'The efficacy of terminology extraction systems for the translation of documentaries', *Perspectives* 23(3): 359–374.

Harrenstien, K. (2009) 'Automatic captions in YouTube'. Available online: http://googleblog.blogspot.com/2009/11/automatic-captions-in-youtube.html [last accessed 25 Jan. 2019].

Kelion, L. (2013) 'Undertexter subtitle translation site raided by police', *BBC News*, 10 July. Available online: www.bbc.com/news/technology-23252523 [last accessed 25 Jan. 2019].

Krefetz, N. (2017) 'Amazon, Netflix, and more go global with the cloud', *Streaminmedia.com*. Available online: www.streamingmedia.com/Articles/Editorial/Featured-Articles/Amazon-Netflix-and-More-Go-Global-With-the-Cloud-118024.aspx [last accessed 25 Jan. 2019].

Massidda, S. (2015) *Audiovisual translation in the digital age: the Italian fansubbing phenomenon,* Basingstoke: Palgrave Macmillan.

Matamala, A. (2016) 'The ALST project: technologies for audio description', in A. Matamala and P. Orero (eds) *Researching Audio Description: New Approaches,* Basingstoke: Palgrave Macmillan, 268–284.

Matamala, A. (2017) 'Mapping audiovisual translation investigations: research approaches and the role of technology' in M. Deckert (ed.) *Audiovisual translation – research and use,* Bern: Peter Lang, 11–28.

Melero, M., A. Oliver and T. Badia (2006) 'Automatic multilingual subtitling in the eTITLE Project', *Proceedings of Translating and the Computer 28,* London: Aslib, 1–18. Available online: www.mt-archive.info/Aslib-2006-Melero.pdf [last accessed 25 Jan. 2019].

Nyberg, E. and T. Mitamura (1997) 'A real-time MT system for translating broadcast captions', *Proceedings of the Sixth Machine Translation Summit*, 51–57. Available online: www.lti.cs.cmu.edu/Research/Kant/PDF/mts6.pdf [last accessed 25 Jan. 2019].

O'Hagan, M. (2003) 'Can language technology respond to the subtitler's dilemma? A preliminary study', *Translating and the Computer* 25, London: Aslib, 1–18. Available online: http://mt-archive.info/Aslib-2003-OHagan.pdf [last accessed 25 Jan. 2019].

O'Reilly, T. (2006) 'Web 2.0 compact definition: trying again', *Radar, Insight, Analysis and Research about Emerging Technologies*, 10 December. Available online: http://radar.oreilly.com/2006/12/web-20-compact-definition-tryi.html [last accessed 25 Jan. 2019].

Pérez Rojas, K. (2014) 'Automatically building translation memories for subtitling', in E. Torres-Simón and D. Orrego-Carmona (eds) *Translation Research Projects 5,* Tarragona: Universitat Rovira i Virgili, 51–61.

Perrino, S. (2009) 'User-generated translation: the future of translation in a Web 2.0 environment', *The Journal of Specialised Translation* 12: 55–78.

Popowich, F., P. McFetridge, D. Turcato and J. Toole (2000) 'Machine translation of closed captions', *Machine Translation* 15(4): 311–341.

Romero-Fresco, P. (2011) *Subtitling through Speech Recognition: Respeaking*, Manchester: St Jerome.

Sawaf, H. (2012) 'Automatic speech recognition and hybrid machine translation for high-quality closed-captioning and subtitling for video broadcast', *Proceedings of Association for Machine Translation in the Americas – AMTA*, 1–5. Available online: https://pdfs.semanticscholar.org/2eeb/01f115f3418fc5ab752bea719b6883047284.pdf [[last accessed 25 Jan. 2019].

Schwab, K. (2016) *The fourth industrial revolution,* Geneva: World Economic Forum.

Scott, S. (2018) 'Netflix launch synthesised audio description'. *DoubleTap*. Available online: http://doubletap.online/netflix-launch-synthesised-audio-description?platform=hootsuite [last accessed 25 Jan. 2019].

Szarkowska, A. (2011) 'Text-to-speech audio description: towards wider availability of AD', *The Journal of Specialised Translation* 15: 142–162.
Toffler, A. (1980) *The third wave,* London: Pan Books.
Verboom, M., D. Crombie, E. Dijk and M. Theunisz (2002) 'Spoken subtitles: making subtitled TV programmes accessible', in K. Miesenberger, J. Klaus and W. Zagler (eds) *Computers helping people with special needs. ICCHP 2002*, Berlin: Springer-Verlag, 295–302.
AIIC (2000) Guidelines for the use of new technologies in conference interpreting. *Communicate!* March-April 2000. Available at https://web.archive.org/web/20020429100556/http://www.aiic.net/ViewPage.cfm?page_id=120 [last accessed 1 Oct. 2018].
AIIC (2018) 'AIIC position on distance interpreting', AIIC Executive Committee, March 7, 2018. Available at http://aiic.net/p/8538 [last accessed 1 Oct. 2018].
Azarmina, P. and P. Wallace (2005) 'Remote interpretation in medical encounters: a systematic review', *Journal of Telemedicine and Telecare* 11: 140–145.
Baigorri-Jalón, J. (1999) 'Conference interpreting: from modern times to space technology', *Interpreting* 4(1): 29–40.
BID (2008) *Immigration bail hearings by video link: a monitoring exercise by Bail for Immigration Detainees and the Refugee Council*. Available at www.refugeecouncil.org.uk/policy/position/2008/bail_hearings.htm [last accessed 1 Oct. 2018].
Böcker, M. and B. Anderson (1993) 'Remote conference interpreting using ISDN videotelephony: a requirements analysis and feasibility study', *Proceedings of the Human Factors and Ergonomics Society, 37th annual meeting*, 235–239.
Braun, S. (2004) *Kommunikation unter widrigen Umständen? Fallstudien zu einsprachigen und gedolmetschten Videokonferenzen*, Tübingen: Narr.
Braun, S. (2007) 'Interpreting in small-group bilingual videoconferences: challenges and adaptation', *Interpreting* 9(1): 21–46.
Braun, S. (2013) 'Keep your distance? Remote interpreting in legal proceedings: A critical assessment of a growing practice', *Interpreting* 15(2), 200–228.
Braun, S. (2014) 'Comparing traditional and remote interpreting in police settings: quality and impact factors', in M. Viezzi and C. Falbo (eds) *Traduzione e interpretazione per la società e le istituzioni*, Trieste: Edizioni Università di Trieste, 161–176.
Braun, S. (2015) 'Remote Interpreting', in H. Mikkelson and R. Jourdenais (eds) *Routledge handbook of interpreting,* New York: Routledge, 352–367.
Braun, S. (2017) 'What a micro-analytical investigation of additions and expansions in remote interpreting can tell us about interpreter's participation in a shared virtual space', *Journal of Pragmatics* 107: 165–177.
Braun, S. (2018) 'Video-mediated interpreting in legal settings in England interpreters' perceptions in their sociopolitical context', *Translation and Interpreting Studies* 13(3): 393–420.
Braun, S. (2019) ' "You are just a disembodied voice really": Perceptions of video remote interpreting by legal interpreters and police officers', in H. Salaets and G. Brône (eds), *Linking up with video*. Amsterdam: Benjamins, forthcoming.
Braun, S. and C. Slater (2014) 'Populating a 3D virtual learning environment for interpreting students with bilingual dialogues to support situated learning in an institutional context', *Interpreter and Translator Trainer*, 8(3): 469–485.
Braun, S. and J. Taylor (eds) (2012a) *Videoconference and Remote Interpreting in Criminal Proceedings*. Cambridge & Antwerp: Intersentia.
Braun, S. and J. Taylor (2012b) 'Video-mediated interpreting: an overview of current practice and research', in S. Braun and J. Taylor (eds) *Videoconference and Remote Interpreting in Criminal Proceedings*. Cambridge & Antwerp: Intersentia, 33–68.
Braun, S. and J. Taylor (2012c) 'Video-mediated interpreting in criminal proceedings: two European surveys', in S. Braun and J. Taylor (eds) *Videoconference and Remote Interpreting in Criminal Proceedings*. Cambridge & Antwerp: Intersentia, 69–98.
Braun, S. and J. Taylor (2012d) 'AVIDICUS comparative studies – part I: Traditional interpreting and remote interpreting in police interviews', in S. Braun and J. Taylor (eds) *Videoconference and Remote Interpreting in Criminal Proceedings*. Cambridge & Antwerp: Intersentia, 99–118.
Braun, S., E. Davitti and S. Dicerto (2018) 'Assessing the implementation of facilities for bilingual videoconferencing in the European justice sector', in J. Napier, S. Braun, R. Skinner (eds) *Here or there: Research on remote interpreting*, Washington, DC: Gallaudet University Press, 144–179.

Braun, S., C. Slater, R. Gittins, P. Ritsos, J. Roberts (2013) Interpreting in Virtual Reality: designing and developing a 3D virtual world to prepare interpreters and their clients for professional practice. With. in D. Kiraly, S. Hansen-Schirra, K. Maksymski (eds) *New prospects and perspectives for educating language mediators*, Tübingen: Narr, 93–120.

Camayd-Freixas, E. (2005) 'A revolution in consecutive interpretation: Digital voice-recorder-assisted CI', *The ATA Chronicle* 34, 40–46.

Chen, N. and L. Ko (2010) 'An online synchronous test for professional interpreters', *Education, Technology and Society* 13(2): 153–165.

Cho, E., C. Fügen, T. Hermann, K. Kilgour, M. Mediani, C. Mohr, J. Niehues, K. Rottmann, C. Saam, S. Stüker, A. Waibel (2013) 'A real-world system for simultaneous translation of German lectures', in *Proceedings of the 14th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, August 25–29, 2013, Lyon.

Devaux, J. (2017) *Technologies in interpreter-mediated criminal court hearings: An Actor-Network Theory account of the interpreter's perception of her role-space*, Ph.D. dissertation, The University of Salford, Salford.

Drechsel, A. and J. Goldsmith (forthcoming) 'Tablet interpreting: The use of mobile devices in interpreting', in M. Forstner and H. Lee-Jahnke (eds) *CIUTI-Forum 2016: Equitable Education through intercultural communication: Role and responsibility for non-state actors,* Frankfurt: Lang.

Eck, M., I. Lane, Y. Zhang, A. Waibel (2010) 'Jibbigo: Speech-to-speech translation on mobile devices', in *Spoken Technology Workshop (SLT), IEEE 2010, Berkeley, CA, December 12–15*, 165–166.

Ellis, R. (2004) Videoconferencing in refugee hearings. Report to the Immigration and Refugee Board Audit and Evaluation Committee. Available at https://irb-cisr.gc.ca/en/transparency/reviews-audit-evaluations/Pages/Video.aspx [last 2013 1 October 2018].

Fantinuoli, C. (2006) 'Specialized corpora from the web for simultaneous interpreters', in M. Baroni and S. Bernardini (eds) *Wacky! Working papers on the web as corpus*, Bologna: GEDIT, 173–190.

Fantinuoli, C. (2017) 'Computer-assisted preparation in conference interpreting', *Translation and Interpreting* 9(2), 24–37.

Fantinuoli, C. (2018) 'Computer-assisted interpreting: Challenges and future perspectives', in G. Corpas Pastor and I. Durán-Muñoz (eds) *Trends in E-tools and resources for translators and interpreters*, 153–174. Leiden: Brill.

Ferrari, M. (2002) 'Traditional vs. "simultaneous consecutive"', *SCIC News* 29: 6–7.

Fowler, Y. (2013) *Non-English-speaking defendants in the Magistrates' court: A comparative study of face-to-Face and prison video link interpreter-mediated hearings in England,* Ph.D. dissertation, Aston University, Birmingham.

Fowler, Y. (2018) 'Interpreted prison via video link: The prisoner's eye view', in J. Napier, R. Skinner and S. Braun (eds) *Here or there: research on interpreting via video link*. Washington, DC: Gallaudet University Press, 183–209.

Fraser, N. (1994) The SUNDIAL speech understanding and dialogue project: Results and implications for translation. *Aslib Proceedings* 46(5):141–148.

Gao, Y., L. Gu, B. Zhou, R. Sarikaya, M. Afify, H. K. Kuo, W. Z. Zhu, Y. Deng, C. Prosser, W. Zhang, L. Besacier (2006) 'IBM Mastor: Multilingual automatic speech-to-speech translator', *Proceedings of the First International Workshop on Medical Speech Translation*. New York University, NYC, June 9, 2006.

Hamidi, M. and Pöchhacker, F. (2007) 'Simultaneous consecutive interpreting: A new technique put to the test', *Meta* 52(2): 276–289.

Hlavac, J. (2013) 'A cross-national overview of translator and interpreter certification procedures', *Translation and Interpreting* 5(1): 32–65.

Hornberger, J., C. Gibson, W. Wood, C. Dequeldre, I. Corso, B. Palla. and D. Bloch (1996) 'Eliminating language barriers for non-English-speaking patients', *Medical Care* 34(8): 845–856.

Kelly, N. (2008) *Telephone interpreting: A comprehensive guide to the profession*. Clevedon: Multilingual Matters.

Ko, L. (2006) 'The need for long-term empirical studies in remote interpreting research: A case study of telephone interpreting', *Linguistica Antverpiensia* NS5: 325–338.

Ko, L. and N. S. Chen (2011) 'Online-interpreting in synchronous cyber classrooms', *Babel* 57(2): 123–43.

Koller, M. and F. Pöchhacker (2018) 'The work and skills…: A profile of first-generation video remote interpreters', in J. Napier, R. Skinner and S. Braun (eds) *Here or there: Research on interpreting via video link,* Washington, DC: Gallaudet University Press, 89–110.

Lee, J. (2007) 'Telephone interpreting – seen from the interpreters' perspective', *Interpreting* 2(2): 231–252.

Licoppe, C. and M. Verdier (2013) 'Interpreting, video communication and the sequential reshaping of institutional talk in the bilingual and distributed courtroom', *International Journal of Speech, Language and the Law* 20(2): 247–276.

Licoppe, C., M. Verdier and C. A. Veyrier (2018) 'Voice, power and turn-taking in multilingual, consecutively interpreted courtroom proceedings with video links', in J. Napier, R. Skinner, S. Braun (eds) *Here or there: Research on interpreting via video link,* Washington, DC: Gallaudet University Press, 299–322.

Lion K., J. Brown and B. Ebel (2015) 'Effect of telephone vs video interpretation on parent comprehension, communication and utilization in the pediatric emergency department: a randomized clinical trial', *JAMA Pediatrics* 69(12): 1117–25.

Locatis, C., Williamson, D., Gould-Kabler, C., Zone-Smith, L., Detzler, I., Roberson, J., Maisiak, R. and M. Ackerman (2010) 'Comparing in-person, video and telephonic medical interpretation', *Journal of General Internal Medicine* 25(4): 345–350.

Locatis, C., D. Williamson, J. Sterrett, I. Detzlerand M. Ackerman (2011) 'Video medical interpretation over 3G cellular networks: A feasibility study', *Telemedicine and e-Health* 17(10): 809–813.

Lombardi, J. (2003) 'DRAC Interpreting: coming soon to a courthouse near you?', *Proteus* 12(2): 7–9.

Mikkelson, H. (2003) Telephone interpreting: boon or bane?, in L. Pérez González (ed) *Speaking in tongues: language across contexts and users*, València: Universitat de València, 251–69.

Morimoto, T. and A. Kurematsu (1993) 'Automatic speech translation at ATR', *Proceedings of the fourth Machine Translation summit 'International Cooperation for Global Communication'*, Kobe, Japan, 83–96.

Moser-Mercer, B. (2003) Remote interpreting: assessment of human factors and performance parameters. *Communicate!* Summer 2003. http://aiic.net/ViewPage.cfm?page_id=1125 (accessed 24/06/2018).

Moser-Mercer, B. (2005) 'Remote interpreting: issues of multi-sensory integration in a multilingual task', *Meta* 50(2): 727–738.

Moser-Mercer, B., B. Class and K. Seeber (2005) Leveraging virtual learning environments for training interpreter trainers. *Meta* 50(4).

Mouzourakis, P. (1996) 'Videoconferencing: techniques and challenges', *Interpreting* 1(1): 21–38.

Mouzourakis, P. (2006) 'Remote interpreting: a technical perspective on recent experiments', *Interpreting* 8(1): 45–66.

Mulayim, S. and M. Lai (2015) The community-of-inquiry framework in online interpreter training. *Interpreter education in the digital age: Innovation, access and change*, Washington, DC: Gallaudet University Press, 95–124.

Napier, J., S. Braun and R. Skinner (eds) (2018) *Here or there: Research on remote interpreting*, Washington, DC: Gallaudet University Press.

O'Hagan, M. (2001) 'Hypertranslation', in J. Tiffin and N. Terashima (eds) *Hyper-Reality: Paradigm for the third millennium*. London: Routledge, 99–109.

Orlando, M. (2010) 'Digital pen technology and consecutive interpreting: Another dimension in note-taking training and assessment', *Interpreters' Newsletter* 15: 71–86.

Orlando, M. (2014) 'A study on the amenability of digital pen technology in a hybrid mode of interpreting: Consec-simul with notes', *Translation and Interpreting* 6(2): 39–54.

Orlando, M. (2015) 'Digital pen technology and interpreter training, practice and research: Status and trends', in S. Ehrlich and J. Napier (eds) *Interpreter education in the digital age: Innovation, access and change,* Washington, DC: Gallaudet University Press, 125–152.

Oviatt, S. and P. Cohen (1992) 'Spoken language in interpreted telephone dialogues', *Computer Speech and Language* 6: 277–302.

Ozolins, U. (2011) 'Telephone interpreting: Understanding practice and identifying research needs', *Translation and Interpreting* 3(1): 33–47.

Price, E., E. Pérez-Stable, D. Nickleach, M. López and L. Karliner (2012) 'Interpreter perspectives of in-person, telephonic and videoconferencing medical interpretation in clinical encounters', *Patient Education and Counseling* 87(2): 226–232.

Rosenberg, B. A. (2007) 'A data driven analysis of telephone interpreting', in C. Wadensjö, B. Englund Dimitrova, A. L. Nilsson (eds) *The critical link 4. Professionalisation of interpreting in the communit*y, Amsterdam: Benjamins, 65–76.

Roziner, I. and M. Shlesinger (2010) 'Much ado about something remote: Stress and performance in remote interpreting', *Interpreting* 12(2), 214–247.

Wadensjö, C. (1999) 'Telephone interpreting and the synchronisation of talk in social interaction', *The Translator*, 5(2): 247–264.

Wahlster, W. (2000) 'Mobile speech-to-speech translation of spontaneous dialogs: an overview of the final Verbmobil system', in W. Wahlster (ed), *Verbmobil: Foundations of Speech-to-Speech Translation*. Heidelberg: Springer, 3–21.

Waibel, A., M. Seligman and A. Joscelyne (2017) TAUS Speech-to-speech translation technology. TAUS. Available at http://isl.anthropomatik.kit.edu/cmu-kit/downloads/S2STranslation TechnologyReport.final.pdf [last accessed 1 Oct. 2018].

Xu, R. (2018) 'Corpus-based terminological preparation for simultaneous interpreting', *Interpreting* 20(1): 29–58.

Baddeley, A. (1986) *Working memory,* Oxford & New York: Oxford University Press.

Balogh, K. and E. Hertog (2012) 'AVIDICUS comparative studies – part II: Traditional, video-conference and remote interpreting in police interviews', in S. Braun and J. L. Taylor (eds) *Videoconference and Remote Interpreting in Criminal Proceedings*. Cambridge & Antwerp: Intersentia,119–136.

Braun, S., E. Davitti and S. Dicarto (2016) 'AVIDICUS 3, Handbook of Bilingual Videoconferencing'. Available online: www.videoconference-interpreting.net [last accessed 27 Aug. 2018].

Braun, S. and J. L. Taylor (eds) (2012) *Videoconference and Remote Interpreting, in Criminal Proceedings,* Cambridge & Antwerp: Intersentia.

Collinson, A. (2018) 'The deaf patients 'left behind' by the NHS', Victoria Derbyshire programme, BBC News, 11 June 2018. Available online at www.bbc.co.uk/news/health-44384503, [last accessed 20 Nov. 2018].

Cokely, D. (1992) *Interpretation: a sociolinguistic model*, Burtonsville, MD: Linstok Press.

Calle, L. (2013) Unpublished presentation on the findings of the 2013 European Forum of Sign Language Iinterpreters (EFSLI) Survey of Members, EFSLI Annual General Meeting, Ljubliana, Slovenia, September 2013.

ContactSCOTLAND-BSL (2018) Available online at https://contactscotland-bsl.org/ [Last accessed 30 Nov. 2018]

Garrod, S. and M. J. Pickering (2007) 'Alignment in dialogue', in M. G. Gaskell (ed.) *The Oxford handbook of psycholinguistics*, Oxford & New York: Oxford University Press, 443–451.

Giles, H., N. Coupland, and J. Coupland, (1991) 'Accommodation theory: communication, context, and consequence' in H. Giles, J. Coupland and N. Coupland (eds), *Contexts of accommodation,* Cambridge & New York: Cambridge University Press, 1–68.

Llewellyn-Jones, P. (2015) 'Professional Standards and Guidelines for Interpreters and Re-Speakers', EU INSIGN Project Final Report (unpublished).

Llewellyn-Jones, P. and R. G. Lee (2014) *Redefining the role of the community interpreter: the concept of role-space*, Lincoln, UK: SLI Press.

McCabe, L-A. (2018) 'Report on own research into interpreting using video technology', unpublished student paper presented in part requirement for the SLI Advanced Diploma in Interpreting and Translation: British Sign Language-English. SLI Limited, Lincoln, UK.

Napier, J. (2012) 'Here or there? An assessment of video remote signed language interpreter-mediated interaction in court', in S. Braun, and J. L. Taylor (eds) *Videoconference and Remote Interpreting in Criminal Proceedings*, Cambridge & Antwerp: Intersentia.167–214.

Napier, J., R. Skinner and S. Braun (eds) (2018) *Here or there: research on interpreting via video link.* Washington DC: Gallaudet University Press.

National Exchange Carrier Association, Inc. (2010) 'Annual Submission of TRS Payment and Revenue Requirements, for July 2009 – June 2010'. Available online: www.neca.org/cms40 0min/ NECA Templates/TRS_Landing_Page.aspx [last accessed 27 Aug. 2018].

Peterson, R. (2011) 'Profession in pentimento: A narrative inquiry into interpreting in video settings', in B. Nicodemus and L. Swabey (eds) *Advances in interpreting research: inquiry in action*, Amsterdam: John Benjamins Publishing, 199–223.

Ryan, H. and R. Skinner (2015) *Video Interpreting Best Practice*, Association of Sign Language Interpreters (UK), Available online at www.asli.org.uk/app/uploads/2017/05/ASLI_Video_Interpreting_Best_Practice_VIBP-1.pdf [last accessed 27 Aug. 2018].

Saville-Troike, M. (2003) *The ethnography of communication: an introduction,* 3rd edition, Oxford: Blackwell.

Skinner, R., J. Napier and S. Braun (2018) 'Interpreting via video link: mapping of the field.', in J. Napier, R. Skinner, S. Braun (eds) *Here or there: research on interpreting via video link*. Studies in Interpretation Series (16). Gallaudet, Washington DC, 11–35.

United States Access Board (Author unknown) (2018) 'History of telecommunications access for individuals with disabilities', Available online: www.access-board.gov/guidelines-and-standards/communications-and-it/159-255-guidelines/background/taac-final-report/828-2-0-history-of-telecommunications-access-for-individuals-with-disabilities [last accessed 20 Aug. 2018].

Bell, T. (2017) 'When hurricane warnings are lost in translation', *The Atlantic*. Available online: www.theatlantic.com/science/archive/2017/09/irma-prep-without-english/539277/ [last accessed 28 Jan. 2019].

Bernardini, C., V. Ambrogi, L. Perioli, M. Tiralti, G. Fardella (2000) 'Comprehensibility of the package leaflets of all medicinal products for human use: A questionnaire survey about the use of symbols and pictograms', *Pharmacological Research* 41(6): 679–688.

Boin, A. (2009) 'The new world of crises and crisis management: Implications for policymaking and research', *Review of Policy Research* 26(4): 367–377.

Cadwell, P (2015) *Translation and trust: a case study of how translation was experienced by foreign nationals resident in Japan for the 2011 Great East Japan Earthquake*, Doctoral Thesis, Dublin City University, Ireland.

Cadwell, P. (2016) 'A place for translation technologies in disaster settings: The case of the 2011 Great East Japan Earthquake', in M. O'Hagan and Q. Zhang (eds) *Conflict and communication: a changing Asia in a globalizing world – language and cultural perspectives,* New York, Nova, 169–194.

Cadwell, P. and S. O'Brien (2016) 'Language, culture, and translation in disaster ICT: an ecosystemic model of understanding', *Perspectives: Studies in Translatology* 24(4): 557–575.

Dowse, R. and M. Ehlers (2005) 'Medicine labels incorporating pictograms: do they influence understanding and adherence?', *Patient Education and Counseling* 58(1): 63–70.

Federici, F. and P. Cadwell (2018) 'Training citizen translators: Design and delivery of bespoke training on the fundamentals of translation for New Zealand Red Cross', *Translation Spaces* 7: 20–43.

