Routledge Research in Audiovisual Translation

PRACTICES, EDUCATION AND TECHNOLOGY IN AUDIOVISUAL TRANSLATION

Alejandro Bolaños García-Escribano

Practices, Education and Technology in Audiovisual Translation

This book explores the intersections of education and technology in audiovisual translation, unpacking the evolution of AVT ecosystems and looking ahead to future directions for the role of technology in the translation industry and higher education.

The volume begins by outlining a holistic account of audiovisual translation scholarship, which includes work on subtitling and dubbing but which has grown to encompass a wider range of practices in light of new technologies, before looking at the current landscape of translator education, including greater interest in distance education and AVT-centered curriculum design. These foundations set the stage for an examination of technological inroads which have permeated AVT practice, including the rise of cloud-based technologies and their use by major media companies. Bolaños draws parallels between these developments to demonstrate the ways in which new tools can help the ever-evolving needs of both the translation industry and higher education and in turn, foster industry-academia collaboration and the growth of new technologies through investment at the pedagogical level.

This book will be of interest to students, scholars, and practitioners in translation studies, particularly those working in audiovisual translation, translation technologies, and translator training.

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To those for whom I had little time in the past few years.

To my dear colleagues and beloved friends.

To those who left us too soon.

To my other half.

Dedico este libro a mi familia, a quien debo mi educación.

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Foreword

Almost a decade ago, in a similar foreword to this one that I am now writing for *Practices, Education and Technology in Audiovisual Translation*, I portended that audiovisual translation (AVT) had finally, and decisively, come of age in academia. Fast-forwarding to the second quarter of the 21st century, fellow AVT scholars will surely agree that, far from plateauing out, our discipline has not ceased growing in volume and importance. Its well-deserved visibility in industry practices, educational curricula and research circles has been recently propelled by the proliferation, distribution and consumption of materials in increasingly internetised societies, on the one hand, and the sizable growth of AVT-related media coverage and scholarship on the other.

Our era is marked by interconnectedness and globalisation, with audiovisual productions reaching all corners of the world in very little time. As the number of streaming and social media platforms multiplies, AVT practices such as revoicing and subtitling have never been more critical in global communication exchanges. Consequently, the demand for skilled practitioners who can appropriately localise the growing number of films, series, documentaries, commercials, corporate videos training courses, and video games, among many other audiovisual materials, continues to rise. Against this backdrop, the number of undergraduate and postgraduate modules, dedicated courses and study programmes focused on AVT has also grown at a steady pace. AVT education-focused research, however, remains seriously overlooked in AVT scholarship when compared to other fields such as accessibility and reception.

This timely Routledge monograph is a much-needed beacon for educators who wish to embrace the arresting world of AVT and make the most of it in the classroom. One of its defining characteristics is its practical, industry-led approach to teaching, which permeates the discussion of the demand for skilled translators and for robust training programmes

that can prepare students for the complexities of an ever-changing professional environment. Throughout the book's exploration of the multifaceted mediascape of AVT practices, the reader will notice clear indicators of the passion, dedication and expertise of its author, a seasoned professional, educator and researcher. By focusing on the defining nature of each and the various translational practices from a professional and technological perspective, the author successfully marries theory and practice, profession and education, while at the same time offering a comprehensive overview of AVT that is both academically rigorous and eminently applied. Such an approach is a much-needed breath of fresh air, which contrasts with the more theoretical, one-sided discussions that we have witnessed in the past.

Being a highly technological discipline, AVT is not alien to the pervasiveness of artificial intelligence (AI) in general and machine translation (MT) in particular. On this front, the debate articulated by the author is an honest one that recognises the pivotal role that technology plays in shaping the future of AVT. From MT, automatic speech recognition (ASR) and synthetic voices to cloud-based tools and large language models, the AI revolution has opened up a world of possibilities for both AVT practitioners and consumers of translated media. However, as accentuated by the scholar, with these opportunities come new challenges and educators, trainees and translators find themselves grappling with issues relating to automation, quality of output, and ethical responsibility. I am convinced that the need for training new generations of AVT professionals remains urgent and justified by the particularities of the media localisation industry, which, standing at the intersection between language, technology, and creativity, is defined by the subtleties of linguistic nuances, the intricacies of cultural context as well as the critical importance of technical skills. Fully aware of these challenges, the pedagogical approaches advocated in this book draw on methods and resources of proven solvency that AVT educators may want to apply to their teaching and learning.

Placing special emphasis on new media localisation practices and automation technologies, this book examines the myriad challenges faced by, and opportunities opened to, translators and educators in these new ecosystems, from navigating linguistic diversity to harnessing the latest technological innovations. In exploring these themes, the book broaches a significant number of salient topics and invites readers to engage critically with the complexities of the media localisation industry and the teaching and learning of AVT practices. In doing so, the book also offers practical guidance and real-world examples that I am certain will resonate with the everyday experiences of translators, educators, and learners.

As the reader embarks on a journey through the fascinating world of AVT, I would like to underscore that the challenges we face are matched only by the opportunities that lie ahead for the next generations of AVT experts. This book will no doubt inspire and empower practitioners, educators, students, and technologists to push the boundaries of what is possible in our field.

Prof. Jorge Díaz Cintas
London, May 2024

Preface

Fellow translation scholars will likely agree with me that new technologies have altered how (audiovisual) translations are being carried out nowadays. We now have a greater variety of tools at our disposal – from translation memories to machine translation systems and novel generative artificial intelligence tools. Higher education has consequently undergone radical changes in the face of technological advancement. Not only have we rethought how lessons and assessments are conducted, but we have also revisited our very understanding of *practices* and *education* and their interaction with *technology*. Digital technologies have enhanced and democratised remote work and learning practices, but embracing change requires that we deeply reflect upon the impact they have on *what*, *how* and *why* we teach media localisation. This book thus sets out to take stock of the latest developments in audiovisual translation practices with an emphasis on education and technology.

This book originally stems from the research I conducted at University College London (UCL) between late 2015 and late 2020, which is publicly available on UCL Library's online repository. It involved a preliminary online survey as well as several face-to-face user-focused experiments, including a pilot study and subsequent action research cycles on the use of cloud subtitling for teaching and learning purposes. In the midst of what has been named the *cloud turn*, the use of web-based ecosystems is increasingly prominent in the industry today, and in this research, I set out to seek a better understanding of their usefulness. I did not intend to provide answers as to whether the latest technologies, namely cloud-based media localisation editors, were more suitable for the learning and teaching of audiovisual translation practices than legacy desktop-based programs. However, the results obtained from the many experiments that took place across several British and European universities between 2017 and 2019, which involved over 300 participants, validated some of my assumptions such as the effectiveness of cloud ecosystems and their agility

for updates and integration of improvements. Cloud-based ecosystems are now widely used by industry stakeholders and audiovisual translation educators worldwide. They have been deemed legitimate alternatives for the learning and teaching of audiovisual translation practices in higher education in what has been referred to as *the age of cloud technologies*.

In this book, I do not delve into the statistically significant information that legitimises the use of cloud ecosystems. Instead, those results – which are duly referenced later on in this book – constitute a point of departure for the contents of this monograph, which have been updated to better reflect the realities of today's industry and higher education. Indeed, this book aims to offer a descriptive depiction of the state of the art of audiovisual translation and expounds on the role played by new technologies while keeping a close eye on innovation in translation education. As a professional wearing many hats (practitioner, educator, researcher), I endeavour to abide by the principles of research-led teaching, and my understanding is that would-be translators should use industry-led tools if and when possible. In so doing, the learner enhances their technological skills while instantly becoming more employable in a fiercely competitive industry. In this book, I therefore emphasise how audiovisual translation can be taught by combining industry advancement with the lessons learnt by educators, researchers, and practitioners as seen in the literature available.

Three main chapters constitute the core of this book (Practices, Education and Technology), which shed light on industry practice by drawing on professional work and research. The discussions herein will hopefully be of interest to educators and students alike. The ultimate aim of this research is to illustrate the utility of professional tools in audiovisual translation education and thereby inform the training of future generations of media localisation professionals. I hope you enjoy reading this book as much as I have enjoyed writing it.

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I would like to thank those who made this monograph possible, including industry stakeholders and academic partners who have been kind enough to let me pick their brains in the name of this research. Seeing this book to fruition would have been impossible without the help of colleagues from OOONA, Plint, TRADILEX, YellaUmbrella, ZOO Academy, and many other academic and industry partners that gave me unlimited access to their technologies. I am extremely thankful to my fellow colleagues at the Centre for Translation Studies (UCL, United Kingdom) as well as fellow members from research teams TRADIT (UNED, Spain) and TRAMA (Universitat Jaume I, Spain), with whom I have had the honour of collaborating over the past few years.

A warm and heartfelt thank-you is owed to both Frederic Chaume and Jorge Díaz Cintas for believing in my research and giving me the means to contend with academic life, which is made more enjoyable thanks to my 'comrades in conflict': Rocío Baños, Olivia Cockburn, Haydn Kirnon, Marga Navarrete, and Mazal Oaknín. Many thanks to colleagues Pablo Romero-Fresco and Soledad Zárate for letting me use some of the illustrations as well as for the insightful discussions we have had.

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Acronyms and Abbreviations

AI	Artificial intelligence
AD	Audio description
ADC	Audio Description Coalition
AVTE	Audiovisual Translators Europe
ASR	Automatic speech recognition
AVT	Audiovisual translation
BITRA	Bibliography of Interpreting and Translation
B-learning	Blended learning
BSI	British Standards Institute
CPL	Characters per line
CPS	Characters per second
CIoL	Chartered Institute of Linguists
CAT	Computer-assisted/-aided translation
CPD	Continuous professional development
DTS	Descriptive translation studies
DAT	Didactic audiovisual translation
E-learning	Electronic learning
EMEA	Europe, Middle East and Africa
ELIS	European Language Industry Survey
EMT	European Master's in Translation
EST	European Society for Translation Studies
ESIST	European Society for Studies in Screen Translation
HEA	Higher Education Academy
ITI	Institute of Translation and Interpreting
IaaS	Interface as a Service
ISO	International Organization for Standardization
LSP	Language Service Provider
LLM	Large language model
MA	Master of Arts
MT	Machine translation

MOODLE	Modular object-oriented dynamic learning environment
MOOC	Massive online open course
MSc	Master of Science
MESA	Media and Entertainment Services Alliance
NLP	Natural language processing
NMT	Neural machine translation
OFCOM	Office of Communications
OBE	Outcomes-based education
OTT	Over the top
PaaS	Platform as a Service
PM	Project management
QAA	Quality Assurance Agency for Higher Education
QA	Quality Assurance
QC	Quality Control
SaaS	Software as a Service
SDH	Subtitling for the d/Deaf and the hard of hearing
SMT	Statistical machine translation
TCR	Time code reader/recording
TM	Translation memory
TS	Translation studies
VO	Voiceover
VOD	Video on demand
WPM	Words per minute

1 Introduction

Since the turn of the 21st century, media and communication have undergone deep transformations led by the increasing audiovisualisation, internetisation, and digitalisation of society. The fast-paced creation, distribution, and sharing of audiovisual materials have recently gathered even more momentum and have consequently led to a greater need to localise content to boost their international appeal and profits. Today, audiovisual content represents a much larger proportion of what is being localised and distributed by the language industry than it did some decades ago, with on-demand television and video streaming services giving notable impetus to translation activity.

Globalisation, epitomised in the easy and pervasive dissemination of audiovisual productions that need to be translated – if they are to reach all corners of the globe – has altered audiences' modes of consumption substantially, promoting a greater multilingual content offering to viewers. Audiovisual translation (AVT), also known as (multi)media localisation, has consequently boomed in the last few decades, reshaping the translation industry's landscape rather rapidly in an attempt to meet the needs of 21st-century audiences, which seem particularly keen on consuming audiovisual material distributed on the internet, for on-demand style consumption (Barker and Wiatrowski 2017). This is leading to far-reaching transformations in mainstream viewing habits as explored in the second chapter of this book.

For some scholars, the future of the translation and localisation industry is audiovisual and "the ability to handle video source content is becoming a key skill for the translators of the future" (Georgakopoulou 2019, 3). Scholarship in the field of AVT has also boomed in recent years, arguably becoming a discipline of its own (Díaz-Cintas and Neves 2015). The learning and teaching of AVT, however, has received much scanter attention in academic circles, and despite some pioneering works, such as Díaz-Cintas (2008), research on AVT education still has plenty of

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room for exploration, as further explained in the third chapter of this book. Even though AVT has been part of the curricula of a number of training institutions for at least three decades now, many courses have traditionally been theory-oriented and have scarcely incorporated technology, let alone industry-informed conventions and professional practice in the form of situated learning experiences such as work placements and in-class simulations. As scholars become more aware of the paramount importance of technology in the AVT professions (Bywood 2020), we bear witness to a new trend: a (timidly) growing number of specialist, technologically oriented training courses in higher education. In an attempt to closely reflect the current industry's landscape and, thus, overcome the perceived theory-practice gap in AVT education, some training institutions make use of desktop software programs, be they commercial or freeware, so that would-be translators are trained using professional tools.

In recent years, new, dedicated translation tools, including cloud revoicing and subtitling systems, have started to be used by large audiovisual media producers and translation companies to carry out AVT and localisation tasks (see Section 4.1.2). The ever-more frantic production of audiovisual content compels the localisation industry to reduce time and costs, increase productivity and enhance workflow connectivity among professional translators and other stakeholders involved. Technological advancement in the form of cloud solutions, artificial intelligence (AI) and other automation tools offer translators much more than traditional translation memory (TM) systems and currently include large language models (LLMs), (automatic) speech recognition (ASR) and machine translation (MT), which are explored in the fourth chapter of this book. These new technologies have been the catalyst for substantial changes to our understanding of the translator's role in society today (Berns 2018; Massey 2018; van der Meer 2018). Since the technology turn in translation studies (TS) discussed by O'Hagan (2013), and chronicled by scholars such as Chaume (2013, 2018) and Díaz-Cintas (2013) in the more specific area of AVT, a new shift seems to be taking place, which has been referred to by some as the *cloud turn* (Bolaños García-Escribano and Díaz-Cintas 2020). In the age of cloud technologies, AVT courses face the challenge of embracing cloud-based revoicing and subtitling tools in an attempt to offer up-to-date, pertinent training (Bolaños García-Escribano et al. 2021). When it comes to the teaching of translation in the face of pervasive automation technologies, Massey et al. (2023) challenge claims that the likes of MT systems endanger humans' agency in the translation profession, including some ominous accounts of the translation profession in the age of *singularity*, in which "technology essentially takes over completely. The human translator is no longer needed in the process" (van der Meer 2021, 54).

The future of translators has been the object of much speculation in recent years. In light of new technologies that are capable of instantly producing transcriptions and translations, there is little doubt that "the role of professional translators will not vanish, but it will evolve – again – through technology" (van der Meer 2020, 308). In this context, closer synergies between academia and industry are required for the translation profession, and AVT in particular, to thrive (Díaz-Cintas 2020). Yet, at least at the time of writing, the ominous predicaments of some industry stakeholders as regards the role of the human translator are still not supported by figures reported by the industry (see ATC 2023). Humans contribute to language services, whose market size is indeed significant, despite the rise of MT services in recent years.

As explained in Section 2.1.1, which contextualises the AVT market within the overarching landscape of the global language industry, European markets continue growing alongside a steady expansion of audiovisual production in Europe, the Middle East and Africa (EMEA). The latest editions of the *European Language Industry Survey* (ELIS, 2022), funded by the European Commission, have suggested that confidence was restored soon after the COVID-19 pandemic, although the most recent reports indicate that the future generation of linguists feels less optimistic about their future role in the language industries. The latest reports on the wealth of the translation industry by Nimdzi (2019, 2020, 2021, 2022), however, have been considerably more optimistic about the steady growth of the translation industry. In the media localisation sector specifically, production and distribution changes have been spearheaded at supranational level, led by the European Union and the United Nations, which have significantly contributed to boosting the need for localising media content in a myriad of languages and practices, including the creation of accessible video content for persons with sensory impairments. Consequently, the market is experiencing its biggest financial growth in recent years (Nimdzi 2023), which is explored in the second chapter of this book. The development of specialist technologies has visibly facilitated this growth by helping companies attain swifter turnaround times and thereby increase their efficiency in a highly competitive market. Such technologies are therefore undoubtedly an area worthy of scholarly exploration.

The AVT industry has evolved in recent years thanks to a growing demand for localised products and the rapid expansion of new technologies (Díaz-Cintas and Anderman 2009; Georgakopoulou 2012; Baños 2018; Bywood 2020). Most recent trends in the profession (see Section 2.1) have led to a vast increase in the global workflow handled online and to other technical specificities in this ever-changing landscape (Baños and Díaz-Cintas 2015). The main aim of this book is to shed light on the new technologies that are currently being used in the language industry and to

find ways in which to exploit them from an educational perspective. As Cattrysse (1998) pointed out before the turn of the century, new technologies have the potential to create new jobs as well as working conditions. Indeed, the development of cloud-based technologies, for instance, has generated new collaborative ways in which to produce translations (e.g. collaborative dubbing) and led to substantial changes in the ways in which AVT specialists work nowadays, with online ecosystems becoming the new norm (Bolaños García-Escribano and Díaz-Cintas 2020).

Among their main characteristics, cloud-based translation solutions have the potential to allow freelancers and in-house translators to use translation services either for free or at a pay-as-you-go rate rather than having to invest a lump sum (often a hefty one) in purchasing their own desktop license and subsequent updates. In this sense, a transition has taken place from capital expenditure (i.e. investing in the purchase of tools), to operating expenditure, whereby users rent a piece of software if and when needed (Díaz-Cintas and Massidda 2019). These tools can also allow for a leaner workflow and enable translators to work simultaneously in more ergonomic interfaces. Although in some areas of translation, cloud-based tools are open and can be easily bought by freelance practitioners, company-specific cloud systems have been developed, mostly on a proprietary basis, by some of the largest media distributors and broadcasters that have consolidated themselves as the new driving forces of a heavily internetised AVT industry. Among their many initiatives, developments on web-based evaluation, translation, and assessment systems, like Netflix's Originator, are of particular interest as they are being instigated in an attempt to improve the overall productivity and quality of their translations. On the other hand, smaller manufacturers and language service providers have also engineered their own virtual tools to help professionals carry out translation commissions (e.g. Plint), whether as part of their pool of freelancers or as independent practitioners, on a pay-as-you-go basis (e.g. OOONA), as seen in Section 4.2.1. The latter are perhaps more accessible for AVT trainers who wish to embrace industry-led changes and incorporate the latest technologies into the classroom.

Computer-aided (or -assisted) translation (CAT) developments, especially in the fields of automatic ASR, MT and TM (see Sections 4.2.2 and 4.2.3), have been progressively integrated into new work networks and systems with the aim of increasing productivity and to ultimately reduce localisation costs. New AVT systems, most of which are currently based on the cloud, are more agile than desktop-based applications when it comes to integrating new developments such as databases and corpora. New ecosystems have also facilitated project management (PM) tasks, with workflows being transferred to web-based environments in order to enhance connectivity and efficiency. These novel ecosystems provide

project managers with a more comprehensive overview of all the steps involved in the projects, from testing and onboarding new linguists to carrying out the translation and quality assessment, as well as to issuing invoices (see Section 4.2.4). Project managers can generate workflows and semi-automatise the localisation process as well as allocate work to translators and monitor progress, sometimes even seeing what project members are doing in real time. These software developments have indeed transformed the ways in which translators and project managers collaborate and undertake media localisation work. In addition to immediate communication between the various stakeholders participating in AVT projects, many revoicing and subtitling systems now allow users to consult corpora, terminology databases and other data banks in an attempt to enhance their workstations (which today are a far cry from the ones AVT specialists had only twenty years ago) and, in turn, their final output.

Against this backdrop of a flurry of change in the industry, the educational sector has been more dormant. Yet, keeping up with new technological developments is essential in disciplines like translation and interpreting studies. CAT tools are only sometimes present at higher-education institutions, and legacy desktop-based solutions often continue to be used. Commercial software include versions of SDL Trados Studio (now RWS Trados Studio), memoQ and Déjà Vu for TM tools, but the same goes for dubbing tools such as Synchronos, and subtitling editors such as EZTitles, FAB Subtitler, Spot, TEMPO, and Wincaps. The use of desktop-based freeware is still a common practice in many translator training institutions due to financial limitations or tradition (see Section 3.5.3); for instance, OmegaT and Xbench are open-source tools that integrate features similar to other TM, terminology and quality assessment tools, whereas Aegisub, Subtitle Edit, Subtitle Workshop, and VisualSubSync are used to produce subtitles free of charge, and Audacity, Cappella, DubIt, VideoPad, and Windows Movie Maker are popular free options for practising revoicing in the classroom.

A closer look at the industry shows that more dynamic, cloud-based CAT tools are now emerging. Covering all areas of translation, the newest CAT tools include Wordfast Anywhere for TM tools; XTM Cloud, OOONA Manager, and Memsource Cloud for translation PM tools; ZOOsubs and OOONA Tools for subtitling; and ZOOdubs and VoiceQ for revoicing (see Section 4.2). Equally, some pioneer research projects developed their own online learning tools with a strong emphasis on AVT (see Section 3.5.2), such as the EU-funded project ClipFlair, which paved the way for further research on digital applications that can be maximised for language-related education, including translation. Other efforts have followed suit while being inspired by this type of initiative, such as TRADILEX, all of

which have followed the principle of creating ad-hoc revoicing or subtitling platforms for the purposes of teaching AVT.

The use of professional tools in the translation classroom has attracted much attention, but there needs to be more emphasis on cloud ecosystems, whose examination by translation scholars, let alone AVT researchers, is virtually non-existent. Before I carried out the research that inspired this monograph (Bolaños García-Escribano 2020), professional web-based subtitling tools had not yet made it to AVT curricula and were practically unheard of in most educational hubs around the globe. In previous studies, I also argued that training institutions do not always succeed in embracing new technologies, especially commercial cloud tools.