Fischer, H. (2008) *Response to disaster: Fact versus fiction and its perpetuation: The sociology of disaster,* 3rd ed, Lanham: University Press of America.

Forcada, M. L. (2017) 'Making sense of neural machine translation', *Translation Spaces* 6(2): 291–309.

Harvard Humanitarian Initiative (2011) *Disaster relief 2.0: The future of information sharing in humanitarian emergencies.* Washington, D.C. and Berkshire: UN Foundation and Vodafone Foundation Technology Partnership.

Hunt, M., C. M. Tansey, J. Anderson, R. F. Boulanger, L. Eckenwiler, J. Pringle and L. Schwartz (2016) 'The challenge of timely, responsive and rigorous ethics review of disaster research: views of research ethics committee members', *PLOS ONE* 11(6): e0157142. Available online: https://doi.org/10.1371/journal.pone.0157142 [last accessed 28 Jan. 2019].

InfoAsAid/ActionAid Isiolo (2012) 'A learning review of the pilot communications project. Reliefweb', *Reliefweb.* Available online: https://reliefweb.int/report/kenya/infoasaidactionaid-isiolo-learning-review-pilot-communications-project [last accessed 28 Jan. 2019].

Lewis, W. (2010) 'Haitian creole: how to build and ship an MT engine from scratch in 4 days, 17 hours, and 30 minutes', *Proceedings of the 14th annual conference of the European Association for Machine Translation*, 27–28 May 2010, Saint-Raphaël, France. No page numbers.

Lewis, W., R. Munro and S. Vogel (2011) 'Crisis MT: developing a cookbook for MT in crisis situations', *Proceedings of the 6th Workshop on Statistical Machine Translation*, 30–31 July, Edinburgh, Scotland, UK, pp. 501–511.

Lian, F., C. Zhang, H. Pan, M. Li, W. Yang, Y. Meng, J. Fang, W. Fang, J. Wang and P. Shi (2015) 'Mapping environments and exposures of the world', in P. Shi and R. Kasperson (eds) *World atlas of natural disaster risk,* Berlin: Springer, 3–21.

McDonough Dolmaya, J. (2011) 'The ethics of crowdsourcing', *Linguistica Antverpiensia* 10: 97–110.
O'Brien, S., F. Federici, P. Cadwell, J. Marlowe and B. Gerber (2018). 'Language translation during disaster: A comparative analysis of five national approaches', *International Journal of Disaster Risk Reduction,* 31, 627–636.
O'Brien, S. and P. Cadwell (2017) 'Translation facilitates comprehension of health-related crisis information: Kenya as an example', *Journal of Specialised Translation* 28: 23–51.
Quarantelli, E. L. (ed) (1998) *What is a disaster? A dozen perspectives on the question*, 1st ed., New York: Routledge.
Rother, H. A. (2008) 'South African farm workers' interpretation of risk assessment data expressed as pictograms on pesticide labels', *Environmental Research* 108(3): 419–427.
Sandvik, K. B. (2014) 'Humanitarian innovation, humanitarian renewal? *Forced Migration Review* (online)', Available at: www.fmreview.org/innovation/sandvik [Last accesseded: 19 Oct. 2018].
Santos-Hernández, J. M. and H. B. Morrow (2013) 'Language and literacy', in D. S. K. Thomas, B. D. Phillips, W. E. Lovekamp and A. Fothergill (eds) *Social vulnerability to disasters*, 2nd ed. Boca Raton, London and New York: CRC Press, 265–280.
Schwarz, A., M. W. Seeger and C. Auer (eds) (2016) *The handbook of international crisis communication researc*h. Oxford: Wiley Blackwell.
Seeger, M. W. (2006) 'Best practices in crisis communication: An expert panel process', *Journal of Applied Communication Research* 34(3): 232–244.
Sutherlin, G. (2013) 'A voice in the crowd: Broader implications for crowdsourcing translation during crisis', *Journal of Information Science* 39(3): 397–409.
Temnikova, I. (2012) *Text complexity and text simplification in the crisis management domain*, Doctoral Thesis, University of Wolverhampton, UK.
United Nations Humanitarian Civil-Military Coordination (2015) *UN-CMCoord Field Handbook v1.0*. Geneva: UNOCHA. Available online: www.unocha.org/sites/unocha/files/CMCoord%20Field%20Handbook%20v1.0_Sept2015_0.pdf [last accessed 28 Jan. 2019].
United Nations International Strategy for Disaster Risk Reduction (2009) *UNISDR Terminology on Disaster Risk Reduction,* Geneva: UNISDR. Available online: www.unisdr.org/we/inform/publications/7817 [last accessed 28 Jan. 2019].
Von Elm, E., P. Ravaud, H. MacLehose, L. Mbuagbaw, P. Garner, J. Ried and X. Bonfill (2013) 'Translating Cochrane reviews to ensure that healthcare decision-making is informed by high-quality research evidence', *PLOS Medicine* 10(9): e1001516.
World Health Organisation (2012) 'Toolkit for assessing health-system capacity for crisis management – Part 1. User manual', *WHO Regional Office for Europe*. Available online: www.euro.who.int/__data/assets/pdf_file/0008/157886/e96187.pdf [last accessed 28 Jan. 2019].
Zetzsche, J. (2017) 'Translators without Borders and technology', *The ATA Chronicle*, July/August 2017 27-28. Available online: www.atanet.org/chronicle-online/highlights/translators-without-borders-and-technology/#sthash.SaYY7vyC.dpbs [last accessed 28 Jan. 2019].
Allen, J. (2003) 'Post-editing', in H. L. Somers (ed.) *Computers and translation: a translator's guide*, Amsterdam & Philadelphia: John Benjamins Publishing, 297–317.
Alves, F., A. Koglin, B. Mesa-Lao, M. G. Martínez, N. B. d. L. Fonseca, A. d. M. Sá, J. L. Gonçalves, K. S. Szpak, K. Sekino and M. Aquino (2016) 'Analysing the impact of Interactive machine translation on post-editing effort', in M. Carl, S. Bangalore and M. Shaeffer (eds) *New directions in empirical translation process research: exploring the CRITT TPR-DB*, Heidelberg: Springer, 77–94.
Astudillo, R., J. Graça and A. Martins (eds) (2018) *The 13th Conference of The Association for Machine Translation in the Americas. Workshop Proceedings: Translation Quality Estimation and Automatic Post-Editing.* Available online: http://aclweb.org/anthology/W18-2100 [last accessed 12 Dec. 2018].
Aziz, W., M. Koponen and L. Specia (2014) 'Sub-Sentence level analysis of machine translation post-editing effort', in S. O'Brien, L. W. Balling, M. Carl, M. Simard and L. Specia (eds) *Post-editing of machine translation: processes and applications*, Newcastle upon Tyne: Cambridge Scholars Publishing, 170–199.
Bar-Hillel, Y. (1951) 'The present state of research on mechanical translation', *American Documentation* 2(4): 229–237.
Bernth, A. and C. Gdaniec (2002) 'MTranslatability', *Machine Translation* 16(3): 175–218.

Besacier, L. (2014) 'Traduction automatisée d'une oeuvre littéraire: une étude pilote' [Automatic translation of a literary work: A pilot study], *21ème Traitement Automatique du Langage Naturel (TALN 2014)*. Marseille: 389–394. Available online: https://hal.inria.fr/hal-01003944/document [last accessed 12 Dec. 2018].

Bundgaard, K. and T. P. Christensen (2019) 'Is the concordance feature the new black? A workplace study of translators' interaction with translation resources while post-editing TM and MT matches', *The Journal of Specialised Translation* 31: 14–37. Forthcoming

Cadwell, P., S. O'Brien and C. S. C. Teixeira (2017) 'Resistance and accommodation: factors for the (non-) adoption of machine translation among professional translators', *Perspectives*: 1–21.

Carl, M., B. Dragsted, J. Elming, D. Hardt and A. L. Jakobsen (2011) 'The Process of post-editing: a pilot study', in B. Sharp, M. Zock, M. Carl and A. L. Jakobsen (eds) *Human-Machine Interaction in Translation*, Copenhagen: Samfundslitteratur, 131–142.

Castilho, S., F. Alves, S. O'Brien and M. O'Brien (2014) 'Does post-editing increase usability? A study with Brazilian Portuguese as Target Language', *Proceedings of the seventh annual conference of the European Association for Machine Translation*, European Association for Machine Translation, 183–190. Available online: http://doras.dcu.ie/19997/ [last accessed 12 Dec. 2018].

Castilho, S., J. Moorkens, F. Gaspari, I. Calixto, J. Tinsley and A. Way (2017) 'Is neural machine translation the new state of the art?', *The Prague Bulletin of Mathematical Linguistics* 108: 109–120.

Green, S., J. Chuang, J. Heer and C. D. Manning (2014) 'Predictive Translation Memory: A mixed-initiative system for human language translation', *Proceedings of the 27th annual ACM symposium on User interface software and* technology. Honolulu*, HI USA*: Association for Computing Machinery, 177–187.

Green, S., J. Heer and C. D. Manning (2013) 'The Efficacy of Human Post-Editing for Language Translation', in *Proceedings of ACM Human Factors in Computing Systems (CHI)*. Paris: Association for Computing Machinery, 439–448.

Guerberof, A. (2013) 'What do professional translators think about post-editing?', *The Journal of Specialised Translation* 19: 75–95.

Hassan, H., A. Aue, C. Chen, V. Chowdhary, J. Clark, C. Federmann, X. Huang, M. Junczys-Dowmunt, W. Lewis, M. Li, S. Liu, T.-Y. Liu, R. Luo, A. Menezes, T. Qin, F. Seide, X. Tan, F. Tian, L. Wu, S. Wu, Y. Xia, D. Zhang, Z. Zhang and M. Zhou (2018) 'Achieving Human Parity on Automatic Chinese to English News Translation'. Available online: https://arxiv.org/abs/1803.05567 [last accessed 12 Dec. 2018].

Hu, C., P. Resnik and B. B. Bederson (2014) 'Crowdsourced monolingual translation', *ACM Transactions on Computer-Human Interaction* 21(4): 22:21–22:35.

ISO (2017) *ISO 18587 Translation Services – Post-editing of Machine Translation Output – Requirements*, Geneva: International Standards Office.

Jia, Y., M. Carl and X. Wang (2019) 'How does the post-editing of Neural Machine Translation compare with from-scratch translation? A product and process study', *The Journal of Specialised Translation* 31: 60–86.

Kinnunen, T. and K. Koskinen, eds. (2010) *Translators' agency*, Tampere, Tampere University Press.

Koehn, P., V. Alabau, M. Carl, F. Casacuberta, M. García-Martínez, J. González-Rubio, F. Keller, D. Ortiz-Martínez, G. Sanchis-Trilles and U. Germann (2015) *CASMACAT: Final public report*. Available online: www.casmacat.eu/uploads/Deliverables/final-public-report.pdf [last accessed 12 Dec. 2018].

Koehn, P. and Haddow, B. (2009) 'Interactive assistance to human translators using statistical machine translation methods', in *Proceedings of the 12th Machine Translation Summit (MT Summit XII)*. Ottawa: Association for Machine Translation in the Americas. Available online: www.mt-archive.info/05/MTS-2009-Koehn-2.pdf [last accessed 17 Dec. 2018].

Koponen, M. (2012) 'Comparing human perceptions of post-editing effort with post-editing operations', in *Proceedings of the Seventh Workshop on Statistical Machine Translation*. Montréal: Association for Computational Linguistics, 181–190. Available online: www.statmt.org/wmt12/pdf/WMT23.pdf [last accessed 12 Dec. 2018].

Koponen, M. (2016) 'Is machine translation post-editing worth the effort? A survey of research into post-editing and effort', *The Journal of Specialised Translation* 25: 131–148.

Krings, H. P. (2001) *Repairing texts: empirical investigations of machine translation post-editing processes*, Kent: Kent State University Press.

Langlais, P. and G. J. M. T. Lapalme (2002) 'Trans type: development-evaluation cycles to boost translator's productivity', *Machine Translation* 17(2): 77–98.

Läubli, S, Sennrich, R. and M. Volk (2018) 'Has Machine Translation Achieved Human Parity? A Case for Document-level Evaluation', in *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing*. Brussels: Association for Computational Linguistics, 4791–4796. Available online: http://aclweb.org/anthology/D18-1512 [last accessed 18 Dec. 2018].

Läubli, S. and D. Orrego-Carmona (2017) 'When Google Translate is Better than Some Human Colleagues, those People Are no Longer Colleagues', in *Proceedings of the 39th Conference Translating and the Computer*. London: Aslib, 59–69. Available online: www.zora.uzh.ch/id/eprint/147260/1/AS56785294220083215123980991O9_content_1.pdf [last accessed 12 Dec. 2018].

Lommel, A. (2018) 'Augmented translation: A new approach to combining human and machine capabilities', in *Proceedings of the 13th Conference of the Association for Machine Translation in the Americas (Volume 2: User Papers)*. Available Online: http://aclweb.org/anthology/W18-1905 [last accessed 12 Dec. 2018].

Massardo, I., J. van der Meer, S. O'Brien, F. Hollowood, N. Aranberri and K. Drescher (2016) *MT post-editing guidelines*, Amsterdam: Translation Automation User society.

Mitchell, L., J. Roturier and S. O'Brien (2013) 'Community-based post-editing of machine-translated content: monolingual vs. bilingual', in S. O'Brien, M. Simard and L. Specia (eds) *Proceedings of the MT Summit XIV Workshop on Post-editing Technology and Practice.* Available online: http://doras.dcu.ie/20030/ [last accessed 12 Dec. 2018].

Moorkens, J. and S. O'Brien (2015) 'Post-editing evaluations: Trade-offs between novice and professional participants', in Durgar El-Kahlout, M. Özkan, F. Sánchez-Martínez et al. (eds) *Proceedings of European Association for Machine Translation (EAMT)*. Available online: www.aclweb.org/anthology/W15-4910 [last accessed 12 Dec. 2018].

Moorkens, J., A. Toral, S. Castilho and A. Way (2018) 'Translators' perceptions of literary post-editing using statistical and neural machine translation', *Translation Spaces* 7(2): 240–262.

Nitzke, J. (2016) 'Monolingual post-editing: an exploratory study on research behaviour and target text quality', in S. Hansen-Schirra and S. Grucza (eds) *Eyetracking and applied linguistics*, Berlin: Language Science Press, 83–109.

O'Brien, S. (2016) 'Post-editing and CAT', *EST Newsletter* 48.

O'Brien, S. (2011) 'Towards predicting post-editing productivity', *Machine Translation* 25(3): 197–215.

Olohan, M. (2011) 'Translators and translation technology: the dance of agency', *Translation Studies* 4(3): 342–357.

Papineni, K., S. Roukos, T. Ward and W. J. Zhu (2002) 'BLEU: a method for automatic evaluation of machine translation', in *Proceedings of the 40th Annual Meeting of the Association for Computational Linguistics.* Philadelphia: Association for Computational Linguistics, 311–318. Available online: www.aclweb.org/anthology/P02-1040.pdf [last accessed 12 Dec. 2018].

Plitt, M. and F. Masselot (2010) 'A productivity test of statistical machine translation post-editing in a typical localization context', *Prague Bulletin of Mathematical Linguistics* 93: 7–16.

Reifler, E. (1952) 'Mechanical translation with a pre-editor and writing for mechanical translation', presented at the Conference on Mechanical Translation, 17–20 June, Cambridge. Available online: www.mt-archive.info/MIT-1952-Reifler-1.pdf [last accessed 12 Dec. 2018].

Schwartz, L. (2014) 'Monolingual post-editing by a domain expert is highly effective for translation triage', in S. O'Brien, M. Simard and L. Specia (eds) *Proceedings of the Third Workshop on Post-Editing Technology and Practice*, Vancouver: Association for Machine Translation in the Americas, 34–44.

Screen, B. (2019) 'What effect does post-editing have on the translation product from an end-user's perspective?', *The Journal of Specialised Translation* 31: 133–157.

Simard, M., C. Goutte and P. Isabelle (2007) 'Statistical Phrase-based Post-editing', in *Proceedings of NAACL HLT 2007*, Madison: Association for Computational Linguistics/Omnipress Inc, 508–515.

Specia, L. (2011) 'Exploiting objective annotations for measuring translation post-editing effort', in M. L. Forcada, I. Depraetere and V. Vandeghinste (eds) *Proceedings of the 15th International Conference of the European Association for Machine Translation*, Leuven: European Association

for Machine Translation, 73–80. Available online: www.mt-archive.info/EAMT-2011-Specia.pdf [last accessed 12 Dec. 2018].

Specia, L., F. Blain, V. Logacheva, R. Astudillo and A. Martins (2018) 'Findings of the WMT 2018 Shared Task on Quality Estimation', in *Proceedings of the Third Conference on Machine Translation (WMT)*, Brussels: Association for Computational Linguistics, 689–709. Available online: http://aclweb.org/anthology/W18-6451 [last accessed 12 Dec. 2018].

Tatsumi, M. and J. Roturier (2010) 'Source text characteristics and technical and temporal post-editing effort: what is their relationship?', in V. Zhechev (ed.) *Proceedings of the Second Joint EM+/CNGL Workshop 'Bringing MT to the User: Research on Integrating MT in the Translation Industry',* Denver, 43–51. Available online: https://pdfs.semanticscholar.org/5573/e1c9a9466c2b84074f1c9a1f3e4387570c40.pdf [last accessed 12 Dec. 2018].

Toral, A., S. Castilho, K. Hu and A. Way (2018) 'Attaining the Unattainable? Reassessing Claims of Human Parity in Neural Machine Translation', https://arxiv.org/abs/1808.10432.

Toral, A. and A. Way (2018) 'What level of quality can neural machine translation attain on literary text?', in J. Moorkens, S. Castilho, F. Gaspari and S. Doherty (eds) *Translation quality assessment: from principles to practice*. Cham: Springer, 263–287.

Underwood, N., B. Mesa-Lao, M. G. Martínez, M. Carl, V. Alabau, J. González-Rubio, L. A. Leiva, G. Sanchis-Trilles, D. Ortíz-Martínez and F. Casacuberta (2014) 'Evaluating the Effects of Interactivity in a Post-Editing Workbench', in N. Calzolari, K. Choukri, T. Declerck et al. (eds) *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)*, Reykjavik: European Language Resources Association, 553–559.

van Egdom, G.-W. and M. Pluymaekers (2019) 'Why go the extra mile? How different degrees of post-editing affect perceptions of texts, senders and products among end users', *The Journal of Specialised Translation* 31: 158–176.

Vermeer, H. J. (2000) 'Skopos and commission in translational action' in L. Venuti (ed.) *The translation studies reader*, London: Routledge, 221–232.

Vieira, L. N. (2014) 'Indices of cognitve effort in machine translation post-editing', *Machine Translation* 28(3–4): 187–216.

Vieira, L. N. (2017) 'From process to product: links between post-editing effort and post-edited quality', in A. L. Jakobsen and B. Mesa-Lao (eds) *Translation in transition: between cognition, computing and technology*, Amsterdam: John Benjamins Publishing, 162–186.

Vieira, L. N. and E. Alonso (2018) *The use of machine translation in human translation workflows: Practices, perceptions and knowledge exchange*, Milton Keynes: Institute of Translation and Interpreting. Available online: www.iti.org.uk/images/downloads/ITIReport-Lucas.pdf [last accessed 12 Dec. 2018].

Wagner, E. (1985) 'Post-editing Systran – a challenge for commission translators', *Terminologie et Traduction* 3: 1–7.

Yamada, M. (2019) 'The impact of Google neural machine translation on post-editing by student translators', *The Journal of Specialised Translation* 31: 87–106.

Zhechev, V. (2014) 'Analysing the post-editing of Machine Translation at Autodesk', in S. O'Brien, L. W. Balling, M. Carl, M. Simard and L. Specia (eds) *Post-editing of machine translation: processes and applications*, Newcastle: Cambridge Scholars Publishing, 2–24.

Allen, J. (2003) 'Post-editing', in H. Somers (ed.), *Computers and translation: A translator's guide,* Amsterdam: John Benjamins Publishing, 297–317.

Arnold, D., L. Balkan, S. Meijer, R. Lee Humphreys and L. Sadler (1994) *Machine translation: An introductory guide.* Blackwell, Manchester, UK: Blackwell.

Bojar, O., M. Ercegovčević, M. Popel and O. Zaidan (2011) 'A grain of salt for the WMT manual evaluation'. *Proceedings of the Sixth Workshop on Statistical Machine Translation*, 30–31 July 2011, Edinburgh, 1–11.

Byrne, J. (2006) *Technical translation: usability strategies for translating technical documentation*. Heidelberg: Springer.

Callison-Burch, C., C. Fordyce, P. Koehn, C. Monz and J. Schroeder (2007) '(Meta-)evaluation of machine translation', *Proceedings of the Second Workshop on Statistical Machine Translation*, Prague, 136–158.

Callison-Burch, C., P. Koehn, C. Monz and J. Schroeder (2009). 'Findings of the 2009 Workshop on Statistical Machine Translation', *Proceedings of the 4th EACL Workshop on Statistical Machine Translation*, 30–31 March 2009, Athens,1–28.

Callison-Burch, C., P. Koehn, C. Monz and O. Zaidan (2011) 'Findings of the 2011 Workshop on Statistical Machine Translation', *Proceedings of the Sixth Workshop on Statistical Machine Translation*, 30–31 July, 2011, Edinburgh, 22–64.

Carl, M., S. Gutermuth and S. Hansen-Schirra (2015) 'Post-editing machine translation: A usability test for professional translation settings', in A. Ferreira and J. Schwieter (eds) *Psycholinguistic and cognitive inquiries into translation and interpreting*, Amsterdam: John Benjamins Publishing, 145–174.

Castilho, S. (2016). *Measuring acceptability of machine translated enterprise content, Doctoral* Thesis, Dublin City University, Ireland.

Castilho, S., S. Doherty, F. Gaspari and J. Moorkens (2018). 'Approaches to human and machine translation quality assessment', in J. Moorkens, S. Castilho, F. Gaspari and S. Doherty (eds), *Translation quality assessment: From principles to practice*. Cham: Springer, 1–29.

Castilho, S. and S. O'Brien (2016). 'Evaluating the impact of light post-editing on usability', *Proceedings of the Tenth International Conference on Language Resources and Evaluation*, 23–28 May 2016, Portorož, 310–316.

Castilho, S., S. O'Brien, F. Alves and M. O'Brien (2014). 'Does post-editing increase usability? A study with Brazilian Portuguese as target language', in *Proceedings of the Seventeenth Annual Conference of the European Association for Machine Translation*, 16–18 June 2014, Dubrovnik, 183–190.

Chan, Y. and H. Ng (2008). 'MAXSIM: An automatic metric for machine translation evaluation based on maximum similarity', *Proceedings of the MetricsMATR Workshop of AMTA-2008*, Honolulu, Hawaii, 55–62.

Daems, J., S. Vandepitte, R. Hartsuiker and L. Macken (2015). 'The impact of machine translation error types on post-editing effort indicators', *Proceedings of the 4th Workshop on Post-Editing Technology and Practice*, 3 November 2015, Miami, 31–45.

De Almeida, G. and S. O'Brien (2010). 'Analysing post-editing performance: Correlations with years of translation experience', *Proceedings of the 14th Annual Conference of the European Association for Machine Translation*, 27–28 May 2010, St. Raphaël.

Depraetere, I. (2010) 'What counts as useful advice in a university post-editing training context? Report on a case study', *Proceedings of the 14th Annual Conference of the European Association for Machine Translation*, 27–28 May 2010, St. Raphaël.

Doddington, G. (2002) 'Automatic evaluation of machine translation quality using n-gram co-occurrence statistics', *Proceedings of the Second International Conference on Human Language Technology Research*, San Diego, p 138–145.

Doherty, S. (2012) *Investigating the effects of controlled language on the reading and comprehension of machine-translated texts: A mixed-methods approach using eye tracking*, Doctoral thesis, Dublin City University, Ireland.

Doherty, S. (2014) 'The design and evaluation of a Statistical Machine Translation syllabus for translation students', *Interpreter and Translator Trainer* 8, 295–315.

Doherty, S. (2016) 'The impact of translation technologies on the process and product of translation', *International Journal of Communication* 10, 947–969.

Doherty, S. (2017) 'Issues in human and automatic translation quality assessment', in D. Kenny (ed.) *Human issues in translation technology*, London: Routledge, 131–148

Doherty S., S. O'Brien and M. Carl (2010) 'Eye tracking as an MT evaluation technique', *Machine Translation* 24, 1–13.

Drugan, J. (2013) *Quality in professional translation: Assessment and improvement.* London, UK: Bloomsbury.

Ehrensberger-Dow, M. and S. O'Brien (2015). 'Ergonomics of the translation workplace', *Translation spaces, 4*(1), 98–118.

Ehrensberger-Dow, M. and A. H. Heeb (2016) 'Investigating the ergonomics of the technologized translation workplace', in R. Muñoz Martín (ed.) *Re-embedding translation process research*, Amsterdam: John Benjamins Publishing, 69–88.

Gaspari, F. (2004) 'Online MT services and real users' needs: An empirical usability evaluation', *Proceedings of AMTA 2004: Sixth Conference of the Association for Machine Translation in the Americas*, Berlin, 74–85.

Graesser, A. C., D. S. McNamara, M. M. Louwerse and Z. Cai (2004) 'Coh-Metrix: Analysis of text on cohesion and language'. *Behavior research methods*, 36(2), 193–202.

Graham, Y., T. Baldwin, A. Moffat and J. Zobel (2014) 'Is machine translation getting better over time?', *Proceedings of the 14th Conference of the European Chapter of the Association for Computational Linguistics*, 443–451.

Guerberof, A. (2014) 'Correlations between productivity and quality when post-editing in a professional context', *Machine Translation,* 28(3–4), 165–186.

House, J. (2015) *Translation quality assessment: Past and present*. London, UK: Routledge.

Hovy, E., M. King and A. Popescu-Belis (2002) 'Principles of context-based machine translation evaluation', *Machine Translation 17*(1), 43–75.

Humphreys, L., M. Jäschke, A. Way, L. Balkan and S. Meyer (1991). 'Operational evaluation of MT', *Working Papers in Language Processing 22*. Essex, UK: University of Essex.

Kincaid, J., R. Fishburne, R. Rogers and B. Chissom (1975) *Derivation of new readability formulas (automated readability index, Fog count and Flesch reading ease formula) for navy enlisted personnel* (No. RBR-8–75), Naval Technical Training Command Millington TN Research Branch.

Klerke, S., S. Castilho, M. Barrett and A. Søgaard (2015) 'Reading metrics for estimating task efficiency with MT output', *Proceedings of the Sixth Workshop on Cognitive Aspects of Computational Language Learning*, 18 September 2015, Lisbon, 6–13.

Koby, G., P. Fields, D. Hague, A. Lommel and A. Melby (2014) 'Defining translation quality', *Revista tradumàtica*, 12, 413–420.

Koehn, P. (2009) *Statistical machine translation*. Cambridge, UK: Cambridge University Press.

Koehn, P. (2010) 'Enabling monolingual translators: Post-editing vs. options', *Proceedings of the 2010 Annual Conference of the North American Chapter of the ACL*, Los Angeles,537–545.

Koponen, M. (2012) 'Comparing human perceptions of post-editing effort with post-editing operations', *Proceedings of the Seventh Workshop on Statistical Machine Translation*, 7–8 June 2012, Montréal, 181–190.

Krings, H. (2001) *Repairing texts: Empirical investigations of machine translation post-editing processes.* Kent, OH: Kent State University Press.

Lacruz, I. and G. Shreve (2014) 'Pauses and cognitive effort in post-editing', in S. O'Brien, L. Balling, M. Carl, M. Simard and L. Specia (eds), *Post-editing of machine translation: Processes and applications*, Newcastle-Upon-Tyne: Cambridge Scholars Publishing, 246–272.

Landis, J. and G. Koch (1977) 'The measurement of observer agreement for categorical data', *Biometrics, 33*(1), 159–174.

Lavie, A. and A. Agarwal (2007). 'METEOR: An automatic metric for MT evaluation with high levels of correlation with human judgments', *Proceedings of the Workshop on Statistical Machine Translation*, June, Prague, Czech Republic, 228–231.

Lommel, A., H. Uszkoreit and A. Burchardt (2014) 'Multidimensional Quality Metrics (MQM): A framework for declaring and describing translation quality metrics', *Revista tradumàtica*, 12, 455–463.

Moorkens, J., S. O'Brien, I. da Silva, N. de Lima Fonseca and F. Alves (2015) 'Correlations of perceived post-editing effort with measurements of actual effort', *Machine Translation 29*(3), 267–284.

Moorkens, J., S. O'Brien and J. Vreeke (2016) 'Developing and testing Kanjingo: A mobile app for post-editing', *Revista tradumàtica, 14,* 58–66.

Moorkens, J. and A. Way (2016). 'Comparing translator acceptability of TM and SMT outputs', *Baltic Journal of Modern Computing, 4*(2), 141–151.

Moorkens, J. and S. O'Brien (2017) 'Assessing user interface needs of post-editors of machine translation', in D. Kenny (ed.) *Human issues in translation technology*, London: Routledge, 109–130.

Nielsen, J. (1993). *Usability engineering*. Amsterdam: Morgan Kaufmann.

Nießen, S., F. Och, G. Leusch and H. Ney (2000) 'An evaluation tool for machine translation: Fast evaluation for MT research', *Proceedings of the Second International Conference on Language Resources and Evaluation*, 31 May–2 June 2000, Athens, 39–45.

Nord, C. (1997) *Translation as a purposeful activity: functionalist approaches explained*. Manchester: St. Jerome publishing.

O'Brien, S. (2008) Processing fuzzy matches in translation memory tools: An eye-tracking analysis', in S. Göpferich, I. Mees and A. Jakobsen (eds) *Copenhagen studies in language* 36, Copenhagen: Samfundslitteratur, 79–102.

O'Brien, S., M. O'Hagan and M. Flanagan (2010) 'Keeping an eye on the UI design of Translation Memory: how do translators use the Concordance feature?', *Proceedings of the 28th Annual European Conference on Cognitive Ergonomics* ACM, 187–190.

O'Brien, S. (ed.) (2011) *Cognitive explorations of translation*. London: Bloomsbury.
O'Brien, S. (2012) 'Translation as human-computer interaction', *Translation spaces 1*(1), 101–122.
O'Brien, S., M. Simard and L. Specia (eds) (2013) 'Workshop on post-editing technology and practice', *Proceedings of Machine Translation Summit XIV*, Nice.
O'Brien, S., L. Balling, M. Carl, M. Simard, L. Specia (eds) (2014). *Post-editing of machine translation: processes and applications*, Newcastle-Upon-Tyne: Cambridge Scholars Publishing.
O'Hagan, M. (2013) 'The impact of new technologies on translation studies: A technological turn' in C. Millan-Varela and F. Bartrina (eds), *The Routledge handbook of Translation Studies,* London, UK: Routledge, 503–518.
Padó, S., D. Cer, M. Galley, D. Jurafsky and C. Manning (2009) 'Measuring machine translation quality as semantic equivalence: A metric based on entailment features', *Machine Translation, 23*(2–3), 181–193.
Papineni, K., S. Roukos, T. Ward and W. Zhu (2002) 'BLEU: A method for automatic evaluation of machine translation', *Proceedings of the 40th Annual Meeting on Association for Computational Linguistics, Philadelphia*, 311–318.
Plitt, M. and F. Masselot (2010) 'A productivity test of statistical machine translation post-editing in a typical localisation context', *The Prague Bulletin of Mathematical Linguistics*, 93, 7–16.
Popović, M (2015). 'ChrF: Character n-gram F-score for automatic MT evaluation', *Proceedings of the 10th Workshop on Statistical Machine Translation*, 17–18 September 2015, Lisbon, 392–395.
Popović, M. and H. Ney (2009) 'Syntax-oriented evaluation measures for machine translation output' *Proceedings of the Fourth Workshop on Statistical Machine Translation*, Athens, 29–32.
Ross, P., M. Ellipse and H. Freeman (2004*). Evaluation: a systematic approach*, 7th ed., Thousand Oaks, CA: Sage.
Roturier, J. (2006) *An investigation into the impact of controlled English rules on the comprehensibility, usefulness, and acceptability of machine-translated technical documentation for French and German users*, Doctoral Thesis, Dublin City University, Ireland.
Roturier, J. (2009) 'Deploying novel MT technology to raise the bar for quality: A review of key advantages and challenges', *The twelfth Machine Translation Summit, Ottawa, Canada, August. International Association for Machine Translation*.
Reeder, F (2004) 'Investigation of intelligibility judgments' *Proceedings of the Sixth Conference of the Association for MT in the Americas*, AMTA 2004, Springer, Heidelberg, 227–235.
Saldanha, G. and S. O'Brien (2014). *Research methodologies in translation studies*. London: Routledge.
Snover, M., B. Dorr, R. Schwartz, L. Micciulla and J. Makhoul (2006) 'A study of translation edit rate with targeted human annotation', *Proceedings of the 7th Conference of the Association for Machine Translation in the Americas*, 8–12 August 2006, Cambridge, 223–231.
Specia, L. (2011) 'Exploiting objective annotations for measuring translation post-editing effort', *Proceedings of the Fifteenth Annual Conference of the European Association for Machine Translation*, 30–31 May, Leuven, 73–80.
Stymne, S., H. Danielsson, S. Bremin, H. Hu, J. Karlsson, A. Lillkull, M. Wester (2012) 'Eye-tracking as a tool for machine translation error analysis', *Proceedings of the Eighth International Conference on Language Resources and Evaluation*, 23–25 May 2012, Istanbul, 1121–1126.
Stymne, S., J. Tiedemann, C. Hardmeier and J. Nivre (2013) 'Statistical machine translation with readability constraints', *Proceedings of the 19th Nordic Conference of Computational Linguistics*, 22–24 May 2013, Oslo, 375–386.
Tatsumi, M. (2010) *Post-editing machine translated text in a commercial setting: Observation and statistical analysis,* Doctoral Thesis, Dublin City University, Ireland.
Torres-Hostench, O., J. Moorkens, S. O'Brien and J. Vreeke (2017) 'Testing interaction with a mobile MT post-editing app', *Translation & Interpreting, 9*(2), 138–150.
Turchi, M., M. Negri and M. Federico (2014) 'Data-driven annotation of binary MT quality estimation corpora based on human post-editions', *Machine translation 28*(3–4), 281–308.
Turian, J., L. Shea and I. Melamed (2003) 'Evaluation of machine translation and its evaluation', *Proceedings of MT Summit IX*, New Orleans, 386–393.
Uszkoreit, H. and A. Lommel (2013) 'Multidimensional Quality Metrics: A new unified paradigm for human and machine translation quality assessment'. Paper presented at Localization World, London, 12–14 June 2013.
Way, A. (2018) 'Quality expectations of machine translation', in J. Moorkens, S. Castilho, F. Gaspari, & S. Doherty (eds), *Translation quality assessment: From principles to practice*. Cham, Switzerland: Springer, 159–178.

Astley, H. and O. Torres Hostench (2017) 'The European graduate placement scheme: an integrated approach to preparing master's in translation graduates for employment', *The Interpreter and Translator Trainer* 11(2–3): 204–222.

Bundgaard, K. (2017) 'Translator attitudes towards translator–computer interaction – findings from a workplace study', *Hermes – Journal of Language and Communication in Business* 56: 125–144.

Bundgaard, K. and T. P. Christensen (2016) 'Translator–computer interaction in action – an observational process study of computer-aided translation', *Journal of Specialised Translation* 25: 106–130.

Cadwell, P., S. Castilho, S. O'Brien and L. Mitchell (2016) 'Human factors in machine translation and post-editing among institutional translators', *Translation Spaces* 5(2): 222–243.

Cadwell, P., S. O'Brien and C. S. C. Teixeira (2018) 'Resistance and accommodation: factors for the (non-)adoption of machine translation among professional translators', *Perspectives* 26(3): 301–321.

Clark, A. and D. J. Chalmers (1998/2010) 'The extended mind', in R. Menary (ed.) *The extended mind*, Cambridge, MA: MIT Press, 27–41.

Dam, H. V. and K. K. Zethsen (2011) 'The status of professional business translators on the Danish market: a comparative study of company, agency and freelance translators', *Meta* 56(4): 976–997.

Dam, H. V. and K. K. Zethsen (2012) 'Translators in international organizations: a special breed of high-status professionals? Danish EU translators as a case in point', *Translation and Interpreting Studies* 7(2): 211–232.

Désilets, A., C. Melançon, G. Patenaude and L. Brunette (2009) 'How translators use tools and resources to resolve translation problems: An ethnographic study', *MT summit XII– Workshop: Beyond Translation Memories: New Tools for Translators*. Available online:http://mt-archive.info/MTS-2009-Desilets-2.pdf [last accessed 21 Sep. 2018].

Ehrensberger-Dow, M. (2014) 'Challenges of translation process research at the workplace', *MonTI* Special Issue 1: 355–383.

Ehrensberger-Dow, M. and A. Hunziker Heeb (2016) 'Investigating the ergonomics of a technologized translation workplace', in R. Muñoz Martín (ed.) *Re-embedding translation process research*, Amsterdam: John Benjamins Publishing, 69–88.

Ehrensberger-Dow, M., A. Hunziker Heeb, G. Massey, U. Meidert, S. Neumann and H. Becker (2016) 'An international survey of the ergonomics of professional translation' *ILCEA* 27. Available online: http://ilcea.revues.org/4004 [last accessed 20 Sep. 2018].

Ehrensberger-Dow, M. and G. Massey (2017) 'Socio-technical issues in professional translation practice', Special Issue of *Translation Spaces* 6(1): 104–121.

Elia (2019) *Language industry survey –expectations and concerns of the European language industry 2019*. Brussels: European Language Industry Association. Available online: https://ec.europa.eu/info/sites/info/files/2019_language_industry_survey_report.pdf [last accessed 26 Jun. 2019].

Fulford, H. and J. Granell-Zafra (2005) 'Translation and technology: a study of UK freelance translators', *Journal of Specialised Translation* 4: 2–17.

Gough, J. (2016) *The patterns of interaction between professional translators and online resources*. Unpublished PhD thesis, University of Surrey.

Hébert-Malloch, L. (2004) 'What do we know about a translator's day?', *Meta* 49(4): 973–979.

Hoffmann-Riem, H., S. Biber-Klemm, W. Grossenbacher-Mansuy, G. Hirsch Hadorn, D. Joye, C. Pohl, U. Wiesmann and E. Zemp (2008) 'The idea of the handbook', in G. Hirsch Hadorn, H. Hoffmann-Riem, S. Biber-Klemm, W. Grossenbacher-Mansuy, D. Joye, C. Pohl, U. Wiesmann and E. Zemp (eds) *Handbook of transdisciplinary research*, Berlin: Springer, 3–17.

Hollnagel, E. and D. D. Woods (2005) *Joint cognitive systems. Foundations of cognitive systems engineering*, Boca Raton: Taylor & Francis Group.

Hutchins, E. (1995) *Cognition in the wild*, Cambridge, MA: The MIT Press.

Karamanis, N., S. Luz and G. Doherty (2011) 'Translation practice in the workplace. Contextual analysis and implications for machine translation', *Machine Translation* 25(1): 35–52.

Katan, D. (2009) 'Translation theory and professional practice: A global survey of the great divide', *Hermes – Journal of Language and Communication Studies* 42: 111–153.

Katan, D. (2011) 'Occupation or profession: a survey of the translators' world', in R. Sela-Sheffy and M. Shlesinger (eds) *Profession, identity and status: translators and interpreters as an occupational group,* Amsterdam: John Benjamins Publishing, 65–88.

Kinnunen, T. and K. Koskinen (2010) *Translators' agency*, Tampere: Tampere University Press.

Kiraly, D. (2013) 'Towards a view of translator competence as an emergent phenomenon: thinking outside the box(es) in translator education', in D. Kiraly, S. Hansen-Schirra and K. Maksymski (eds) *New prospects and perspectives for educating language mediators*, Tübingen: Narr Francke Attempto, 197–224.

Kiraly, D. (2016) 'Authentic project work and pedagogical epistemologies: a question of competing or complementary worldviews?', in D. Kiraly, L. Rüth, C. Canfora and A. Cnyrim (eds) *Towards authentic experiential learning in translator education*, Göttingen: V&R unipress/Mainz University Press, 53–66.

Koskinen, K. (2008) *Translating institutions. An ethnographic study of EU translation*, Manchester: St. Jerome Publishing.

Krüger, R. (2016) 'Contextualising computer-assisted translation tools and modelling their usability', *Trans-Kom* 9(1): 114–118.

Kuznik, A. and J. Miquel Verd (2010) 'Investigating real work situations in translation agencies. Work content and its components', *Hermes – Journal of Language and Communication Studies* 44: 25–43.

Lagoudaki, E. (2006) 'Translation Memories Survey 2006: Users' perceptions around TM use', in *Proceedings of ASLIB translating and the computer 28*, London, UK. 15–16 November 2006. Available online: https://pdfs.semanticscholar.org/6c55/2454a3368e08cee7dc9a5fb3aa441a79db35.pdf [last accessed 20 Sep. 2018].

Lave, J. and E. Wenger (1991) *Situated learning: legitimate peripheral participation*, Cambridge: Cambridge University Press.

LeBlanc, M. (2013) 'Translators on translation memory (TM). Results of an ethnographic study in three translation services and agencies', *The International Journal for Translation & Interpreting* 5(2): 1–13.

LeBlanc, M. (2017) '"I can't get no satisfaction": should we blame translation technologies or shifting business practices?', in D. Kenny (ed.) *Human issues in translation technologies*, London Routledge, 45–62.

MacWhinney, B. and W. O'Grady (eds) (2015) *The handbook of language emergence*, London: Wiley-Blackwell

Marshman, E. (2014) 'Taking control: language professionals and their perception of control when using language technologies', *Meta* 59(2): 380–405.

Massey, G. and M. Ehrensberger-Dow (2011) 'Commenting on translation: implications for translator training', *Journal of Specialised Translation* 16: 26–41.

Mellinger, C. (forthcoming) 'Core research questions and methods', in E. Angelone, G. Massey and M. Ehrensberger-Dow (eds) *Bloomsbury companion to the language industry studies*, London: Bloomsbury.

Menary, R. (ed.) (2010) *The extended mind*, Cambridge, MA: MIT Press.

Menary, R. (2013) 'The extended mind', in H. Pashler (ed.) *Encyclopedia of the mind*, Thousand Oaks: SAGE, 335–338.

Moorkens, J. and S. O'Brien (2013) 'User attitudes to the post-editing interface', in S. O'Brien, M. Simard and L. Specia (eds) *Proceedings of MT Summit XIV Workshop on Post-editing Technology and Practice*. Available online:http://www.mt-archive.info/10/MTS-2013-W2-Moorkens.pdf [last accessed 20 Sep. 2018].

Muñoz Martín, R. (2010) 'On paradigms and cognitive translatology', in G. M. Shreve and E. Angelone (eds) *Translation and cognition*, Amsterdam: John Benjamins Publishing, 169–187.

Nardie, B. A. (ed.) (1996) *Context and consciousness: activity theory and human–computer interaction*, Cambridge, MA: The MIT Press.

O'Brien, S. (2012) 'Translation as human–computer interaction', *Translation Spaces* 1: 101–122.

O'Brien, S., M. Ehrensberger-Dow, M. Hasler and M. Connolly (2017) 'Irritating CAT tool features that matter to translators', *Hermes – Journal of Language and Communication in Business* 56: 145–162.

Olohan, M. (2011) 'Translators and translation technology: the dance of agency', *Translation Studies* 4(3): 342–357.
Olohan, M. (2017) 'Knowing in translation practice. A practice-theoretical perspective', *Translation Spaces* 6(1): 159–180.
Perrin, D. (2012) 'Transdisciplinary action research. Bringing together communication and media researchers and practitioners', *Journal of Applied Journalism and Media Studies* 1(1): 3–23.
Pickering, A. (2008) 'New ontologies', in A. Pickering and K. Guzik (eds) *The mangle in practice. Science, society and becoming*, Durham, NC: Duke University Press, 1–14.
Pym, A. (2011) 'What technology does to translating', *The International Journal for Translation and Interpreting* 3(1): 1–9.
Reason, P. and H. Bradbury (2006/2010) *The handbook of action research*, London: Sage.
Riegler, A. (2002) 'When is a cognitive system embodied?', *Cognitive Systems Research* 3(3): 339–348.
Risku, H. (1998) *Translatorische Kompetenz. Kognitive Grundlagen des Übersetzens als Expertentätigkeit*, Tübingen: Stauffenburg Verlag.
Risku, H. (2002) 'Situatedness in translation studies', *Cognitive Systems Research* 3: 523–533.
Risku, H. (2004) *Translationsmanagement. Interkulturelle Fachkommunikation im Informationszeitalter*, Tübingen: Gunter Narr.
Risku, H. (2010) 'A cognitive scientific view on technical communication and translation. Do embodiment and situatedness really make a difference?', *Target* 22(1): 94–111.
Risku, H. (2014) 'Translation process research as interaction research. From mental to socio-cognitive processes', *MonTI* Special Issue 1: 331–53.
Risku, H. (2016) *Translationsmanagement. Interkulturelle Fachkommunikation im Informationszeitalter,* 3rd Edition, Tübingen: Gunter Narr.
Risku, H., R. Rogl and J. Milosevic (eds) (2017) *Translation practice in the field. Current research on socio-cognitive processes.* Special Issue of *Translation Spaces* 6(1).
Robbins, P. and M. Aydede (eds) (2009) *The Cambridge handbook of situated cognition*, Cambridge: Cambridge University Press.
Saldanha, G. and S. O'Brien (2013) *Research methodologies in translation studies*, Manchester: St. Jerome Publishing.
Stokols, D. (2006) 'Toward a science of transdisciplinary action research', *Community Psychology* 38(1–2). Available online: https://onlinelibrary.wiley.com/doi/full/10.1007/s10464-006-9060-5 [last accessed 20 Sep. 2018].
Teixeira, C. S. C. (2014a) 'Perceived vs. measured performance in the post-editing of suggestions from machine translation and translation memories', in S. O'Brien, M. Simard and L. Specia (eds) *Proceedings of the third workshop on post-editing technology and practice (WPTP-3)*. Available online:http://www.mt-archive.info/10/AMTA-2014-TOC.htm [last accessed 20 Sep. 2018].
Teixeira, C. S. C. (2014b) *The impact of metadata on translator performance: how translators work with translation memories and machine translation*. Doctoral thesis, Tarragona: Universitat Rovira i Virgili.
Teixeira, C. S. C. and S. O'Brien (2017) 'Investigating the cognitive ergonomic aspects of translation tools in a workplace setting', *Translation Spaces* 6(1): 79–103.
Toudic, D. and G. de Brébisson (2011) 'Poste du travail du traducteur et responsabilité: une question de perspective', *ILCEA* 14. http://ilcea.revues.org/1043
Vandepitte, S. (2009) 'Entrepreneurial competences in translation training', in I. Kemble (ed.) *Eighth Portsmouth translation conference Proceedings. The changing face of translation*, Portsmouth: University of Portsmouth, 120–130.
Alabau, V., C. Buck, M. Carl, F. Casacuberta, M. García-Martínez, U. Germann, J. González-Rubio, R. Hill, P. Koehn, L. Leiva, B. Mesa-Lao, D. Ortiz-Martínez, H. Saint-Amand, G. Sanchis Trilles, and C. Tsoukala (2014) CASMACAT: A computer-assisted translation workbench. In *Proceedings of EACL*, Stroudsburg: Association for Computational Linguistics, 25–28.
Alabau, V., M. Carl, M. G. Martínez, J. González-Rubio, B. Mesa-Lao, D. Ortiz-Martínez, S. Rodrigues, and M. Schaeffer. (2015) *Analysis of the third field trial*. Technical Report D6.3, ICT Project 287576 (CASMACAT) of the European Community's Seventh Framework Programme for Research and Technological Development.

Alben, L. (1996) Quality of experience. *Interactions* 3(3): 11–15.
Bahdanau, D., K. Cho, and Y. Bengio (2015) Neural Machine Translation by Jointly Learning to Align and Translate. In *Proceedings of ICLR*, San Diego.
Bar-Hillel, Y. (1951) The present state of research on mechanical translation. *American Documentation* 2(4): 229–237.
Barrachina, S., O. Bender, F. Casacuberta, J. Civera, E. Cubel, S. Khadivi, A. Lagarda, H. Ney, J. Tomás, E. Vidal, and J. Vilar-M (2009) Statistical approaches to computer-assisted translation. *Computational Linguistics* 35(1): 3–28.
Bisbey, R. L. and M. Kay (1972) *The MIND translation system: A study in man-machine collaboration*. Technical Report P-4786, RAND Corp., Santa Monica.
Brooke, J. (1996) SUS: a 'quick and dirty' usability scale. In P. W. Jordan, B. Thomas, B. A., Weerdmeester, and I. L. McClelland (eds) *Usability Evaluation in Industry*, London: Taylor & Francis, 189–194.
Callison-Burch, C., M. Osborne, and P. Koehn (2006) Re-evaluation the role of BLEU in machine translation research. In *Proceedings of EACL*, Stroudsburg: Association for Computational Linguistics, 249–256.
Carbonell, J. R. (1970) AI in CAI: An artificial-intelligence approach to computer-assisted instruction. *IEEE Transactions on Man-Machine Systems* 11(4), 190–202.
Carl, M. and M. Kay (2011) Gazing and typing activities during translation: A comparative study of translation units of professional and student translators. *Meta* 56(4): 952–975.
Casacuberta, F., J. Civera, E. Cubel, A. L. Lagarda, G. Lapalme, E. Macklovitch, and E. Vidal (2009) Human interaction for high-quality machine translation. *Communications of the ACM* 52(10): 135–138.
Cheng, S., S. Huang, H. Chen, X. Dai-Y., and J. Chen (2016) Primt: A pick-revise framework for interactive machine translation. In *Proceedings of NAACL-HLT*, Stroudsburg: Association for Computational Linguistics, 1240–1249.
Church, K. W. and E. H. Hovy (1993) Good applications for crummy machine translation. *Machine Translation* 8(4): 239–258.
Cleveland, W. S. and R. McGill (1984) Graphical perception: theory, experimentation, and application to the development of graphical methods. *Journal of the American Statistical Association* 79(387): 531–554.
Coppers, S., J. Van den Bergh, K. Luyten, K. Coninx, I. van der Lek-Ciudin, T. Vanallemeersch, and V. Vandeghinste (2018) Intellingo: an intelligible translation environment. In *Proceedings of CHI*, New York: ACM.
Esteban, J., J. Lorenzo, A. S. Valderrábanos, and G. Lapalme (2004) TransType2 – an innovative computer-assisted translation system. *Proceedings of ACL*, Stroudsburg: Association for Computational Linguistics, 94–97.
Foster, G., P. Isabelle, and P. Plamondon (1997) Target-text mediated interactive machine translation. *Machine Translation* 12(1): 175–194.
Green, S., J. Chuang, J. Heer, and C. D. Manning (2014a) Predictive translation memory: a mixed-initiative system for human language translation. *Proceedings of UIST*, New York: ACM, 177–187.
Green, S., J. Heer, and C. D. Manning (2013) The efficacy of human post-editing for language translation. *Proceedings of CHI*, New York: ACM.
Green, S., S. Wang, J. Chuang, J. Heer, S. Schuster, and C. D. Manning (2014b) Human effort and machine learnability in computer aided translation. In *Proceedings of EMNLP*, Stroudsburg: Association for Computational Linguistics, 1225–1236.
Hokamp, C. M. (2018) *Deep interactive text prediction and quality estimation in translation interfaces*. PhD thesis, Dublin City University.
Hokamp, C. M. and Q. Liu (2015) HandyCAT – An open-source platform for CAT tool research. *Proceedings of EAMT*, Antalya, 2016.
Jakobsen, A. L. (2003) Effects of think aloud on translation speed, revision and segmentation. In F. Alves (ed.) *Triangulating Translation*, Amsterdam: John Benjamins Publishing, 69–95.
Junczys-Dowmunt, M. (2018) Microsoft's submission to the WMT2018 News Translation Task: How I learned to stop worrying and love the data. *Proceedings of WMT*, Stroudsburg: Association for Computational Linguistics, 429–434.
Karimova, S., P. Simanier, and S. Riezler (2018) A user-study on online adaptation of neural machine translation to human post-edits. *Machine Translation* 32(4): 309–324.