At a time when a perceived talent crunch seems to have hit media localisation (Estopace 2017), leading market players confess to being in need of expanding their pools of professionals in AVT, so new initiatives are being orchestrated, such as The Poool directory and the AVTpro certifications. Of special interest are company-led educational projects, such as ZOOAcademy, that aim to enhance industry-led training in AVT education settings, but also private initiatives, such as AVT Masterclass that turn online training into an opportunity to provide specialist AVT training beyond the boundaries of higher education (Stasimioti 2022). Some of these initiatives have received negative responses from translator associations, such as Audiovisual Translators Europe (AVTE), which published its *Machine Translation Manifesto* in 2021 (Deryagin et al. 2021) and actively challenges the so-called lack of trained professional translators that many companies claim to be the reason for why MT is increasingly integrated into existing workflows. Closer synergies must certainly be established between educational centres and the industry for the well-being of the entire profession (see Section 3.6). Strengthening partnerships with stakeholders and software developers can be instrumental not only in equipping universities with the right software and access to the latest cloud-based tools and portals but also in securing professional careers in the AVT world for qualified translators. The exploitation of situated, socioconstructivist, and project- and task-based learning experiences that showcase cutting-edge technologies are therefore of utmost importance, as they promote students' employability and resilience in a mercurial industry heavily driven by technological changes (Díaz-Cintas 2019).

In sum, this book aims to depict current professional practices and conventions in AVT education as well as to explore new pedagogical methodologies in the age of cloud and automation technologies. I hereby endeavour to analyse and challenge the ingrained training practices in AVT education, which are bound to be transformed by new technological developments in the age of the cloud and new automation technologies. Ultimately, the contents of this book can help to finetune existing

AVT curricula as well as to find ways to develop innovative educational ecosystems with the aim of providing a more immersive experience in industry-focused AVT education.

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2 Practices

Better known as (multi)media localisation in industry settings, AVT is an academic discipline and professional activity that involves the translation or adaptation of audiovisual media content (e.g. films, series, commercials, corporate videos) by means of different language transfer practices. Localising media content requires awareness of the coexistence of the acoustic and visual communication channels, together with the presence of verbal and non-verbal information. The profession has evolved drastically since the advent of digitisation at the end of the 20th century, which in turn led to a growth of academic interest. AVT has traditionally been approached by TS scholars in academic circles and translation and localisation experts in the language industries. The main tenet of AVT lies in the specificities of the content that is localised – the *audiovisual text*. In the words of Chaume (2016, 75):

> An audiovisual text is a semiotic construct woven by a series of signifying codes that operate simultaneously to produce meaning. A film, a cartoon, or a documentary is made up of a series of codified signs, articulated in accordance with conventional editing rules. The way the audiovisual text is organized and the meaning of all its elements results in a semantic structure that the spectator deconstructs in order to understand the meanings of the text. The interest for the translator, and especially for the researcher, lies in disentangling the meaning and functioning of each of these codes and the possible impact of all signs, linguistic and non-linguistic, on translation operations.

Audiovisual texts can be considered, in perhaps simpler terms, acts of communication involving sounds and images, in which four different types of signs – i.e. audio-verbal, audio-non-verbal, visual-verbal and visual-non-verbal – are complementary and equally important in the process of meaning production (see Zabalbeascoa 2008). Every single snapshot taken

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Figure 2.1 Example of verbal and non-verbal signs in snapshot from *Cocodrilo* (2019) © Jorge Yúdice.

from a given video clip has many layers of meaning, corresponding to each of the aforementioned signs, as exemplified in Figure 2.1.

Also referred to as multimedia, multisemiotic, multimodal, audiomedial, and multidimensional, audiovisual texts have been theorised within multimodality frameworks by scholars such as Pérez-González (2009, 2019), Pettit (2004) O'Sullivan (2013), and Taylor (2016). Audiovisual texts build semantic composites of a complex nature, and their specificities have a direct impact on the different AVT practices as further discussed in Section 2.4.

2.1 Audiovisual Translation as a Professional Practice

Despite early experiments with film rolls in the 1880s, the history of cinema started in the mid-1890s (Nowell-Smith 1996), when Auguste and Louis Lumière invented the cinematograph. The first instances of translation took the form of filmed, printed texts called *intertitles* that "served to contextualize, interpret or elaborate on certain aspects of the visual action" (Pérez-González 2014, 42) in the silent films of the times. From the 1920s onwards, early attempts were made to incorporate sound, music and special effects into film, which ultimately led to a major remodelling of the early film industry. The introduction of soundtracks brought about a stumbling block for distributing films internationally, as dialogue now needed to be translated into different languages, and companies started to

experiment with solutions such as multiple-language versions, subtitling, and dubbing (Danan 1991). The first dubbed films were produced in the early 1930s in different dubbing studios, including the renowned Des Reservoirs studio in Joinville-le-Pont, France, which soon became more popular and financially stable than multiple-language films. The history of film translation (see Ávila 1997; Chaume 2004; Cornu 2014) is a fascinating one, though it falls beyond the scope of this monograph's subject matter.

Fast-forwarding to present times, the globalisation of the professional translation market has coincided with an increased use of technological advances, particularly the emergence and expansion of the internet. One of the main developments that transformed the audiovisual landscape was the introduction of optical discs (particularly CDs and DVDs but later on Blu-rays too) at the turn of the last century – a storage format that permitted the inclusion of several subtitles and dubbed tracks within the same disc (Georgakopoulou 2019). The translation of film, and later TV and internet productions, has grown exponentially ever since, leading to a well-established industry that has played a fundamental role in the distribution of culture and entertainment worldwide. Two decades into the 21st century, translation has indeed been transformed into a completely digitised profession in a similar manner to most liberal professions and arts across the globe. Translation services, applications, content, and uses have been greatly diversified while audiovisual consumption has changed significantly, too. The internet has allowed for a rapid transformation of audiovisual distribution and exhibition by those embracing new video-delivery systems, in which translation is ubiquitous.

2.1.1 Industry Size and Context

In an official report on the size and wealth of the language industry in Europe (European Commission 2009), it transpired that the language industry within the EU was worth €8.4 billion, of which €568 million represented the sector of language technology tools and €633 million accounted for subtitling and dubbings services. The European language industry was expected to exceed €16.5–20 billion by 2015 with an estimated annual compounded growth rate of at least 10%. According to a press release published by the Media and Entertainment Services Alliance (MESA 2019), the total spending on content localisation services in the Europe, the Middle East and Africa (EMEA) market in the television, film and video sector exceeded US$2.3 billion in 2018 and a 5–8% growth was anticipated by 2021. In two pre-pandemic reports of global market research on the language industry, Nimdzi (2019, 2020) reinforced its positive estimates from previous years: the value of the

global language industry in 2019 was expected to be US$53.5 billion (2.1% of which accounted for subtitling services), with a predicted five-year growth of 6.8% and a projection of US$70 billion for 2023; in 2020, the language industry's total value was expected to be US$57 billion worldwide, with an estimated growth of 6.2% and a projection of US$77 billion by 2025. Nimdzi's anticipated growth rate shrank from 7.4% in 2018 to 6.2% in 2020 as they factored in the impact of the COVID-19 pandemic. Years later, the 2022 *European Language Industry Survey* (henceforth, ELIS) collated 1,342 responses from language service providers (LSPs), independent language professionals, students or representatives of training institutions, language departments and language service buyers. The authors suggest that not only has confidence been restored following the COVID-19 pandemic, but "more than 50% of the language company respondents expected 2021 market growth to be in line with pre-Covid years, and were even more optimistic about their performance (net 71% expecting growth)" (ELIS Research 2022, 6). What is more, the most recent reports by Nimdzi (2021, 2022, 2023) have been much more positive, highlighting continuous growth and arguing that the impact of the pandemic, particularly among large companies and major stakeholders, had been overestimated and predicting a continued growth projection from 64.7 billion in 2022 to $69.3 billion in 2023 and ultimately reaching $90.8 billion by 2027. In 2021, TransPerfect achieved an unprecedented position as a long-time industry leader after surpassing a threshold that no other company had met in the language industry – $1 billion in revenue in a single tax year. These figures are encapsulated in the latest report by Nimdzi (2023, n. pag.) as follows:

> In 2020, we had reduced our growth estimate to reflect the impact of the pandemic, adjusting the market's compound annual growth rate (CAGR) to 6.0%, down from 6.2% and 6.8% in previous years. However, after a phenomenal 2021 with record growth, our estimate for 2021 reflected a one-off increase of 10% compared to 2020. Already in last year's Nimdzi 100, we predicted that it is unrealistic to expect this exceptional level of growth to continue, but that we can expect the industry to grow at a faster pace than before March 2020, thanks to a changed market that LSPs have adapted well to at this point in time. This is why, in March 2022, we projected a CAGR of 7.0% for the coming years. Considering the results from this year's ranking, we can now confirm this growth projection despite economic uncertainty, particularly thanks to a strong second half of 2022. This is why we continue to predict that the market will grow at a CAGR of 7.0% in the coming years, reaching $90.8 billion by 2027.

A report published by the LIND Expert Group (2019), on the results obtained from a survey carried out in Europe in 2019, and completed by 1404 respondents from 55 countries, showed that both independent translators and translation companies expected the industry to continue growing. What is more, almost three-quarters of the companies surveyed predicted a relentless growth "clearly fuelled by the uninterrupted industry growth that companies have been reporting since 2014" (LIND Expert Group 2019, online). The ELIS surveys, commissioned and undertaken by a number of associations and partners including the aforementioned LIND Expert Group and the Directorate-General for Translation, offered similar results with promising figures in the 2022 survey, but the post-COVID recovery was followed by somewhat less promising results in 2023 (ELIS Research 2023). As contended in the report itself, the ELIS results typically reflect the reality of the remaining 75% of stakeholders that do not fall under the world's 100 largest companies providing language services. Contingent factors, such as world politics and global economy in the wake of international conflicts and war, may deeply impact the performance of smaller companies and freelancers, nonetheless.

Changes in the production and distribution of media content have been spearheaded by policies such as the European Commission's revised *Audiovisual Media Services Directive* (2016, 2018) and other legal instruments that notably include the seminal *Convention on the Rights of Persons with Disabilities* produced by the United Nations (2006). Whereas the former requires large media producers to invest in European audiovisual content by imposing a minimum quota (Cole 2022), the latter establishes the right to access media content for people with sensory disabilities. Both initiatives thereby boost the need for localising media content in a myriad of languages. Consequently, audiovisual materials feature on-demand products and services, with the market experiencing its biggest financial growth in recent years as "media localization agencies grew 24% in 2021 compared to 2020" (Nimdzi 2022, 57). In this context, new technologies such as cloud ecosystems have arguably facilitated the implementation of swifter turnaround times, and thereby increased efficiency among stakeholders by enhancing international collaboration via the internet in novel ecosystems.

2.1.2 Media Localisation Workflows

As with other translation practices, the localisation of media content involves many stakeholders apart from translators and language specialists at different stages of the relevant workflows. As a rule of thumb, the translation phase of a given AVT project usually starts when a distributor purchases the rights to show an audiovisual text in another language and it ends when the target audience watches the localised programme. As

explained by Walker (2023), translation projects operate in three main phases (namely, *pre-production*, *production*, and *post-production*). The commissioning, planning and groundwork work carried out before the source materials are localised, as well as the supervision and monitoring of the linguists' work, is handled by project managers, who are primarily responsible for the successful completion and delivery of the relevant localisation commission as representatives of an LSP.[1] Workflows are devised taking into account the final delivery of a high-quality product while observing quality measures throughout the process, thereby enabling project managers to identify and solve any issues prior to delivering localised work to clients.

In AVT scenarios, a regular workflow for the localisation of programmes that is not performed live (e.g. subtitle templates or dubbing scripts, among others) would encompass a number of steps under the aforementioned three phases, which are illustrated in Figure 2.2.

The above figure does not fully attest to the complexity of AVT projects, or any other translation project for that matter. For instance, even though the bulk of project managers' work takes place before the files are sent to the linguists, they also oversee the whole project, paying close attention to deadlines by drafting and following timelines (e.g. Gantt charts) as well as ensuring that linguists have access to relevant editors that allow them to originate and translate templates and scripts. Project managers also need to scrutinise the source and target materials and identify potential issues, including disparities that might occur as a result of localising content into many different languages.

In broad terms, translators are responsible for the adaptation of the audiovisual text in the post-production phase, meaning they work with audiovisual material in its final form and do not have a say over how the material was produced. This manner of operating often carries additional difficulties insofar as filming is not always as accessible as it should be (Romero-Fresco 2019).[2] Generally speaking, AVT linguists often work with audiovisual material to generate language-specific output – such as captions, subtitles, (audio) descriptions, transcriptions, dubbing scripts – that matches the spatiotemporal and semiotic specificities of the audiovisual material. This usually entails dialogue writing in dubbing (Spiteri-Miggiani 2019) and spotting in (interlingual) subtitling (Díaz-Cintas and Remael 2007, 2021) and SDH (Zárate 2021) as well as the production of timed descriptions in audio description (AD) (Fryer 2016).

Generally speaking, *synchronisation* – that is, inserting timecodes so that translations can appear in synchrony with the original dialogue and visuals – can be a time-consuming task. As workflows become increasingly leaner in the AVT industry, the use of *templates*, also known as *master files* in subtitling, have come to be seen as an answer to cope with the high

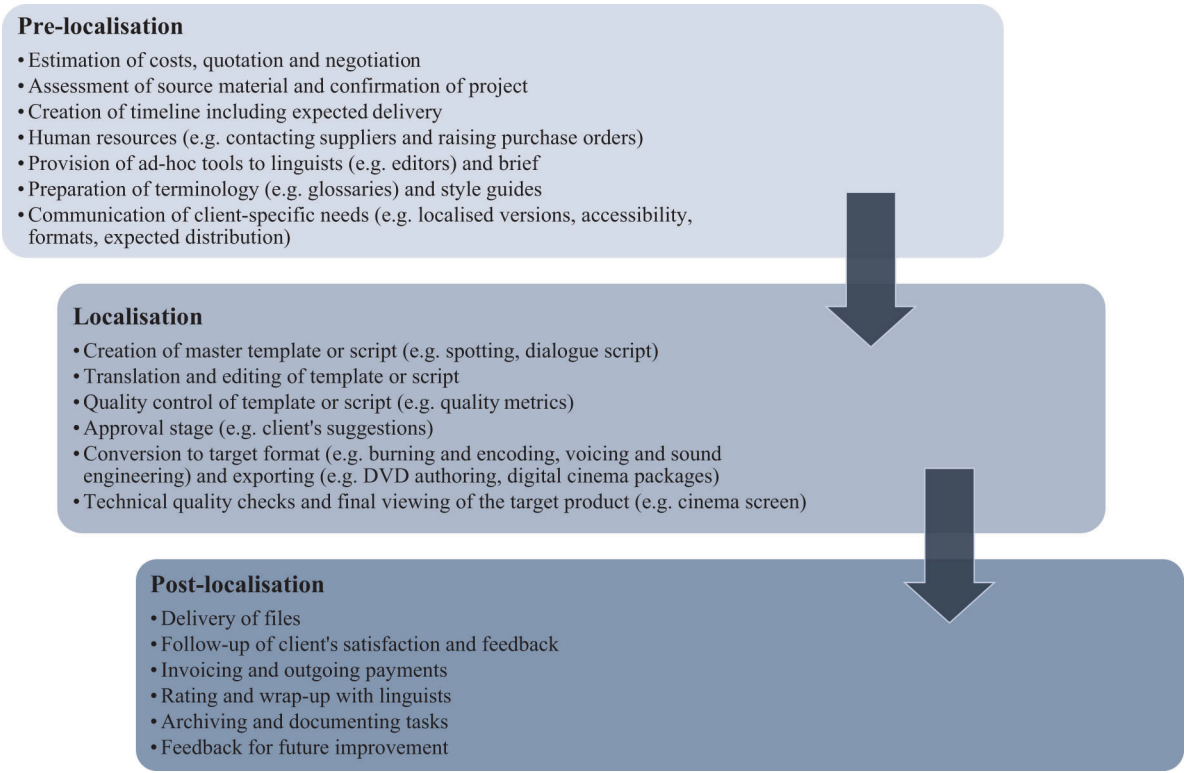

Figure 2.2 Generic AVT workflow.

Source: Author.

volume of localisation projects. Templates are working documents that contain the already spotted subtitles in the source language. They were first used in the subtitling sector for DVDs and soon became common practice in the industry (Georgakopoulou 2019), particularly when working with large multilingual projects, to maximise resources, save time, and cut operational costs (Georgakopoulou 2006, 2012), as translators only need to focus on the linguistic side. As a rule of thumb, template creators produce the timed text file in the original language, and the resulting templates are then distributed among translators to be used as a basis for subtitling into other languages. The use of subtitling templates has also extended to revoicing practices where a master script, or transcript, is generated for it to be used by other linguists for translation purposes.

Although "the prevailing source language of audiovisual media in many countries is English" (Nikolić 2018, 80), there is a growing number of productions being created in other languages. At times, it might be intricate to find specialists in certain language combinations (say Korean into Croatian, for example), so it is common in the industry to produce a first translation in English, which involves spotting, that then becomes the pivot text for the production of translations into other languages. As Vermeulen (2011) contends, the original scripts are not usually handed over to linguists, who only have access to the English template. This can cause quality-related problems, including infelicitous mistranslations and misunderstandings, which is the reason why English annotations are essential. This modus operandi has been denounced by some translators and translation associations (ATAA and ATLF 2014) because it constrains the subtitlers' performance and can lead to unnecessarily high levels of condensation and linguistic interference (Kapsaskis 2011; Nikolić 2015). Nevertheless, the escalation in the number of multilingual AVT projects has meant that the use of templates has been imposed in most working environments in and beyond subtitling, and many scholars have recently argued that pivot translation carries certain specificities (e.g. annotations) that ought to be further integrated into training scenarios (see Pięta et al. 2023).

Templates are known to have a positive impact on the industry's performance. They cut costs for the company, which localise audiovisual content more efficiently as they help to minimise distribution delays in different language combinations. In addition, the fact that templates tend to share the same timecodes in all languages means that project managers can easily refer to any content whose translation may be problematic; however, many companies now allow linguists to merge subtitles and change timecodes whenever necessary. The widespread

use of templates, however, has not removed subtitlers' spotting duties for good; indeed, spotting still represents a fundamental aspect of subtitling. As students wanting to enter the profession will certainly have to work with templates and/or create their own, spotting and template translation (also known as *origination*) need to be included in the AVT classroom so that learners become familiar with all types of subtitling tasks (see Section 3.6).

In the past, TV channels and distributors had in-house localisation departments or worked directly with freelancers, but most decided to outsource those tasks to multinational translation companies (see Abdallah 2011). Today, most AVT specialists freelance for large LSPs (also known in the industry as *fulfilment partners*) who manage large volumes of media content for localisation purposes in a myriad of languages and therefore have vendor managers that handle the selection, onboarding and monitoring of qualified linguists who join their books. Vendor management is essential for LSPs to ensure that translation quality standards – further explored in Section 2.5 – are observed throughout the localisation process. Quality, however, is inevitably influenced by working conditions and related professional issues experienced by linguists, and the "pressure to work faster and for lower rates might seem likely to have entirely negative effects for translation quality" (Drugan 2013, 28). Low rates and abusive working conditions in the AVT sector have been previously outlined by Kuo (2015), whose empirical study on subtitling working conditions indicates that while the volume of work is on the increase, rates are stagnating and deadlines becoming tighter.

The evolution of the translation market has run parallel to the emergence of new translation technologies, e.g. TM, MT, corpora banks, quality control (QC) systems, term bases, and other terminology and PM tools (see Section 4). Technological advances aim at improving the productivity, efficiency and consistency of the translators' work, although the outcome may not always be positive for all parties involved (Pym 2011). With the advent of language automation models, particularly ASR and MT, the future of AVT workflows is soon bound to change, perhaps leading to scenarios where spotting will be increasingly automatised and linguists will serve as language engineers, post-editors, and revisers, including those working on quality assurance (QA) and/or control (QC) and conversion and compliance supervisors. Post-editing is indeed becoming increasingly frequent across the language industries, including AVT, and the pervasiveness of automation technologies is allowing ASR, MT and other technologies to make further inroads into AVT practices (particularly subtitling) and is sparking great interest among scholars (Mejías-Climent and de los Reyes Lozano 2021, 2023).

2.1.3 Media Consumption Habits and Trends

Alongside the rapid and profound evolution of media localisation workflows came a substantial number of new scenarios and research trends that echoed new viewing habits (Chaume 2016, 2018). AVT scholars (e.g. Nikolić and Bywood 2021) and industry reports (Slator 2022) have recently emphasised the sheer volumes of audiovisual content that are consumed by users on a daily basis and the challenges this poses to the AVT industry (see Section 2.1.1). Digital technology has undoubtedly paved the way for a new era of audiovisual consumption and novel distribution methods, such as paid-subscription streaming platforms, whose content is available on demand, hence the term *video on demand* (VOD). These and other services that formerly depended on cable or satellite now rely exclusively on internet connection – i.e. *over the top* (OTT) broadcasting or *streaming* – and have generally contributed to expanding the degree of control that audiences have over their viewing experience of audiovisual productions. As one form of internet-based distribution, VOD "provides users with access to [either] a traditional channel or network's existing library including new content once it becomes available on the linear schedule" (Wayne 2018, 729). VOD services, which encompass the likes of Amazon Prime, Disney+, HBO, and Netflix, *inter alia*, have grown exponentially in the last decade or so, and are expected to continue expanding. In Europe, VOD usage rates accelerated steadily from 2012 onwards with revenues soaring in tandem (Croce and Grece 2015). More recently, during the COVID-19 pandemic, VOD viewing rates experienced a spike across the board with the USA, for example, reporting a 32% increase in membership subscriptions in March 2020 and VOD viewership growing up to 57% for some UK providers (Forte 2020). It goes without saying that VOD platforms have stimulated the language industry, too, since content needs to be localised in a myriad of languages and be made accessible to cater for viewers with sensory impairments and other needs.