Kay, M. (1980). *The proper place of men and machines in language translation*. Research Report CSL-80-11, Xerox Palo Alto Research Center, Palo Alto.
Knowles, R. and P. Koehn (2016) Neural interactive translation prediction. In *Proceedings of AMTA*, Austin, 107–120.
Koehn, P. (2009) A process study of computer-aided translation. *Machine Translation* 23(4): 241–263.
Koehn, P. and B. Haddow (2009) Interactive assistance to human translators using statistical machine translation methods. *Proceedings of MT Summit*, Ottawa.
Koehn, P., H. Hoang, A. Birch, C. Callison-Burch, M. Federico, N. Bertoldi, B. Cowan, W. Shen, C. Moran, R. Zens, C. Dyer, O. Bojar, A. Constantin, and E. Herbst (2007) Moses: Open source toolkit for statistical machine translation. *Proceedings of ACL*, Stroudsburg: Association for Computational Linguistics, 177–180.
Koponen, M. (2012) Comparing human perceptions of post-editing effort with post-editing operations. *Proceedings of WMT*, Stroudsburg: Association for Computational Linguistics, 181–190.
Krings, H. P. (2001) *Repairing Texts: Empirical Investigations of Machine Translation Post-Editing Processes*. Ohio: Kent State University Press.
Langlais, P., G. Foster, and G. Lapalme (2000) Transtype: a computer-aided translation typing system. *Proceedings of the 2000 ANLP-NAACL Workshop on Embedded Machine Translation Systems*, Stroudsburg: Association for Computational Linguistics, 46–51.
Langlais, P. and G. Lapalme (2002) Trans type: development-evaluation cycles to boost translator's productivity. *Machine Translation* 17(2): 77–98.
Langlais, P., G. Lapalme, and S. Sauvé (2001) User interface aspects of a translation typing system. In Stroulia, E. and S. Matwin (eds) *Advances in Artificial Intelligence*, Berlin: Springer, 246–256.
Licklider, J. C. R. (1960) Man-computer symbiosis. *IRE Transactions on Human Factors in Electronics* 1: 4–11.
Läubli, S. and U. Germann (2016) Statistical modelling and automatic tagging of human translation processes. In M., Carl, S. Bangalore, and M. Schaeffer (eds) *New Directions in Empirical Translation Process Research: Exploring the CRITT TPR-DB*, Cham: Springer, 155–181.
Läubli, S. and D. Orrego-Carmona (2017) When Google Translate is better than some human colleagues, those people are no longer colleagues. *Proceedings of the 39th Conference on Translating and the Computer*, London: Aslib, 59–69.
Macklovitch, E. (2006) TransType2: The last word. *Proceedings of LREC*, Genova, 167–172.
Macklovitch, E., N. T. Nguyen, and G. Lapalme (2005) Tracing translations in the making. *Proceedings of MT Summit*, Phuket.
Marie, B. and A. Max (2015) Touch-based Pre-post-editing of machine translation output. *Proceedings of EMNLP*, Stroudsburg: Association for Computational Linguistics, 1040–1045.
McBride, C. (2009) *Translation memory systems: An analysis of translators' attitudes and opinions*. Master's thesis, University of Ottawa.
Moorkens, J. and S. O'Brien (2017) Assessing user interface needs of post-editors of machine translation. In D., Kenny (ed.) *Human Issues in Translation Technology*, New York: Routledge, 109–130.
Nepveu, L., G. Lapalme, P. Langlais, and G. Foster (2004) Adaptive language and translation models for interactive machine translation. *Proceedings of EMNLP*, Stroudsburg: Association for Computational Linguistics, 190–197.
O'Brien, S. (2012) Translation as human–computer interaction. *Translation Spaces* 1(1): 101–122.
O'Brien, S., M. Ehrensberger-Dow, M. Hasler, and M. Connolly (2017) Irritating CAT tool features that matter to translators. *HERMES* 56:145–162.
Ortiz-Martínez, D., I. García-Varea, and F. Casacuberta (2010) Online learning for interactive statistical machine translation. *Proceedings of NAACL-HLT*, 546–554.
Ortiz-Martínez, D., J. González-Rubio, V. Alabau, G. Sanchis-Trilles, and F. Casacuberta (2016) Integrating online and active learning in a computer- assisted translation workbench. In M., Carl, S. Bangalore, and M. Schaeffer (eds) *New directions in empirical translation process research: exploring the CRITT TPR-DB*, Cham: Springer, 57–76.
Papineni, K., S. Roukos, T. Ward, and W. Zhu-J (2002) BLEU: A method for automatic evaluation of machine translation. *Proceedings of ACL*, Stroudsburg: Association for Computational Linguistics, 311–318.
Peris, Á., L. Cebrián, and F. Casacuberta (2017a) Online learning for neural machine translation post-editing. *arXiv preprint* arXiv:1706.03196.

Peris, Á., M. Domingo, and F. Casacuberta (2017b) Interactive neural machine translation. *Computer Speech & Language* 45: 201–220.

Pierce, J. R., J. B. Carroll, E. P. Hamp, D. G. Hays, C. F. Hockett, A. G. Oettinger, and A. Perlis (1966) *Language and machines: Computers in translation and linguistics*. Research report, Automatic Language Processing Advisory Committee (ALPAC), Division of Behavioral Sciences, National Academy of Sciences, National Research Council, Washington, D.C.

Plitt, M. and F. Masselot (2010) A productivity test of statistical machine translation post-editing in a typical localisation context. *Prague Bulletin of Mathematical Linguistics* 93:7–16.

Sánchez Torrón, M. (2017). *Productivity in post-editing and in neural interactive translation prediction: A Study of English-to-Spanish Professional Translators*. PhD thesis, University of Auckland, New Zealand.

Sennrich, R., B. Haddow, and A. Birch (2016) Edinburgh Neural Machine Translation Systems for WMT 16. *Proceedings of WMT*, Stroudsburg: Association for Computational Linguistics, 368–373.

Simianer, P. (2018) *Preference Learning for Machine Translation*. PhD thesis, University of Heidelberg, Germany.

Sutskever, I., O. Vinyals, and Q. V. Le (2014) Sequence to Sequence Learning with Neural Networks. *Proceedings of NIPS*, Montreal, 3104–3112.

Turchi, M., M. Negri, M. FarajianA., and M. Federico (2017) Continuous learning from human post-edits for neural machine translation. *The Prague Bulletin of Mathematical Linguistics* 108: 233–244.

Wuebker, J., S. Green, J. DeNero, S. Hasan, and M. Luong-T (2016) Models and inference for prefix-constrained machine translation. *Proceedings of ACL*, Stroudsburg: Association for Computational Linguistics, 66–75.

Wuebker, J., P. Simianer, and J. DeNero (2018) Compact personalized models for neural machine translation. In *Proceedings of EMNLP*, Stroudsburg: Association for Computational Linguistics, 881–886.

Aaltonen, S. (2013) 'Theatre translation as performance', *Target. International Journal of Translation Studies* 25(3): 385–406.

Abdallah, K. (2010) 'Translators' Agency in Production Networks', in T. Kinnunen and K. Koskinen (eds) *Translators' Agency*, Tampere: Tampere University Press, 11–46. Available online: http://tampub.uta.fi/handle/10024/65639 [last accessed 9 Apr. 2018].

Abdallah, K. (2011) 'Quality problems in AVT production networks: reconstructing an actor-network in the subtitling industry', in A. Serban, A. Matamala and J. M. Lavaur (eds) *Audiovisual translation in close-up: practical and theoretical approaches*, Bern: Peter Lang, 173–86.

Beyer, H. and K. Holtzblatt (1997) *Contextual design: defining customer-centered systems*, San Francisco: Morgan Kaufmann.

Bijker, W. E., T. P. Hughes and T. Pinch (eds) (2012) *The social construction of technological systems: new directions in the sociology and history of technology*, 2nd ed., Cambridge, MA: The MIT Press.

Bijker, W. E. and T. Pinch (2012) 'Preface to the anniversary edition', in W. E. Bijker, T. P. Hughes and T. Pinch (eds) *The social construction of technological systems*, 2nd ed., Cambridge, MA: The MIT Press, xi–xxxiv.

Bogic, A. (2010) 'Uncovering the hidden actors with the help of Latour: the "making" of the second sex', *MonTI. Monografías de Traducción e Interpretación* (2): 173–92.

Buzelin, H. (2005) 'Unexpected allies: how Latour's network theory could complement Bourdieusian analyses in translation studies', *The Translator* 11(2): 193–218.

Buzelin, H. (2006) 'Independent publisher in the networks of translation', *TTR: Traduction, Terminologie, Rédaction* 19(1): 135–73.

Buzelin, H. (2007) 'Translations "in the making"', in M. Wolf and A. Fukari (eds) *Constructing a sociology of translation*, Amsterdam & Philadelphia: John Benjamins Publishing, 135–69

Buzelin, H. (2014) 'Translating the American textbook', *Translation Studies* 7(3): 315–34.

Buzelin, H. and C. Baraldi (2016) 'Sociology and translation studies: two disciplines meeting', in Y. Gambier and L. van Doorslaer (eds) *Border crossings: translation studies and other disciplines*, Amsterdam & Philadelphia: John Benjamins Publishing, 117–39.

Chesterman, A. (2006) 'Questions in the sociology of translation', in J. F. Duarte, A. Assis Rosa and T. Seruya (eds), *Translation studies at the interface of disciplines*, Amsterdam & Philadelphia: John Benjamins Publishing, 9–28.

Cronin, M. (2013) *Translation in the digital age*, London & New York: Routledge.
Désilets, A., C. Melançon, G. Patenaude and L. Brunette (2009) 'How Translators Use Tools and Resources to Resolve Translation Problems: An Ethnographic Study', *Proceedings of Machine Translation Summit XII*, Ontario, Canada. Available online: www.mt-archive.info/MTS-2009-Desilets-2.pdf [last accessed 9 Apr. 2018].
Devaux, J. (2017) *Technologies in Interpreter-Mediated Criminal Court Hearings: An Actor-Network Theory Account of the Interpreter's Perception of her Role-Space*, PhD thesis, The University of Salford. Available online: https://usir.salford.ac.uk/43417/ [last accessed 9 Apr. 2018].
Dillon, S. and J. Fraser (2006) 'Translators and TM: an investigation of translators' perceptions of translation memory adoption', *Machine Translation* 20(2): 67–79.
Eardley-Weaver, S. (2015) 'Opening eyes to opera: the process of translation for blind and partially sighted audiences', in M. Ehrensberger-Dow, B. Englund Dimitrova, S. Hubscher-Davidson and U. Norberg (eds) *Describing cognitive processes in translation: acts and events*, Amsterdam & Philadelphia: John Benjamins Publishing, pp. 125–45.
Ehrensberger-Dow, M. and A. Hunziker Heeb (2016) 'Investigating the ergonomics of a technologized translation workplace', in R. Muñoz Martín (ed.) *Re-embedding translation process research*, Amsterdam & Philadelphia: John Benjamins Publishing, 69–88.
Ehrensberger-Dow, M., A. Hunziker Heeb, G. Massey, U. Meidert, S. Neumann and H. Becker (2016) 'An International Survey of the Ergonomics of Professional Translation', *ILCEA. Revue de l'Institut des Langues et Cultures d'Europe, Amérique, Afrique, Asie et Australie* 27. Available online : http://ilcea.revues.org/4004 [last accessed 9 Apr. 2018].
Ehrensberger-Dow, M. and G. Massey (2017) 'Socio-technical issues in professional translation practice', *Translation Spaces* 6(1): 104–21.
Ehrensberger-Dow, M. and S. O'Brien (2015) 'Ergonomics of the translation workplace: potential for cognitive friction', *Translation Spaces* 4(1): 98–118.
Feenberg, A. (1992) 'Subversive rationalization: technology, power, and democracy', *Inquiry* 35(3–4): 301–22.
Feenberg, A. (1999) *Questioning technology*, London & New York: Routledge.
Fulford, H. and J. Granell-Zafra (2005) 'Translation and technology: a study of UK freelance translators', *JoSTrans – The Journal of Specialised Translation* 4: 2–17. Available online: www.jostrans.org/issue04/art_fulford_zafra.php [last accessed 9 Apr. 2018].
Geertz, C. (1973) *The interpretation of cultures*, New York: Basic Books.
Gouanvic, J.-M. (2005) 'A Bourdieusian theory of translation, or the coincidence of practical instances: field, "habitus", capital and "illusio"', *The Translator* 11(2): 147–66.
Hanna, S. (2016) *Bourdieu in translation studies: the socio-cultural dynamics of Shakespeare translation in Egypt*, New York: Routledge.
Harding, S. (2009) 'Postcolonial and feminist philosophies of science and technology: convergences and dissonances', *Postcolonial Studies* 12(4): 401–21.
Hekkanen, R. (2008) 'Fields, networks and finnish prose: a comparison of bourdieusian field theory and actor-network theory in translation sociology', *Selected papers of the CETRA research seminar in translation studies* (Vol. 2009).
Hokkanen, S. (2017) 'Experiencing the interpreter's role: emotions of involvement and detachment in simultaneous church interpreting', *Translation Spaces* 6(1): 62–78.
Hornborg, A. (2014) 'Technology as fetish: Marx, Latour, and the cultural foundations of capitalism', *Theory, Culture & Society* 31(4): 119–40.
Hurd, E. (2010) 'Confessions of belonging: my emotional journey as medical translator', *Qualitative Inquiry* 16(10): 783–91.
Inghilleri, M. (ed.) (2005) *The Translator*, Special Issue Bourdieu and the Sociology of Translation and Interpreting, Vol. 11(2).
Jansen, H. and A. Wegener (2013) 'Multiple translatorship', in H. Jansen and A. Wegener (eds) *Authorial and editorial voices in translation 1: collaborative relationships between authors, translators, and performers*, Toronto: Éditions québécoises de l'œuvre.
Jones, F. R. (2009) 'Embassy networks: translating post-war Bosnian poetry into English', in J. Milton and P. Bandia (eds) *Agents of translation*. Amsterdam & Philadelphia: John Benjamins Publishing, 301–26.
Karamanis, N., S. Luz and G. Doherty (2011) 'Translation practice in the workplace: contextual analysis and implications for machine translation', *Machine Translation* 25(1): 35–52.

Kenny, D. (2017) 'Introduction', in D. Kenny, (ed.) *Human issues in translation technology*, London & New York: Routledge, 1–7.
Knorr Cetina, K. D. (1981) *The manufacture of knowledge: an essay on the constructivist and contextual nature of science*, Oxford: Pergamon.
Kolb, W. (2017) ' "It was on my mind all day" ', *Translation Spaces* 6(1): 27–43.
Koskinen, K. (2008) *Translating institutions: an ethnographic study of EU translation*, Manchester: St Jerome.
Koskinen, K. and M. Ruokonen (2017) 'Love letters or hate mail? Translators' technology acceptance in the light of their emotional narratives', in D. Kenny (ed.) *Human issues in translation technology*, London & New York: Routledge, 8–24.
Kozinets, R. V. (2010) *Netnography: doing ethnographic research online*, London: SAGE.
Kozinets, R. V. (2015) *Netnography: redefined*, London: SAGE.
Kuznik, A. (2016) 'Work content of in-house translators in small and medium-sized industrial enterprises: observing real work situations', *JoSTrans – The Journal of Specialised Translation* 25: 213–31. Available online: www.jostrans.org/issue25/art_kuznik.pdf [last accessed 9 April 2018].
Kuznik, A. and J. M. Verd (2010) 'Investigating real work situations in translation agencies: work content and its components', *Hermes* 44: 25–43.
Lagoudaki, E. (2006) *Translation memory systems: enlightening users' perspective*, London: Imperial College London.
Latour, B. (1987) *Science in action: how to follow scientists and engineers through society*, Milton Keynes: Open University Press.
Latour, B. (2005) *Reassembling the social: an introduction to actor-network-theory*, Oxford: Oxford University Press.
Latour, B. and S. Woolgar (1979) *Laboratory life: the social construction of scientific facts*., Beverly Hills: Sage.
Law, J. (1992) 'Notes on the theory of the actor-network: ordering, strategy, and heterogeneity', *Systemic Practice and Action Research* 5(4): 379–93.
Law, J. and V. Singleton (2013) 'ANT and politics: working in and on the world', *Qualitative Sociology* 36(4): 485–502.
LeBlanc, M. (2013) 'Translators on translation memory (TM): results of an ethnographic study in three translation services and agencies', *Translation & Interpreting* 5(2): 1–13.
LeBlanc, M. (2017) ' "I can't get no satisfaction!" Should we blame translation technologies or shifting business practices?', in D. Kenny (ed.) *Human issues in translation technology*. London & New York: Routledge, 45–62.
Leonardi, P. M. and S. R. Barley (2010) 'What's under construction here? Social action, materiality, and power in constructivist studies of technology and organizing', *The Academy of Management Annals* 4(1): 1–51.
Littau, K. (2016a) 'Translation and the materialities of communication', *Translation Studies* 9(1): 82–96.
Littau, K. (2016b) 'Translation's histories and digital futures', *International Journal of Communication* 10: 907–28.
Lommel, A. (2002) *LISA 2002 Translation memory survey*, Romainmotier: Localization Industry Standards Association.
Lommel, A. (2004) *LISA 2004 Translation memory survey*, Romainmotier: Localization Industry Standards Association.
Lynch, M. (1985) *Art and artifact in laboratory science: a study of shop work and shop talk in a research laboratory*, London: Routledge & Kegan Paul.
Mihalache, I. (2008) 'Community experience and expertise: translators, technologies and electronic networks of practice', *Translation Studies* 1(1): 55–72.
Mihalache, I. (2009) 'Social and economic actors in the evaluation of translation technologies: creating meaning and value when designing, developing and using translation technologies', *Linguistica Antverpiensia* 8: 159–77.
Moorkens, J. and S. O'Brien (2013) 'Assessing User Interface Needs of Post-Editors of Machine Translation', in *Proceedings of MT Summit XIV Workshop on Post-Editing Technology and Practice*, Nice, 19–25.
Moorkens, J. and S. O'Brien (2017) 'Assessing user interface needs of post-editors of machine translation', in D. Kenny (ed.) *Human issues in translation technology*, London & New York: Routledge, 109–30.

Morozov, E. (2013) *To save everything, click here: the folly of technological solutionism*, New York: PublicAffairs.
O'Hagan, M. (2017) 'Deconstructing translation crowdsourcing with the case of a Facebook initiative: a translation network of engineered autonomy and trust?', in D. Kenny (ed.) *Human issues in translation technology*. London & New York: Routledge, 25–44.
Olohan, M. (2011) 'Translators and translation technology: the dance of agency', *Translation Studies* 4(3): 342–57.
Olohan, M. (2017a) 'Technology, translation and society: a constructivist, critical theory approach', *Target* 29(2): 264–83.
Olohan, M. (2017b) 'Knowing in translation practice: a practice-theoretical perspective', *Translation Spaces* 6(1): 160–81.
Olohan, M. and E. Davitti (2017) 'Dynamics of trusting in translation project management: leaps of faith and balancing acts', *Journal of Contemporary Ethnography* 46(4): 391–416.
Pedersen, D. (2017) 'Managing transcreation projects', *Translation Spaces* 6(1): 44–61.
Pickering, A. (1995) *The mangle of practice: time, agency, and science*, Chicago, IL: University of Chicago Press.
Pickering, A. (2008) 'Preface', in A. Pickering, A. and K. Guzik (eds) *The mangle in practice: science, society and becoming*, Durham, NC: Duke University Press, vii–xiv.
Pinch, T. J. and W. E. Bijker (1984) 'The social construction of facts and artefacts: or how the sociology of science and the sociology of technology might benefit each other', *Social Studies of Science* 14(3): 399–441.
Risku, H. (2004) *Translationsmanagement: Interkulturelle Fachkommunikation im Informationszeitalter*, 1st ed., Tübingen: Gunter Narr.
Risku, H. (2009) *Translationsmanagement: Interkulturelle Fachkommunikation im Informationszeitalter*, 2nd ed., Tübingen: Gunter Narr.
Risku, H. (2016) 'Translatorisches Handeln: Anforderungen und Kompetenzen', in M. Kadrić and K. Kaindl (eds) *Berufsziel Übersetzen und Dolmetschen: Grundlagen, Ausbildung, Arbeitsfelder*. Tübingen: A. Francke Verlag, 39–62.
Risku, H., R. Rogl and J. Milosevic (2017) 'Translation practice in the field: current research on socio-cognitive processes', *Translation Spaces* 6(1): 3–26.
Risku, H. and F. Windhager (2013) 'Extended translation: a sociocognitive research agenda', *Target* 25(1): 33–45.
Simeoni, D. (1998) 'The pivotal status of the translator's habitus', *Target* 10(1): 1–39.
Simeoni, D. (2007) 'Between sociology and history: method in context and in practice', in M. Wolf and A. Fukari (eds) *Constructing a sociology of translation*. Amsterdam & Philadelphia: John Benjamins Publishing, 187–204.
Teixeira, C. S. C. and S. O'Brien (2017) 'Investigating the cognitive ergonomic aspects of translation tools in a workplace setting', *Translation Spaces* 6(1): 79–103.
Tosoni, S. and T. Pinch (2017) *Entanglements: conversations on the human traces of science, technology, and sound*, Cambridge, MA: MIT Press.
Traweek, S. (1988) *Beamtimes and lifetimes: the world of high energy physicists*, Cambridge, MA: Harvard University Press.
UK Translator Survey (2017) London: European Commission Representation in the UK, Chartered Institute of Linguists, and Institute of Translation and Interpreting.
Vorderobermeier, G. M. (2014) *Remapping habitus in translation studies*, Amsterdam: Rodopi.
Wajcman, J. (2000) 'Reflections on gender and technology studies in what state is the art?', *Social Studies of Science* 30(3): 447–64.
Wolf, M. (2011) 'Mapping the field: sociological perspectives on translation', *International Journal of the Sociology of Language* 207: 1–28.
Wolf, M. and A. Fukari (eds) (2007) *Constructing a sociology of translation*, Amsterdam & Philadelphia: John Benjamins Publishing.
Alabau, V., C. Buck, M. Carl, F. Casacuberta, M. García-Martínez, U. Germann, J. González-Rubio, R. Hill, P. Koehn, L. A. Leiva, B. Mesa-Lao, D. Ortiz, H. Saint-Amand, G. Sanchis and C. Tsoukala (2014) 'CASMACAT: A computer-assisted translation workbench'. *Proceedings of the Demonstrations at the 14th Conference of the European Chapter of the Association for Computational Linguistics*, Gothenburg, Sweden, April 26–30, 2014. Association for Computational Linguistics, 25–28.