VODs have been the perfect catalyst for the so-called "Netflix effect" (Matrix 2014, 219), which alludes to the fact that younger generations feel less of an affinity for live TV. Media scholars such as McDonald and Smith-Rowsey (2016, 2) have posited that "[Netflix] has become synonymous with the growing, pervasive impact of technology." Nowadays, leading media services offer almost instant access to audiovisual programmes via VOD platforms, video-sharing services and social media applications. New consumption habits have led to the significant expansion of practices, such as growing media accessibility services and more mainstream use of English-language dubbing (Hayes 2021; Sánchez-Mompeán 2021; Spiteri-Miggiani 2021).

Against this backdrop, and amid the so-called fourth industrial revolution (Schwab 2016), these new consumption trends are constantly (re)-shaping the translation industry, and new audiences and readers require novel ways of translating the products they watch on the internet and other media. This is particularly relevant in a globalised world in which "far-reaching technological developments and new forms of communication have given consumers and audiences a great deal of power and autonomy" (Baños and Díaz-Cintas 2015, 1). In this sense, not only have audiences changed in terms of their audiovisual consumption habits, but the companies offering AVT have also been forced to evolve and expand their services (Díaz-Cintas 2019). Alongside more English-language dubs streamed by VODs, intralingual captions are also ever-more present on social media and media streaming services.

2.2 Audiovisual Translation as an Academic Discipline

From an academic perspective, AVT has been theorised since the last quarter of the 20th century, under many different names, such as film translation, constrained translation, screen translation, and (multi)media translation, among many others (Gambier and Gottlieb 2001; Pérez-González 2014). The terminological evolution in the field is explained by Gambier (2013, 46) as follows:

> The introduction of the term *audiovisual translation* around 20 years ago brought to the forefront the multisemiotic dimension of all broadcast programmes (TV, cinema, radio, DVD). It is today the most commonly used term in the field. [. . .] *Translation for the media* was used sometimes for both AV [audiovisual] and printed media. As for *multimedia translation*, it refers explicitly to the multitude of media and channels now used in global and local communication for different purposes (information, entertainment, education, advertising, etc.).

The academic potential of AVT practices such as dubbing was already clearly established in early works published in scholarly journal *Babel*'s special edition on cinema translation in 1960. However, the foundations are usually attributed to works like Laks's (1957) on subtitling and Fodor's (1976) on dubbing, as well as subsequent discussions on the concept of 'constrained translation' (Titford 1982; Mayoral et al. 1988). Publications such as those written by Luyken et al. (1991), Ivarsson (1992), and Ivarsson and Carroll (1998) were exemplary of how the discipline was booming a few years later and thus progressively becoming more deeply entrenched within academia.

Despite incipient training courses in the 1980s (see Section 3.5), AVT was still an under-researched area until the mid-1990s, when it boomed into the so-called "golden years of AVT" (Díaz-Cintas 2012, 280). In June 1995, the international forum *Audiovisual Communication and Language Transfer* was held in Strasbourg under the auspices of UNESCO, the Council of Europe and the French Ministry of Culture to commemorate the centenary of cinema; and the following year, the first edition of the renowned international conference *Languages and the Media* was held in Berlin (Gambier 1998). The first doctoral theses on topics related to AVT also appeared in the 1990s – e.g. Zabalbeascoa (1993), Danan (1994), Machado (1996) and Díaz-Cintas (1997), among others – rapidly leading to a fast-growing community of AVT scholars in the following years.

Despite the many challenges encountered for its academic development, and arguably because of its core technological dimension, AVT scholarship has moved from the margins to centre stage in translator training programmes and TS research in the last three decades (Gambier 2006). Nowadays, AVT is a well-rooted and stable field, as evidenced in the vast array of research avenues and existing literature (Pérez-González 2018) as well as the many postgraduate programmes of study that are currently being offered at European universities and beyond. Contrary to the rather dispiriting landscape depicted by Lambert and Delabastita (1996) in the late 1990s, AVT has progressively caught the attention of academics as discussed by Martínez-Sierra (2012, 2017), Orero et al. (2018), and Pérez-Escudero (2018, 2021), who reported on the sharp increase in AVT publications experienced since the early noughties. To further illustrate this, a quick search on the University of Alicante's Bibliography of Translation and Interpreting (BITRA, https://aplicacionesua.cpd.ua.es/tra_int), which comprises over 94,000 entries at the time of writing, reveals 4,846 results for *audiovisual translation*, 2,256 for *film translation*, 2,105 for *subtitling*, 1,484 for *dubbing*, with a considerable lesser number of hits for terms such as *multimedia translation* (389), *media accessibility* (387) and *media localisation* (56). Needless to say, a detailed analysis of the results would be necessary to ascertain how many of those publications overlap, as well as to add those results in other languages, but it is clear that, in broad terms, a representative number of all translation publications have an arguable connection with audiovisual translation practices.

What is evident is that AVT is flourishing as well as becoming increasingly interdisciplinary (Szarkowska and Wasylczyk 2018), and some leading scholars noted the blossoming importance of AVT in academic circles and duly predicted a potential emancipation of AVT from TS (Gambier 2013; Díaz-Cintas 2008; Díaz-Cintas and Neves 2015). Some position papers, such as that announcing the launch of the *Journal of Audiovisual*

Translation by Jankowska et al. (2018) and the article on experimental approaches by Orero et al. (2018) suggested that AVT has already become a discipline of its own. Coincidentally, several media accessibility papers advocated for a similar disassociation of media accessibility from AVT itself (e.g. Greco 2018; Romero-Fresco 2018a).

2.3 Media Localisation Practices

AVT is an umbrella term that subsumes a wide range of language transfer modes that differ on the nature of their linguistic output and the translational techniques they imply (Gambier 2003), as well as on how they are ultimately consumed by the target audience. It has traditionally been agreed among scholars that there are two main approaches to the localisation of media content: revoicing and subtitling.

Generally speaking, revoicing consists of substituting the original dialogue soundtrack with a newly recorded or live soundtrack in the target language (Chaume 2006), though it also encompasses practices in which the original soundtrack is preserved (e.g. voiceover) as well as the description of visual information in AD. Subtitling operates by displaying written chunks of text that correspond to (condensed), synchronised translations of the original aural utterances as well as some of the visual input contained in the source programme. For authors like Becquemont (1996, 146) both modes can be perceived negatively insofar as they either replace a soundtrack or deface the screen by adding text. In today's mediascape, both revoicing and subtitling encompass media accessibility practices – such as audio description (AD) for people who are blind or partially sighted and subtitling for the d/Deaf and the hard of hearing (SDH), among others – whose primary aim is to bridge sensory disabilities that may hinder the reception and enjoyment of audiovisual content. Their inner differences notwithstanding, the common axis across all the modes is the multisemiotic nature of the source and target texts, in which aural and visual input cohabit. The existence of spatial and temporal constraining factors (Mayoral et al. 1988) justify the utilisation of AVT-specific software tools that allow translators to deal with technical dimensions.

The audience's preferences for revoicing or subtitling have traditionally been studied – especially in Europe – in terms of nation- and language-bound conventions (Georgakopoulou 2012). This scholarly *idée reçue*, which has been propagated for decades, is described by de Linde and Kay (1999, 1) as follows: "subtitling is the favoured form in Portugal, Greece, Wales, Holland, Luxembourg, Ireland, and parts of Belgium. Dubbing is the preferred alternative in France, Germany, Britain, Spain and Italy." However, as posited by Orrego-Carmona (2018, 377), "there is emerging evidence that digital technologies and the changing habits of media

consumption that digitization has brought about are blurring traditional distinctions between subtitling and dubbing countries," a perception also noted by Chaume (2012). Some examples of the recent changes that have occurred in the localisation of audiovisual programmes are elucidated by Chaume et al. (2018, 11) in the following terms:

> For instance, despite the fact that Portugal has an outstanding subtitling tradition, the audience share for dubbed products is on the rise. Other primarily-subtitling countries, such as Denmark, have recently experimented with dubbed films for younger audiences. A further significant trend can be noticed in subtitling countries such as Greece, Morocco, Egypt, Jordan and other North African countries which are now dubbing Latin American and Turkish soap operas. Furthermore, in Iran, there is a trend of reverse dubbing, that is, the industry has started to dub Persian products into English and Arabic. In Japan, films are dubbed on TV, though the same TV stations also broadcast subtitled films at midnight. In Africa, there have also been some instances of dubbing in the Nollywood scene.

Both revoicing and subtitling encompass many related subtypes, some of which contain a mixture of features found in either of the two. The following sections offer a depiction of today's most common AVT modes, focusing on the key components that should be borne in mind when developing and implementing purposeful curricula and pedagogical methodologies for training the audiovisual translators of tomorrow.

2.3.1 Revoicing

Revoicing is a hypernym that covers different practices, most of which are based on the partial or total replacement of the dialogue contained in the original audio track. The two main practices are (lip-sync) dubbing and voiceover. Whereas the latter is usually inexpensive, the former is more financially onerous as it has traditionally required many more resources (e.g. a dubbing studio, sound engineers, a director, and voice talents), though the expansion of cloud revoicing has recently reshaped dubbing workflows, thereby enhancing remote work and reducing the need for hardware and onsite equipment.

There are several revoicing taxonomies, which vary greatly depending on their authorship. For instance, Luyken et al. (1991, 63) identify lip-sync dubbing, voiceover, narration, and free commentary; Karamitroglou (2000, 4) differentiates between lip-sync dubbing, voiceover/narration, and free commentary. This chapter utilises the taxonomy proposed by Chaume (2012). According to Whitman-Linsen (1992) and Chaume (2012), the

work of revoicing experts, especially in interlingual dubbing, has traditionally taken place after a dubbing company is commissioned with the revoicing of a programme into one or several other languages. Linguists often use text editors and have access to the clips with video players, but the technical component is often dealt with separately at the studio by professionals other than translators, which can include dialogue writers, dubbing directors, and assistants. Contrary to subtitling (see Section 2.3.2), in which technical considerations play a fundamental role in the ways in which linguists engage with AVT work, the emphasis for revoicing experts has traditionally been put on the adaptation of text, taking into account synchronies and dialogue segmentation. However, there are new technologies, such as AI systems, that can edit the facial expressions of actors with *facial reenactment* (Patel et al. 2022). According to Chaume and de los Reyes Lozano (2021), the latest cloud revoicing systems unite all dubbing phases, from scripting to the recording of the dubbed audio track by the voice actors, thereby contributing to the decentralisation of dubbing tasks, which used to involve highly technical processes at dubbing studios (Chaume 2012).

2.3.1.1 Dubbing, Partial Dubbing and Off-Screen Dubbing

Dubbing, also known as *lip-sync dubbing* (Luyken et al. 1991), consists of replacing the original soundtrack of a film, or any other audiovisual production, containing the source language dialogue, with another track on which the translated dialogue exchanges in the target language have been recorded (Chaume 2012). From a strictly technical point of view, dubbing can be defined as an activity in which a new recording of dialogue and sound is integrated into an existing audiovisual product. Although dubbing can be either interlingual or intralingual, it is most often considered an interlingual practice and is frequently practised in so-called dubbing countries,[3] including primarily Austria, Brazil, China, France, Germany, Italy, Japan, Spain, and Turkey, among others. In other countries, particularly in the Anglosphere, dubbing is still frequently used in animation and cartoons (Pageon 2007; Lallo and Wright 2009), though in recent times, mainstream lip-sync dubbing is becoming more widespread in English-speaking countries and "the practice is currently being revamped and going through an experimental phase, finding its feet in the dubbing world among more consolidated dubbing industries" (Hayes 2021, 19).

The fact that the dialogue soundtrack is replaced with one in another language has many implications. Firstly, the translated dialogue lines need to be accurately synchronised with the visuals and main soundtrack as synchronisation issues disrupt and detract from the quality of the viewing and can cause frustration. Secondly, the dubbing has to maintain the

suspension of disbelief that characterises certain audiovisual productions like films and TV series (Caillé 1960; Bosseaux 2015; Spiteri-Miggiani 2019), i.e. avoiding any potential detraction from the audience's tolerance towards accepting the fictionality of the audiovisual programme.

One of the key characteristics of dubbing is threefold synchrony (Luyken et al. 1991; Whitman-Linsen 1992; Agost 1999; Chaves 2000; Chaume 2004b; Spiteri-Miggiani 2019), namely *phonetic* (matching the translation with the actor's lip movement), *kinetic* (matching the translation with the actor's body movement), and *isochrony* (matching the translation with the duration of the actor's utterance). Respecting these various synchronies plays a core role in the translation and adaptation of the dubbing script, which requires the use of language- and country-bound dubbing symbols, or notations, whose aim is to "help dubbing actors imitate the screen actors' paralinguistic signs: sounds, pitch, tone, volume, primary voice qualities, etc." (Chaume 2014, 58). The implementation of these three synchronies, along with the production of appropriate register, grammar, and diction, "is the result of a conscious agenda to domesticate the translated text, so that viewers do not realise that what they are witnessing on screen is a translation" (Chaume 2020, 113).

According to Spiteri-Miggiani (2019, 25), the basis of any dubbing commission is the dubbing script, i.e. "the translated, adapted and synchronized target language dialogue list that may encompass additional paratextual features (such as dubbing annotations, time codes, tempo markers, and loop segmentations)." There are three main phases to prepare a dubbing script: translation, adaptation, and loop segmentation. The linguistic transfer that takes place in the translation phase of a dubbing project is only one of the many tasks carried out by the translator. The dialogue writing, conceived as the "creation of a credible, convincing oral target text" (Chaume 2012, 37), is also a key component of the dubbing process because it "implies remoulding a translated dialogue list into one that is to be recited by dubbing actors and that is to act as a working tool in the recording studios" (Spiteri-Miggiani 2019, 25).

Once the translation has been completed, it is customary to segment dubbed scripts into *takes*, also known as *loops*, which are dialogue lines that have been numbered and allocated a time code of entry. According to Chaume (2012, 47), "historically, translations were divided into short portions of text because dubbing actors had to memorize all their dialogue lines." To identify takes, the dialogue writer should include, at least, the in (and out) timecode, the number of the take and the name of the character or narrator speaking, though this is not always the case. Take segmentation differs enormously depending on each dubbing country (Chaume 2007) – for instance, in Spain, takes comprise eight to ten lines, of which one voice talent cannot be assigned more than five; in France, there is no

limit to the number of lines permitted per take and the change of take is triggered by a maximum duration of one minute; in Germany, takes usually contain five lines only, and, in Italy, they can have over twelve.

Non-verbal information (e.g. when speakers are on or off screen and when a speaker is shouting) is indicated in the dubbing scripts with the help of notations. These are often company-specific as well as country- or region-specific (Chaume 2007, 2012), though some of them are widely used (e.g. *(ON)* and *(OFF)* for on and off screen, respectively). A more recent account of frequently used dubbing notations can be found in Cerezo-Merchán et al. (2016) and Spiteri-Miggiani (2019).

Prefabricated orality is a prevalent linguistic phenomenon in most original and dubbed programmes, and is the reason why the script translation task requires a thorough understanding of the main features that characterise spontaneous discourse, both in real life and in audiovisual texts (Baños and Chaume 2009). As straightforward as this may seem, the representation of orality in written (dubbing) scripts poses many linguistic challenges and intricacies as translators use audiovisual texts (often in writing forms such as subtitle templates or dubbing scripts) to recreate realistic, credible oral texts and deliver a written product to the client. In order to echo the features of spontaneous oral register, there must be a sensible exploitation of the flexibility of syntax, colloquial language, word derivation, style, and rhythm, while at the same time producing credible dialogue exchanges and complying with lip-sync constraints (Chaume 2012).

Partial dubbing, also known as *half-dubbing*, *phrase-synching*, *concise synchronisation* (Hendrickx 1984), and *semi-* or *simil-sync*, has taken different forms across the years. Originally, it consisted of the combined use of lip-sync dubbing for the leading characters, with few voice talents, and narration for the remaining secondary characters (Chaume 2012, 3). More recently, scholars seem to agree that partial dubbing follows the Russian tradition of Gavrilov translation, thus using multiple voices for the translations but still utilising voiceover techniques (Matamala 2018). Chaume (2013, 108) offers a more detailed description, arguing that:

> [Partial dubbing] is more elaborate than conventional voice-over and is used to translate fictional texts in which a male reader reads the leading male's dialogues in a film or series, a female reader reads the leading female's dialogues, and sometimes a third voice reads the dialogues of other main characters in the film (a child's voice for a boy or girl, for example); all the other characters' dialogues are read by one other voice.

It seems that today's applications of partial dubbing have been subject to multiple transformations, leading to blurrier divides between voiceover – which

Sileo (2018) considers synonymous with half-dubbing – and dubbing. For instance, the use of new voiceover and dubbing approaches for reality TV in Spain, characterised by "flexible synchronicity" (Baños 2019a, 279), is only one of the many and versatile uses of this term, which "has resulted in terminological confusion and nowadays these terms need to be carefully defined as they can lead to different interpretations" (Baños 2019a, 281).

Off-screen dubbing, also known as *narrations*, refers to "a transfer mode in which the original soundtrack is replaced by the target soundtrack, making the original words inaudible but not requiring lip synchronization because the speaker is off-screen" (Matamala 2020, 134). In off-screen dubbing, these so-called narrations are timed so as to avoid clashes with the visual syntax of the original programme with information being prioritised and then summarised to convey the most important details from the verbal input of the programme. In this respect, it constitutes a technique that is often used alongside voiceover with the notable difference that the original soundtrack is fully removed.

2.3.1.2 Voiceover

Voiceover is a narrative technique inherited from character narrators and third-person narrators or commentators, who used to fill silent gaps by voicing narratives in newsreels, shorts and documentaries, and later in fiction films (Kozloff 1988). Voiceover is also known as *single-voice translation* and *lektoring* in countries like Poland and *half-dubbing* in Italy (Sileo 2018), and it is often defined as "the final product we hear when watching a programme where a voice in a different language than that of the original programme is heard on top of the original soundtrack" (Orero 2009, 132). Voiceover is usually associated with non-fictional programmes (with some exceptions); in these programmes, voiceover might coexist with other AVT types such as subtitling or off-screen dubbing.

Drawing on previous works by Luyken et al. (1991), Gambier (1996), and Franco et al. (2010, 26), voiceover is defined as "a faithful, literal and complete version of the original audio." The somewhat controversial use of terms like *faithful* and *literal* notwithstanding, this statement could be interpreted in the sense that voiceover traditionally employs foreignising techniques to enhance authenticity. Alongside saving money, this is the reason why voiceover is commonly used for the translation of documentaries, interviews, low-cost reality shows and specialised productions (e.g. medical online courses, technical instructions and tutorials), where synchronicity is laxer than in lip-sync dubbing. The emphasis on the intentional similarity of the initial and final words or phrases between the source and the target narrations, which resemble each other semantically and structurally, is an attempt to create an illusion of faithful rendering

for the audience (Franco et al. 2010, 26). The use of more than one voice depends on the idiosyncrasy of each commission; however, the standard practice in the case of documentaries is for a single male or female voice talent to interpret the narrator.

2.3.1.3 Interpreting and Sign Language

Both simultaneous and particularly consecutive interpreting have been rarely used in AVT (Chaume 2013), especially since the invention of electronic subtitles. Nonetheless, they are still practised to translate certain TV, radio, and live programmes, as well as in conferences, theatre and cinema festivals where tight deadlines and funding constraints can be common (Bartoll 2015). Working conditions seem to vary substantially and whether interpreters have access to the programmes and scripts in advance depends on the commissions. When the interpreter is given a dialogue list or script, the activity may be considered a form of *sight translation*.

When an interpreter translates orally what the different actors and narrators enunciate on screen, the target audience can still listen to the original soundtrack. Simultaneous interpreting is a practice most often restricted to film festivals and seems to have been inspired by silent film narrators, known in Japan as *benshi*, "who narrated films and enacted characters while standing or sitting beside the movie screen" (Fujiki 2006, 68). Similarly to the Japanese *benshi* are the French and Canadian *bonimenteurs*, the Hispanic *comentadores* or *explicadores* and the sub-Saharan African video-jockeys (Fuentes-Luque 2019), all of whom preceded interpreters in the film industry.

According to Bartoll (2015), sign language interpreting should fall under this category too. Sign language is frequently used on TV, especially in informative contexts (e.g. news, interviews, and talk shows), though it is also common in the performing arts (e.g. operas and musical theatres) to address the needs of viewers who are d/Deaf or hard of hearing.

2.3.1.4 Audio Description

AD is a practice that has traditionally been understood as the use of speech to make audiovisual material "accessible to people who might not perceive the visual element themselves" (Fryer 2016, 9) as well as to inform them of the source of some sounds that are relevant to fully understand the plot. According to Whitehead (2005, 960), AD involves the production of

> an additional narration that fits in between dialogue to describe action, body language, facial expressions, scenery, costumes—anything that will help a person with a sight problem follow the plot of the story. It is

> a vital service for anyone with a sight problem and is available on television, video, DVD, at cinemas, theatres, sports grounds, and museums.

Supranational and national accessibility laws have allowed for the expansion of AD, understood by some as a type of *mediation* (Braun 2007), especially in the case of public broadcasting services, in an attempt to ensure equal access to media content for visually impaired audiences (Greco 2016, 2018). Relevant examples are the United Nations' *Convention on the Rights of Persons with Disabilities* (2006) and the European Union's *European Accessibility Act* (2019), true milestones in the quest for further inclusion and integration of disabilities in the realms of politics and society (see Section 2.1.1).[4]

Since their inception, guidelines for AD projects have been led by intuition and convention (Braun 2008) and tend to lack in homogeneity at a supranational level, even if some unsuccessful attempts have been made at its systematisation (e.g. Mazur and Chmiel 2012). There are English-language guidelines created by associations such as the Audio Description Coalition in the US (ADC 2007/2009) and the Office of Communications in the UK (Ofcom 2000), AENOR (Spanish Association for Standardisation and Certification) (2005), as well as the useful cross-national guides produced by Rai et al. (2010) and ADLAB (Audio Description: Lifelong Access for the Blind, 2011–2014, adlabproject.eu), which need to be noted as some of the main attempts at unifying current practices in AD. Despite their sharp differences: "the common denominator across all the guidelines is that description should only be added during pauses in a film/TV programme and at no cost should the description undermine the film/television programme" (Rai et al. 2010, 3).

Often incorporated alongside AD, especially in live performances and the performing arts, is audio subtitling, which is the oral rendering of subtitles in combination with the audio-described scripts or narrations. Audio subtitling is used to deal with foreign programmes in countries where these programmes are subtitled, since foreign productions in dubbing countries are often audio-described on the basis of the dubbed version. The reading aloud of the subtitles and scripts is usually performed "to make foreign TV programmes more accessible for those who are visually impaired, and also for the elderly and for people with language impairments" (Braun and Orero 2010, 173).

2.3.1.5 Free Commentary

Free commentary is an adaptation practice whereby a clip is manipulated to produce a revoiced programme for specific purposes. This practice can be used in sports programmes but is more often associated with comedians.

Some scholars such as Baños (2019b) have contended that *parodic dubbing* is a more appropriate term when this is done for comedic purposes, but it should be noted that parodic dubbing necessarily implies a more accurate synchronisation with the visuals (e.g. characters are dubbed) compared to the laxer synchronisations of free commentaries. Therefore, parodic dubbing is hereby equated with *fun*dubbing (see Section 2.3.1.6).

In free commentaries for comedic purposes, there is no aim to reproduce content faithfully or to create a rigorously synchronised translation; instead, a free commentary is explicit and informal and can contain more details as well as jokes and funny comments. In Russia, the film translator Goblin, cognomen for Dimitrii Iur'evich Puchkov, started making parodies of internationally acclaimed blockbusters in 1995, which gained wide distribution in the wake of file-sharing platforms. Despite their poor technical quality, "Goblin's translations reached mass audiences, as his fans were able to copy and distribute extracts or full versions of his works via informal networks or on the internet" (Strukov 2011, 238). Goblin's creations constitute a domesticating practice that utilises translations to re-create humour and disseminate cultural products that are semantically and semiotically at odds with their original counterparts.

2.3.1.6 Remakes

A remake is a new production or adaptation of a film in a different language. Although this practice does not seem to fit in traditional AVT-specific taxonomies, recent studies have argued that they can be considered "a form of composite translation" (Evans 2014, 310). For some authors, remakes are recontextualisations of a film with the values, ideology and narrative conventions of the new target culture, and they become "a kind of appropriation by changing the language and also to a certain extent the plot, with all its values and assumptions, the character and the cultural context" (Gambier 2003, 46). If the first remakes, done between 1930 and 1950, were European adaptations of USA films, the early noughties saw the advent of Hollywood remakes based on European and Asian feature films (Smith and Verevis 2017). At present, major production companies, notably Netflix, are shifting towards original films and TV series that are created in languages other than English and then subsequently localised in an array of languages rather than remaking them in English. Hollywood producers and large media distributors like Netflix are also moving away from remakes and favouring the mainstream lip-sync dubbing of international films and TV productions in English (Hayes 2021). Along with the already established subtitling tradition, this new approach to the localisation of audiovisual media has far-reaching implications on the curtailing of US remakes, which seem to be fading away.

2.3.1.7 Amateur Dubbing

Amateur dubbing is a type of translation performed by fans (Wang and Zhang 2015). Also known as *fandubbing and non-professional* dubbing, it is a form of user-generated translation that fans do of their favourite programmes, and which can be either intralingual or interlingual. This phenomenon has grown extensively in the last few decades, probably thanks to the democratisation of technology and the improvement of internet connections. Fandubbers usually work with trailers, cartoons, TV series and other audiovisual productions that have not yet been distributed in their language or country. Their objective is to make them available as soon as possible, almost exclusively online and for free. Fandubbers translate the videos using digital sound editing software to alter the soundtrack of the original version and to then insert a newly dubbed track that has been recorded separately.

*Fan*dubs are sometimes created for humoristic purposes, and this phenomenon is known as parodic dubbing, although this term co-exists with *fun*dubbing, gag dubbing, dub comedy, and fake dubbing. Fundubbed versions are not new and have been produced since "the consolidation of sound film and post-synchronisation techniques, involving a variety of audiovisual genres and in a wide range of contexts" (Baños 2019b, 3). Furthermore, according to Baños (2020), fandubs in the form of parodic dubbing may also precede fansubs. *Fan*dubbing traditionally refers to "manifestations of participatory and convergence culture involving the use of dubbing, regardless of whether these are undertaken by fans, amateurs who do not deem themselves fans, or even dubbing professionals" (Baños 2019c, 155). This has resulted in a terminological conundrum, following similar research in subtitling (Díaz-Cintas 2018), which has led to a new conceptualisation in order to encompass other forms of dubbing – e.g. *activist*, *altruist*, and *promotional* – under the umbrella term "cyberdubbing." As explained by Baños (2019c, 156), this latter term encompasses practices that range "from the promotion of specific audiovisual material and the altruistic dissemination of dubbed material, to the criticism and instigation of socio-political changes."

2.3.2 Subtitling

Subtitling is a superordinate term for practices that imply the reproduction on screen of original dialogue, sounds and text in the form of "snippets of written text superimposed on visual footage that convey a target language version of the source speech" (Pérez-González 2014, 16). Subtitling can be either *interlingual* or *intralingual*, according to whether they are in the same or a different language to the one heard in the original soundtrack.

Furthermore, subtitles can be closed or open, depending on whether they can be removed or not from the screen. Another distinction is made by Gottlieb (1994, 104; emphasis in original), for whom "vertical subtitling takes speech down in writing, whereas diagonal subtitling being *two-dimensional*, 'jaywalks' (crosses over) from source-language speech to target-language writing."

When produced in advance for pre-recorded programmes, subtitles take the form of pop-on or pop-up text that can appear anywhere on the screen and remain visible for a limited period of time before they disappear. As opposed to this way of working offline, subtitles can be produced online for (semi-)live or real-time events, in which case they are usually rolled-up or scrolled, thus appearing "from left to right and when the line is filled it scrolls up to make way for a new line, and the top line is erased to give way to a new bottom line" (Díaz-Cintas 2013, 279). In the 1980s, laser techniques were introduced for subtitles to be burnt onto celluloid, especially for theatrical releases, but these often left little room for changes. Conversely, electronic subtitles, which were originally utilised in film festivals, are projected onto the film copy and can be easily edited if need be. They have now become the most common type as they do not require the (physical) burning of the subtitles and can therefore be added to video files with video encoding software.

Spotting, also known as *authoring, mastering, text timing,* or *cueing*, consists of setting the in and out times of the subtitles so that they appear and disappear in synchrony with the spoken dialogue and what is being shown on screen as well as in a visually appealing fashion that does not detract from the visuals. The spotting ought to mirror the rhythm of the film and the performance of the actors, and be mindful of pauses, interruptions, and other prosodic features in the original speech, all with the aim of allowing for the smooth reading of the subtitles. Close attention must also be paid to particular factors, such as leading-in and lagging-out times. Some scholars, like Karamitroglou (1998), recommend that subtitles be cued a few frames after an utterance starts to avoid confusion, and that subtitles must not linger on screen more than two seconds after the end of an utterance. By today's standards, such recommendations would constitute an infelicitously long delay and ought to be avoided since synchronicity issues are discomforting for the viewer and can have a negative impact on readability. As a rule of thumb, subtitles ought to have a minimum duration of one second (i.e. 24, 25, or 30 frames depending on the frame rate) and a maximum duration of five to seven seconds. The so-called *six second rule* (see Brondeel 1994), however, posits that subtitles ought to stay on screen for a maximum of six seconds and is widely encouraged in subtitling manuals nowadays (Gerber-Morón and Szarkowska 2018).

Subtitles are traditionally composed of one or two lines, although it is common to come across three-liners, and even four-liners, on programmes captioned for people who are d/Deaf or hard of hearing. The traditional way of displaying interlingual subtitles is centred, both horizontally and vertically, and they are placed at the bottom of the screen except when they risk being illegible because the background is too light at the bottom or whenever important action or essential data appears in said position. Other practices like integrated titles (see Section 2.3.2.5) and fansubbing (see Section 2.3.2.6) allow for more wriggle room in the positioning of subtitles inasmuch as the subtitler can place subtitles more creatively to draw the viewer's attention to particular parts of the screen where the action is happening as illustrated in Figure 2.3.

Although laser subtitles are always white, as they have been burnt onto the celluloid, electronic subtitles can have different colours, as they are projected onto the images. Depending on the commission, colours can vary, though yellow and particularly white are preferred in interlingual subtitling. Non-serif fonts (e.g. Arial or Helvetica) are used, and although the size varies across different pieces of software – the range is between 25 and 40 points – the most common being 30. Subtitle characters are almost always shadowed or black contoured so that they stand out against the images. Should there be legibility problems with very light backgrounds, they may be encased in a grey or black box.

The pixels occupied by subtitles on the screen have a direct implication on the number of characters, including spaces, that any of the two lines

Figure 2.3 Example of a subtitle from P. Middleton and J. Spinney's *Notes on Blindness* (2016) © Into Darkness Limited.

can accommodate. Díaz-Cintas and Remael (2021) have recently argued that, with the arrival of digital media, subtitling editors were enhanced and started working with proportional lettering or variable-width fonts, thus allowing for greater rationalisation of the space available. Therefore, today subtitlers can write as much text as possible as long as the output is contained within the limits of the safe area. Today's guidelines, however, still impose maximum character-per-line (CPL) values on subtitlers; whereas most guidelines have traditionally imposed lengths of up to 35 to 39 characters per line, the likes of Netflix (2016/2022) currently advocates for 42-character lines (i.e. two-line subtitles comprising of up to 84 spaces) across their whole range of languages, except for some like Chinese (16), Korean (16), Japanese (16 horizontal or 11 vertical), and Russian (39).

The reading speed, also known as *subtitle speed* or *display* or *presentation rate* (Pedersen 2011; Sandford 2015), is understood as the relationship that exists between the quantity of text contained in a subtitle and the time that it remains on screen (Díaz-Cintas and Remael 2021) and is calculated by dividing the total number of characters by the time they remain on screen. Generally speaking, the fewer characters a subtitle contains, the lower the reading speed, whereas the more characters it contains, the higher the display rate will be. The reading speed is calculated in words per minute (WPM) or characters per second (CPS); the latter quickly becoming more common in the industry for all languages, as seen in professional guidelines such as the ones distributed by Netflix. Subtitling systems use algorithms to calculate reading speed values, which are usually displayed on each subtitle along with its duration as well as the start and end timecodes. Nonetheless, as not all subtitling systems use the exact same algorithms, reading speed values can differ when exporting subtitle files from one tool and importing them into another (see González-Iglesias 2011). Furthermore, the calculation of the display rate value depends on whether or not the blank spaces that separate words are counted.

Subtitles can end up being less legible in the presence of camera movements caused by the editing of the programme, including scene and shot changes. It has traditionally been considered that when a subtitle crosses over a shot change, the eye goes to the start of the subtitle and reads it again. The research studies conducted on gaze movement and fixation have determined that it is only a small number of viewers who are disturbed by subtitles that cross over shot changes; furthermore, the latter do not necessarily read the subtitle again but immediately jump back to wherever they were reading prior to the shot change according to some of the latest eye-tracking research on this particular topic (Krejtz et al. 2013). Yet, standard practice in the industry is for subtitles to be cued in and out in a manner that prevents them from traversing shot changes, or that at least crosses over in a less perceptible fashion.

In broad terms, subtitling is fast, inexpensive, flexible and easy to produce when compared with revoicing. These are some of the key qualities that make it the perfect translation ally of globalisation and the preferred mode of AVT on the world wide web (Díaz-Cintas 2012). In this sense, subtitling can be said to represent the most successful and economical accomplice of the current processes of internetisation, digitalisation and the audiovisualisation of communication (Díaz-Cintas 2015). With the expansion of subtitled material on social media and videogames, the very concept of subtitling is now being diluted, as videos can now be found without sound but with subtitles, and multimedia products can contain textual instructions that resemble standard subtitles.

2.3.2.1 Interlingual Subtitling

Interlingual subtitling can be understood as a "diamesic translation in polysemiotic media (including films, TV, video, and DVD) in the form of one or more lines of written text presented on the screen in sync with the original verbal content" (Gottlieb 2012, 37). Among interlingual subtitles there can be many sub-varieties depending on the language combination, with *monolingual* subtitles being the most common and simple form as only one language is used to produce the target subtitle template. *Bilingual* subtitles encompass two different languages and are often used in countries and regions where there are multiple official languages (e.g. Belgium, Finland, and Israel). In China, it is common to see subtitles in both Simplified Chinese and English for English-speaking films. In the Anglosphere, bilingual subtitles can be found in multilingual productions (though English utterances are never subtitled); for instance, in the 2024 Polish film *Biala odwaga* [*White Courage*], which depicts the Nazi invasion of Poland, and more specifically the Tatra mountains, both the Germans and the Polish Highlanders (Gorals) were subtitled in English and Polish in the version shown in UK cinemas.

Interlingual subtitles have been commonly used in so-called subtitling countries, although their expansion goes beyond geographical and cultural boundaries. Interlingual subtitles are increasingly being used in the industry inasmuch as DVDs/Blu-rays until recently, and today's OTT and VOD media services, resort to the production of multilingual subtitles to reach a wider audience. Subtitles are characterised by a number of spatial and temporal considerations that necessarily have an impact on their linguistic makeup. Subtitling vendors are usually reluctant to release subtitling guidelines to the public and prefer to share them exclusively with their pools of translators, who are subject to strict confidentiality agreements, ultimately imposed by the end clients. This has been the

traditional attitude, which can be seen as detrimental to the study (and teaching) of professional conventions in higher education, though more recently some companies have decided to make their subtitling guidelines freely available to the public, e.g. Netflix (2016/2022).

In the professional subtitling industry, "in-house guidelines are the most common product-oriented quality tools that many companies have" (Pedersen 2017, 213–214). In most cases, the recommendations differ from one to the other, irrespective of whether they have been created in academic or commercial circles. The rules of the game do not always follow logic or general consensus (Díaz-Cintas and Remael (2007, 104), and there have been many scholarly attempts at devising taxonomies to systematise guidelines, including Torralba-Miralles et al. (2019), Díaz-Cintas and Remael (2007, 2021), Díaz-Cintas (2001, 2003), Karamitroglou (1998, 2000), Ivarsson and Carroll (1998), Ivarsson (1992), Luyken et al. (1991), and Laks (1957).

Subtitling norms usually fall under two main categories, i.e. technical and linguistic. Technical considerations, on the one hand, refer to those aspects that define this professional practice and which usually derive from the multisemiotic nature of audiovisual texts (e.g. synchronising text with soundtrack and visuals) and the technological component (e.g. subtitling software). On the other hand, the main linguistic parameters that affect interlingual subtitling are text reduction, cohesion and coherence, and segmentation and line breaks. In a perhaps less structured fashion, Ivarsson and Carroll (1998) also make reference to linguistically related good subtitling practices, which regard grammar, word order, condensation, coherence and consistency.

The two main technical dimensions of subtitling relate to spatial and temporal features. According to Díaz-Cintas (2013) and Díaz-Cintas and Remael (2007, 2021), subtitles should provide a semantically adequate account of the original dialogue. Subtitles must afford viewers not only enough time to read and understand what is written at the bottom of the screen but also to watch and listen to what is happening. With regards to spatial considerations, subtitles should be displayed in the least distracting manner so that they do not detract from the visuals in general or the plot in particular. The spatial dimension is usually studied in terms of visibility (i.e. subtitles appear in a given on-screen location), legibility (i.e. subtitles can be read against the background), and readability (i.e. subtitles are well segmented and inviting to read). As Fox (2018, 30) argues, "problems with contrast, collisions, and interference seem to be widely accepted as unpleasant, but unavoidable features of subtitles." New research methods and tools, like eye trackers, enable testing on how the audience perceives and receives subtitled programmes (Romero-Fresco 2013, 2015).

General guidance dictates that subtitles should be grammatically and semantically self-contained and flawless, as they serve as a model for literacy insofar as they duly reflect idiomaticity, culture and register, among other linguistic features. The inscription of the original dialogue in the form of written subtitles in the target language is usually accompanied by the deployment of reduction techniques, which may be total (i.e. omission) or partial (i.e. condensation). As Georgakopoulou (2003, 75) explains, "it would never be possible to fit the same amount of text in the two lines available at the bottom of the screen as actors may utter in the voicetrack in the same amount of time." For this reason, subtitles can never be a quantitatively complete and detailed translation of the original dialogue. There are many ways to reduce information, although "no rules can be given as to when to condense and reformulate, or when to omit" (Díaz-Cintas and Remael 2007, 149) on account of the many technical constraints and conventions. At word level, some of the condensation procedures include the following: simplifying verbal periphrases, generalising enumerations, using a shorter near-synonym or equivalent expression, using simple rather than compound tenses, changing word classes, and exploiting short forms and contractions. At clause or sentence level, some of the most frequent procedures encountered in subtitling encompass changing negations or questions into affirmative sentences or assertions, transforming indirect questions into direct ones, simplifying modal verbs, turning direct speech into indirect speech, changing the subject of a sentence or phrase, manipulating the theme and rheme, turning long or compound sentences into simple sentences, switching from active to passive voice or vice versa, using pronouns and other deictics to replace nouns or noun phrases, and merging two or more phrases or sentences into one.

When dividing dialogue, narrations and other content that needs to be translated into subtitles, the ensuing target text is written over the two available lines of a subtitle. One of the golden rules in the profession is that each subtitle must endeavour to contain a complete idea. When the target text spreads across several subtitles, most guidelines recommend using as few subtitle chains as possible (see SUBTLE 2023). The line breaking within subtitles and the segmentation across subtitles ought to be done according to syntactic and grammatical considerations rather than aesthetic rules, since the ultimate objective is to facilitate the reading and understanding of the message in the little time available.

In subtitling, as in other types of written text, punctuation marks and typefaces are utilised to convey paralinguistic information and to contribute to the readability of the message as they inform about the prosody of the speech (e.g. rhythm, tone, pauses, hesitations, orality markers, and intonation). Yet, the traditional approach rests on the assumption that

the fewer punctuation marks are used the better since they take up space on screen, which could be used for the actual message. All signs ought to be used following the rules of the target language grammar although exceptions may be made in cases where signs acquire a particular expressive role in subtitling, like the use of hyphens to indicate multiple speakers and italics for off-screen voices and narrations (see Díaz-Cintas and Remael 2021, 120–132).

Subtitling-specific publications on strategies and techniques include Luyken et al. (1991), Ivarsson (1992), Gottlieb (1992), Lambert and Delabastita (1996), Díaz-Cintas (2001, 2003), and Díaz-Cintas and Remael (2007, 2021). The latter includes many authentic examples of translations that have been produced adequately and purposefully in the interest of reduction.

2.3.2.2 Intralingual Subtitling

Intralingual subtitling, also known as *(closed) captioning* or *SDH* when specifically produced for d/Deaf or hard-of-hearing viewers, has traditionally been carried out to address the needs of people with hearing impairments (Neves 2008). Captions are widely used nowadays to foster a wider distribution of audiovisual programmes on the internet, with many scholars pointing out that intralingual subtitles enhance accessibility for non-native speakers (Romero-Fresco 2019, 11) and have a very positive impact on foreign-language learners too (Vanderplank 2016).

SDH consists of "presenting a written text by transcribing the dialogue exchanges, alongside relevant sound effects, music and paralinguistic features for d/Deaf and hard of hearing audiences" (Zárate 2021, 5). It is used to produce captions that work as "a visual representation of the verbal element that is delivered orally, combined with the pictures shown on screen" (Zárate 2014, 26). These subtitles render not only dialogue but also any further information that is delivered aurally and is considered essential for the understanding of the diegesis (Szarkowska 2020). In SDH, subtitlers transfer dialogue, along with *who said what* information whenever this cannot be accurately inferred from the visuals. This can be done by means of identification labels, colours or displacement of text. Moreover, subtitlers identify, and verbally express how utterances are enunciated (e.g. emphasis, tone, accents and foreign languages, exertion noises), and describe the nature of any relevant aural information (e.g. music, sound effects and environmental noise), so that the d/Deaf and hard-of-hearing viewers are able to pick up all nuances in written form. Spatial and temporal constraints also apply to SDH, although reading speed values tend to be somehow lower than those used in interlingual subtitling (Zárate and Eliahoo 2014), especially in the case of programmes for children and neurodivergent audiences.

SDH conventions[5] include the ones drafted by Linde and Kay (1999) as well as those published by Ofcom (1999) and the BBC (2022). Industry stakeholders have also produced guidelines for freelance linguists (e.g. Netflix). As a minimum, subtitles set out to identify speakers and utterances with the use of colours, name tags and/or strategic placement, especially when their location is problematic (e.g. off screen, unknown voices, narrations, groups of people). Other features that can often be found in SDH conventions are: 1) upper-case letters, normally used to indicate shouting or screaming, and tone of voice (e.g. irony, contempt, surprise); 2) exclamation or question marks within round brackets at the end of the relevant subtitle; 3) non-standard spellings and transliterations for accents and foreign languages, which are occasionally preceded by an explanatory label indicating the speakers' linguistic variety; 4) inverted commas to draw the viewer's attention to a specific pun or instance of verbally expressed humour; 5) descriptive tags in block letters, with or without brackets, to verbally explain sound effects; and 6) a musical symbol (e.g. #, ♪, ♫) to indicate lyrics. In addition to these recommendations, subtitles ought to keep internal and external redundancy, produce grammatical structures in a simple and easy-to-read fashion, and foster short memory and comprehension by delivering information coherently throughout (Neves 2009).