Berthouze, B. (2013) 'Understanding the role of body movement in player engagement', *Human-computer interaction,* 28: 40–75.
Caffrey, C. (2008) Relevant abuse? Investigating the effects of an abusive subtitling procedure on the perception of TV anime using eye tracker and questionnaire. PhD Thesis. DCU.
Caffrey, C. (2012) 'Using an eye-tracking tool to measure the effects of experimental subtitling procedures on viewer perception of subtitled AV content', in E. Perego (ed.) *Eye Tracking in Audio-Visual Translation*, Rome: Aracne, 223–258.
Campderrich, B. (2009) 'Human-computer interaction: A human resources perspective', in T. Torres-Corona and M. Arias-Oliva (eds) *Encyclopedia of human resources information systems: challenges in e-HRM,* New York, Information Science Reference, 488–494.
Carl, M., B. Dragsted, J. Elming, D. Hardt and A. L. Jakobsen (2011) 'The process of post-editing: a pilot study', in B. Sharp, M. Zock, M. Carl. and A. L. Jakobsen (eds) *Human-machine interaction in translation*. (*Proceedings of the 8th international NLPCS workshop*), Copenhagen: Samfundslitteratur, 131–142.
Carl, M., M. García Martínez, R. Hill, F. Keller, B. Mesa-Lao and M. Schaeffer (2014) 'CASMACAT. D1.3: Final report on user interface studies, cognitive and user modelling. ICT Project 287576. Available online: http://openarchive.cbs.dk/bitstream/handle/10398/9059/Michael%20Carl_d1.3.pdf?sequence=1. [Last accessed 23 Aug. 2018].
CASMACAT Available online: www.casmacat.eu/. [Last accessed 19 Aug. 2018].
Choe, K. W., R. Blake and S. H Lee (2016) 'Pupil size dynamics during fixation impact the accuracy and precision of video-based gaze estimation', *Vision Research* 118: 48–59.
Dam, H. V., M. Nisbeth Brøgger and K. Korning Zethsen (eds) (2019) *Moving boundaries in translation studies*. London & New York: Routledge.
di Giovanni, E. and Y. Gambier (eds) (2018) *Reception studies and audiovisual translation.* Amsterdam & Philadelphia: John Benjamins Publishing.
Doherty, S. and J. L. Kruger (2018) 'The development of eye tracking in empirical research on subtitling and captioning', in J. Sita, T. Dwyer, S. Redmond and C. Perkins (eds) *Seeing into screens: eye tracking and the moving image*, London: Bloomsbury, 46–64.
Doherty, S. and S. O'Brien (2013) 'Assessing the usability of raw machine translated output: a user-centred study using eye tracking', *International Journal of Human-Computer Interaction* 30(1): 40–51.
Dragsted, B. (2010) 'Coordination of reading and writing processes in translation', in G. M. Shreve and E. Angelone (eds) *Translation and cognition*, Amsterdam & Philadelphia: John Benjamins Publishing, 41–62.
Duchowski, A. T. (2017) *Eye tracking methodology. Theory and practice, 3rd rev. ed.* New York: Springer International Publishing AG.
Dwyer, T., C. Perkins, S. Redmond and J. Sita (eds) (2018) *Seeing into screens. Eye tracking and the moving image*, New York & London: Bloomsbury.
d'Ydewalle, G. and W. de Bruycker (2007) 'Eye movements of children and adults while reading television subtitles', *European Psychologist* 12(3): 196–205.
d'Ydewalle, G., J. van Rensbergen and J. Pollet (1987) 'Reading a message when the same message is available auditorily in another language: the case of subtitling', in J. K. O'Regan and A. Lévy-Schoen (eds) *Eye movements: From physiology to cognition*, Amsterdam & New York: Elsevier Science Publishers, 313–321.
d'Ydewalle, G., C. Praet, K. Verfaillie and J. van Rensbergen (1991), 'Watching subtitled television: Automatic reading behavior', *Communication Research* 18(5): 650–666.
Ehrensberger-Dow, M. and S. O'Brien (2015) 'Ergonomics of the translation workplace. Potential for cognitive friction', *Translation Spaces* 4(1): 98–118.
Eye-to-IT (2009) D5.2 Report about the system's potential for visualization and analysis of the synchronized data. (Public EU research report)
Fernández, G., Biondi, J., Castro, S. and O. E. Agamennoni (2016) 'Pupil size behavior during on line processing of sentences', *Journal of Integrative Neuroscience* 15(4): 1–12.
Flower, L. and J. R. Hayes (1981) 'A cognitive process theory of writing', *College Composition and Communication* 32(4): 365–387.
Fox, W. (2016) 'Integrated titles: an improved viewing experience?', in S. Hansen-Schirra and S. Grucza (eds) *Eye tracking and applied linguistics*, Berlin: Language Science Press, 5–30.

Fox, W. (2018) *Can integrated titles improve the viewing experience? Investigating the impact of subtitling on the reception and enjoyment of film using eye tracking and questionnaire data.* Language Science Press: Berlin.

Frank, S. and R. L. Thompson (2012) 'Early effects of word surprisal on pupil size during reading'. Conference paper. Available online: www.researchgate.net/publication/233426538_Early_effects_of_word_surprisal_on_pupil_size_during_reading [last accessed 28 Apr. 2018].

García, A. M. (2019) *The neurocognition of translation and interpreting*, Amsterdam & Philadelphia: John Benjamins Publishing.

Gile, D. (1995) *Basic concepts and models for interpreter and translator training*, Amsterdam & Philadelphia: John Benjamins Publishing.

Grabner, R. H., C. Brunner, R. Leeb, C. Neuper, and G. Pfurtscheller (2007) 'Event-related EEG theta and alpha band oscillary responses during language translation', *Brain Research Bulletin*, 72(1): 57–65.

Green, S., J. Heer and C. D. Manning (2013) 'The efficacy of human post-editing for language translation', in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 27 Apr – 2 May, 2013, Paris*, 439–448. Available online: https://dl.acm.org/citation.cfm?id=2470718 [last accessed 12 Sept. 2018]

Guerberof Arenas, A. (2014) 'Correlations between productivity and quality when post-editing in a professional context', *Machine Translation* 28(3/4): 165–186.

Göpferich, S., A. L. Jakobsen and I. M. Mees (eds) (2008) *Looking at eyes: eye tracking studies of reading and translation processing*, (Copenhagen Studies in Language 36), Samfundslitteratur: Copenhagen.

Hansen-Schirra, S. and S. Grucza (eds) (2016) *Eye tracking and applied linguistics.* (*Translation and Multilingual Natural Language Processing* 2), Berlin: Language Science Press.

Hess E. H. and J. M. Polt (1964) 'Pupil size in relation to mental activity during simple problem-solving', *Science* 143: 1190–1192.

Holmqvist, K. and M. Nyström (2011) *Eye tracking. A comprehensive guide to methods and measures*, Oxford: Oxford U.P.

Holsanova, J. (2014) 'Reception of multimodality: Applying eye tracking methodology in multimodal research', in C. Jewitt (ed.), *Routledge handbook of multimodal analysis*, 2nd ed., London: Routledge, 285–296.

Hvelplund, K. T. (2011) *Allocation of cognitive resources in translation: an eye-tracking and key-logging study*, Copenhagen: Copenhagen Business School. Ph.D. thesis.

Hyrskykari, A. (2006) *Eyes in attentive interfaces: experiences from creating iDict, a gaze-aware reading aid,* PhD Dissertation. Department of Computer Sciences, Tampere: University of Tampere.

Hyönä, J., R. F. Lorch, Jr. and M. Rinck (2003) 'Eye movement measures to study global text processing', in J. Hyönä, R. Radach and H. Deubel (eds) *The mind's eye: cognitive and applied aspects of eye movement research*, Amsterdam: Elsevier, 313–334.

Ipsen, H. and H. V. Dam (2016) 'Translation revision: Correlating revision procedure and error detection', *Hermes* 55: 143–156.

ISO 9241-11 (2018) Available online: www.iso.org/obp/ui/#iso:std:iso:9241:-11:en [last accessed 20 November 2018]

Jakobsen, A. L. (2016) 'Are gaze shifts a key to a translator's text segmentation?', *Poznan Studies in Contemporary Linguistics* 52(2): 149–173.

Jakobsen, A. L. (2019) 'Moving translation, revision and post-editing boundaries', in H. V. Dam, M. Nisbeth Brøgger and K. Korning Zethsen (eds) *Moving boundaries in translation studies,* London & New York: Routledge, 64–80.

Jakobsen, A. L. and K. T. H. Jensen (2008) 'Eye movement behaviour across four different types of reading task', in S. Göpferich, A. L. Jakobsen and I. M. Mees (eds) *Looking at eyes: eye-tracking studies of reading and translation processing*, (Copenhagen Studies in Language 36), Copenhagen: Samfundslitteratur, 103–124.

Jakobsen, A. L. and B. Mesa-Lao (2017) *Translation in transition: between cognition, computing and technology*, Amsterdam & Philadelphia: John Benjamins Publishing.

Just, M. A. and P. A. Carpenter (1980) 'A theory of reading: From eye fixations to comprehension', *Psychological Review* 87(4): 329–359.

Kaakinen, J. K. and J. Hyönä (2003) 'How prior knowledge, WMC, and relevance of information affect eye fixations in expository text', *Journal of experimental psychology* 29(3): 239–257.

Kahneman D. and J. Beatty (1966), 'Pupil diameter and load on memory', *Science* 154: 1583–1585.
Kaindl, K. (2013) 'Multimodality and translation', in C. Millán and F. Bartrina (eds) *The Routledge handbook of translation studies*, London: Routledge, 257–269.
Kintsch, W. (1998) *Comprehension: a paradigm for cognition*, Cambridge, England: Cambridge UP.
Kliegl, R., E. Grabner, M. Rolfs and R. Engbert (2004) 'Length, frequency, and predictability effects of words on eye movements in reading', *European Journal of Cognitive Psychology* 16: 262–284.
Koponen, M., W. Aziz, L. Ramos and L. Specia (2012) 'Post-editing time as a measure of cognitive effort', in S. O'Brien, M. Simard and L. Specia (eds) *Proceedings of the AMTA 2012 workshop on post-editing technology and practice.* Association for Machine Translation in the Americas, 11–20.
Koponen, M. (2016) 'Is machine translation post-editing worth the effort? A survey of research into post-editing and effort', in H. V. Dam and K. Koskinen (eds) *The translation profession: centres and peripheries. The Journal of Specialised Translation* 25: 131–148.
Kruger, J.-L. and S. Doherty (2018) 'The development of eye tracking in empirical research on subtitling and captioning', in T. Dwyer, C. Perkins, S. Redmond and J. Sita (eds) *Seeing into screens. Eye tracking and the moving image*, New York & London: Bloomsbury, 46–64.
Kruger, J.-L., S. Doherty, W. Fox and P. de Lissa (2018) 'Multimodal measurement of cognitive load during subtitle processing', in I. Lacruz and R. Jääskeläinen (eds) *Innovation and expansion in translation process research*, Amsterdam & Philadelphia: John Benjamins Publishing, 267–294.
Kruger, J.-L., M. T. S. Sanfiel, S. Doherty, and R. Ibrahim (2016) 'Towards a cognitive audiovisual translatology. Subtitles and embodied cognition', in R. Muñoz Martín (ed) *Re-embedding translation process research*, Amsterdam & Philadelphia: John Benjamins Publishing, 171–193.
Kruger, J.-L., A. Szarkowska and I. Krejtz (2015) 'Subtitles on the moving image: An overview of eye tracking studies', *Refractory: a journal of entertainment media, 25.* Available online: http://refractory.unimelb.edu.au/2015/02/07/kruger-szarkowska-krejtz/ [last accessed 23 April 2018]
Lacruz, I. (2017) 'Cognitive effort in translation, editing and post-editing', in J. W. Schwieter and A. Ferreira (eds) *The handbook of translation and cognition*, Malden, MA. & Oxford, England: Wiley-Blackwell, 386–401.
Lacruz, I. and R. Jääskeläinen (eds) (2018) *Innovation and expansion in translation process research*, Amsterdam & Philadelphia: John Benjamins Publishing.
Lacruz, I. and G. M. Shreve (2014) 'Pauses and cognitive effort in post-editing', in S. O'Brien, L. Winther Balling, M. Carl, M. Simard and L. Specia (eds) *Post-editing of machine translation: processes and applications*, Newcastle-upon-Tyne: Cambridge Scholars Publishing, 246–273.
Liversedge, S. P., K. B. Paterson and M. J. Pickering (1998) 'Eye movements and measures of reading time', in G. Underwood (ed.) *Eye guidance in reading and scene perception*, Amsterdam: Elsevier Science, 55–76.
Liversedge, S. P., I. D. Gilchrist and S. Everling (eds) (2011) *The Oxford handbook of eye movements*, Oxford, UK: Oxford University Press.
Majaranta, P. (2014) 'Eye tracking and eye-based human-computer interaction', in S. H. Fairclough and K. Gilleade (eds) *Advances in physiological computing*, London: Springer-Verlag, 39–65.
Meister, L. (2018) 'On methodology: How mixed methods research can contribute to translation studies', *Translation Studies* 11(1): 66–83.
Mellinger, C. D. and G. M. Shreve (2016), 'Match evaluation and over-editing in a translation memory environment', in R. Muñoz Martín (ed) *Re-embedding translation process research*, Amsterdam & Philadelphia: John Benjamins Publishing, 131–148.
Mesa-Lao, B. (2013) 'Eye-tracking post-editing behaviour in an interactive translation prediction environment', in K. Holmqvist, F. Mulvey and R. Johansson (eds) *Book of abstracts: 17th European conference on eye movement*, *11–16 August 2013, Lund, Sweden*. *Journal of Eye Movement Research* 6(3), 541.
Moorkens, J. and S. O'Brien (2013) 'User attitudes to the post-editing interface', in O'Brien, S. M. Simard, and L. Specia (eds) *Proceedings of MT Summit XIV Workshop on Post-editing Technology and Practice, Nice, September 2, 2013*, 19–25.
Moorkens, J., S. O'Brien, I. A. L da Silva, N. Fonseca and F. Alves (2015) 'Correlations of perceived post-editing effort with measurements of actual effort', *Machine Translation* 29(3): 267–284.
Moorkens, J. and S. O'Brien (2017). 'Assessing user interface needs of post-editors of machine translation', in D. Kenny (ed) *Human issues in translation technology*, London & New York: Routledge, 109–130.

Muñoz Martín, R. (ed) (2016) *Re-embedding translation process research*, Amsterdam & Philadelphia: John Benjamins Publishing.

Nyström, M., R. Andersson, K. Holmqvist and J. van de Weijer (2013) 'The influence of calibration method and eye physiology on eyetracking data quality', *Behavior Research Methods* 45: 272–288.

O'Brien, S. (2007) 'Eye-tracking and translation memory matches', *Perspectives: studies in translatology* 14(3): 185–205.

O'Brien, S. (2009) 'Translation memory interfaces and attention shifts', Paper given at the Eye-to-IT Conference, April 2009. Available online: www.academia.edu/3578131/Translation_Memory_Interfaces_and_Attention_Shifts [last accessed 23 Feb. 2018]

O'Brien, S. (2010) 'Controlled language and readability', in G. Shreve and E. Angelone (eds) *Translation and Cognition*, Amsterdam & Philadelphia: John Benjamins Publishing.

O'Brien, S., M. Ehrensberger-Dow, M. Hasler and M. Connolly (2017) 'Irritating CAT tool features that matter to translators', *Hermes* 56: 145–162.

O'Brien, S., M. O'Hagan and M. Flanagan (2010) 'Keeping an eye on the UI design of Translation Memory: How do translators use the Concordance feature?', *ECCE 2010 – European Conference on Cognitive Ergonomics 2010: The 28th Annual Conference of the European Association of Cognitive Ergonomics,* 187–190.

O'Hagan, M. and R. Sasamoto (2016) 'Crazy Japanese subtitles? Shedding light on the impact of impact captions with a focus on research methodology', in S. Hansen-Schirra and S. Grucza (eds) *Eyetracking and Applied Linguistics. Translation and Multilingual Natural Language Processing,* 2, Berlin: Language Science Press, 31–58.

Pedersen, J. (2011) *Subtitling norms for television: an exploration focussing on extralinguistic cultural references*, Amsterdam & Philadelphia: John Benjamins Publishing.

Perego, E. (2010) 'La sottotitolazione sperimentale degli *anime* e le norme contravvenute: cosa ci dicono i tracciati oculari', in G. L. de Rosa (ed.) *Dubbing cartoonia: Mediazione interculturale e funzione didattica nel processo di traduzione dei cartoni animati*, Napoli: Loffredo Editore.

Perego, E., F. del Missier, M. Porta, and M. Mosconi (2010) 'The cognitive effectiveness of subtitle processing', *Media Psychology* 13(3): 243–272.

Perego, E. (ed) (2012) *Eye tracking in audiovisual translation*, Rome: Aracne editrice.

Pollatsek, A., B. J. Juhasz, E. D. Reichle, D. Machacek and K. Rayner (2008) 'Immediate and delayed effects of word frequency and word length on eye movements in reading: a reversed delayed effect of word length', *Journal of Experimental Psychology: Human Perception & Performance* 34(3): 726–750.

Poole, A., and L. J. Ball (2005) 'Eye tracking in human-computer interaction and usability research', in C. Ghaoui (ed.) *Encyclopedia of human computer interaction,* Pennsylvania: Idea Group, 211–219.

Radach, R., A. Kennedy and K. Rayner (2004) *Eye movements and information processing during reading*, Hove: Psychology Press.

Rayner, K. (1998) 'Eye movements in reading and information processing: 20 years of research', *Psychological Bulletin* 124(3): 372–422.

Rayner, K. and A. Pollatsek (1989) *The psychology of reading*, Englewood Cliffs, NJ: Prentice Hall.

Risku, H. (2014) 'Translation process research as interaction research: From mental to socio-cognitive processes', in R. Muñoz Martín (ed) *Minding translation*, (Special issue of *MonTI*), Alicante: University of Alicante, 331–353.

Romero-Fresco, P. (2013) 'Accessible film-making: Joining the dots of audiovisual translation, accessibility and film making', *Journal of Specialised Translation* 20: 201–223.

Surakka, V., M. Illi and P. Isokoski (2003) 'Voluntary eye movements in human-computer interaction', in Hyönä, J. and H. Deubel (eds) *The mind's eye: cognitive and applied aspects of eye movement research*, Amsterdam: Elsevier, 313–334.

Surakka, V., M. Illi and P. Isokoski (2004) 'Gazing and frowning as a new human–computer interaction technique', *ACM Transactions on Applied Perceptions*, 1(1): 40–56.

Vieira, L. N. (2017) 'From process to product. Links between post-editing effort and post-edited quality', in A. L. Jakobsen and B. Mesa-Lao (eds) *Translation in transition: between cognition, computing and technology,* Amsterdam & Philadelphia: John Benjamins Publishing, 161–186.

Wade, N. J. and B. W. Tatler (2011) 'Origins and applications of eye movement research', in S. P. Liversedge, I. D. Gilchrist and S. Everling (eds) (2011) *The Oxford handbook of eye movements*, Oxford: Oxford University Press, 17–43.

Walker, C. and F. Federici (eds) (2018) *Eye tracking and multidisciplinary studies on translation*, Amsterdam & Philadelphia: John Benjamins Publishing.
Abraham, T. H. (2016) *Rebel genius: Warren S. McCulloch's transdisciplinary life in science*, Cambridge, MA: MIT Press.
Bar-Hillel, Y. (1964) *Language and information*. Jerusalem: The Jerusalem Academic Press.
Boitet, C. (2000) 'Bernard Vauquois' contribution to the theory and practice of building MT systems: A historical perspective', in W. J. Hutchins (ed.), *Early years in machine translation: memoirs and biographies of pioneers*, Amsterdam & Philadelphia: John Benjamins Publishing, 331–348.
Cherivirala, S., S. Chiplunkar, J. N. Washington and G. K. B. Unhammer (2018) 'Apertium's Web Toolchain for Low-Resource Language Technology', *Proceedings of Technologies for MT of Low Resource Languages at the 13th Conference of The Association for Machine Translation in the Americas (AMTA) (LoResMT 2018) Boston*, MA: AMTA, 53–62.
Chomsky, N. (1957) *Syntactic structures*, The Hague: Mouton & Co.
Davis, M. (2008) 'Moving to Unicode 5.1.', *Google Blog*, 5 May 2008. Available online: https://googleblog.blogspot.com/2008/05/moving-to-unicode-51.html [last accessed 12 Jan. 2019].
Eco, U. (1997) *The search for the perfect language,* New York: Fontana Press.
Flores, I. (1983) *Word processing handbook*, New York: Van Nostrand Reinhold Company.
Forcada, M. (2017) 'Making Sense of Machine Translation', *Translation Spaces* 6(2), 291–309. doi: 10.1075/ts.6.2.06
Graham, T. (1999) 'Unicode: What Is It and How Do I Use It?', *Markup Languages: Theory & Practice* 1(4): 75–102. doi:10.1162/109966299760283210.
Harris, B. (1988) 'Bi-text, a new concept in translation theory', *Language Monthly* 54(March): 8–10. Available online: http://mt-archive.info/LangMonthly-54-1988-Harris.pdf [last accessed 12 Jan. 2019].
Harris, Z. (1946/1951) *Methods in structural linguistics*, Chicago: University of Chicago Press.
Hutchins, J. (1986) *Machine translation: past, present, future*, Chichester: Ellis Horwood.
Hutchins, J. (1997) 'From first conception to first demonstration: the nascent years of machine translation, 1947–1954. A chronology', *Machine Translation* 12(3), 195–252.
Hutchins, J. (1998) 'Milestones in machine translation, no. 2: Warren Weaver's memorandum, 1949', *Language Today* no. 6 (March 1998), 22–23.
Hutchins, J. and E. Lovtskii (2000) 'Petr Petrovich Troyanskii (1894–1950): A Forgotten Pioneer of Mechanical Translation', *Machine Translation* 15(3): 187–221. Available online: www.jstor.org/stable/40009018 [last accessed 12 Jan. 2019].
Hutchins, J. (2000) *Warren Weaver and the Launching of MT. Early Years in Machine Translation*. Available online: www.hutchinsweb.me.uk/Weaver-2000.pdf [last accessed 12 Jan. 2019].
Hutton, M. (2018) 'AI researchers allege that machine learning is alchemy', *Science.* Available online: www.sciencemag.org/news/2018/05/ai-researchers-allege-machine-learning-alchemy [last accessed 29 Dec. 2018].
Kay, M. (2017) *Translation: linguistic and philosophical perspectives* (Studies in Computational Linguistics, Book 221). Stanford, CA: Center for the Study of Language and Information.
Koehn, P. (2010) *Statistical machine translation*. Cambridge: Cambridge University Press.
Lamb, S. (1999) *Pathways of the brain: the neurocognitive basis of language*, Amsterdam & Philadelphia: John Benjamins Publishing.
Lamb, S. (2016) 'Linguistic structure: A plausible theory', *Language Under Discussion* 4(1). Available online: www.ludjournal.org/index.php?journal=LUD&page=article&op=view&path%5B%5D=30&path%5B%5D=21 [last accessed 12 Jan. 2019].
Langley, P. (2011) 'The changing science of machine learning', *Machine Learning* 82: 275–279.
Lieberman, H. (2016) 'Symbolic vs. Subsymbolic,' (a presentation), MIT. Available online: http://futureai.media.mit.edu/wp-content/uploads/sites/40/2016/02/Symbolic-vs.-Subsymbolic.pptx_.pdf [last accessed 1 Oct. 2018].
Locke, W. N. and A. D. Booth (eds) (1955) *Machine Translation of Languages: Fourteen Essays*. Cambridge, Mass.: MIT Press.
Lytinen, S. L. and R. C. Schank (1982) 'Representation and translation', *Interdisciplinary Journal for the Study of Discourse* 2(1–3): 83–112 (1982 article reprinted in 2009). *Cambridge Dictionary Online*. Available online: https://dictionary.cambridge.org/us/dictionary/english/machine-translation [last accessed 15 Dec. 2018]

Marcus, G. (2001) *The algebraic mind: integrating connectionism and cognitive science.* Cambridge, Mass.: MIT Press.

Marcus, G. (2012) 'Is "Deep Learning" a Revolution in Artificial Intelligence?', *New Yorker*, 25 November 2012. Available online: www.newyorker.com/news/news-desk/is-deep-learning-a-revolution-in-artificial-intelligence [last accessed 29 Dec. 2018].

Marcus, G. (2018) 'The deepest problem with deep learning', in *Medium,* Available online: https://medium.com/@GaryMarcus/the-deepest-problem-with-deep-learning-91c5991f5695 [last accessed 29 Dec. 2018].

McCulloch, W. and W. Pitts (1943) 'A logical calculus of the ideas immanent in nervous activity', *Bulletin of Mathematical Biophysics*, 115–133.

Melby, A. K. (2012) Human and Translation Quality: Definable? Achievable? Desirable? Available online: www.ttt.org/melbyak [last accessed 12 Jan. 2019]

Melby, A. K. and C. Foster (2010) 'Context in Translation: definition, access, and teamwork', *The International Journal of Translation and Interpreting Research* 2(2): 1. Available online: http://trans-int.org/index.php/transint/article/view/87 [last accessed 12 Jan. 2019].

Melby, A. K., A. Lommel, and L. Morado Vásquez (2015) 'Bitext', in S-W, Chan (ed.), *Routledge encyclopedia of translation technology,* London & New York: Routledge, 409–424.

Melby, A. K. and T. Warner (1995) *The possibility of language: a discussion of the nature of language, with implications for human and machine translation*. Vol. 14. Amsterdam & Philadelphia: John Benjamins Publishing.

Newmeyer, F. J. (1986) *Linguistic theory in America*, 2nd ed., Cambridge, Mass.: Academic Press.