Similarly to other access services, such as AD, SDH has seen a rapid evolution in the last few decades, particularly from a quantitative perspective, thanks to the enforcement of international and national legislation, such as the EU's *Audiovisual Media Service Directive* (2010). In some countries such as the UK, where SDH has been produced since the early 1980s, the percentage of captioned programmes currently reaches 100% for public service television productions (Evans 2003).[6] Interestingly, in a research study conducted among users of captioned content, Verizon Media and Publicis Media (2019) argued that 69% of the people surveyed in the US reported watching videos with no sound in public spaces, and 80% of subtitles users did not have a hearing impairment. Captioning can therefore be an effective way to cater for viewers' needs and make media content more accessible for all.

2.3.2.3 Surtitling

Surtitles, also called *supertitles* in the US, were originally invented in the 1980s to translate live opera and then spread to other live performances like theatres. They can be either intralingual or interlingual and are normally displayed above the stage by means of projection or presentation software (Burton 2009, 59), although nowadays they can also be watched in front of the patron's seat, or on mobile phones and tablets.

Surtitles convey the "linguistic contents of a theatre play presented to the audience concomitantly to the performance" (Carrillo-Darancet

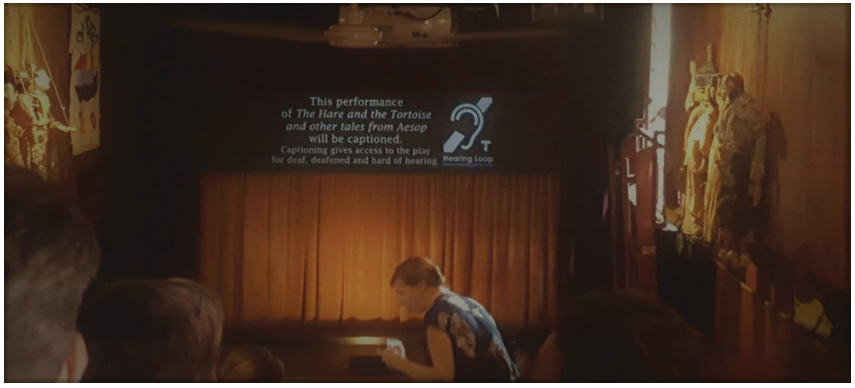

Figure 2.4 Puppet Theatre Barge auditorium with caption unit as seen in Zárate (2021, 96) © Soledad Zárate.

2020, 174). According to Mele-Scorcia (2018), surtitles are unobtrusive but remain condensed and reduced transcriptions or translations. Surtitles need to be synchronised with a live performance, in which unexpected changes may occur. Therefore, although the surtitles can be produced before the actual event, their timing cannot be predetermined as it will vary depending on the acting (Desblache 2007). In this sense, the work of the surtitlers is substantially different from that of the subtitlers who deal with pre-prepared, interlingual subtitles (Low 2002). Surtitles can also be adapted creatively so as to cater for the needs of the d/Deaf, the deafened and hard-of-hearing audiences in live performances such as puppeteering for children, as illustrated in Figure 2.4.

In a similar fashion to interlingual subtitles, the aim of interlingual surtitles is to convey the overall meaning of what is being enunciated or sung, while still complying with temporal and spatial limitations (Ippoliti 2009). Yet, unlike in the case of subtitling, some clarifications (e.g. reminders of characters' names) may be added to the surtitles so that the audience can follow the plot more easily.

2.3.2.4 Live Subtitling

Live subtitles, also known as *real-time subtitles*, are produced at the same time as a programme is being broadcast or screened and therefore are often fast and verbatim (Romero-Fresco 2018b). They used to be produced by "stenotyping or a pool of subtitlers working with dual keyboards" (Díaz-Cintas 2013, 279), but nowadays *respeaking* has taken over as the preferred

technique in most Western European countries. Respeaking, also known as *speech-based live subtitling or real-time subtitling via speech recognition*, is the production of subtitles for live programmes or events by means of speech recognition, whereby a respeaker listens to the original dialogue and *re-speaks* it through a speech recognition piece of software, which is connected to a subtitling editor and then displays the text as subtitles on the screen with the shortest possible delay (Romero-Fresco 2011). Respeaking is more cost-effective and time-efficient than any other live subtitling methods, but there are countries, like Canada and the US, where stenotypists are still preferred over respeakers by many broadcasters (Romero-Fresco 2018b).

Live subtitles produced by respeakers were traditionally intralingual and appeared in teletext format (Evans 2003) since they targeted hearing-impaired audiences (Arumí-Ribas and Romero-Fresco 2008; Eugeni 2008). In recent times, however, live interlingual subtitling is becoming increasingly common. Interlingual respeaking might be perceived as a more complex and cognitively demanding activity than intralingual respeaking, although experimental research has not been able to fully prove this (Szarkowska et al. 2016).

Respeaking is a rather novel activity, and, as noted by Romero-Fresco (2012), the profession was first introduced in Europe in 2001, whereas the provision of training in this field did not start until 2007. One of the earliest works on respeaking training was by Arumí-Ribas and Romero-Fresco (2008) who established the main differences between respeaking and closely related practices like simultaneous interpreting and subtitling as well as devising a taxonomy of respeaking-specific skills and providing a set of exercises aimed at fostering said skills in the classroom.

2.3.2.5 Integrated Subtitles

Integrated (sub)titles are also known as *creative subtitles*, *impact captions*, *dynamic subtitles*, or *authorial titles*. They override traditional subtitling conventions, especially traditional positioning and layout settings, in an attempt to offer a more aesthetic viewing experience. In so doing, they highlight the visual side of captions by utilising moving text (also known as *kinetic typography*) as one more communicative element, thereby enhancing the subtitles' creative potential, which prevails over their invisibility (Romero-Fresco 2019). These subtitles are usually placed on different areas of the screen and try to follow the plot as closely as possible (Fox 2018), and, contrary to traditional subtitling, spatial constraints and restrictions are used to the subtitler's advantage. As posited by McClarty (2012, 144), creative subtitling "responds to the specific qualities of the individual film text, giving the creative subtitler more freedom to create an

aesthetic that matches that of the source text, instead of being bound by standard font types, sizes and positions." Integrated titles, in short, supposedly reduce reading time, by complementing the visuals and minimising the effort required by the viewer (Kruger 2018). Additionally, as claimed by Romero-Fresco and Fryer (2018, 13), they allow "viewers to spend more time on the images, helping to bridge the gap between the experience of the original viewers and that of the viewers of translated/accessible versions, while at the same time providing an exciting opportunity for collaboration and innovation between filmmakers and translators."

Integrated titles can be said to draw from the concepts of abusive (Nornes 1999) and hybrid (Díaz-Cintas and Muñoz-Sánchez 2006) subtitles, which are common in amateur practices (see Section 2.3.2.6). As Fox (2018, 69) claims, the benefits of integrated titles over traditional subtitling are many, especially since subtitles with a conventional layout "can cover interesting or plot-relevant image regions and objects" and can hypothetically disrupt the image composition, leading to a potential loss of aesthetic value. The BBC's TV series *Sherlock* (Mark Gatiss and Steven Moffat 2010–2017), for one, has particularly attracted much scholarly attention due to the profuse appearance of on-screen text that "challenges the presumption that screen media is made to be viewed, not read" (Dwyer 2015, online). As illustrated in Figure 2.5, text on screen can be utilised to transmit essential information; in this case these diegetic descriptions are

Figure 2.5 Example of text on screen in BBC's *Sherlock* (2010–2017) © BBC and Hartswood Films.

the inner workings of Sherlock's mind and his thought process on the personality traits of someone he has just met.

Under the auspices of the BBC, eye-tracking experiments with excerpts from *Sherlock* were carried out to ascertain whether integrated titles were favoured over traditional subtitles by monolingual English speakers. They concluded that the viewers who used integrated titles "were more immersed in the action, and missed less of the video content" (Brown et al. 2015, online). Arguing that it was a less disjointed experience, their viewing patterns were considered similar to people who viewed the clip without subtitles. Eye-tracking studies on the integrated titles used in *Sherlock* have also been conducted by Fox (2016, 2017), who has recently produced creative subtitles for Pablo Romero's latest film documentary (2022), from which an example is shown in Figure 2.6.

Similarly to the production of 3D subtitles, the placement of integrated titles on screen has to be properly pondered so that they can become an integral part of the aesthetic of the whole production. This, of course, makes this practice rather onerous as the spotter, or subtitling mapper, needs more time to complete the task and each subtitle in each language has to be considered individually, in relation to the plot and the visuals.

Integrated titles can be further automatised utilising a wide range of technologies, which often include face detection and recognition, lip motion analysis, and visual saliency analysis. Hong et al. (2011) have developed a

Figure 2.6 Example of creative subtitle in *Where Memory Ends* (2022) © Pablo Romero-Fresco.

system that can recognise the speaker and uses visual analysis of the scene to identify the potential placement for a subtitle. This is done with the help of a software program that recognises talking faces for each piece of script as well as nonintrusive regions where the subtitles can be placed.

Scholars such as Brown, Jones and Crabb (2015), Fox (2016), Kruger et al. (2015) and Kruger et al. (2018) have carried out user experience research with the help of eye trackers, concluding that this practice has the potential to improve the viewing experience, though, to do so successfully, more resources need to be invested and closer collaboration with film directors and producers is called for (Romero-Fresco 2019). Nevertheless, research on the integration of this new practice in pedagogical environments is still scarce if at all present.

2.3.2.6 Amateur Subtitling

Fansubbing, short for *fan subtitling*, is "a strategy to circulate copyrighted content within an alternative (not completely legal) framework and, as pointed out by the early studies on fansubbing, people creating subtitles for the shows did not take into account the professional standards widely accepted in professional subtitling" (Orrego-Carmona and Lee 2017, 5). Also known as *amateur* (Bogucki 2009) or *non-professional* (Orrego-Carmona and Lee 2017) subtitling, fansubbing is a translational phenomenon that remained practically untouched by scholars until very recently.

A prime example of "user-generated translation" (Remael 2010, 12), it started as an amateur translation movement of people interested in Japanese anime in the United States in the 1980s. As discussed by Díaz-Cintas and Muñoz-Sánchez (2006), these amateur translations aimed to bridge the gap between the scarce official commercial distribution of anime and the large number of fans eager to consume them in languages other than Japanese. The phenomenon soon evolved to encompass the translation of any kind of audiovisual programme, especially of TV series from the US (Massidda 2015). In recent years, fansubbing has grown exponentially and branched out into new activities on the internet, which has led to a whole new conceptualisation of this ecosystem under the umbrella term of "cybersubtitles" (Díaz-Cintas 2018, 132). In addition to fansubbing, this concept also encompasses two other main types of subtitles, namely, guerrilla subtitles, which are understood as "a practice that rebels against or resists legal media and translation frameworks" (Dwyer 2017, 123), and, altruist subtitles, usually undertaken by individuals with a close affinity to the project on hand, such as Khan Academy and TED Talks (Díaz-Cintas 2018).

Some fansubbing communities provide their volunteers with a set of established guidelines, which do not conform to the usual standards

regulating the practice of commercial subtitling. Given the interconnectedness between these different practices, however, Massidda (2015) portended that a hybridisation of approaches, merging professional and fansubbing conventions, is to be expected. Moreover, the widespread and almost immediate availability of these free amateur subtitles on the internet has skewed consumers' habits so deeply, and visibly, that many media companies, including TV channels and VOD platforms, soon moved to *simulcasting*, that is, the releasing of programmes simultaneously in various countries so as to counteract fansubbing activities.

Fansubbing has been theorised as a social movement propelled by the fact that "digital technology has empowered mass media by making it a more interactive experience, thus giving individuals the opportunity of being not only information receivers, but also information sources" (Díaz-Cintas 2018, 131). Activists and fandom culture collectives utilise subtitles not only to release the most recent episodes of their favourite TV series and shows, but also to share and spread their socio-political agendas. In countries where censorship bodies monitor and filter audiovisual productions prior to their distribution nationally, fansubbing constitutes a subversive practice by means of which viewers can access less biased translations (Wang and Zhang 2017).

The study of fansubbing has focused primarily on aspects around the *para*-profession (Orrego-Carmona and Lee 2017), community dynamics (O'Hagan 2009; Pérez-González 2013; Li 2015), activism (Pérez-González 2016), and geopolitics (Dwyer 2012). Other research avenues that have been ventured into are those that examine fakesubs, crowdsubtitles, and volunteer subtitles (Díaz-Cintas 2018). Fansubs have also been studied in terms of their suitability for the learning and teaching of foreign languages (Bolaños García-Escribano 2017).

The next section sets out to explore the main characteristics of interlingual subtitling in the industry so that any teaching in the field adheres to professional standards and conventions.

2.4 Audiovisual Translation Quality Standards and Evaluation

AVT practices have traditionally been governed by standards and protocols, which are conceived as documents to guide practitioners and often contain examples of best practices as well as detailed guidelines on technical and linguistic aspects. Several examples of guidelines for revoicing (including AD) and subtitling (including SDH) have already been mentioned in Section 2.3.1 and Section 2.3.2, respectively.

From the late 20th century, the descriptive TS (henceforth, DTS) paradigm started to be capitalised on by translation scholars in their attempt to examine translation-related phenomena, particularly in

literary translation (Pym 2001). Inroads were soon made into descriptive AVT studies in the early noughties (Díaz-Cintas 2004). Drawing from polysystem theory (Even-Zohar 1990) and Toury's (1980, 1995/2012) approach to the study of translation norms, DTS is a theoretical framework in which the study of translation (conceived as a function, product, and process) shifts the focus towards the analysis of target texts. One of the main premises is that the socio-cultural context, determines how translations are conceived and produced inasmuch as they are the fruit of a norm-governed activity that varies across time, communities, cultures, and languages. In this sense, DTS is articulated around a series of concepts, such as conventions, norms, ideology, and patronage (Díaz-Cintas 2004), that emphasise the sociological dimension of translation.

For many years, studies on AVT focused on the identification of certain patterns of behaviour in the revoicing and subtitling of films as well as on the reasons behind the activation of such norms. The concept of norm is particularly useful in AVT studies, since, according to Assis Rosa (2016, 199), it "enables the unveiling of the intervention of several agents specific to AVT (laboratories, production and distribution companies, dubbing actors and directors, technicians, adaptors, etc.)" Norms, which do vary across time and space, allow us to better understand the 'rules of the game' that govern AVT at different levels. Indeed, as argued by Díaz-Cintas (2004, 26):

> At a macro-structural level, [. . .] norms allow us to determine which are the distinctive characteristics that regulate the delivery of the dubbed or subtitled discourse, bearing in mind the many different constraints imposed by the medium. At a micro-structural level, they help us to observe the translator's behaviour in the linguistic mediation.

In DTS, sizable attention has traditionally been paid to the so-called "translation crisis points" (Pedersen 2007, 2008), which are those that trigger the conscientious use of translation techniques to overcome specific translation challenges. As a reaction to the traditional prescriptive approach to the study of translation, the descriptive analysis of the linguistic and cultural aspects that characterise translated programmes constitutes a fruitful approach for the study of translation as a product and of translators' agency. According to Díaz-Cintas (2019), some of the main issues that directly impinge on the interlingual transfer that takes place in AVT practices are the following: orality and naturalness, wordplay and humour, swearing, censorship and manipulation, cultural references, gender, multilingualism, and linguistic variation.

A substantial degree of technical and linguistic prescriptivism still prevails in AVT guidelines – understood as the documents that set out "the norms that govern the behaviour of practitioners in a community" (Pedersen 2020, 419) – proposed by the various industry stakeholders, which can be said to extend to the way in which translations are assessed and evaluated for quality purposes. Subtitling, for instance, has traditionally been rather dogmatic because, as posited by Díaz-Cintas (2004, 29), "the time and spatial constraints in the presentation of subtitles imposed by the medium bring along an inescapable degree of prescriptivism" (see Section 2.3.2.1). In the same vein as textbooks on this field by authors such as Ivarsson and Carroll (1998) and Díaz-Cintas and Remael (2007, 2021), this monograph makes a clear distinction between two main dimensions (i.e. linguistic and technical) that have a direct impact on translations (see Section 3.4.2). In fact, it is understood that a consistent application of guidelines, both in linguistic and technical terms, adds value to translated audiovisual programmes and is directly linked to its final quality.

The study of quality in the AVT industry is of great importance in both academia and the industry, which is why it ought to be embedded also in AVT training, particularly assessment (see Section 3.4.2). To become well-rounded professionals, trainees need to enhance their awareness about the importance of revision and of delivering translations, and subtitles, of the highest quality. Now withdrawn, *ISO 8402:1995* provided a cut-clear definition of quality – "the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs" (BSI 1995, 5) – where an *entity* would represent *textual products of any nature* in the translation industry. In the latest version produced by the International Standardization Organization (*ISO 9000:2015*), their focus shifts towards the agency of those who enable quality, so this is understood from an active perspective as follows: "an organization focused on quality promotes a culture that results in the behaviour, attitudes, activities and processes that deliver value through fulfilling the needs and expectations of customers and other relevant interested parties" (BSI 2015, 8). In the translation industry, this is patent in the quality assessment measures adopted by each LSP, arguably by drawing on *ISO 17100:2015+A1:2017* (BSI 2018).

As posited by Dunne and Dunne (2011), translation being both a *product* and a *process*, quality is often measured in accordance with how adequate the outputs are considering the client's requirements and expectations. Evaluating the quality of a translation – as a product and irrespective of its type – depends on internal and external factors that go undeniably far beyond mere words insofar as "there is no such thing as absolute quality" (Mossop 2001/2020, 6) Indeed, just like in any other type of translation project, AVT projects follow specific quality criteria

depending on the target audience, the client's demands and the needs of each project. For instance, some projects are necessary to grant access to visual or aural information for persons with sensory disabilities (e.g. AD or SDH, respectively) whereas others imply an interlingual transfer to facilitate access to foreign-language content (e.g. dubbing, subtitling, voiceover) and others aim to expose viewers to audiovisual content for foreign language learning purposes (i.e. didactic AVT).

Research on translation quality, however, has almost solely focused on the linguistic aspects of rendering texts from one language to another, thus obliterating the paratextual and paralinguistic dimension of certain translation types like AVT (Kuo 2020). From a purely linguistic point of view, translation quality regards translation errors and stems from revisers' own understanding of what a translation should be. It follows that "any statement about the quality of a translation implies a conception of the nature and goals of translation, in other words it presupposes a theory of translation" (House 2014, 241). To define *translation* properly speaking, House (2015) argues a concrete understanding is needed to clarify three elements: firstly, the relationship that is established between source and target texts; secondly, the rapport between the various features of the texts and how they are perceived by the author, the translator, and the recipients is equally important; and, thirdly, the distinction between a translated text and other types of multilingual text production.

Because of its multimodal nature, AVT challenges traditional approaches to the study of translation quality, which tend to focus on the linguistic dimension only. Quality evaluation models (e.g. House 1977, 1997, 2015), and quality evaluation metrics (e.g. Lommel et al. 2014; Mariana et al. 2015), are of limited use in AVT, where the multisemiotic nature of the translated texts calls for alternative assessment methods. Traditional proofreading and revision guidelines (Mossop 2001/2020) are not easily applicable, for subtitling and revoicing practices are often curtailed and consciously handled to abide by both technical constraints and guidelines. In subtitling, for instance, applying a traditional model of quality assessment that emphasises accuracy and semantics can be counterproductive, because as foregrounded by Pedersen (2017, 212):

> The main problem with general translation quality assessment models when applied to subtitling is that they are difficult to adapt to the special conditions of the medium. They thus often see e.g. omissions and paraphrases as errors. This is very rarely the case in subtitling, where these are necessary and useful strategies for handling the condensation that is almost inevitable [...], or which may be a necessary feature when going from speech to writing.

The synchronisation between utterances and soundtrack as well as the interconnectedness between text and image have an impact on quality that is not acknowledged in generalist quality models. The 1990s, however, witnessed the publication of the *Code of Good Subtitling Practice* (Carroll and Ivarsson 1998), also adopted by ESIST (esist.org/resources/code-of-good-subtitling-practice) and thus giving it greater projection in both academia and the profession.

The concept of translation quality is intrinsically related to the teaching of translation practice in higher education and has traditionally been considered one of the guiding parameters used to evaluate students' work in translator training curricula, with AVT being no exception. Although now outdated, the University of Wales published the marking criteria for their Certificate in Screen Translation, whose categories fell under linguistic skills (portrayal, language quality, grammar, spelling and punctuation) and technical skills (time-coding, synchronisation, positioning, use of colour, and respect of gaps between consecutive subtitles) (James et al. 1996). Today, most AVT courses have ad hoc marking criteria to evaluate students' AVT assessments, although they are rarely made available outside of the institution (see Section 3.4.1).

Quality has inevitably been at the centre of AVT-specific scholarly research and training since the very origins of the discipline (see Section 2.2). Its examination was often carried out with a primary focus on the linguistic dimension, thereby having little or no application beyond scholarly inquiry (see, for instance, the hermeneutic stand maintained in Lambert 1998). The rather subjective nature of those studies soon led scholars to raise the issue that in order to explore translation quality evaluation and assessment, the audience must be at the core (see Chaume 2005). They therefore proposed that more reception studies be carried out on the topic. Empirical and experimental methods have recently started to be more widely applied in AVT research (Orero et al. 2018) and it seems that more projects have expanded their remit beyond the linguistic aspects to consider other parameters that affect quality.

Today, whereas technological advancements have been rapid and ground-breaking, the questions over quality have somehow remained static and the lack of AVT quality taxonomies is still patent. Despite rampaging progress made in the field of translation quality assessment (Moorkens et al. 2018), where a greater degree of automation is observed in quality evaluation work, AVT quality assessment still calls for more detailed examination. Historically, audiovisual content used to be exhibited only in traditional cinema houses and later broadcast on TV, but nowadays its provision has expanded to VOD and streaming platforms (see Section 2.1.3), having also manifested in formats like VHS tapes,

DVDs and Blu-rays. The nature of the programmes that are localised at present has also evolved from chiefly films to a myriad of formats such as news, documentaries, educational videos, and sports events, among others. In fact, the continuous spread of audiovisual programmes over the internet has raised awareness about the quality of their translation, especially when observing how commercial subtitling practices compare to amateur activism (Pérez-González and Susam-Saraeva 2012), although as accounted for by Massidda (2015), fansubbing communities' guidelines may often adhere to industry-informed norms (see Section 2.3.2.6).

Despite being a late newcomer to the AVT mediascape, respeaking quality seems to have received more detailed academic attention than other practices like interlingual subtitling (Romero-Fresco 2020); what is more, "many countries are considering the introduction of measures to assess the quality of live subtitling" (Romero-Fresco and Eugeni 2020). Being a live subtitling practice, respeaking is well known for the presence of (almost) inevitable delay and errors that may detract from the quality of the products and often remain unsolved due to its synchronous nature. Two assessment models, i.e. NER (Romero-Fresco and Martínez 2015) and NTR (Romero-Fresco and Pöchhacker 2017), were developed in an attempt to assess the quality of intralingual and interlingual respeaking. Although they draw on word error rate models, traditionally used to evaluate accuracy in speech recognition, they also acknowledge human intervention and incorporate two types of errors that account for the technical and linguistic dimensions: recognition and edition (or translation).

When it comes to interlingual subtitling, companies have their own in-house quality processes but information about them is scarce as LSPs tend to be zealous guardians of their own workflows and QA and QC models. Nonetheless, there are some exceptions with large media providers, such as Netflix, which offers comprehensive documents underlining quality assessment workflows and conventions on their website, from which trainers and students can benefit. From an academic perspective, however, few theoretical constructs are available, and the FAR model proposed by Pedersen (2017) and the CIA model developed by Künzli (2021) are arguably the only subtitling quality models available as such.

Drawing heavily on the aforementioned NER model, the FAR proposal constitutes a fairly comprehensive attempt to categorise pre-prepared, interlingual subtitling errors. The author identifies three main error categories, whose initials give name to the FAR model: functional equivalence, acceptability, and readability. *Functional* equivalence errors can be semantic (e.g. mistranslations, false friends, inaccuracies) or stylistic (e.g. inappropriate register). When defining this category, Pedersen (2017, 218) argues that subtitles have to convey meaning without necessarily resorting to verbatim renderings. The study of Sperber and Wilson's (1986) relevance theory

has previously been considered an optimal framework for understanding accuracy and purposefulness in the case of condensed subtitles (Bogucki 2020). *Acceptability* errors are those that affect grammar, spelling, and naturalness. Generally speaking, and again following a DTS approach, acceptability refers to the adherence to target language norms. *Readability* includes errors closely related to the technical dimension and is directly impacted by spotting, synchronisation, segmentation, line breaking, line lengths, punctuation, as well as display rates.

Whereas functional and acceptability errors could potentially be extrapolated to other translation domains because they concentrate primarily on the linguistic dimension, the readability classification can be said to be unique to subtitling as it focuses on the technical dimension that characterises the production of subtitles. Pedersen (2017, 224) acknowledges the many limitations of putting forward a scholarly model and concludes:

> There are several weaknesses in the model. One weakness is that it is based on error analysis, which means that it does not reward excellent solutions. Another is that it has a strong fluency bias, as it is based on the contract of illusion. The greatest weakness is probably subjectivity when it comes to judging equivalence and idiomaticity errors [. . .]. There is also a degree of fuzziness when it comes to judging the severity of the errors and assigning them a numerical penalty score.

Academic models have the potential to be used in the industry; for instance, Ofcom (2015) uses the NER model for quality assessment purposes, and some companies like SDL (RWS since 2020) claimed to have adopted the FAR model as a component for their subtitling applications. AVT quality models can also prove relevant and useful for the didactics of revoicing and subtitling, particularly when it comes to the assessment of students' coursework as they tap into all the main parameters that define each practice. Moreover, students can use existing models to hone their revision skills by gauging the quality of the subtitles produced by other peers or the ones found in productions that have been commercialised.

Technologies are a fundamental element to take into consideration in the evaluation of AVT quality (see Section 4.2.5). The latest dubbing and subtitling systems, for instance, include automatic error recognition tools, which work on the basis of the properties that have been set for a particular project. Many companies nowadays also enforce the submission of a self-evaluation of one's translation work, which as a minimum will include the use of grammar and spelling checks. Typically, the project manager will set up the project and file properties so that those working on synchronisation (e.g. a spotter in subtitling and a dialogue writer in

dubbing) can tailor the master templates to said properties when timing the video material. Linguists working on the translation of the templates can benefit from automatic alerts when mastering or translating the templates, whereas the project manager can assist revisers to perform tailor-made linguistic and technical checks upon submission. Given the importance attached to quality in today's industry (Drugan 2013), AVT tools used for training purposes would ideally include comprehensive error-checking and QC functionalities too.

To ensure that high standards are achieved in AVT projects, many companies have developed their own selection processes in an attempt to guarantee that outsourced work is delivered by professional practitioners that care about quality. To test newcomers, companies often arrange translation tests, either on paper or online. Following unfruitful initiatives orchestrated by major multimedia companies such as Netflix's Hermes test, synergies between higher education institutions and academic partners have led to the creation of AVT training schemes such as the AVTpro Certification (avtpro.ooona.net) and translator databases such as The Pool (ooona.net/the-poool). It only follows that AVT training centres continue to embrace industry collaborations as well as professional (often cloud-based) ecosystems to train future practitioners and to expose them to the environments in which they will be tested by companies.

In both training and testing, but also in quality assessment practices, automation tools are increasingly utilised by all stakeholders involved in media localisation projects. Thus, the future of the discipline points towards a more solid integration of automation, including AI and LLMs. Automating the revision process will inevitably trigger changes in QC measures as well as the overall assessment of translations as we know it, so it only follows that the AVT classroom will be impacted too. To be future-proof, students ought to be trained in the role that automation and CAT tools play in AVT and on how to harness their potential (see Section 4).

Notes

1 Walker's (2023) monograph on translation PM is preceded by works such as Rico (2002) and Matis (2004) as well as inspired by ISO 11669:2012 (BSI 2012).
2 Some scholars have argued that post-production media localisation practices would prove less cumbersome if accessible filmmaking was integrated into the preparation and production phases of filmmaking, often involving collaboration between the translator and the creative team of the film (Romero-Fresco 2013). From a practical perspective, its goal is to ensure that audiovisual programmes and their localisations are made suitable for users with sensory impairments and/or language barriers in order to reduce the number of constraints and obstacles that translators and localisers encounter in the post-production localisation phase.

3 Although dubbing was invented prior to the rise of Western European fascist regimes (Ávila 2002; Cornu 2014), these authoritarian governments fostered its use. Dubbing eventually became an effective instrument to censor films by removing inconvenient cultural references and values that clashed with the official doctrine (Danan 1991). Furthermore, as studied by Ballester-Casado (1995, 2001) in the case of countries like Spain, dubbed versions contributed to reshaping national consumption habits and to promoting linguistic uniformity across a given country, to the detriment of regional dialects and minority languages.
4 Further information on accessibility legislation and conventions worldwide can be found on the Media Accessibility Platform (mapaccess.uab.cat).
5 As discussed by Bartoll and Martínez-Tejerina (2010, 70–71), the d/Deaf community is rather diverse (e.g. deaf children, cochlear-implanted people, oralists, sign language users, and prelingually and postlingually deaf people). Standardising SDH practices for such a heterogenous group of potential viewers is not without hurdles and often results in ad-hoc solutions depending on each case (Zárate 2021).
6 According to Ofcom (2019, 12), "the BBC channels (excluding BBC Parliament) are required to subtitle 100% of their programme content, audio describe 10% of their programme content (except in the case of BBC News), and sign 5% of their content. The corresponding targets for ITV1 (including both the regional and national licensees) and Channel 4 are 90%, 5% and 10%, and for Five and S4C1 80%, 5% and 10%."

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3 Education

Translation didactics, also known as the *pedagogy of translation* (Kelly 2019), usually falls under the more commonly used umbrella terms translation (or translator) *training* (Kelly 2003) and *education* (Way 2020). This area of research examines how translation can be learnt and taught and finds its theoretical origins in the intersection between didactics and translation theory. Pym (2012) establishes a fruitful distinction between translator *training*, associated with the (mostly linguistic) skills that are required from translators in training to produce an acceptable translation, and translator *education*, which recognises the need for students to acquire a wide range of interpersonal skills and attitudes. Whereas the former is often linked with translation competence, the latter is aligned with translator competence. As further explained by Kelly (2019, 158), "translator training may be considered the preferred term, although again those closest to the socio-constructivist school of thought prefer translator education, since training is seen as a transmissionist approach, centred on the teacher and leaving only a passive role for the learner." As further clarified by Way (2020, 181), "training is the process of accumulating chunks of knowledge in a specific field (such as language learning), whereas education has a much wider scope."

This terminological conundrum is nurtured by a conceptual schism in the TS community. Some scholars defend that teaching translation serves "to prepare our graduates to enter the professional market" (Way 2008, 89), hence putting a clear emphasis on training students with a preconceived or preordained conception of what their prospective career will look like, and ultimately defending the use of the term translator training as well as advocating a profession-bound pathway of the curriculum. Other scholars defend that teaching translation means to "train, teach or otherwise to facilitate the education of *students* of translation" (Kearns 2008, 207; emphasis in original), thus highlighting the importance of training with an open-minded attitude towards students' prospective careers. Ultimately,

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this position establishes a more holistic use of *education* and advocates for a vocational and humanist nature of curricula in higher education. There is a wide variety of opinions on this matter and the landscape is, therefore, far from being homogenous or even holistically definable (Pym 2000), although the current trend in higher education settings is to capitalise on the more comprehensive term *education*.

Research in this field has significantly developed as a direct consequence of the rapid expansion of undergraduate and postgraduate programmes on translation and interpreting in recent decades. Way (2020) reported on the figures from the last report provided by the Translator Training Observatory, formerly provided by the Intercultural Studies Group of the University Rovira i Virgili, Spain, in conjunction with the European Society for Translation Studies (EST, est-translationstudies.org) and the International Federation of Translators (FIT, en.fit-ift.org), according to which there were over 350 courses on translation and interpreting offered by 433 institutions from 67 countries. These figures are significant, and in countries such as Canada, China, the UK, and Spain, TS has already been firmly established at an institutional level. In this respect, Venuti (2017, 1) explained that "the emergence of the field has coincided with the gradual development of a fairly standard curriculum for teaching translation studies, especially at the master's level, where students are trained to enter the job market as translators or to proceed to doctoral research and academic careers." Some scholars, however, have argued that the development of programmes has not always responded to social demands and has occurred "even in the absence of rising market demands for well-paid fulltime translators and interpreters" (Pym 2012, 478), perhaps being driven by universities' agendas and departmental needs.

These rapid developments can also cause institutional antinomies. Firstly, teaching staff are sometimes neither professional translators nor academics conducting research in TS, especially in countries where translator education programmes have had a relatively short lifespan. Secondly, certain specialisations, such as AVT, require the use of cutting-edge technologies and industry knowledge, but many academic institutions cannot afford to buy or be trained in the latest resources seen in the industry (often requiring substantial licensing fees). Thirdly, it can be challenging to find educators with the right technological expertise who are also willing to undertake continuous professional development (CPD) in order to keep up with industry changes.

For many decades, studying how translation is learnt and taught was considered "the Cinderella of the academic world across disciplines and traditions" (Kelly and Way 2007, 5), leading to false assumptions of a supposed lack of scientific rigour and integrity. Translation *pedagogy* is often disregarded as a subsidiary dimension that fails to build a sufficient

body of research, although there is ample evidence that TS scholars have traditionally utilised didactic approaches and academic resources in their study of different types of translation, including AVT (Díaz-Cintas 2008a) and media accessibility (Mazur and Vercauteren 2019). Nowadays, the body of scholarship is sizeable; it suffices to take Taylor and Francis' peer-reviewed, paywall journal *The Interpreter and Translator Trainer* as a primary example. First conceived in 2007 by translator educators D. Kelly and C. L. Way, this journal boasts more than 18 volumes at the time of writing, with as many as four issues per year, and it constantly features in the first quartile of subject category rankings with one of the highest impact factors among translation journals worldwide. The University of Alicante's Bibliography of Translation and Interpreting (BITRA, https://aplicacionesua.cpd.ua.es/tra_int), previously alluded to in Section 2.2, reveals whopping results. A quick search on its system returns 5,528 entries for *training*, 4,974 for *teaching*, 3,172 for *education*, 3,117 for *translator training*, 2,220 for *translation education*, 1,960 for *didactic*, 1,323 for *translator education*, 582 for *pedagogy* and 521 for *didactics*. Going back to the terminological conundrum mentioned at the beginning of this introduction, there seems to be a (quantitative) preference for the term *training* – instead of other terms such as *education, pedagogy* or *teaching* – which can be due to TS scholars' attempt to focus on the industry-oriented, vocational aspects of their classroom practice.

When it comes to AVT, revoicing and subtitling practices (including media accessibility modes) have traditionally been taught as part of specialised study programmes, usually at postgraduate level, though many undergraduate programmes have started including AVT-specific modules in recent years. The mushrooming of AVT-specific master's degrees offered throughout Europe is somehow exemplary of the current needs and directions of the translation industry, though it may also point to a lack of solid training in AVT at undergraduate levels of study (Section 3.5). There have also been research projects advocating for the use of AVT methods to teach languages, often referred to as didactic AVT (or DAT as seen in Talaván et al. 2024), thereby fostering a notable inclusion of AVT teaching in language learning curricula. When combining Boolean operators to narrow down an online search, BITRA shows 10,969 entries that contain the words *audiovisual* and at least one of the following words: *training*, *teaching*, *education*, *didactics* or *pedagogy*. This roughly indicates that, at the time of writing, over 10% of the publications listed in the aforementioned bibliography database discuss, to a greater or lesser extent, the teaching of AVT (and arguably media accessibility too). These results further legitimise the importance of discussing education in TS and AVT scholarship.

3.1 Learning and Teaching Approaches in Higher Education Scholarship

Education scholarship has grown significantly since the appearance of pioneering publications such as Hilgard (1948). Following Millwood (2013), learning and teaching theories have traditionally been linked to concrete scientific disciplines such as Linguistics, Psychology, or Philosophy. In general terms, learning theories and approaches are classified within three broad categories, namely behavioural, cognitive, and constructivist. Whereas the first of them was developed by Skinner (1957), the father of operant conditioning, the second is attributed to Piaget (1936/1952), pioneer of genetic epistemology, and the third was introduced by Vygotsky (1930–34/1980), believed to have inspired Piaget's cognitive constructivist theory (Sjøberg 2007). In Western European and Anglophone higher education environments, the main learning and teaching approaches that have traditionally been implemented, studied, and revisited in higher education lie under the umbrella of constructivism, which stipulates that learners "construct knowledge with their own activities, building on what they already know" (Biggs and Tang 1992/2011, 21), thereby placing emphasis on the knowledge and skills that learners have previously acquired and stipulating that *learning* does not happen in isolation or abstractly. The below sub-sections build on this approach and offer an overview of today's higher education landscapes with a focus on teaching methods, learning settings and quality evaluation.

3.1.1 Outcomes-based Education Framework

Nowadays, the main trend in academic institutions is the application of an outcomes-based education (OBE) approach within the credit transfer curriculum paradigm, not least because it is "a convenient and practical way of maintaining standards and of improving teaching" (Biggs and Tang 1992/2011, 5). Despite the fact that universities have heavily capitalised on this approach to further market higher education, this scheme is also a powerful resource used for evaluating the quality of the learning and teaching outcomes at an individual level. Rooted in the principles of *constructive alignment*, as well as the seminal works of B. Bloom (see Bloom et al. 1956), this approach determines that students be made aware of the intended learning outcomes (i.e. what the learner will ultimately know, do and understand) before the teaching and assessments take place. Its aim is to optimise students' chances of achieving those outcomes through engagement, so assessment tasks need to be designed to enable clear judgments as to how the learning outcomes are attained (Biggs 2014). Following this approach, educators set aims and learning outcomes so that students

conceptualise them as tangible goals, thereby eliminating guesswork "to ensure that students are not misled, and to make the learning and assessment process as transparent to them as possible" (Morss and Murray 2005, 21). This underlying principle has vastly influenced contemporary approaches to curriculum design (see Section 3.5.2), highlighting the need for a tripartite alignment of teaching methods, learning outcomes and assessment.

Current student-centred trends impose the application of a framework in which students engage actively with their own learning process and are thus placed at the core of their education. In search of critical inquiry enhancement, educators design the learning and teaching activities so as to simultaneously perform close supervision and examination, thereby monitoring the student's progress in terms of *aims* and *learning outcomes* satisfaction as well as providing the resources necessary to build their own *knowledge* progressively (European Commission 2008, 11). According to Biggs and Tang (1992/2011), there are two levels of learning and teaching, namely *effective* (or *deep*) and *surface*, depending on the level achieved by the learning activities proposed for the intended learning outcomes. Following the former approach, teachers are required to discard inappropriate methods and are encouraged to use high-level learning activities. Another key to successful deep teaching rests on teachers' self-evaluation and reflection, that is, their taking stock of commonly used practices and their effects on the learners' progression. Reflective practices within the framework of learning and teaching theories can be directed as action research (learning), described by Biggs and Tang (1992/2011, 51) as "learning about oneself as a teacher and learning how to use reflection to become a better teacher."

While activities should be designed in accordance with the intended learning outcomes, the learning process is achieved through the successful completion of assessment tasks. The degree to which the learning outcomes are proven to be reached establishes the degree of satisfaction and appropriateness of the activities. In this training scenario, teachers are to be considered facilitators, providing the students with the right resources and tasks, as well as monitoring their engagement throughout the learning process in the form of formative and summative assessments.

3.1.2 Learning Spaces and Teaching Delivery

Research on learning environments and spaces has experienced enormous growth in recent years, with this area of study being considered a post-COVID-19 pandemic question in urgent need of further investigation (see Leijon et al. 2022). University campuses, hereby understood as a hypernym of *learning spaces* (Temple 2008), have traditionally received scant attention from TS scholars, but the pervasiveness of digital technologies,

online communication and telecollaboration is currently driving the need for structural changes in teaching delivery and learning methods in higher education.

Temple (2008) highlights the importance of campuses, and therefore classrooms, as the ultimate integration of intellectual and physical spaces. Without necessarily delving into the architectural features of campus design (see CABE 2005), it could be argued that the learning and teaching of specialised knowledge (and skills) necessitates appropriate spaces. The idea of a traditional classroom, understood as a physical space shared by educators and students in a formal setting (e.g. a campus), has undergone much disruption following technological advancements. In light of ever-expanding online ecosystems, the classroom boundaries extend beyond physical borders so as to encompass a vast array of learning tools and teaching methodologies that often fall under the umbrella term of *distance education*.

Distance education, as an educational framework, includes practices such as *distance learning*, *online learning*, *remote learning*, and *internet-* or *web-based learning*, as well as the common concepts of *blended* learning (*b*-learning) and *electronic* learning (*e*-learning). All of these practices draw on the premise that education does not only take place in a physical classroom as there is always a significant degree of physical separation between the learner and educators. Distance education offers greater flexibility in terms of students' and educators' geographical location and time availability. In recent years, societal, health and technological conditions have led to a greater demand for internet-based academic programmes, with higher education leaders reportedly leading change through distance learning practices (see Marshall 2016/2019, 115). Distance learning practices, however, are far from new. Decades ago distance learners already enrolled on courses for which they would receive materials through the post and then liaise with their teachers and tutors through telephone or email. Traditional distance learning practices have experienced major changes throughout the years. The British Open University, established in 1969, and the Spanish National Distance Education University, established in 1972, constitute well-known examples in Europe of early instances of distance education. In addition to higher education institutions that specialise in distance education, many higher education institutions have embraced b- and e-learning practices in an attempt to move away from more traditional classrooms and have increasingly incorporated learning technologies.

There are many technologies and tools that can be implemented to enhance remote learning. Some studies have pointed out that online learning tools are highly beneficial to enhance communication skills among students (see Damnjanovic et al. 2015). Some of these tools include communication-related features such as forums, event calendars, emails, group spaces, chat-rooms, and videoconferencing meeting rooms. Perhaps the best-known resource is the *Modular Object-Oriented Dynamic*

Learning Environment, better known as Moodle (moodle.org). Moodle-based teaching approaches have been utilised and exploited by most universities and vocational institutions worldwide and represent a powerful didactic resource since the inception of this free and open-source learning management system over two decades ago. Along with other forms of online communication, Moodle's private messaging, chat and forum functionalities allow teachers and students to easily engage in one-to-one or team conversations through the interface, both synchronously and asynchronously. More importantly, on Moodle, students can retrieve material, submit assignments, sit tests, and give and receive peer feedback; educators can share materials, post notifications, create online courses, and create and grade assessed coursework. No wonder Moodle has been adopted in over 242 countries and currently has over 400 million users in more than 46 million courses across more than 165,000 sites (Moodle Project 2023).