Piccinini, G. (2004) 'The first computational theory of mind and brain: a close look at McCulloch and Pitts's "Logical calculus of ideas immanent in nervous activity"', *Synthese* 141(2): 175–215.

Qun, L. and X. Zhang (2015) 'Machine Translation – General', in S-W, Chan (ed.), *Routledge encyclopedia of translation technology,* London & New York: Routledge, 224–249.

Rojas, R. (2013) *Neural networks: a systematic introduction*. New York: Springer Science & Business Media.

Saers, M. (2011) *Translation as Linear Transduction: Models and Algorithms for Efficient Learning in Statistical Machine Translation*, Doctoral thesis, Uppsala University, Sweden. Available online: https://www.lingfil.uu.se/research/dissertations/ [last accessed 12 Jan. 2019].

Samuel, A. L. (1959) 'Some studies in machine learning using the game of checkers', *IBM Journal of Research and Development* 3(3): 210–229.

Sze, V., Y. H. Chen, T. J. Yang, and J. S. Emer (2017) 'Efficient processing of deep neural networks: A tutorial and survey', *Proceedings of the IEEE,* 105(12): 2295–2329.

Turing Machine. (n.d.). In the Editors of Encyclopedia Britannica (Ed.), *Encylopædia Britannica*.

Uchida, H. (1989) 'ATLAS II: A machine translation system using conceptual structure as an interlingua', in M. Nagao (ed.) *Machine Translation Summit*, Tokyo, 93–100. Available online: https://pdfs.semanticscholar.org/0504/48982b6e976d9cbe41c9199137dc9dd08e18.pdf [last accessed 12 Jan. 2019].

United States Department of Labor (2016) 'Interpreters and translators', *Occupational Outlook Handbook*. Available online: www.bls.gov/ooh/media-and-communication/interpreters-and-translators.htm#tab-6 [last accessed 12 Jan. 2019].

Vauquois, B., G. Veillon, and J. Veyrunes (1967) 'Un métalangage de grammaires transformationnelles', *Conférence Internationale Sur Le Traitement Automatique Des Langues*, 1. Available online: https://aclanthology.coli.uni-saarland.de/papers/C67-1019/c67-1019 [last accessed 12 Jan. 2019].

Voosen, P. (2017) 'The AI detectives', *Science Magazine* 357(6346). Available online: http://science.sciencemag.org/content/357/6346/22/tab-pdf [last accessed 7 Jul. 2017].

Weaver, W. (1949a) *Translation*. Reprinted in W. N. Locke and A. D. Booth (eds) *Machine Translation of Languages*, New York: The Technology Press of MIT, 15–23.

Weaver, W. (1949b) 'The Mathematics of Communication', *Scientific American* 181(1): 11–15.

Wendt, C. (2010) 'Better translations with user collaboration – integrated MT at Microsoft', presented at *The Ninth Biennial Conference of the Association for Machine Translation in the Americas* (http://mt-archive.info/AMTA-2010-Wendt.pdf) [last accessed 12 Jan. 2019].

What is Unicode? Available online: http://unicode.org/standard/WhatIsUnicode.html [last accessed 24 Jul. 2017].

Wilks, Y. (1979) 'Machine translation and artificial intelligence', in B. M. Snell (ed.), *Translating and the Computer*, Amsterdam: North Holland Publishing Company. Available online: www.researchgate.net/publication/241488724 [last accessed 12 Jan. 2019].

Aikawa, T., L. Schwartz, R. King, M. Corston-Oliver and C. Lozano (2007) 'Impact of Controlled Language on Translation Quality and Post-editing in a Statistical Machine Translation Environment'. Available online: http://www.mt-archive.info/05/MTS-2007-Aikawa.pdf [last accessed 28 Oct. 2018].

Akiba, Y., K. Imamura and E. Sumita (2001) 'Using Multiple Edit Distances to Automatically Rank Machine Translation Output', in *Proceedings of the MT Summit VIII*, Santiago de Compostela, Spain. Available online: http://www.mt-archive.info/MTS-2001-Akiba.pdf [last accessed 28 Oct. 2018].

ALPAC (1966) *Languages and machines: computers in translation and linguistics. A report by the Automatic Language Processing Advisory Committee, Division of Behavioral Sciences*. Washington DC: National Academy of Sciences, National Research Council. Available online: https://www.nap.edu/read/9547/chapter/1 [last accessed 28 Oct. 2018]

Aristotle (1938) *Categories. On interpretation. Prior analytics*, trans. H. P. Cooke and H. Tredennick, Cambridge MA: Harvard University Press.

Austermühl, F. (2006) 'Training translators to localize', in A. Pym et al. (eds) *Translation technology and its teaching (with much mention of localization)*, Tarragona: Intercultural Studies Group, 97–105.

Banerjee, S. and A. Lavie (2005) 'METEOR: An Automatic Metric for MT Evaluation with Improved Correlation with Human Judgments', in *Proceedings of Workshop on Intrinsic and Extrinsic Evaluation Measures for MT and/or Summarization*, Ann Arbor, Michigan, June 2005.

Bédard, C. (2000) '"Translation Memory Seeks Sentence-oriented Translator…'", *Traduire* 186: 41–9.

Beninatto, R. (2007) 'Quality still doesn't matter', presentation to ATA conference, San Francisco. Available online: http://goo.gl/QuhnEg [last accessed 28 Oct. 2018].

Biel, Ł. (2011) 'Training translators or translation service providers? EN 15038: 2006 standard of translation services and its training implications', *The Journal of Specialised Translation* 16: 61–76.

Bowker, L. (2005) 'Productivity vs Quality? A pilot study on the impact of translation memory systems', *Localisation Focus* 4: 13–20.

Bowker, L. (2009) 'Can machine translation meet the needs of official language minority communities in Canada? A recipient evaluation', *Linguistica Antverpiensia* 8: 123–155.

Byrne, J. (2006) *Technical translation: usability strategies for translating technical documentation*, Dordrecht: Springer.

Chesterman, A. (2004) 'Functional quality', a lecture at Universitat Rovira i Virgili, Tarragona. Available online: https://youtu.be/IJW1Y6rAB1I [last accessed 28 Oct. 2018].

Church, K. and E. Hovy (1993) 'Good applications for crummy machine translation', *Machine Translation* 8(4): 239–258.

Coughlin, D. (2003) 'Correlating Automated and Human Assessments of Machine Translation Quality', MT Summit IX, New Orleans, 23–27. Available online: https://goo.gl/7yNzLV [last accessed 28 Oct. 2018].

Cronin, M. (2013) *Translation in the digital age*, London & New York: Routledge.

Davies, I. (2013) 'The hardest word in translation', *The Pillar Box* (Institute of Translation and Interpreting). Available online: https://goo.gl/Raxob4 [last accessed 8 Jul. 2018].

Dragsted, B. (2004) *Segmentation in translation and translation memory systems: An empirical investigation of cognitive segmentation and effects of integrating a TM system into the translation process*, Copenhagen: Samfundslitteratur.

European Commission (2006) *Special Report No 9/2006 concerning translation expenditure incurred by the Commission, the Parliament and the Council*. Official Journal of the European Union, C 284, 21 November 2006.

Fiederer, R. and S. O'Brien (2009) 'Quality and machine translation: A realistic objective?', *Journal of Specialised Translation* 11: 52–74.

Freigang, K. H. (1998) 'Machine-aided translation', in M. Baker (ed.) *Routledge Encyclopedia of Translation Studies*, London & New York: Routledge, 134–136.

García, I. (2006) 'Translators on Translation Memories. A Blessing or a Curse?', in A. Pym et al. (eds) *Translation Technology and its Teaching (with much mention of localization)*, Tarragona: Intercultural Studies Group, 97–105.
García, I. (2010) 'Is machine translation ready yet?', *Target* 22(1): 7–21.
Gow, F. (2003) *Metrics for Evaluating Translation Memory Software*, MA thesis, University of Ottawa.
Graham, Y. and T. Baldwin (2014) 'Testing for Significance of Increased Correlation with Human Judgment', Proceedings of EMNLP 2014, Doha, Qatar.
Guerberof, A. (2013) 'What do professional translators think about post-editing?', *Journal of Specialised Translation* 19: 75–95.
Hassan, H., et al. (2018) 'Achieving Human Parity on Automatic Chinese to English News Translation'. Available online: https://www.microsoft.com/en-us/research/uploads/prod/2018/03/final-achieving-human.pdf [last accessed 28 October 2018].
House, J. (2015) *Translation quality assessment. Past and present*, London & New York: Routledge.
Hovy, E. E. (1999) 'Toward finely differentiated evaluation metrics for machine translation', in *Proceedings of the Eagles Workshop on Standards and Evaluation*, Pisa, Italy. 127–133.
Jordan, P. W. (1998) *An introduction to usability*, London: Taylor and Francis.
Koponen, M. (2016) 'Is machine translation post-editing worth the effort? A survey of research into post-editing and effort', *Journal of Specialised Translation* 25: 131–147.
Kurzweil, R. (2005) *The singularity is near*, New York: Viking Books.
Läubi, S., R. Sennrich and M. Volk (2018) 'Has Machine Translation Achieved Human Parity? A Case for Document-level Evaluation'. Available online: https://arxiv.org/pdf/1808.07048.pdf [last accessed 28 Oct. 2018].
Le, Quoc V. and M. Schuster (2016) 'A neural network for machine translation, at production scale'. Google AI Blog. Available online: https://ai.googleblog.com/2016/09/a-neural-network-for-machine.html [last accessed 28 Oct. 2018].
Leblanc, M. (2013) 'Translators on translation memory (TM). Results of an ethnographic study in three translation services and agencies', *Translation & Interpreting* 5(2): 1–13.
Leblanc, M. (2017) ' "I can't get no satisfaction!" Should we blame translation technologies or shifting business practices?', in D. Kenny (ed.) *Human issues in translation technology*, London and New York: Routledge, 45–62.
Levenshtein, V. I. (1966) 'Binary codes capable of correcting deletions, insertions and reversals', *Soviet Physics – Doklady* 10(8): 707–710. Available online: https://nymity.ch/sybilhunting/pdf/Levenshtein1966a.pdf [last accessed 28 Oct. 2018].
Lewis, D. (1997) 'Machine translation in a modern languages curriculum', *Computer Assisted Language Learning* 10(3): 255–271.
Lotz, S. and A. van Rensburg (2016) 'Omission and other sins: tracking the quality of online machine translation output over four years', *Stellenbosch Papers in Linguistics* 46: 77–97.
Martín-Mor, A. (2011) *La interferència lingüística en entorns de Traducció Assistida per Ordinador: Recerca empíricoexperimental*, doctoral thesis, Universitat Autònoma de Barcelona.
Marx, K. (1847) *Misère de la philosophie*, Paris & Brussels: A. Frank, C. H. Vogler.
Mellinger, C. D. (2018) 'Re-thinking translation quality: Revision in the digital age', *Target* 30(2): 310–331.
Miller, K., D. Gates, N. Underwood and J. Magdalen (2001) 'Evaluation of Machine Translation Output for an Unknown Source Language'. Available online: https://www.issco.unige.ch/en/staff/nancy/miller-2.pdf [last accessed 28 Oct. 2018].
Mitamura, T. and E. Nyberg (2001) 'Automatic rewriting for controlled language translation'. Available online: https://goo.gl/PfYbue [last accessed 28 October 2018].
Mitchell, L., J. Roturier and S. O'Brien (2013) 'Community-based post-editing of machine-translated content: monolingual vs. bilingual', in S. O'Brien, M. Simard and L. Specia (eds) *Workshop Proceedings: Workshop on Post-editing Technology and Practice (WPTP-2)*, Allschwil: The European Association for Machine Translation, 35–44.
Moorkens, J., S. Castilho, F. Gaspari and S. Doherty (eds.) (2018) *Translation quality assessment. From principles to practice*, Cham: Springer.
Mossop, B. (2003) 'What should be taught at translation school?', in A. Pym, C. Fallada, J. R. Biau and J. Orenstein (eds) *Innovation and e-learning in translator training*, Tarragona: Universitat Rovira i Virgili, 20–22.

MQM (2015a) 'Multidimensional Quality Metrics (MQM) Issue Types'. Available online: www.qt21.eu/mqm-definition/issues-list-2015-12-30.html [last accessed 28 Oct. 2018].
MQM (2015b) 'Multidimensional Quality Metrics (MQM) Definition'. Available online: www.qt21.eu/mqm-definition/definition-2015-12-30.html [last accessed 28 Oct. 2018].
Nyberg, E., T. Mitamura and W. O. Huijsen (2003) 'Controlled language for authoring and translation', in H. Somers (ed) *Computers and Translation: A Translator's Guide*, Amsterdam & Philadelphia: John Benjamins Publishing, 245–281.
O'Brien, S. and J. Roturier (2007) 'How Portable are Controlled Languages Rules? A Comparison of Two Empirical MT Studies', MT Summit XI, Copenhagen, Denmark, 345–352.
Pym, A. (2004) *The moving text: localization, translation, and distribution*, Amsterdam & Philadelphia: John Benjamins Publishing.
Quine, W. V. O. (1960) *Word and object*, Cambridge, MA: MIT Press.
Reiss, K. and H. J. Vermeer (1984) *Grundlegung einer allgemeinen Translationstheorie*, Tübingen: Niemeyer.
Ribas, C. (2007) 'Translation memories as vehicles for error propagation: a pilot study'. Minor Dissertation. Tarragona: Universitat Rovira i Virgili.
Reinke, U. (1999) 'Evaluierung der linguistischen Leistungsfähigkeit von Translation Memory Systemen. Ein Erfahrungsbericht', *LDV-Forum* 16: 100–117.
Su, K. Y., M. W. Wu and J. S. Chang (1992) 'A New Quantitative Quality Measure for Machine Translation Systems', in *Proceedings of COLING- 92*, Nantes, France.
Teixeira, C. S. C. (2014) 'Perceived vs. measured performance in the post-editing of suggestions from machine translation and translation memories', in S. O'Brien, M. Simard and L. Specia (eds) *Proceedings of the Third Workshop on Post-Editing Technology and Practice*, 45–59.
Temizöz, Ö. (2013) *Postediting machine-translation output and its revision. Subject-matter experts versus professional translators*, PhD thesis, Universitat Rovira i Virgili.
Torres del Rey, J. (2005) *La interfaz de la traducción. Formación de traductores y nuevas tecnologías*, Granada: Comares.
Toudic, D. (2012) 'Employer Consultation Synthesis Report', OPTIMALE Academic Network project on translator education and training, Université Rennes 2, Rennes.
Underwood, N. and B. Jongejan (2001) 'Translatability checker: A tool to help decide whether to use MT', in B. Maegaard (ed.) *Proceedings of MT Summit VIII: Machine translation in the information age*, Santiago de Compostella, 363–368.
Vilanova i Subirats, S. (2006) *L'impacte de les memòries de traducció sobre el text d'arribada: interferències i trets lingüístics*, Minor dissertation, Universitat Rovira i Virgili.
Way, A. (2018) 'Quality expectations of machine translation', in J. Moorkens et al. (eds) (2018) *Translation Quality Assessment. From Principles to Practice*, Cham: Springer, 159–178.
Webb, L. E. (2000) *Advantages and Disadvantages of Translation Memory*, MA thesis, Monterey Institute for International Studies.
White, J. (1995) 'Approaches to Black Box MT Evaluation'. Available online: https://goo.gl/LM432C [last accessed 28 Oct. 2018].
White, J. (2003) 'How to evaluate machine translation', in H. Somers (ed) *Computers and translation. A translator's guide*, Amsterdam & Philadelphia: John Benjamins Publishing, 211–244.
White, J., T. O'Connell and L. Carlson (1993) 'Evaluation of machine translation', in *Human Language Technology: Proceedings of the Workshop (ARPA)*: 206–210. Available online: https://pdfs.semanticscholar.org/c5f1/89cc1e3719d7ddef5dbc48fedf21b0a1298e.pdf [last accessed 28 Oct. 2018].
Wu Y., M. Schuster, Z. Chen, Q. V. Le and M. Norouzi (2016) 'Google's Neural Machine Translation System: Bridging the Gap between Human and Machine Translation'. Available online: https://arxiv.org/pdf/1609.08144.pdf [last accessed 28 Oct. 2018].
ASTM International. (2014) ASTM F2575-14, Standard Guide for Quality Assurance in Translation, ASTM International, West Conshohocken, PA. Available online: www.astm.org/Standards/F2575.htm [last accessed 3 Oct. 2018].
Austermühl, F. (2011) 'On clouds and crowds: Current developments in translation technology', *T21 – Translation in Transition* 9: 1–26. Available online: http://t21n.com/homepage/articles/T21N-2011-09-Austermuehl.pdf [last accessed 3 Oct. 2018].
Automatic Language Processing Advisory Committee (ALPAC) (1966) Languages and machines: computers in translation and linguistics. A report by the Automatic Language Processing

Advisory Committee, Division of Behavioral Sciences. Washington DC: National Academy of Sciences, National Research Council. Available online: www.mt-archive.info/ALPAC-1966.pdf [last accessed 3 Oct. 2018].

Bédard, C. (2000) 'Mémoire de traduction cherche traducteur de phrases…', *Traduire* 186: 41–49.

Bowker, L. (2006) 'Translation Memory and Text', in L. Bowker (ed.), *Lexicography, terminology and translation: text-based studies in honour of Ingrid Meyer*, Ottawa: University of Ottawa Press, 175–187.

Bowker, L. (2009) 'Can machine translation meet the needs of official language minority communities in Canada? A recipient evaluation', *Linguistica Antverpiensia* 8: 123–155.

Bowker, L. and J. Buitrago Ciro (2015) 'Investigating the usefulness of machine translation for newcomers at the public library', *Translation and Interpreting Studies* 10(2): 165–186.

Canadian Translators, Terminologists, and Interpreters Council (CTTIC). Homepage. Available online: www.cttic.org/ [last accessed 3 Oct. 2018].

Carl, M. and A. Way (eds) (2003) *Recent advances in example-based machine translation,* Dordrecht: Kluwer Academic Publishers.

Church, K. W. and E. H. Hovy (1993) 'Good applications for crummy machine translation', *Machine Translation* 8(4): 239–258.

Diño, G. (2018) 'Human Parity Achieved' in Machine Translation – Unpacking Microsoft's Claim', Slator, 15 March. Available online: https://slator.com/technology/human-parity-achieved-machine-translation-unpacking-microsofts-claim/ [last accessed 3 Oct. 2018].

Durban, C. (2011) *Translation: Getting it Right. A guide to Buying Translation*. Available online: www.atanet.org/publications/getting_it_right.php [last accessed 3 Oct. 2018].

Durban, C., K. Hendzel and D. Jemielity (2014) 'Why raising the bar on your own translation quality is about to get deadly serious', presented at the 55th Annual Conference of the American Translators Association, 5–8 November, Chicago.

Durban, C. and A. Melby (2008) *Translation: Buying a non-commodity*. Available online: www.atanet.org/docs/translation_buying_guide.pdf [last accessed 3 Oct. 2018].

Dyson, S. (2003) 'A Strategic Point', Letters, *Multilingual Computing & Technology* 14(3): 11.

EN 15038 Translation Services – Service requirements. Available online: www.fit-europe.org/en/what-we-do/completed-projects/standard-en-15038 [last accessed 3 Oct. 2018].

Faes, F. (2016) ''Nearly Indistinguishable From Human Translation' – Google Claims Breakthrough', Slator, 27 September. Available online: https://slator.com/technology/nearly-indistinguishable-from-human-translation-google-claims-breakthrough/ [last accessed 3 Oct. 2018].

Forcada, M. L. (2017) 'Making sense of neural machine translation', *Translation Spaces* 6(2): 291–309.

García, I. (2015) 'Cloud marketplaces: procurement of translators in the age of social media', *JoSTrans: The Journal of Specialised Translation* 23: 18–38. Available online: www.jostrans.org/issue23/art_garcia.pdf [last accessed 3 Oct. 2018].

Gaspari, F., H. Almaghout and S. Doherty (2015) 'A survey of machine translation competences: insights for translation technology educators and practitioners', *Perspectives: Studies in Translatology* 23(3): 333–358.

Guerberof Arenas, A. (2008) 'Productivity and quality in the post-editing of outputs from translation memories and machine translation', *Localisation Focus* 7(1): 11–21.

Henisz-Dostert, B. (1979) 'Users' evaluation of machine translation', in B. Henisz-Dostert, R. R. Macdonald and M. Zarechnak (eds.) *Machine translation*, The Hague: Mouton Publishers, 149–244.

Heyn, M. (1998) 'Translation memories: insights and prospects', in L. Bowker, M. Cronin, D. Kenny and J. Pearson (eds) *Unity in diversity? Current trends in translation studies*, Manchester: St. Jerome Publishing, 123–136.

Hutchins, J. (2001) 'Machine translation and human translation: in competition or in complementation?', *International Journal of Translation* 13 (1/2): 5–20.

Hutchins, W. J. and H. L. Somers (1992) *An introduction to machine translation*, London: Academic Press.

Jiménez-Crespo, M. A. (2018) 'Crowdsourcing and Translation Quality: Novel Approaches in the Language Industry and Translation Studies', in J. Moorkens, S. Castilho, F. Gaspari, S. Doherty (eds) *Translation quality assessment*, Cham: Springer, 69–93.

Kay, M. (1980) 'The proper place of men and machines in language translation', Technical Report CSL-80-11, Xerox Palo Alto Research Center (PARC).

Kelly, N., R. Ray and D. A. DePalma (2012) 'From crawling to sprinting: community translation goes mainstream', *Linguistica Antverpiensia* 10: 45–76.
Koehn, P. (2010) *Statistical machine translation,* Cambridge: Cambridge University Press.
Lehrberger, J. and L. Bourbeau (1988) *Machine translation: linguistic characteristics of MT systems and general methodology of evaluation*, Amsterdam: John Benjamins Publishing.
McDonough Dolmaya, J. (2011) 'Moral ambiguity: some shortcomings of professional codes of ethics for translators', *JoSTrans: Journal of Specialized Translation* 15: 28–49. Available online: www.jostrans.org/issue15/art_mcdonough.php [last accessed 3 Oct. 2018].
Nurminen, M. (2019) 'Machine Translation Stories', Available online: https://mt-stories.com/ [last accessed 3 Oct. 2018].
O'Brien, S. (1998) 'Practical experience of computer-aided translation tools in the software localization industry', in L. Bowker, M. Cronin, D. Kenny and J. Pearson (eds) *Unity in diversity? Current trends in translation studies*, Manchester: St. Jerome Publishing, 115–122.
O'Hagan, M. (2009) 'Computer-aided translation', in M. Baker and G. Saldanha (eds) *Routledge encyclopedia of translation, 2nd edition*, London/NY: Routledge, 48–51.
Project Management Institute (PMI). (2013) *A guide to the project management body of knowledge (*PMBOK® Guide*), 5th Edition*, Newton Square, PA: Project Management Institute.
Reiß, K. and H. J. Vermeer (1984) *Grundlegung einer allgemeinen Translationstheorie*, Tübingen: Niemeyer.
Schäffner, C. (2009) 'Functionalist approaches', in M. Baker and G. Saldanha (eds) *Routledge Encyclopedia of Translation, 2nd edition*, London/NY: Routledge, 115–121.
Topping, S. (2000) 'Sharing translation database information: Considerations for developing an ethical and viable exchange of data', *Multilingual Computing and Technology* 11(5): 59–61.
van der Meer, J. (2006) 'The Emergence of FAUT: Fully Automatic Useful Translation', Paper presented at the 11th Annual Conference of the European Association for Machine Translation, 19–20 June 2006, Oslo, Norway.
Wagner, E. (1985) 'Rapid Post-editing of SYSTRAN', in V. Lawson (ed) *Tools for the Trade: Translating and the Computer 5*. London: Aslib, 199–213. Available online: www.mt-archive.info/Aslib-1983-Wagner.pdf [last accessed 3 Oct. 2018].
Way, A. (2013) 'Traditional and emerging use-cases for machine translation', in *Proceedings of Translating and the Computer 35*. London: Aslib, 1–12. Available online: www.computing.dcu.ie/~away/PUBS/2013/Way_ASLIB_2013.pdf [last accessed 3 Oct. 2018].
Way, A. (2018) 'Quality expectations of machine translation', in J. Moorkens, S. Castilho, F. Gaspari, S. Doherty (eds) *Translation quality assessment*, Cham: Springer, 159–178.
Abdallah, K. and K. Koskinen (2007) 'Managing trust: translating and the network economy', *Meta* 52(4), 673–687.
Abrams, H. B. (1992) 'Originality and creativity in copyright law', *Law and Contemporary Problems* 55 (2): 3–44.
Barlow, J. P. (1994) The Economy of Ideas. Wired 3/1/1994. Available online: www.wired.com/1994/03/economy-ideas/ [last accessed 10 Oct. 2018]
Bridy, A. (2012) 'Coding creativity: copyright and the artificially intelligent author', *Stanford Technology Law Review*, 5: 1–28.
Burger, P. (1988) 'The Berne Convention: its history and its key role in the future', *Journal of Law & Technology* 3: 1–69.
Cabanellas, G. (2015) *The legal environment of translation.* London: Routledge.
Canfora, C. and A. Ottmann (2018). 'Of ostriches, pyramids, and Swiss cheese: risks in safety-critical translations'. *Translation Spaces* 7(2), 167–201.
Cerda Silva, A. (2012) 'Beyond the Unrealistic Solution for Development Provided by the Appendix of the Berne Convention on Copyright', *PIJIP Research Paper no. 2012-08* American University Washington College of Law, Washington, D.C.
César, J., J. Debussche, and B. Van Asbroeck (2017) 'White Paper – Data ownership in the context of the European data economy: proposal for a new right', Bird & Bird. Available online: www.twobirds.com/en/news/articles/2017/global/data-ownership-in-the-context-of-the-european-data-economy [last accessed 14 Dec. 2018].
Diño, G. (2018). 'Korean Voice Assistant Highlights Tech's Insatiable Hunger for Language Data'. *Slator*, Oct. 8, 2018. https://slator.com/technology/korean-voice-assistant-highlights-techs-insatiable-hunger-for-language-data/ [last accessed 9 Oct. 2018].

Dormehl, L. (2016) *Thinking machines: the inside story of artificial intelligence and our race to build the future.* New York: Random House.

European Commission (2018) Joint statement by Vice-President Ansip and Commissioner Gabriel on the European Parliament's vote to start negotiations on modern copyright rules. *Press Release 12 September 2018.* Available from http://europa.eu/rapid/press-release_STATEMENT-18-5761_en.htm

European Parliament (1996) Directive 96/9/Ec of the European Parliament and of the Council. Available online: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0009:EN:HTML [last accessed 9 Oct. 2018].

European Parliament (2017) European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics. Available online: www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2017-0051+0+DOC+XML+V0//EN#BKMD-12 [last accessed 9 Oct. 2018].

Feist Publications, Inc. v. Rural Telephone Service Co., 499 U.S. 340 (1991). Available online: www.law.cornell.edu/copyright/cases/499_US_340.htm [last accessed 14 Dec. 2018].

Filip, D., S. McCance, D. Lewis, C. Lieske, A. Lommel, J. Kosek, F. Sasaki and Y. Savourel (2013) 'Internationalization Tag Set (ITS) Version 2.0 W3C Recommendation 29 October 2013', World Wide Web Consortium (W3C). Available online: www.w3.org/TR/its20/#provenance [last accessed 14 Dec. 2018].

Forcada, M. L. (2017) 'Making sense of neural machine translation', *Translation Spaces* 6(2): 291–309.

Franken, R. E. (2006) *Human motivation* (6th ed.), Boston: Cengage Learning.

García, I. (2009) 'Beyond translation memory: computers and the professional translator', *Journal of Specialised Translation* 12: 199–214.

García, I. (2006) 'Translators on translation memories: a blessing or a curse? Pym, A., A. Perekrestenko, B. Starink (eds.) *Translation technology and its teaching*, Tarragona: Servei de Publicacions, 97–106.

Giblin, R., K. Weatherall (2017) If we redesigned copyright from scratch, what might it look like? Giblin, R., K. Weatherall (eds) *What if we could reimagine copyright?* Acton: ANU Press, 1–24.

Giblin, R. (2018) Reclaiming lost culture and getting authors paid. *Columbus Journal of Law and Arts* 41, 369–410.

Gottlieb, H. (1994) 'Subtitling: diagonal translation', *Perspectives* 2(1), 101–121.

Gow, F. (2007) 'You must remember this: the copyright conundrum of '"translation memory"' databases', *Canadian Journal of Law and Technology* 6 (3): 175–192.

Heller, M. (2008). *The gridlock economy: how too much ownership wrecks markets, stops innovation, and costs lives*, New York: Basic Books.

Hess, C. and E. Ostrom (2007a). 'Introduction: an overview of the knowledge commons'. Charlotte Hess, Elinor Ostrom (eds). *Understanding knowledge as a commons: from theory to practice*. Boston: MIT Press, 3–26.

Hess, C. and E. Ostrom (2007b). 'A Framework for Analyzing the Knowledge Commons'. Charlotte Hess, Elinor Ostrom (eds). *Understanding knowledge as a commons: from theory to practice*. Boston: MIT Press, 41–82.

Kelleher, J., B. Mac Namee and A. D'Arcy (2015) *Fundamentals of machine learning for predictive data analytics: algorithms, worked examples, and case studies*. Boston, MIT Press.

Kohavi, R. and F. Provost (1998) 'Glossary of terms', *Machine Learning* 30: 271–274

Koskinen, K. and H. V. Dam (2016) 'Academic boundary work and the translation profession: Insiders, outsiders and (assumed) boundaries', *Journal of Specialised Translation* 25: 254–267.

Kuo, A. S-Y. (2015) 'Professional realities of the subtitling industry: the subtitlers' perspective'. Díaz Cintas, J., R. Baños Piñero (Eds) *Audiovisual translation in a global context: mapping an ever-changing landscape.* London: Palgrave, 163–191.

Lunney Jr, G. S. (2001) 'The death of copyright: digital technology, private copying, and the digital millennium copyright act', *Virginia Law Review* 87(5), 813–920

Margoni, T. (2016) 'The harmonisation of EU copyright law: the originality standard'. Mark Perry (Ed) *Global governance of intellectual property in the 21st century: reflecting policy through change*. Berlin: Springer, 85–105.

Moore, P. V. (2017) *The quantified self in precarity: work, technology and what counts,* London: Routledge.
Moorkens, J., D. Lewis, W. Reijers, E. Vanmassenhove and A. Way (2016) 'Translation Resources and Translator Disempowerment'. In *Proceedings of ETHI-CA² 2016: ETHics In Corpus collection, Annotation and Application*, 49–53.
Moorkens, J. and D. Lewis (2019) Research questions and a proposal for the future governance of translation data. *Journal of Specialised Translation*, 32.
Moran, J. and D. Lewis (2011) 'Unobtrusive methods for low-cost manual evaluation of machine translation', In *Proceedings of Tralogy 2011*, Paris, 1–9.
Mulligan, C. (2017) 'A numerus clausus principle for intellectual property', *Tennessee Law Review* 80, 235–290.
NGTV (2017) General Terms and Conditions of The Netherlands Association of Interpreters and Translators for Translation Work. Available online: https://ngtv.nl/application/files/1215/2846/6121/NGTV_logo_algemene_voorwaarden_Engels_20170915.pdf
Nolan, P. and M. Adair (2016) 'Blockchain Technology: Emerging from the Shadows', Thomson Reuters Practical Law UK Articles. Available online: https://uk.practicallaw.thomsonreuters.com/4-634-8506?__lrTS=20170328154357505&transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1 [last accessed 14 Dec. 2018].
O'Sullivan, C. (2013) 'Creativity', Gambier, Y., L. van Doorslaer (Eds) *Handbook of translation studies (volume 4)*. Amsterdam: John Benjamins Publishing, 42–46.
Perzanowski, A. and J. Schultz (2016) *The end of ownership: personal property in the digital economy*. Boston: MIT Press.
Reese, R. A. (2017) What should copyright protect? Giblin, R., K. Weatherall (Eds) *What if we could reimagine copyright?* Acton: ANU Press, 111–146.
Sennrich, R., B. Haddow and A. Birch (2016) 'Neural Machine Translation of Rare Words with Subword Units', In *Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (ACL 2016),* Berlin, ACL, 1715–1725. Available online: https://aclweb.org/anthology/P16-1162 [last accessed 14 Dec. 2018].
Smith, R. (2008) Your own memory. *The Linguist* 47 (1): 22–23.
Sternberg R. J. (2011) *Cognitive psychology* (6th ed.). Boston: Cengage Learning.
Topping, S. (2000) 'Sharing translation database information: Considerations for developing an ethical and viable exchange of data', *Multilingual Computing and Technology* 11(5): 59–61. Available online: https://multilingual.com/all-articles/?art_id=1105 [last accessed 12 Nov. 2018].
Toral, A., M. Esplá-Gomis, F. Klubička, N. Ljubešić, V. Papavassiliou, P. Prokopidis, R. Rubino and A. Way (2017). 'Crawl and crowd to bring machine translation to under-resourced languages'. *Language Resources and Evaluation* 51(4), 1019–1051.
Troussel, J.-C. and J. G. Debussche (2014) *Translation and intellectual property rights.* Report by Bird & Bird for the European Commission DG Translation. Luxembourg: European Commission. Available from https://publications.europa.eu/en/publication-detail/-/publication/e079e290-e250-482d-9d4f-dae566ba67ff/
UK Government (1988) Copyright, Designs and Patent Act. Available online: www.legislation.gov.uk/ukpga/1988/48/contents [last accessed 14 Oct. 2018].
United States Constitution (Article I, Section 8, Clause 8).
US National Commission on New Technological Uses of Copyrighted Works (CONTU) (1979) Final Report. Available online: http://digital-law-online.info/CONTU/
Vaswani, A., N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez, L. Kaiser and I. Polosukhin (2017) 'Attention is All you Need', Paper presented at *Advances in Neural Information Processing Systems 30 (NIPS 2017)*, 6000–6010.
Venuti, L. (1995) 'Translation, authorship, copyright', *The Translator*, 1(1), 1–24.
Vieira, L. N. (2018) 'Automation anxiety and translators', *Translation Studies* (online first).
Wachter, S. and K. Mittelstadt (2019) A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data And AI. *Columbus Business Law Review* preprint.
Way, A. (2018) 'Quality Expectations of Machine Translation', in J. Moorkens, S. Castilho, F. Gaspari and S. Doherty (eds) *Translation Quality Assessment*, Cham: Springer, 159–178.
World Trade Organization (WIPO) (1886) Berne Convention.
World Trade Organization (WIPO) (1994) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Available online: www.wto.org/english/docs_e/legal_e/27-trips.pdf

Wu, A. J. (1997) From Video Games to Artificial Intelligence: Assigning Copyright Ownership To Works Generated By Increasingly Sophisticated Computer Programs. *AIPLA* 25(1), 131–155.

Wu Y, Schuster M, Chen Z, Le QV, Norouzi M, Macherey W, Krikun M, Cao Y, Gao Q, Macherey K, Klingner J, Shah A, Johnson M, Liu X, Kaiser L, Gouws S, Kato Y, Kudo T, Kazawa H, Stevens K, Kurian G, Patil N, Wang W, Young C, Smith J, Riesa J, Rudnick A, Vinyals O, Corrado G, Hughes M and J. Dean (2016) Google's neural machine translation system: bridging the gap between human and machine translation. arXiv:1609.08144

Abdallah, K. (2011) 'Quality problems in AVT production networks: reconstructing an actor-network in the subtitling industry', in A. Şerban, A. Matamala, J. M. Lavaur (eds) *Audiovisual translation in close-up. Practical and theoretical approaches,* Bern: Peter Lang, 173–186.

Bachmeier, C. (2014) 'Barrier-free access to audiovisual content: A fundamental human right', *IRIS plus 3.* Available online: https://rm.coe.int/1680783db1 [Last accessed 27 Sept. 2018].

Baldry, A. and P. Thibault (2010) *Multimodal transcription and text analysis: a multimedia toolkit and coursebook,* London: Equinox.

Berger, V. (2010) 'Voices against the silence: Polyglot documentary films from Spain and Portugal', in V. Berger and M. Komori (eds) *Polyglot cinema. Migration and Transcultural Narration in France, Italy, Portugal and Spain*, Vienna: LIT Verlag, 211–227.

Branson, J. (2017) *Bringing media accessibility in from the cold: A comparative analysis of collaborative and standard approaches to AD and SDH*. Paper presented at the Intermedia Conference, Poznan.

Braun, S. and Orero, P. (2010) 'Audio description with audio subtitling – an emergent modality of audiovisual localisation', *Perspectives: Studies in Translatology 18(3*): 173–188.

Braun, S. (2008) 'Audio description research: state of the art and beyond', *Translation studies in the New Millenium: An international journal of translation and interpretin 6:* 14–30.

Buzelin, H. (2005) 'Unexpected allies: how Latour's network theory could complement Bourdieusian analyses in translation studies', *The Translator* 11(2): 193–218.

Bywood, L., Volk, M., Fishel, M. and P. Georgakopoulou (2013) 'Parallel subtitle corpora and their applications in machine translation and translatology', *Perspectives: Studies in Translatology* 21(4): 595–610.

Conseil Supérieur de l'Audiovisual (2016) L'accessibilité des programmes de télévision aux personnes handicapées et la représentation du handicap à l'antenne – Rapport annuel. Available online:www.csa.fr/Etudes-et-publications/Les-autres-rapports/L-accessibilite-des-programmes-de-television-aux-personnes-handicapees-et-la-representation-du-handicap-a-l-antenne-Rapport-annuel-2016. [Last accessed 27 Sept. 2018].

Díaz Cintas, J. (2015) 'Technological strides in subtitling', in C. Sin-Wai (ed) *The Routledge encyclopedia of translation technology*, London and New York: Routledge.

Eardley-Weaver, S. (2013) 'Opening eyes to opera. The process of translating for blind and partially sighted audiences', *Translation and Interpreting Studies* 8(2): 272–292.

European Parlement (2007) 'DIRECTIVE 2007/65/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL', *Official Journal of the European Union.* Available online: www.wipo.int/wipolex/en/text.jsp?file_id=199630 [Last accessed 27 Sept. 2018].

Fernandez-Torné, A. and A. Matamala (2015) 'Text-to-speech vs. human voices audio description: a reception study in films dubbed into Catalan', *Journal of Specialised translation 24: 61–88.*

Folaron, D. and H. Buzelin (2007) 'Introduction: Connecting Translation and Network Studies', *Meta* 5(4): 605–642.

Fox, W. (2016) 'Integrated titles: An improved viewing experience?', in S. Hansen-Schirra and S. Grucza (eds) *Eyetracking and Applied Linguistics,* Berlin: Language Science Press, 5–30.

Freddi, M. (2013) 'Constructing a corpus of translated films: A corpus view of dubbing', *Perspectives. Studies in Translatology* 21(4): 491–503.

Fryer, L. (2016) *An introduction to audio description: a practical guide,* London and New York: Routledge.

Fryer, L. and J. Freeman (2012) 'Cinematic language and the description of film: Keeping AD users in the frame', *Perspectives: Studies in Translatology* 21(3): 412–426.

Fryer, L. and J. Freeman (2014) 'Can you feel what I'm saying? The impact of verbal information on emotion elicitation and presence in people with a visual impairment', in A. Felnhofer and O. D. Kothgassner (eds) *Challenging Presence: Proceedings of the 15th International Conference on Presence*, Wien: facultas.wuv, 99–107.

Fuchs, H. and D. Oetting (2014) 'Advanced clean audio solutions: dialogue enhancement', *Motion Imaging Journal* 123(5): 23–27.
Ghia, E. (2012) *Subtitling matters. New perspectives on subtitling and foreign language learning*. Oxford: Peter Lang.
Greco, G. M. (2016) 'On accessibility as a human right, with an application to media accessibility', in A. Matamala and P. Orero (eds) *Researching audio description. New approaches*, Palgrave Macmillan, 11–33.
Hanoulle, S., V. Hoste and A. Remael (2015) 'The translation of documentaries: can terminology-extraction systems reduce the translator's workload? An experiment involving professional translators', *New Voices in Translation Studies* 13: 25–49.
Hurtado, J. and S. Gallegoa (2013) 'Multimodality, translation and accessibility: a corpus-based study of audio description', *Perspectives: Studies in Translatology* 20(4): 577–594.
Jankowska, A., B. Ziółko, M. Igras-Cybulska and A. Psiuk (2017) 'Reading rate in filmic audio description', *Rivista Internazionale di Tecnica della Traduzione* 19: 75–97.
Jiménez, C. and C. Seibel (2012) 'Multisemiotic and multimodal corpus analysis in audio description: TRACCE', in M. Carroll, P. Orero and A. Remael (eds) *Media for all: audiovisual translation and media accessibility at the crossroads*, Amsterdam: Rodopi, 409–425.
Kobayashi, M., K. Fukuda, H. Takagi and C. Asakawa (2009) 'Providing synthesised audio description for online video's', *ASSETS '09: Proceedings of the 11th International ACM SIGACCESS Conference on Computers and Accessibility,* New York: ACM*,* 249–250.
Kraemer, M. and E. Eppler (2018) 'The deliberate non-subtitling of L3s in a multilingual TV series: the example of Breaking Bad', *Meta* 63(2), (in press).
Kruger, J.-L. (2019). Eye tracking in Audiovisual Translation Research. In Pérez-Gonzalez, L. (ed), *The Routledge Handbook of Audiovisual Translation*. London: Taylor & Francis, 355–366.
Kruger, J.-L. (2012) 'Making meaning in AVT: Eye Tracking and Viewer Construction of Narrative', *Perspectives: Studies in Translatology* 20(1): 67–86.
Latour, B. (2005) *Reassembling the social. An introduction to actor-network-theory*. Oxford: OUP.
Matamala, A. (2017) 'Mapping audiovisual translation investigations: research approaches and the role of technology', in M. Deckert (ed*) Audiovisual Translation, Research and Use*. Peter Lang.
Matamala, A. and P. Orero, (2016) *Researching audio description.* London: Palgrave Mamillan.
Matamala, A. (2016) 'The ALST project: technologies for audio description BT', in A. Matamala and P. Orero (eds) *Researching audio description: new approaches*, London: Palgrave Macmillan UK, 269–284.
Marais, K. (2015) *Translation theory and development studies. A complexity theory approach*. New York & London: Routledge.
Muller, T. (2012) 'Subtitles for deaf and hard-of-hearing people on French television', in S. Bruti and E. Di Giovani (eds) *Audiovisual translation across Europe: an ever-changing landscape.* Berlin: Peter Lang, 257–274.
Orero, P. and A. Vilaro (2012) 'Eye tracking analysis of minor details in films for audio description', *MONTI: Multidisciplinary in Audiovisual Translation* 4: 295–312.
O'Sullivan, C. (2016) 'Imagined spectators: the importance of policy for audiovisual translation', *Target* 28(2): 261–275.
Pereira, A and V. Arnáiz Uzquiza (2010) 'A comprehensive bibliography on subtitling for the deaf and hard of hearing from a multidisciplinary approach', in A. Matamala and P. Orero (eds) *Listening to subtitles. Subtitles for the deaf and hard of hearing,* Bern: Peter Lang, 219–227.
Pérez-González, L. (2014) *Audiovisual translation theories, methods and issues*. New York and London: Routledge.
Perego, E. (2012) *Emerging topics in audiovisual translation*. Trieste: EUT Edizioni Università di Trieste.
Perego, E. (2008) 'Subtitles and line-breaks: towards improved readability*',* in D. Chiaro, C. Heiss and C. Bucaria (eds) *Between text and image. Updating research in screen translation,* John Benjamins Publishing, 211–223.
Pöchhacker, F. and A. Remael (forthcoming 2019) 'New Efforts? A competence-oriented task analysis of interlingual live subtitling' *Linguistica Antverpiensa NS - Themes in Translation Studies* 18.
Ramos, M. (2015). The emotional experience of films: does Audio Description make a difference? *The Translator, 21(*1), 68–94.

Ramos, M., and A. López (2014) 'Feeling audio description. Exploring the impact of AD on emotional response', *Translation Spaces* 3: 133–150.
Remael, A., N. Reviers and R. Vandekerckhove (2016) 'From TS and AVT to media accessibility: some practice-based research trends', in Y. Gambier and S. Ramos Pintu (eds) *Audiovisual Translation. Theoretical and Methodological Challenges. Special Issue of Target* 28(2), 248–260.
Remael, A. and N. Reviers (2015) 'Recreating multimodal cohesion in audio-description: The case of audio-subtitling in Dutch multilingual films', *New Voices in Translation Studies* 13, 50–78.
Remael, A., L. Van Waes and M. Leijten (2014) 'Live subtitling with speech recognition: How to pinpoint the challenges', in D. Abend (ed) *Media and translation. An interdisciplinary approach*, London: Bloomsbury Academic, 211–223.
Remael, A. (2014) 'From audiovisual translation to media accessibility. Live-subtitling, audio-description and audio-subtitling', in A. Arnall and A. Gentile (eds) *AUSIT 2012 – Proceedings of the 'JubilaTIon 25' Biennial National Conference of the Australian Institute of Interpreters and Translators*, Newcastle upon Tyne, UK: Cambridge Scholars Publishing, 134–150.
Remael, A. (2012) 'Audio description with audio subtitling for Dutch multilingual films: Manipulating textual cohesion on different levels', *Meta* 57(2), 385–407.
Remael, A. and J. Neves (2007) 'A tool for social integration? Audiovisual translation from different angles', *Linguistica Antverpiensia NS* 6: 11–22.
Reviers, N. (2018c). Tracking multimodal cohesion in Audio Description: Examples from a Dutch audio description corpus. Linguistica Antverpiensia, New Series: Themes in Translation Studies 14, 22–35.
Reviers, N. (2018a) 'Studying the language of Dutch audio description: An example of a corpus-based analysis', in L. McLoughlin, J. Lertola and N. Talaván (eds) *Audiovisual translation in applied linguistics: Educational perspectives*, *Special issue of Translation and Translanguaging in Multilingual Contexts* 4(1), John Benjamins Publishing, 178–202
Reviers, N. (2018b) *Audio Description in Dutch: A corpus-based study into the linguistic features of a new, multimodal text type.* PhD thesis conducted at the University of Antwerp under the supervision of prof. dr. Aline Remael and prof. dr. Reinhild Vandekerckhove.
Reviers, N. (2016) 'Audio description services in Europe: An update', *The Journal of Specialised Translation* 26: 232–247.
Risku, H. and F. Windhaver (2013) 'Extended translation. A socio-cognitive research agenda', *Tar*get 25(1): 33–45.
Robert, I. and A. Remael (2017) 'Assessing quality in live interlingual subtitling: a new challenge', *Linguistica Antverpiensia NS* 16: 168–195.
Robert, I., S. Schrijver and E. Diels (Forthcoming in 2019) 'Live subtitlers: who are they? A survey study' *Linguistica Antverpiensia, New Series - Themes in Translation Studies* 18.
Romero-Fresco, P. and F. Pöchhacker, F. (2017) 'Quality assessment in interlingual live subtitling: The NRT model', *Linguistica antverpiensia NS* 6: 149–167.
Romero-Fresco, P. (2019) *Accessible filmmaking. Integrating translation and accessibility into the filmmaking process*. London and New York: Routledge.
Romero-Fresco, P. (2015) *The reception of subtitling for the deaf and hard of hearing in Europe*. Bern: Peter Lang.
Romero-Fresco, P. (2013) 'Accessible filmmaking: joining the dots between audiovisual translation, accessibility and filmmaking', *Jostrans 20,* 201–223.
Romero-Fresco, P. (2011) *Subtitling through speech recognition: respeaking*. Manchester: St. Jerome.
Starr, K. And S. Braun (fc.) 'Audio Description 2.0: Re-purposing audiovisual accessibility to assist emotion recognition in autistic children', in K. Starr and S. Braun (eds.) *Innovation in audio description research.* London and New York: Routledge.
Stanke, C. (2016) 'Developer Involvement, Context & Testing – What makes Mobile App Localization Different', *Paper presented at the 11th Languages and the Media Conference*, Berlin.
Szarkowska, A. and O. Gerber-Morón (2018) 'Viewers can keep up with fast subtitles: evidence from eye movements', PLoS ONE 13(6). Available online: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0199331 [Last accessed 27 Sept. 2018].
Szarkowska, A. and A. Jankowska (2015) *Open Art – designing a multimedia guide app for visitors with and without sensory impairments.* Paper presented at the ARSAD Conference, Barcelona.
Szarkowska, A. (2011) 'Text-to-speech audio description: towards wider availability of AD', *The Journal of Specialised Translation* 15: 142–162.