When it comes to TS-related instances of distance learning opportunities, there is a large number of fully online courses that cover an array of specialised areas within translation and interpreting in an attempt to make knowledge more easily accessible to practitioners while fostering social interaction and collaboration via the internet. Many translator and interpreter associations, such as the Chartered Institute of Linguists (CIoL, ciol.org.uk) and the Institute of Translation and Interpreting (ITI, iti.org.uk) in the UK, also offer CPD opportunities that often include online courses to fellow members. Embracing the potential of online learning settings, associations thus require a very small number of face-to-face teaching hours and capitalise on independent learning. Yet, online learning environments differ from traditional face-to-face settings in various ways and are heavily determined by social aspects, not least because "online environments, seemingly cold and unwelcoming, may maximise distances between learners and teachers, thus creating obstacles and impeaching the success of the learning experience" (Ketola and Bolaños García-Escribano 2018, 196). Another example of a successful online education scheme is that of *Massive Online Open Courses* (MOOCs), which have been offered by leading institutions since 2006, although their popularity rose from 2012 onwards, when major education-focused technology companies, such as Coursera (coursera.org) and edX (edx.org), were founded.

Today, the use of distance learning tools and social media platforms is deeply rooted in both teaching and work environments, building on greater interactivity and enhancing socialness by relying on remote collaboration, though there does not seem to be an integration of external social networking resources in online learning tools' interfaces. Interaction between students and teachers, as well as among students, is indeed fundamental for students to achieve their academic goals and not feel isolated. Whereas office hours were once the most common type of teacher-student interaction outside class time, it seems that the diversification of

communication in academia, thanks to the irruption of new electronic means, has opened up the potential (and the need) for greater online interaction, be it via emails, forums, video conferences or live chats. In addition, tutors and students can create a personalised profile in which they can introduce themselves to their classmates.

The use of internet-based tools in higher education requires the sharing of material in editable formats and its impact on the intended learning outcomes should be fully acknowledged by teachers and students alike as they may impinge on the forms of assessment. However, it also has many advantages, as foregrounded by Kelly (2005, 88):

> Education technology probably represents a step forward in the assessment of translation simply because it facilitates the submission or delivery of student translations by the same means as used professionally (email, ftp) and because word-processing software functions such as comment and change-tracking allow feedback from other students and teachers to be made easily also in electronic format.

Translator education programmes experienced profound changes in the early 1990s with the advent of computerised workstations, and their use in the translation industry and at universities (Kiraly 2000). In the first quarter of the 21st century, the constructivist computer-based classroom advocated by Kiraly (2000) and his counterparts at the beginning of the 21st century (see Section 3.2.3) is starting to become obsolete, considering the scope and breadth of internet-based teaching programmes. The importance of distance education is central today, especially when considering the way in which the industry has resorted to remote and freelance work on a global scale. The funding problems at certain institutions to purchase up-to-date software, which is a key drawback for the teaching of translation technology and AVT, could be addressed by establishing co-operation frameworks between universities and developers.

Many universities and vocational institutions have traditionally fostered international exchanges of both students and staff through programmes like Erasmus (1987–) and other overseas research and teaching partnerships. Embracing digital exchanges by means of practices like telecollaboration can also allow for leaner inter-university partnerships, especially whenever the movement of persons may be disrupted or temporarily interrupted like in the case of the COVID-19 pandemic in 2020 (see Marczak 2024). As foretold by James (1998, 256):

> Distance learning agreements can be set up between institutions; staff and student exchanges can be arranged; the home institution could provide the theoretical knowledge and the host institution could provide

> the opportunity for practical experience. The sharing of resources in these different ways not only brings economic benefits but enriches the student's understanding and appreciation of the other language and culture in question. Teachers can also benefit by an exchange of knowledge and expertise.

Some scholars, such as Olvera-Lobo and Gutiérrez-Artacho (2014), have sought a greater understanding of student-led collaboration and telecommunication with the use of new technologies. Rather unsurprisingly, their findings shed light on the fact that including social networks in translator training environments may enhance students' communication skills and technological literacy. The many benefits of utilising social media platforms to teach AVT have been also highlighted in a case study conducted by Ketola and Bolaños García-Escribano (2018), who reported on an online course for translation students and discuss how the students interacted with each other via the social media platform on which the course was organised at the University of Tampere, Finland, in 2016. The participants' online exchanges constituted the course's assessment in the form of peer grading. The authors claim that online training promotes the participants' understanding and appreciation of other cultures and languages while stimulating active engagement and self-reflection.

The amount of face-to-face tuition in TS and AVT study programmes remains an area worthy of further exploration. What is evident is that digital technologies are now key in enabling online exchanges as well as the sharing of resources. As part of universities' internationalisation agendas, many of today's programmes of study offered by TS and AVT training institutions include partnerships with other countries as well as telecollaboration opportunities among students and trainers. No doubt distance education methods and practices will continue to be a significant asset in higher education for years to come. As the importance attached to global impact grows steadily, more supranational research-led training initiatives can be expected, thus boosting the development of distance education communities of TS and AVT specialists.

3.1.3 Education Quality Evaluation

As argued by scholars such as Högberg and Lindgren (2021), OBE approaches have directly contributed to benchmarking and accountability in higher education. Supranational attempts to embed these approaches in English-speaking countries, such as the ones described by Gosling and Moon (2001), were soon followed by the so-called Bologna Process (1999–2015), which set out to revamp university curricula in Europe in general and EU member states in particular. Higher education policies

were rearticulated in the face of new agendas, with public universities having become market-oriented corporations in which chancellors and provosts sell education in exchange for ever-increasing tuition fees (Collini 2012, 2017). There is also a greater emphasis on how academic (albeit also non-academic) leadership can enable change in higher education (see Marshall 2016/2019), with some scholars highlighting the paramount role technology has in how education is marketed nowadays.

The current neoliberal university ecosystem is arguably obsessed with rankings and league tables (see Collini 2012). Benchmarking productivity, efficiency, rigour and excellence – among other powerful traits often associated with universities' pursuit of new knowledge and advancement – is everyday practice in today's scholarly communities. Yet, as Collini (2017, 53) explains, "rankings give us pseudo-statistical tabulation of incommensurable proxies, inflected by impressionistic judgements which have been shaped in part by previous rankings." As claimed by Brindley (2001, 393), "educational institutions worldwide have been under increasing pressure from governments to demonstrate efficiency and cost-effectiveness by more rigorous reporting of program outcomes." As a result, higher education has, of late, been subject to much scrutiny from external bodies, whose evaluations have a direct impact on expenditure and funding as well as an indirect impact on teaching practices. Indeed, Berg and Seeber (2016) recently argued that the fierce competition attached to today's higher education landscapes – which is caused by pervasive corporatism and ever-growing institutional pressure – is detrimental to the intellectual life of the university.

Higher education quality is audited in most countries nowadays to ensure that universities uphold excellent standards of teaching and research. The quality of *education provision* is evaluated differently by each institution, which makes ascertaining the parameters that apply on each occasion a rather complex task. In countries like the UK there are national agencies such as the Quality Assurance Agency for Higher Education (www.qaa.ac.uk), which oversee the safeguarding and enhancement of higher education standards inside and outside the country. There are similar agencies in other European countries, such as France's High Council for the Evaluation of Research and Higher Education (www.hceres.fr), Italy's Agency for the Evaluation of Universities and Research Institutes (www.anvur.it) and Spain's National Agency for Quality Assessment and Accreditation (www.aneca.es), to name but a few. The aforementioned agencies form part of a supra-national organisation called the European Network for Quality Assurance in Higher Education (www.enqa.eu), which currently has 109 members from over 50 countries (including European, non-European and multinational associations). These associations strive to maintain quality standards in specific regions

by establishing criteria, developing benchmarks and assessing compliance. At an institutional level, however, a traditional approach to underpin the overall impact and quality of the scholarly outputs of any given university is to conduct ad-hoc surveys. In the UK, for example, a considerable amount of academic quality evaluations undertaken by faculties, departments and research centres on the Research Evaluation Framework (www.ref.ac.uk), a process of external reviews that assesses research outputs in terms of quality, impact and environment. Many evaluations, however, excessively focus on research outputs, so more recent initiatives, such as the Office for Students' Teaching Evaluation Framework (www.officeforstudents.org.uk), have been orchestrated in an attempt to highlight the importance of student-centred education with an emphasis on the quality of teaching practices over research outputs.

Albeit not exhaustive, Gibbs's (2010) list aims to cover the main aspects that have an impact on higher education as a system: infrastructure, funding, student-staff ratio, quality of teaching staff and students, class composition and contact hours, quality of teaching, research environment, level of intellectual challenge, formative assessment and feedback, reputation and peer ratings, student support, student performance and degree qualification, student retention and persistence, and employability. Despite the widespread use of university rankings across the globe – with the likes of QS' World University Rankings (www.topuniversities.com/university-rankings), the Shanghai Ranking (www.shanghairanking.com), or Times Higher Education's World University Rankings (www.timeshighereducation.com) – these often fail to give an accurate depiction of education standards as has been suggested by higher education leaders such as Collini (2012, 2017). Today, with access to information being democratised and more accessible than ever before thanks to the internet and digital technologies, it is paramount that higher education institutions reinforce their educational goals and pay heed to the importance that society attaches to the role of universities in upholding high standards of holistic education.

In the specific case of TS, there have been efforts in the form of expert groups and networks, such as the European Master's in Translation network (EMT, ec.europa.eu/info/resources-partners/european-masters-translation-emt_en), a long-standing initiative first orchestrated by universities from EU member countries. First launched by the European Commission's Directorate-General for Translation in 2009, this international group of university leaders and translation programme directors published their understanding of good-quality translator education practices in line with the notions of higher education established by the European Commission (2008). Alongside this European platform, other supranational bodies have appeared such as the International Doctorate in Translation Studies instigated by EST (www.idts-est.org). When it comes

to AVT, international associations such as ESIST have devoted much-needed efforts to promoting quality standards among practitioners and educators, though no training initiatives seem to have been offered yet.

3.2 Translator Education and Training Approaches

According to Klimkowski (2020), most of today's translator education theories draw heavily from the seminal works of two main scholars: the American philosopher J. Dewey and the Russian psychologist L. S. Vygotsky. As previously mentioned in this chapter, however, the latter seems to have contributed to our current understanding of higher education more significantly (see Kiraly 2000 and Massey and Kiraly 2019). The influence of constructivist theories is visible in the collaborative nature of the activities that are often implemented in multilingual communication settings, including translation exercises, as well as the emphasis placed on situated learning and the replication of professional settings. Indeed, while early explorations in the field of translator education first focused on the curricular *content* of translator training programmes, interest soon shifted towards *methodologies* and on to ascertaining *how* students learn to translate (Kelly and Way 2007). Publications on how to learn and teach to translate started to appear in the second half of the last century and particularly grew from the 1980s onwards, with the appearance of seminal works such as Delisle (1980), Nord (1988), Kussmaul (1995), Kiraly (1995), Gile (1995/2009), Robinson (1997/2020), Hurtado Albir (1999), Kiraly (2000), Colina (2003), González-Davies (2004), and Kelly (2005), among others.

From a thematic point of view, Kelly (2005) offered comprehensive summaries of the major approaches utilised by TS scholars, which were later used by Cerezo Merchán (2018) to specifically address AVT education. These approaches are: *teaching objectives-centred* (Delisle 1993), *profession-based learner-centred* (Nord 1988,1991/2005), *process-centred* (Gile 1995/2009), *cognitive and psycholinguistic research-based* (Kiraly 1995), *project-based or situational* (Vienne 1994; Gouadec 2003), *task-based* (Hurtado Albir 1999; González-Davies 2004), *inductiond-eduction-abduction* (Robinson 1997/2020), and *socio-constructivist* (Kiraly 2000).

Although some translator education approaches are often seen as antagonistic (e.g. project-based versus task-based), Kelly (2005, 116) opines that they are in fact complementary, their difference being "simply a question of level/stage of training, that is of sequencing." In a one-of-a-kind scholarly attempt at taking stock of the AVT training landscape, Cerezo Merchán (2012, 33) advocated for the compatibility of situational approaches with task-based approaches, in that the

former propose "the creation of a series of activities to practice specific aspects of learning." There are two main approaches that have an immediate applicability to the didactics of AVT: on the one hand, task-based approaches and, on the other hand, socio-constructivist approaches (including project-based and situated learning experiences). The reasons will be made clearer in the sub-sections that follow, but it can be argued, from the outset, that the skills needed to localise audiovisual and multimedia content may be (more) easily acquired when exposed to semi-real and quasi-professional tasks, as well as to projects that are based on learning outcomes.

3.2.1 Task-based Learning and Sequencing Approaches

This approach is broadly based on Delisle's (1993) succinct training theory and Biggs's (1999) systematic approach to aligned curricular design, which advocates "an overall curricular design based on learning outcomes" (Kelly 2005, 17). The task-based approach, which stems from foreign language learning and teaching and language education in general, was first applied to translator training by Hurtado Albir (1999). Tasks represent the core of this teaching approach, which is informed by humanistic teaching principles, the communicative approach, cooperative learning and socio-constructivism (González-Davies 2004, 12).

In this line of thought, *tasks* are "a chain of activities with the same global aim and a final product" (González-Davies 2004, 23), where *activities* are understood as concrete and brief exercises aiming to help in practising specific skills. A fruitful definition is the one proposed by Hurtado Albir (2015, 263), who states that a translation *task* is "a unit of work that is representative of translation practice, intentionally aimed at learning to translate, and designed with a specific objective, a structure and a work sequence." Within this paradigm, special emphasis is put on curricular design, by carefully creating, organising, and sequencing tasks that promote the acquisition of translation skills. To be successful, the *syllabus* or *module overview* needs to include relevant translation competences, specific aims, expected outcomes, procedures assigned to the students, grading scales and a bibliography (González-Davies 2017). It is primordial that teachers encourage students to familiarise themselves with these module guides, in which the principles, objectives, and goals that regulate the learning and teaching process throughout the duration of the module are stipulated. Module overviews need to be distributed among students and thoroughly discussed between them and the teacher so that the former have a clear understanding of what is required from them to acquire the skills necessary to pass the module and how to make the most of the strategies and resources proposed by their teachers.

In AVT training, sequencing is often at the core of curriculum design. Considerable scholarship has been devoted to fleshing out what AVT courses often include as a means to offer best practices and curricula examples (for instance, Agost et al. 1999). Díaz-Cintas (2008a) claimed that any given subtitling course should follow four dimensions starting from general considerations and then moving on to technical, linguistic and professional considerations. In dubbing, Martínez-Sierra (2012, 141) suggested that the course materials could be classified and embedded depending on the linguistic complexity, the presence of cultural and intertextual references and the specificities of visual synchronisation. Most projects that have utilised AVT methodologies in (foreign) language education (i.e. DAT) – including ClipFlair (Baños and Sokoli 2015), PluriTAV (Martínez-Sierra 2021) and TRADILEX (Talaván and Lertola 2022) – proposed sequences that are deeply rooted in task-based pedagogies.

In a recent attempt to systematise a task-based approach to teach AVT, Cerezo Merchán (2018) proposes four phases. The first focuses on declarative knowledge about AVT practices, with tasks such as "reading support texts, organizing debates, analyzing parallel source and target audiovisual texts, and completing questionnaires" (Cerezo Merchán 2018, 475). The second phase consists of pre-translation practice focusing on the linguistic and technical constraints and conventions affecting AVT practices, which can involve

> analysis of source texts made up of one or several semiotic codes; reflecting on translation commissions; carrying out gist/extended translations; the student's familiarization with relevant translation software applications; conducting documentary and terminological searches; carrying out comparative translation analyses to identify correct solutions and errors; and revising translations.
>
> (Cerezo Merchán 2018, 475)

The third phase entails the creation of extended projects including activities in which students work on translation proper, and which can be accompanied by translation commentaries or essays. Lastly, the fourth phase is an exploration of the professional considerations that expose students to industry-focused information such as "working environment, including the project workflow, the professionals involved in it, payment rates, requirements for professional association membership, and copyright restrictions" (Cerezo Merchán 2018, 476). It could be argued, however, that educators should consider these phases in the opposite direction when devising their tasks, that is, taking into consideration the professional applications of the contents taught in class before devising sequences for the AVT classroom.

3.2.2 Socio-constructivism, Project-based and Situated Learning Experiences

Kiraly (2000) builds on Vygotsky's (1930–34/1980) learning theory of social constructivism and regards translator training programmes as those in which *education* – i.e. the processes of learning and teaching – happens in social environments where knowledge is constructed as a process through human activity. D. Kiraly's seminal works on translator education have been widely acknowledged in the TS community (Abels et al. 2022). According to Piotrowska (2022, 39), his pedagogical ideas "although sometimes controversial and challenging within various academic settings, enlivened the ground of teaching translation and brought new aspects of learning the translation trade to light." As opposed to the *transmissionist* perspective, whereby the learner is considered a passive listener and consumer of knowledge, Kiraly's (2000, 23) *transformationist* position sees learning as "a personal, holistic, intrinsically motivating and socially effectuated construction process." In his view, learning is not transmitted from the teacher to the students but rather proactively constructed and transformed in *collaborative* learning processes.

Authentic collaborative projects encompass a vast array of activities as well as many different ways in which translations can be tackled by students in the form of de-situated exercises. For instance, instead of proposing the translation of a text in full, students can be encouraged to follow specific guidelines, to select the more accurate options among multiple choices, etc. In addition, there are project-embedded activities that form part of these exercises, such as using parallel texts, paraphrasing, doing library and internet searches, creating small translation groups, analysing the assignment, and editing and proofreading the final results. Each activity enhances the authenticity of the projects and aim for greater exhaustiveness in the development of translation skills. Under the socio-constructivist umbrella, learning activities thus imitate to a certain extent how real-life projects are operationalised in the translation industry, and the classroom is transformed into a forum for guided social and cultural experiences and levels of skill acquisition are determined by the student's expertise (see Section 3.3).

The collaborative approach builds on three pedagogical principles: learner autonomy, awareness, and authenticity. In broad terms, students carry out translation activities in teams, whereby they emulate professional contexts that include the production of authentic translations, and discussions on the theoretical and practical aspects of translation. This is done through *scaffolding*, a systematic approach to teaching in which the educator assists learners in the collaborative instruction of their mental models. This approach emphasises "the understanding that the constructivist teacher does not simply give students an activity to complete on their own,

at least not as long as support is needed for the students to complete the task competently" (Kiraly 2000, 45). Scholars have discussed the patent mismatch that exists between trainers and students on their perception of group work in the classroom (Hubscher-Davidson 2008). As Prosser and Trigwell (1999) explain, students learn differently because their interactions with the world are different, too, and depend on their perception of the context (i.e. learning world) and the situation (i.e. student's access to the learning world).

Group work is at the core of socioconstructivist approaches, but as Colina and Venuti (2017) warn, by introducing collaborative work at the expense of teacher intervention, constructivist pedagogies rely greatly on self-learning and may be counterproductive in building basic knowledge. Indeed, self-critical awareness about the ways in which one translates is acquired not only through real-life experiences but also through critical thinking and reflection on the theory and practice of translation. This is why educators' intervention and the implementation of scaffolding techniques is key. In this sense, some may argue that the many different specialisations offered in translation and interpreting programmes often lead to theoretical disagreement or contradictory strategies within the same programme of study. In such cases, educators might find that overriding prescriptive or normative approaches can offer a much-needed opportunity for would-be translators' voices to be heard in the classroom and accommodate their learning needs as appropriate. Furthermore, students are ultimately those who can better judge the overall coherence of a programme and the internal cohesion of the relevant modules and components, especially when taught by large teaching teams.

The combination of the aforementioned group work, collaborative learning and authenticity results in our current understanding of project-based and situated learning, which aim at emphasising long-term, interdisciplinary and student-centred learning with a strong focus on real-life practice. Projects can be defined as "multicompetence assignments that enable the students to engage in pedagogic and professional activities and tasks and work together towards an end product" (González-Davies 2004, 28) and often emulate professional standards and workflows to enhance authenticity. Participants therefore learn by doing (e.g. producing translations of authentic texts) with the aid of technology, driving questions, group work, in-depth inquiry, feedback, decision making, and presentations (Li et al. 2015).

The applications of project-based simulative approaches to the teaching of translation were first inspired by Nord's (1997) developments on functionalist theory, whereas situational approaches drew from the works of Vienne (2000), among others. According to Vienne (2000, 99), the ethos of functionalist teaching stems from the assumption that when students

are not provided with the purpose and context of a given translation task, they are being deprived of a major aspect of professional translation practice. Translator educators who adhere to this philosophy tend to promote student interaction with the help of situated projects, whose main objective is the emulation of real-life translation commissions within an academic environment. Methodological considerations on how project-based approaches are informed by translation competence scholarship, foregrounding the use of seemingly professional projects to develop how-to translation skills. In a recent examination of today's application of functionalist approaches in real-life work scenarios, Calvo (2018) acknowledges that some scholars have criticised the lack of certain elements (such as project specifications in the form of translation briefs) but argues that even where explicit specifications and briefs are not always clearly provided, these approaches remain helpful for both professional and training purposes.

According to Kiraly (2005, 1098), restricting project-based learning to assigning exercises which are then reviewed in the classroom represents a type of lecture-like performance (*performance magistrale*) that results from "the inertia of the conventional trial-and-error approach to teaching." Along the same lines, Kiraly (2000, 43) argues that situating learning for translating purposes would require "the collaborative undertaking of professional translation tasks, in all of their complexity, under the guidance of a professional translator," as well as presenting real or semi-real pieces of work to the students, offering them real praxis inside and outside the classroom. For the scholar, this would be the only method that brings the complex translation profession alive, though it is very unlikely that companies will be eager to outsource projects to inexperienced translators-to-be or that all the translation and interpreting courses that exist today across the globe have an adequate number of professional translators as members of staff.