Tai, A. (2016) 'Subtitles on Mobile Devices – Status Quo and Perspectiv', *Paper presented at the 11th Languages and the Media Conference*, Berlin.
Tseng, C.-I. (2013) *Cohesion in film. Tracking film elements.* Palgrave Macmillan.
Tymoczko, M. (2007) *Enlarging translation, empowering translators*. Manchester: St Jerome.
Van Waes, L., M. Leijten and A. Remael (2013) 'Live subtitling with speech recognition. Causes and consequences of text reduction', *Across Languages and Cultures* 14(1): 15–46.
Alcina, A. (2008) 'Translation technologies. scope, tools and resources', *Target* 20(1): 79–102.
Alcina, A., V. Soler and J. Granell (2007) 'Translation technology skills acquisition', *Perspectives* 15(4): 230–244.
AMTA (2003) *MT Summit IX*, *Workshop on Teaching Translation Technologies and Tools,* 27 September 2003, New Orleans: AMTA.
Arnold, D., L. Balkan, R. L. Humphreys, S. Meijer and L. Sadler (1994) *Machine translation: an introductory guide*, Oxford: NCC Blackwell.
Austermühl, F. (2001) *Electronic tools for translators*, Manchester: St Jerome.
Austermühl, F. (2006) 'Training translators to localize', in A. Pym, A. Perekrestenko and B. Starink (eds) *Translation technology and its teaching,* Tarragona: Intercultural Studies Group / Servei de Publicacions, 69–81.
Austermühl, F. (2013) 'Future (and not-so-future) trends in the teaching of translation technology', *Revista Tradumàtica* 11: 326–337.
Babych, B., A. Hartley, K. Kageura, M. Thomas and M. Utiyama (2012) 'MNH-TT: a collaborative platform for translator training', *Translating and the Computer 34*, London: Aslib, no page numbers.
Baer, B. J. and G. S. Koby (2003) 'Introduction: translation pedagogy: the *other* theory', in B. J. Baer and G. S. Koby (eds) *Beyond the ivory tower: rethinking translation pedagogy*, Amsterdam & Philadelphia: John Benjamins Publishing, vii–xv.
BDÜ (1986) 'Memorandum', *Mitteilungsblatt für Dolmetscher und Übersetzer* 32(5): 1–8.
Bernardini, S. (2004) 'The theory behind practice: translator training or translation education?', in K. Malmkjær (ed.) *Translation in undergraduate degree programmes,* Amsterdam & Philadelphia: John Benjamins Publishing, 17–30.
Bowker, L. (2015) 'Computer-Aided Translation: translator training', in S. Chan (ed.) *The Routledge encyclopedia of translation technology*, London & New York: Routledge, 88–104.
Bowker, L. and E. Marshman (2010) 'Toward a model of active and situated learning in the teaching of computer-aided translation: introducing the CERTT Project', *Journal of Translation Studies* 13(1&2): 199–226.
Burrell, J. (2016) 'How the machine 'thinks': understanding opacity in machine learning algorithms,' *Big Data & Society* January–June 2016: 1–12.
Buysschaert, J., M. Fernández-Parra and G. van Egdom (2017) 'Professionalising the curriculum and increasing employability through authentic experiential learning: the cases of INSTB', *Current Trends in Translation Teaching and Learning E* 4: 78–111.
Buysschaert, J., M. Fernández-Parra, K. Kerremans, M. Koponen and G. van Egdom (2018) 'Embracing digital disruption in translator training: technology immersion in simulated translation bureaus', *Revista Tradumàtica* 16: 125–133.
Castilho, S., S. Doherty, F. Gaspari and J. Moorkens (2018) 'Approaches to human and machine translation quality assessment', in J. Moorkens, S. Castilho, F. Gaspari and S. Doherty (eds) *Translation quality assessment. Machine translation: technologies and applications*, vol. 1, Berlin: Springer, 9–38.
Chan, S. (2017) *The future of translation technology. Towards a world without Babel,* London & New York: Routledge.
Chan, S. (2010) 'Introduction', *Journal of Translation Studies. Special Issue on the Teaching of Computer-Aided Translation* 13(1&2): v–x.
Clark, R., A. Rothwell and M. Shuttleworth (2002) 'Integrating language technology into a postgraduate translation programme', in B. Maia, J. Haller and M. Ulrych (eds) *Training the Language Services Provider for the New Millennium*, Porto: Universidad do Porto, 63–70.
Corness, P. (1986) 'The ALPS computer-assisted translation system in an academic environment', in C. Picken (ed.) *Translating and the Computer 7. Proceedings of a conference,* London: Aslib, 118–127.
Cronin, M. (2003) *Translation and globalization*, London & New York: Routledge.

de Vries, Marc J. (2016) *Teaching about technology. An introduction to the philosophy of technology for non-philosophers*, 2nd edition, Switzerland: Springer.
Desjardins, R. (2017) *Translation and social media*, Basingstoke: Palgrave.
Díaz-Cintas, J. (2008a) *The didactics of audiovisual translation*, Amsterdam & Philadelphia: John Benjamins Publishing
Díaz-Cintas, J. (2008b) 'Introduction', in J. Díaz-Cintas (ed.) *The didactics of audiovisual translation*, Amsterdam & Philadelphia: John Benjamins Publishing, 1–18.
Doherty, S. and D. Kenny (2014) 'The design and evaluation of a statistical machine translation syllabus for translation students', *The Interpreter and Translator Trainer* 8(2): 295–315.
Domingos, P. (2017) *The master algorithm*, London: Penguin.
EAMT/BCS (2002) *Proceedings of the 6th EAMT Workshop: Teaching Machine Translation*, Manchester: EAMT and BCS.
Ehrensberger-Dow, M. and G. Massey (2017) 'Sociotechnical issues in professional translation practice', *Translation Spaces* 6(1): 104–121.
Ehrensberger-Dow, M. and S. O'Brien (2015) 'Ergonomics of the translation workplace', *Translation Spaces* 4(1): 98–118.
EMT (2017) *EMT Competence Framework 2017*, Brussels & Luxembourg: European Commission. https://ec.europa.eu/info/sites/info/files/emt_competence_fwk_2017_en_web.pdf [last accessed Jan. 31, 2019]
EMT Expert Group (2009) *Competences for professional translators, experts in multilingual and multimedia communication*, Brussels & Luxembourg: European Commission. https://ec.europa.eu/info/sites/info/files/emtcompetencestranslatorsen.pdf [last accessed Jul. 31, 2017]
Engeström, Y. and A. Sannino (2010) 'Studies of expansive learning: foundations, findings and future challenges', *Educational Research Review* 5: 1–24.
Enríquez Raído, V. (2013) 'Teaching translation technologies "everyware": towards a self-discovery and lifelong learning approach', *Revista Tradumàtica* 11: 275–285.
Esselink, B. (2000) *A practical guide to localization*. Amsterdam & Philadelphia: John Benjamins Publishing.
Flanagan, M. and T. Christensen (2014) 'Testing post-editing guidelines: how translation trainees interpret them and how to tailor them for translator training purposes,' *The Interpreter and Translator Trainer* 8(2): 257–275.
Forcada, M. L., J. A. Pérez-Ortiz, and D. Lewis (eds) (2001) *MT Summit VIII. Proceedings of the Workshop on Teaching Machine Translation*, Santiago de Compostella: IAMT/EAMT.
Freigang, K. (2001) 'Teaching theory and tools', *Language International* 13 (4): 20–23.
Frey, C. and M. Osborne (2017) 'The future of employment: How susceptible are jobs to computerisation?', *Technological Forecasting & Social Change* 114: 254–280.
Guerberof Arenas, A. and J. Moorkens (2019) 'Machine translation and post-editing training as part of a master's programme', *Journal of Specialised Translation* 31: 217–238.
Haller, J. (1995) 'Computerlinguistik und maschinelle Übersetzung in einem Studiengang für Übersetzer und Dolmetscher', *LDV-Forum* 12(1): 29–34.
Hartley, T. and K. Schubert (1998) 'From testbench to workflow: relocating MT in education and training', *Translating and the Computer 20*, London: Aslib. www.mt-archive.info/Aslib-1998-Hartley.pdf [last accessed 21 Feb. 2019]
Hutchins, W. J. and H. L. Somers 1992. *An introduction to machine translation*. London: Academic Press.
Jiménez-Crespo, M. (2013) *Translation and web localization*, London & New York: Routledge.
Kelly, D. (2005) *A handbook for translator trainers*, Manchester: St Jerome.
Kelly, D. (2007) 'Translator competence contextualized. Translator training in the framework of higher education reform: in search of alignment in curricular design', in D. Kenny and K. Ryou (eds) *Across boundaries: international perspectives on translation*. Newcastle-upon-Tyne: CSP, 128–142.
Kelly, D. and C. Way (2007) 'Editorial: on the launch of ITT', *The Interpreter and Translator Trainer* 1(1): 1–13.
Kenny, D. (1999) 'CAT tools in an academic environment: what are they good for?', *Target* 11(1): 65–82.
Kenny, D. (2018a) 'Translation, Technology and Teaching. Charting a course in choppy waters'. Keynote presentation, CIUTI Conference, Heriot-Watt University, Edinburgh, 30–31 May 2018.
Kenny, D. (2018b) 'Sustaining disruption. On the transition from statistical to neural machine translation', *Revista Tradumàtica* 16: 59–70.

Kenny, D. (2018c) 'Machine translation', P. Rawling and P. Wilson (eds) *The Routledge handbook of translation and philosophy*, London & New York: Routledge, 428–445.
Kenny, D. and S. Doherty (2014) 'Statistical machine translation in the translation curriculum: overcoming obstacles and empowering translators', *The Interpreter and Translator Trainer* 8(2): 276–294.
Killman, J. (2018) 'A context-based approach to introducing translation memory in translator training', in C. B. Godev (ed.) *Translation, globalization and translocation: the classroom and beyond*, Basingstoke: Palgrave, 137–159.
Kiraly, D. (2000) *A social constructivist approach to translator education: empowerment from theory to practice*, Manchester: St Jerome.
Kiraly, D. (2003) 'From instruction to collaborative construction: A passing fad or the promise of a paradigm shift in translator education?', in B. J. Baer and G. S. Koby (eds) *Beyond the ivory tower: rethinking translation pedagogy*, Amsterdam & Philadelphia: John Benjamins Publishing, 3–32.
Kiraly, D. (2013) 'Towards a view of translator competence as an emergent phenomenon: thinking outside the box(es) in translator education', in D. Kiraly, S. Hansen-Schirra and K. Maksymski (eds) *New prospects and perspectives for educating language mediators*, Tübingen: Narr Francke Attempto, 197–224.
Koehn, P. (2010) *Statistical machine translation*, Cambridge: Cambridge University Press.
Koponen, M. (2015) 'How to teach machine translation post-editing? Experiences from a post-editing course', in S. O'Brien and M. Simard (eds) *Proceedings of the 4th Workshop on Post-Editing Technology and Practice*, Miami: AMTA, 2–15.
Koskinen, K. and M. Ruokonen (2017) 'Love letters or hate mail? Translators' technology acceptance in the light of their emotional narratives', in D. Kenny (ed.) *Human Issues in Translation Technology*, London & New York: Routledge, 8–24.
Krüger, R. (2016) 'Situated LSP translation from a cognitive translational perspective', *Lebende Sprachen* 61(2): 297–332.
L'Homme, M. (1999) *Initiation à la traductique*, Brossard, Quebec: Linguatech.
Lavault-Olléon, É. (2011) 'L'ergonomie, nouveau paradigme pour la traductologie', [Ergonomics as a New Paradigm for Translation Studies] *ILCEA* 14. URL: http:// journals.openedition.org/ilcea/1078.
Li, D. (2018) 'Teaching of Translation Technology: Curriculum, Methods and Teacher Education', Plenary Presentation, *Fourth International Conference on Research into the Didactics of Translation*, 20–22 June 2018, Universitat Autònoma de Barcelona: PACTE, http://grupsderecerca.uab.cat/pacte/en/node/585 [last accessed Feb. 21, 2019]
Lilt (2017) 'Lilt Launches First-Ever Adaptive Neural Machine Translation System.' Press Release. https://slator.com/press-releases/lilt-launches-first-ever-adaptive-neural-machine-translation-system/ 02 November 2017, [last accessed Feb. 21, 2019]
Littau, K. (2016) 'Translation and the materialities of communication.' *Translation Studies* 9(1): 82–113.
Luo, X. (2010) 'The course design of CAT for undergraduate English major of Sun Yat-Sen University' *Journal of Translation Studies* 13 (1 & 2): 251–272.
Maia, B. (2002) 'Introduction', in B. Maia, J. Haller and M. Ulrych (eds) *Training the language services provider for the new millennium*, Porto: Universidad do Porto, 9–16.
Marshman, E. and L. Bowker (2012) 'Translation technologies as seen through the eyes of educators and students: harmonizing views with the help of a centralized teaching and learning resource', in S. Hubscher-Davison and M. Borodo (eds) *Global trends in translator and interpreter training*, London: Continuum, 69–95.
Martín-Mor, A. (2017) 'MTradumàtica: Statistical machine translation customisation for translators.' *Skase journal of translation and interpretation* 11(1): 25–40.
Massardier-Kenney, F. (2017) 'An MA in translation', in L. Venuti (ed.) *Teaching translation: programs, courses, pedagogies*, London & New York: Routledge, 53–65.
Massey, G. and M. Ehrensberger-Dow (2017) 'Machine learning: Implications for translator education.' *Lebende Sprachen* 62(2): 300–312.
Melby, A. (1998) 'Eight types of translation technology', Paper presented at the *American Translators' Association 39th Annual Conference*, November 4–9.
Mellinger, C. (2017) 'Translators and machine translation: knowledge and skills gaps in translator pedagogy', *The Interpreter and Translator Trainer* 11(4): 280–293.

Moorkens, J. (2017) 'Under pressure: translation in times of austerity', *Perspectives* 25(3): 464–477.
Moorkens, J. (2018) 'What to expect from neural machine translation: a practical in-class translation evaluation exercise', *The Interpreter and Translator Trainer* 12(4): 375–387.
O'Brien, S. (2002) 'Teaching Post-editing: A Proposal for Course Content', in *Proceedings of the 6th EAMT Workshop: Teaching Machine Translation*, Manchester: EAMT and BCS, 99–106.
O'Hagan M. (2017) 'Deconstructing translation crowdsourcing with the case of a Facebook initiative: A translation network of engineered autonomy and trust?', in D. Kenny (ed.) *Human Issues in Translation Technology*, London & New York: Routledge, 25–44.
O'Hagan, M. and C. Mangiron (2013) *Game localization*, Amsterdam & Philadelphia: John Benjamins Publishing.
Olohan, M. (2017) 'Technology, translation and society: A constructivist, critical theory approach', *Target* 29(2): 264–283.
PACTE (2005) 'Investigating translation competence: conceptual and methodological issues', *Meta* 50(2): 609–619.
Plaza Lara, C. (2017) 'Contextualising translator training: defining social, professional and disciplinary requirements', *Lebende Sprachen* 61(2): 333–352.
Plaza Lara, C. (2019) 'Análisis DAFO sobre la inclusión de la traducción automática y la posedición en los másteres de la red EMT.' [SWOT Analysis of the Inclusion of Machine Translation and Post-Editing in the Master's Degrees Offered in the EMT Network] *The Journal of Specialised Translation* 31: 260–280.
Prates, M., P. Avelar, and L. Lamb (2018) 'Assessing Gender Bias in Machine Translation. A Case Study with Google Translate', https://arxiv.org/pdf/1809.02208.pdf [last accessed Nov. 1, 2018).
Pym, A. (2011) 'Training translators', in K. Malmkjaer and K. Windle (eds) *The Oxford handbook of translation studies*, Oxford: Oxford University Press, 475–489.
Pym, A. (2013) 'Translation skill-sets in a machine-translation age', *Meta* 58(3): 487–503.
Pym, A., A. Perekrestenko, and B. Starink (eds) 2006 *Translation technology and its teaching*, Tarragona: Intercultural Studies Group / Servei de Publicacions.
Quah, C. K. (2006) *Translation and technology*, Basingstoke: Palgrave.
Rico, C. (2017) 'The ePortfolio: constructing learning in translation technology', *The Interpreter and Translator Trainer* 11(1): 79–95.
Risku, H. (2010) 'A cognitive scientific view on technical communication and translation: Do embodiment and situatedness really make a difference?', *Target* 22(1): 94–111.
Rittle-Johnson, B. and M. Schneider (2015) 'Developing conceptual and procedural knowledge of mathematics', in R. Cohen Kadosh and A. Dowker (eds) *The Oxford handbook of numerical cognition*, Oxford: Oxford University Press, www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199642342.001.0001/oxfordhb-9780199642342-e-014 [last accessed Jan. 31, 2019]
Rodríguez-Castro, M. (2018) 'An integrated curricular design for computer-assisted translation tools: developing technical expertise', *The Interpreter and Translator Trainer* 12(4): 355–374.
Rossi, C. (2017) 'Introducing statistical machine translation in translator training: from uses and perceptions to course design, and back again', *Tradumàtica* 15: 48–62.
Sakamoto, A., B. Rodríguez de Céspedes, S. Berthaud and J. Evans (2017) *When Translation Meets Technologies: Language Service Providers (LSPs) in the Digital Age*, Focus Group Report, Portsmouth: University of Portsmouth.
Schubert, K. (1995) 'Maschinelle Übersetzung an der Fachhochschule. Überlegungen zum Start eines angewandten Forschungsprojekts.' In R. Walczak (ed.) *Forschungsbericht 1993/94*, Flensburg: Fachhochschule Flensburg, 148–158.
Secară, A., P. Merten and Y. Ramírez (2009a) 'What's in your blend?' *The Interpreter and Translator Trainer* 3(2): 275–294.
Secară, A., P. Merten and Y. Ramírez (2009b) 'Creating Multimedia Localisation Training Materials The Process and Resources Developed for eCoLoMedia', *Aslib Proceedings*, London: Aslib. http://mt-archive.info/Aslib-2009-Secara.pdf [last accessed Jan. 31, 2019]
Sennett, R. (2009) *The craftsman*, London: Penguin.
Shuttleworth, M. (2010) 'Teaching localization via e-learning: developing and delivering an e-course on software localization at Imperial College London', *Journal of Translation Studies* 13 (1 & 2): 3–12.

Somers, H. (2001) 'Three Perspectives on MT in the Classroom,' in M. L. Forcada, J. A. Pérez-Ortiz and D. Lewis (eds) *MT Summit VIII. Proceedings of the Workshop on Teaching Machine Translation*, Santiago de Compostella: IAMT/EAMT, 25–29.
Somers, H. (ed.) (2003) *Computers and translation. A translator's guide*, Amsterdam & Philadelphia: John Benjamins Publishing.
Surowiecki, J. (2017) 'Robopocalypse Not', *Wired*, September 2017, www.wired.com/2017/08/robots-will-not-take-your-job/ [last accessed Feb. 21, 2019).
Trujillo, A. (1999) *Translation engines: techniques for machine translation*, London: Springer.
Venuti, L. (ed) (2017) *Teaching translation: programs, courses, pedagogies*, London & New York: Routledge.
Vieira, L. N. (2018) 'Automation anxiety and translators', *Translation Studies*, Online first, DOI: 10.1080/14781700.2018.1543613 [last accessed Feb. 21, 2019]
Wältermann, D. (1994) 'Machine translation systems in the translation curriculum', in C. Dollerup and A. Lindegaard (eds) *Teaching translation and interpreting 2: insights, aims, visions*, Amsterdam & Philadelphia: John Benjamins Publishing, 309–317.
Xu, S. Y. (2010) 'When translation technology meets educational technology: the way forward for teaching computer-aided translation', *Journal of Translation Studies* 13 (1 & 2): 283–284.
Bennett, J. (2010) *Vibrant matter: a political ecology of things*, London & Durham: Duke University Press.
Berry, W. (2000) *Life is a miracle*, Berkeley: Counterpoint Press.
Bonneuil, C. and J-B. Fressoz (2013) *L'Événement Anthropocène: La Terre, l'histoire et nous*, Paris: Seuil.
Bourg, D. (1996) *L'homme artifice*, Paris: Gallimard.
Braidotti, R. (2013) *The posthuman*, Cambridge: Polity.
Cadwell, P. and S. O'Brien (2016) 'Language, culture, and translation in disaster ICT: an ecosystemic model of understanding', *Perspectives – Studies in Translatology*, 24 (4), 557–575.
Campbell, N., G. McHugh and P. J. Ennis (2018) 'Climate change is not a problem: speculative realism at the end of organization', *Organization Studies*, 1–20.
Canzi, G. (2016) 'Q&A with Mary Robinson: What is Climate Justice?'. *The Road to Paris*. Available online: http://roadtoparis.info/2015/07/29/qa-with-mary-robinson-what-is-climate-justice [last accessed 8 Jan. 2019].
Casili, A. A. (2019) *En attendant les robots: Enquête sur le travail du clic*, Paris: Seuil.
Chabot, P. (2015) *L'Âge des transitions*, Paris: PUF.
Chakrabarthy, D. (2009) 'The Climate of History: Four Theses', *Critical Inquiry*, 35, 207.
Cronin, M. (2003) *Translation and globalization*, London: Routledge.
Cronin, M. (2013) *Translation in the digital age*, London: Routledge.
Cronin, M. (2017) *Eco-translation: translation and ecology in the age of the anthropocene*, London: Routledge.
Crutzen, P. and E. Stoermer (2000), 'The Anthropocene', *International Geosphere-Biosphere Programme*, Global Change Newsletter, 41, 17.
Crutzen, P. (2002) 'Geology of Mankind', *Nature*, vol.415, 3 January 2002, p.23.
De Decker, K. (2015a) 'Why We Need a Speed Limit for the Internet', *Low Tech Magazine.* Available online: www.lowtechmagazine.com/2015/10/can-the-internet-run-on-renewable-energy.html [last accessed 19 Dec. 2018].
De Decker, K. (2015b) 'How to build a low-tech internet', *Low-Tech Magazine*. Available online: www.lowtechmagazine.com/2015/10/how-to-build-a-low-tech-internet.html [last accessed 16 Dec. 2018].
Ghosh, A. (2016) *The great derangement: climate change and the unthinkable*, London: Penguin.
Gubbi, J., R. Buyya, S. Marusic and M. Palaniswami (2013) 'Internet of things (IOT): a vision, architectural elements and future directions', *Future Generation Computer Systems*, 29 (7), 1645–1660.
Halsey, M. (2005) 'Ecology and machinic thought', *Angelaki*, 10, 3, 33–55.
Haraway, D. (1991) *Simians, cyborgs and women: the reinvention of nature*, London & New York: Routledge.
Holt, R. and F. Mueller (2011) 'Wittgenstein, Heidegger and drawing line in organization studies', *Organization Studies*, 32, 67–84.
Hu, G. (2015) *Eco-translatology: construction and interpretation*, Beijing: The Commercial Press.

Jiang, X. (2015)‘ “Eco” and “adaptation-selection” in eco-translatology explained’ in S. Yifeng (ed.) *Translation and academic journals: the evolving landscape of scholarly publishing,*135–148. New York: Palgrave Macmillan.
Jiménez-Crespo, M. (2013) *Translation and web localization*, London & New York: Routledge.
Klein, N. (2014) *This changes everything: capitalism vs. the climate*, London: Allen Lane.
Kurzweil, Ray (2014) *How to create a mind: the secret of human thought revealed,* London: Duckworth Overlook.
Language Scientific (2015) ‘Website Localization and Website Translation – What Is Involved?’ Available online: www.languagescientific.com/translation-services/website-localization-services.html [last accessed 18 Dec. 2017]
Latour, B. (1993) *We have never been modern*, tr. Catherine Porter, Cambridge (Mass.): Harvard University Press.
Latour, B. (2015) *Face à Gaïa*, Paris: La Découverte.
Lionbridge (2016) ‘Software Localization: reach a global audience with your software and applications’. Available online: www.lionbridge.com/solutions/software-localization [last accessed 3 Jan. 2019].
Maffi, L. (2001) *On biocultural diversity: linking language, knowledge and the environment*, Washington DC: Smithsonian Institution Press.
McKenzie Wark, K. (2015) *Molecular red: theory for the anthropocene*, London: Verso.
Meillassoux, Q. (2011[1997]) ‘Appendix: excerpts from *L’Inexistence divine*’, 177–238 in G. Harman, *Quentin Meillassoux: philosophy in the making*, Edinburgh: Edinburgh University Press.
Morton, T. (2013) *Hyperobjects: philosophy and ecology after the end of the world*, Minneapolis: University of Minnesota Press.
Morton, T. (2018) *Being ecological*, London: Penguin.
O’Brien, S., F. Federici, P. Cadwell, J. Marlowe and B. Gerber (2018) ‘Language translation during disaster: A comparative analysis of five national approaches’, *International Journal of Disaster Risk Reduction*, 31, 627–636.
O’Reilly, S. (2019) ‘Warming to the inevitability of environmental apocalypse’, *The Irish Times*, 16 January 2019, 12.
Robbins, P. (2004) *Political ecology: a critical introduction*, London: Blackwell.
Robinson, D. (2013) ‘Hu Gengshen and the eco-translatology of early Chinese thought’, *East Journal of Translation*, 1, 9–29.
Scott, C. (2015) ‘Translating the nineteenth century: a poetics of eco-translation’, *Dix-Neuf: Journal of the Society of Dix-Neuvièmistes*, 19, 3, 285–302.
Scott, C. (2018) *The work of literary translation*, Cambridge: Cambridge University Press.
Serres, M. (2003) *Hominescence*, Paris: Livre de Poche.
Steffen, W., J. Grinevald, P. Crutzen and J. McNeill (2011) ‘The Anthropocene: conceptual and historical perspectives’, *Philosophical Transactions of the Royal Society*, 842–867.
Taylor, T. (2010) *The artificial ape: how technology changed the course of human evolution*, New York: Palgrave Macmillan.
Urry, J. (2009) ‘Sociology and climate change’, *The Sociological Review*, 57, 2, 84–100.
US Global Change Research Program (2018) *Fourth National Climate Assessment*. Available online: https://nca2018.globalchange.gov [last accessed 2 Jan. 2018].
Von Ahn, L. (2011) ‘Massive-Scale Online Collaboration’. TED Talk, April. Available online: www.ted.com/talks/luis_von_ahn_massive_scale_online_collaboration.html [last accessed 4 Jan. 2019].
Williams, E. (2011) ‘Environmental effects of information and communications technologies’, *Nature*, Nov. 17, 354–358.
Wilson, Edward O. (2002) *The future of life*, London: Abacus.
World Meterological Organization (2017) ‘WMO Statement on the State of the Global Climate in 2017’. Available online: https://public.wmo.int/en/wmo-statement-state-of-global-climate-2017 [last accessed 2 Jan. 2019].
Xu, J. (2009) *Translation ecology*, Beijing: Three Gorges Publishing House. [Chinese]
Zuckerman, E. (2013) *Digital cosmopolitans: why we think the internet connects us, why it doesn’t, and how to rewire it*, New York: Norton.