As a rule of thumb, situated learning implies the application of a "practice-theoretical approach [that] lends further weight to the importance of engaging translation students in relevant workplace practices through internships or placements" (Olohan 2021, 98). According to González-Davies and Enríquez-Raído (2016), situated translation learning and teaching practices are beneficial inasmuch as they allow students to establish a direct connection with industry stakeholders and develop professional competences. More specifically, they "aim at facilitating the transition from (near-)authentic task- and/or project-based work to real-life professional practice" (González-Davies and Enríquez-Raído 2016, 3) and thereby narrow the gap between abstract learning and real-life applications of the knowledge acquired in the work environment, where such knowledge is needed. A recent action research study by Rodríguez de Céspedes

(2019), in which observations of a translation company's training cycle were made from inside, shed light on the professional skills that companies demand from trainees nowadays. Her results confirmed the need, in the context of a neoliberal university, for trainees to enhance their employ-ability skills by being exposed to both simulated professional practices and situated experiences in authentic environments, the combination of which results in the facilitation of "a well-rounded set of employ-ability skills that can be applied to the whole programme of study, or a specific unit" (Rodríguez de Céspedes 2017, 113).

Attention must be drawn to the fact that evaluating semi-real revoicing and subtitling projects may have different objectives, and quality can be measured following different models. An integrative model for translation evaluations in interactive, artificial contexts is illustrated by González-Davies (2004), although translation evaluation methods tend to differ among teachers of translation, and there do not seem to be homogenous practices. When it comes to AVT, few quality or evaluative methods have been proposed, and most of them are only applicable to subtitling (see Section 2.3.2).

3.3 Translation Competence

The so-called translation (and translator) *competence(s)* lie at the very core of translator education scholarship. The literature reveals that the point of departure of many of these studies consists of establishing a common understanding of what *translation* is. In TS, translation has been labelled a "craft" (Newmark 1976, 21), an "art" (Meschonnic 1999, 18) or even a "technology" (Mayoral 2001a, 16), and if *competence* is understood as a holistic combination of sub-competences and skills, including expertise and professionalism, then translation is also a *discipline*. On the understanding that translators are trained for the contemporary (and future) needs of the industry, trainers have traditionally inquired *how* a linguist-to-be becomes a professional and *what* they need to know to be fully competent. Specialist training has been continually transformed to cater for new professional scenarios by training the future generations of translators. The below sub-sections report on the body of research that seeks to understand the skills that translators require to excel at their work.

3.3.1 Competence in Translation Studies

The ultimate goal of the didactics of translation is the acquisition of translation competence in professional contexts. *Competence* can thus be understood as everything that enables an individual to carry out the cognitive operations that are required by translation practice (Hurtado

Albir 2001). This process integrates "various types of capabilities and skills (cognitive, affective, psychomotor or social) and declarative knowledge" (Hurtado Albir 2007, 167). Translation competence – which coexists with similar theoretical concepts such as *expertise*, *performance* and *professionalism* within academe – started to spark interest in the late 1980s in search of a better understanding of what translators need to master in order to become fully competent professionals. Among the scholars who have produced models of translation competence are Krings (1986), Ammann (1990), Gile (1995), Hurtado Albir (1995), Kiraly (1995, 2000), Kussmaul (1995), Cao (1996), Risku (1998), Neubert (2000), Robinson (1991, 1997), PACTE (1998, 2018), Kelly (2002, 2005), Pym (2003), Alves and Gonçalves (2007), Angelelli (2009), Göpferich (2009), Göpferich and Jääskeläinen (2009), EMT Expert Group (2009, 2017, 2022), Muñoz Martín (2014), PETRA-E (2017), and Yang and Li (2021).

As established by Robert et al. (2017), although older models considered translation competence as a summation of linguistic competences, the vast majority of models are based on the understanding that competence is a complex construct comprising multiple sub-competences and is therefore *multicomponential*. Yang and Li (2021) explain that many other researchers have also discussed translation competence to some extent in their language and translation teaching works, including Bell (1991), Wilss (1996), Campbell (1998), Colina (2003) and Shreve (2006), thereby suggesting that competence has indeed attracted much attention from many translation instructors worldwide. Indeed, translation competence has been the central theme of several large-scale publications (see, for instance, Schäffner and Adab 2000, Schwieter and Ferrera 2014, and Pietrzak and Deckert 2015), and recent works on the re-profiling of translator education still capitalise on the concept of competence (see Massey et al. 2022, 2023). Some scholars, such as Plaza-Lara (2016), Chodkiewicz (2020) and Quinci (2023), have critically examined existing translation competence models, with others stressing that most models remain to be tested and validated empirically (Lesznyák 2007).

Two of the earliest models of translation competence were those elaborated by two Spanish research groups, namely PACTE (grupsderecerca.uab.cat/pacte), led by A. Hurtado Albir at the Autonomous University of Barcelona, and AVANTI (www.ugr.es/~avanti), led by D. Kelly at the University of Granada.

On the one hand, PACTE has put forward integrated definitions of translation competence in more than two decades of empirical work (Hurtado Albir 2017) and has recently pioneered the development of a European framework of competence levels (PACTE 2018; Hurtado Albir and Rodríguez-Inés 2022; Hurtado Albir et al. 2023). Following

a communicative approach framework, they first presented a translation competence model in 1988 and then identified six interrelated, hierarchical sub-competences (PACTE 1998, 2000, 2001). They distinctly moved away from terms such as *expert knowledge* and *learning processes* and, following a series of exploratory tests and experiments, proposed a holistic model of translation competence (PACTE 2003, 2005). In one of their latest collective volumes on translation competence (Hurtado Albir 2017), they analyse the outcomes and applications of their holistic model, which establishes that translation competence comprises five sub-competences – i.e. bilingual, extralinguistic, knowledge of translation, instrumental, and strategic – and activates a series of psycho-physiological components" (PACTE 2017, 39). The group's latest developments in translation competence were collated as part of PACTE's latest project entitled NACT, which took place between 2015 and 2018, and whose main results were published in a Spanish journal in the form of a special issue (see Hurtado Albir and Rodríguez-Inés 2022). The results yielded as part of this work have more recently led to a European project entitled EFFORT (2020–2023, https://effortproject.eu) that reunited a number of translator educators from partner higher education institutions. They set out to develop and validate the descriptors of translation competence by drawing on the well-established descriptors published in the second edition of the *Common European Framework of Reference for Languages* (Council of Europe 2018).

On the other hand, Kelly's (2002) multicomponential model of translation competence has been instrumental in translation didactics. It comprised seven sub-competences: communicative and textual, professional and instrumental, interpersonal, psycho-physiological, subject area, cultural, and strategic (Kelly 2002, 15). Contrary to PACTE's (2003) model, Kelly situates strategic competence – "comprising all processes applied to the handling and completion of a job as well as to identifying and solving problems and self-evaluation and revision" (Kelly 2002, 15) – as an overarching competence that enables the application of the rest of competences. This model has been used by other translation scholars, notably Cerezo Merchán (2012) for AVT-focused education.

These models have attracted certain criticism, and among their detractors are Pym (2003) and Malmkjær (2009) who have argued against multicomponential models. Pym (2003, 489) proposed a minimalist approach to translation competence that aims at preserving the essence of translating, even though this approach does not seem to elaborate its theoretical assumptions in much detail. More recently, Shreve et al. (2018, 49) portended that evidence from cognitive studies is always required to consider models psychologically valid and go on to ask: "the PACTE definition of competence is quite robust, but is it sufficiently

distinguishable from expertise to justify the maintenance of the older disciplinary term?"

Alongside the concept of *competence* lie those of *professionalism* and *expertise*. These are inextricably related inasmuch as translators require enough *expertise* to become *professionals* who can operate to the highest standard in the real market. In Kiraly's words (2000, 31), *professionalism* is "the translator's ability to work within the social and ethical constraints of translation situations in a manner that is consistent with the norms of the profession," whereas *expertise* is "the competence to accomplish translation tasks to the satisfaction of clients and in accordance with the norms and conventions of the profession with respect to producing a translated text *per se*." At this point, it would be primordial to remember that "translation is not only a skill but also a problem-solving process" (Kussmaul 1995, 9). Indeed, practising professional (and not pedagogical) translation calls for the successful acquisition and ultimate command of a certain number of highly technical and very specific skills. As Chesterman (2016, 149) emphasises, "insofar as translating is seen as a skill, an expert translator is thus someone who works largely on intuition, who has automatized a set of basic routines, and who can draw on deliberative rationality when the need arises, in the solving of unusual problems or in the comparison and justification of possible solutions."

Drawing on the acquisition theory proposed by Dreyfus and Dreyfus (1980, 1986), Chesterman (2016, 150) argues that the process of *skill* acquisition is gradually automatised as "it goes from atomistic to holistic recognition, from conscious to unconscious responses, from analytical to intuitive decision-making, from calculative to deliberative rationality, from detached to involved commitment." From this perspective, also closely examined by scholars such as Massey and Kiraly (2021), the ultimate acquisition of translation *competence* would entail deliberative rationality, intuitive decision-making and holistic recognition of the translation process. Moving away from the Piagetian school, Dreyfus and Dreyfus (1980, 5) argued that "skill in its minimal form is produced by following abstract formal rules, but that only experience with concrete cases can account for higher levels of performance." Behind this rationale lies the assumption that translation competence can be acquired, thus justifying its constructive nature in opposition to those who embellish translation as an inner gift or a talent with which one is born and which cannot be acquired. This assumption is as inextricable and complex as the definition of translation itself and would therefore require further philosophical reflection. Yet to put it simply, translation is hereby considered a process, a craft and a skill that can be learnt, requiring the acquisition of so-called translation competence through specific training. In a nutshell, the translator is made, not born.

An interesting debate was introduced by Kiraly (2000, 13; emphasis in original) when he claimed:

> Becoming a professional translator clearly entails more than learning specific skills that allow one to produce an acceptable target text in one language on the basis of a text written in another. That is what I would call "**translation** competence". Acquiring "**translator** competence", on the other hand, in addition involved joining a number of new communities such as the group of educated users of several languages, those conversant in specialized technical fields, and proficient users of traditional tools and new technologies for professional interlingual communication purposes.

Following this rationale, it could be argued that the acquisition of *translator* competence responds to the premise that there are culture-specific and national norms that govern the practice of professional translation. From this perspective, translator competence is inextricably related to expertise insofar as collaborative work, industry knowledge and expert communities are concerned. This area of inquiry has attracted much attention in cognitive studies, and Shreve (1997, 2006) advocates for the concept of translation *expertise* as a form of superior performance that builds on deliberate practice. In his view, expertise equals "regular engagement in specific activities directed at performance enhancement in a particular domain" (Shreve 2006, 29). Translation is thus conceived as a domain of skilled activity that applies to well-defined tasks of certain complexity, so Shreve (2006) argues that expertise is developed via repetition and correction accompanied by informative feedback (see Section 3.4). Englund Dimitrova (2005) also sets out to compare the concepts of competence and expertise, arguing that whereas translation *ability* can develop into translator *competence* – to which she refers as a *professional* competence – *expertise* is an ulterior development that sets those who can translate apart from those who truly excel at it. As explicitly upheld by Way (2022, 93) translation competence and expertise are not only different but also mutually exclusive insofar as "hard work is required to reach expertise and requires specific goals that may be achieved by recognising their weaknesses [. . .] and through planning to improve each competence."

To better understand recent scholarly efforts on translation competence, and how these relate to the actual practice of translation training provision in today's higher education landscape, educators may resort to *The European Qualifications Framework for Lifelong Learning* (European Commission 2008). This document served as the basis for the production of the *Framework for Higher Education Qualifications in the UK* (QAA 2008) and was used by the EMT Expert Group (2009, 2017, 2022) to

elaborate their own translation competence frameworks for the EMT network. According to the first model of translation competence produced by the EMT Expert Group (2009), which drew heavily upon previous scholarly works (Chodkiewicz 2012), there were six interdependent sub-competences: language, intercultural, information mining, technological, thematic, and translation service provision. The EMT Expert Group (2009, 2017, 2022) established a clear distinction between *competence* and *skills*. Whereas a *skill* is "the ability to apply knowledge and use know-how to complete tasks and solve problems," *competence* is broader in its scope and refers to "the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development" (European Commission 2008, 11). Interestingly, the concepts of *expertise* and *professionalism* are absent from this key document.

It was not until a few years ago that the EMT Expert Group (2017) introduced several changes to their original understanding of translation competence. At the time of writing, the current framework encompasses 35 competences, skills, and areas of knowledge that lie under five *areas of competence* and "should be considered as complementary and equally important in providing the translation service, which is the ultimate goal of the translation process" (EMT Expert Group 2017, 5). This taxonomy introduces a major change: translation competence is no longer an umbrella competence but rather an area of competence that "lies at the heart of the translation service provision competences" and includes "all the strategic, methodological and thematic competences that come into play before, during and following the transfer phase per se – from document analysis to final quality control procedures" (EMT Expert Group 2017, 7). As a novelty, the provision of translation services now "covers all the skills relating to the implementation of translation and, more generally, to language services in a professional context – from client awareness and negotiation through to project management and quality assurance" (EMT Expert Group 2017, 11). The so-called *areas of competence* are: language and culture (including transcultural and sociolinguistic awareness, and communicative skills); translation (including strategic, methodological, and thematic competence); technology (including tools and applications); personal and interpersonal; and service provision.

From a practical perspective, and focusing on a profession-oriented approach in translator education settings, the EMT's most substantial sub-competence is the so-called *service provision*, which seems to draw on the "strategic competence" first developed by both Kelly (2002, 15) and PACTE (2017, 40). This includes the set of skills necessary to accomplish translation projects under existing working conditions. It thus has to do with quality, professionalism, self-evaluation, negotiation and

many other business-related aspects of translation understood as a service that is provided by linguists and other professionals with enough translation expertise to excel in a rather competitive market. This approach also echoes recent profession-oriented, industry-led approaches in TS and translator training scholarship (see Angelone et al. 2020).

Unsurprisingly, the current pervasiveness of automation tools in the translation industry has prompted some scholars to present alternative models of competence with special attention being paid to the likes of PM, revision and post-editing (see Robert et al. 2017; Nitzke et al. 2019; Nitzke and Hansen-Schirra 2021; Plaza-Lara 2022; Robert et al. 2023). As technology disrupts the role of the human translator in a highly competitive market, and particularly in the face of highly perfected AI systems, "it is precisely the elements of 'human' intelligence and thinking that will set our future translators apart and that will guarantee their role in the future of the profession" (Rodríguez de Céspedes and Bawa Mason 2022, 244). This is the reason why further scholarly work on translation competence, professionalism and expertise is still urgently needed to clearly establish how human competences, skills and abilities (and ultimately expertise) set human linguists apart from AI.

3.3.2 Competence in Audiovisual Translation

As far as the learning and teaching of AVT are concerned, one of the most notable differences with other types of translation (such as literary or legal) lies in its multimodal nature. The confluence in any given clip of aural and visual, and verbal and non-verbal information calls for transversal skills related to technology and audiovisual literacy. Furthermore, technology, and instrumental and occupational subcompetences play a fundamental role in AVT education (Bolaños García-Escribano and Díaz-Cintas 2019) and are closely linked to the EMT Expert Group's (2017) *technology* and *translation service provision* areas of competence (see Section 3.3.1).

AVT remains amply taught at postgraduate level (see Section 3.5), so it is often assumed that many students are translation or modern foreign language graduates who may already be working in the language and translation industries. As a minimum, students enrolling on a postgraduate course on AVT are often linguists who have received sufficient training in practical translation at undergraduate level. This is because, as discussed in Section 2.3, AVT practices impose a number of technical constraints, idiosyncratic working conditions, specific linguistic challenges, and cognitive pressure that must be handled by linguists. The coining of a so-called *AVT competence* would entail, *inter alia*, advanced image narration understanding, information and communication technologies literacy, and condensation skills, among other sub-competences, knowledge, and skills.

These are professional traits that go far beyond linguistic abilities but which first necessitate pre-acquired solid linguistic and translation skills. As foregrounded by Gambier (2013, 55), the translation of audiovisual productions requires the activation of multiple skills, such as

> the ability to analyse the needs of the intended audience, to match the verbal to the visual; the ability to comply with deadlines, commitments, interpersonal cooperation, team organization; the ability to express oneself concisely and succinctly and to write with a sense of rhythm [...]; the ability to adapt to and familiarize oneself with new tools; and the ability to self-evaluate in order to revise and assess the quality of the output.

Cerezo Merchán (2012) assembled a comprehensive, descriptive case study of AVT competence and skills by critically engaging with existing works, including Zabalbeascoa (2000, 2001), Carroll (1998), James (1998), Kovačič (1998), Agost et al. (1999), Bartrina (2001), Espasa (2001), Gambier (2001), Izard (2001), Chaume (2003), Díaz-Cintas (2006, 2008b), Matamala (2008), Neves (2008), and Granell (2011). An adaption of her list of AVT competences is presented in Table 3.1:

The above taxonomy remains the most comprehensive attempt at outlining the skills that would-be AVT specialists ought to hone when learning how to localise media content. However, there have been recent attempts at defining media accessibility competences and skills, including the ADLAB projects (Audio Description: Lifelong Access for the Blind, 2011–2014, and Audio Description: A Laboratory for the development of a new professional profile, 2016–2019), following which Mazur and Chmiel (2021) reported on the importance attached to AD competences by experienced practitioners, researchers, educators, and other stakeholders from the media accessibility industries. Another part of that project was Mendoza and Matamala's (2019) survey of instances of AD training – with an emphasis on the skills expected from future Spanish audio describers – and a study on how to develop AD training that considers those skills (Chmiel et al. 2019). These results offer empirical evidence that supports our understanding of AD skills, which until then had been briefly discussed by scholars, such as Matamala and Orero (2007), and practitioners, such as Snyder (2005). Yet, further empirical evidence is still required to ascertain how those AD competences are acquired in training environments.

The literature reveals an overall agreement on the application of industry practices in classroom activities when fostering AVT-specific skills and competences. Following Way (2000), educators should endeavour to identify and utilise the real needs of the translation industry. As seen in Section 2.1.2, AVT industry workflows mean that professionals are mainly

Table 3.1 Audiovisual translation competences

AVT competences
Communicative and textual sub-competences
• Exhaustive knowledge of the target language in all dimensions (spelling, phonetics, morphology, syntax, lexis, phraseology and textuality) • Proficiency in the source language (excellent listening and written comprehension; identification of register, colloquial varieties and dialects, etc.) • Synthesis and paraphrasing skills (knowledge of information reduction and amplification translation techniques) • Linguistic creativity • Text analysis and production skills (discourse mode: fake orality, pretended orality)
Cultural sub-competences
• Good knowledge of the working cultures and adequacy of the translation to the needs of the target culture
Thematic sub-competences
• Cinema knowledge • Theatre knowledge • Exhaustive knowledge of the target audiences' specific characteristics • Film language and image semiotics knowledge • Audiovisual genres' characteristics knowledge
Instrumental-professional sub-competences
• Command of AVT-specific software (subtitling, dubbing, AD, etc.) • Command of digitalisation, encoding and format conversion software • Speech recognition knowledge • Willingness and disposition to learning new software and packages • Proficient resource search and documentation strategies • Theoretical knowledge on one or more AVT modes • Basic knowledge on software localisation • Knowledge on VO • Command of sign language techniques • Command of text and image visualisation • Command of dialogue writing techniques for dubbing and VO (take segmentation, notations, timecodes, etc.) • Command of text into subtitle segmentation, spotting and reading speed adjustments for the target audience • Knowledge on appropriate translation strategies and techniques for each audiovisual genre • AVT project managing skills (project creation, development and organisation, teamwork) • Knowledge on the profession and the current landscape in the industry

Source: Adapted from Cerezo Merchán (2012, 128–129).

required to translate from home and materials are sent over through file transfer protocols or, increasingly more commonly, are hosted in the company's cloud. Freelancers are expected to command different pieces of software, on top of being conversant with national and company-specific conventions. Therefore, among the many skills that already form part of AVT-specific curricula, one should add the ability to work on the cloud as well as being flexible enough to adapt to future working ecosystems. In this context, competent translators are not only those who know how to translate but also those who can adapt easily to new software and translation processes, as well as to heterogeneous working teams.

Alongside professional working standards and industry conventions, the use of authentic materials and relevant specialist software are key in profession-oriented environments. Needless to say, as the AVT industry evolves, particularly propelled by new automation technologies and practices such as speech-to-speech tools, these taxonomies should be revisited. Future examinations of AVT competences would ideally reflect on the impact of AI to keep up with the new market reality, and more efforts should be devoted to categorising and validating AVT-specific competences while considering pressing matters such as perception (as well as audiences' ability to raise concerns over quality), the changing role of the professional translator (including post-editing and video synchronisation), efficiency and productivity, the multifaceted nature of plurilingualism and multilingualism in an increasingly global world, and the far-reaching impact of English as a lingua franca (e.g. pivot translation), among other pressing matters.

3.4 Translation Assessment

As with other disciplines, translation is subject to formal assessment in higher education. The OBE approach establishes that *assessment* equals the process of measuring and understanding the effectiveness of teaching and learning strategies and methods and can take many forms. When devising assessment tasks, educators need to ensure that the teaching is fully aligned as the assessment represents "the knowledge to be learned in a way that is authentic to real life" (Biggs and Tang 1992/2011, 212) (see Section 3.1.1). In translator education settings, there seems to be a preference for authentic, contextualised assessments (i.e. practicum and case-based and work-based assessment) as opposed to decontexualised assessments (i.e. written exams and essays for assessing declarative knowledge with no real-life context). In the same vein, translation assessments are often subject to analytical rather than holistic marking, thereby prioritising the use of ad-hoc marking criteria and rubrics that reduce assessments to independent components (which in practical translation work can be elements such as

coherence, accuracy, and adherence to industry conventions) in search of objectivity.

3.4.1 Assessment in Translation Studies

Translation assessment, albeit a thorny subject, has attracted significant attention from TS scholars (e.g. Galán-Mañas and Hurtado Albir 2015; Way 2022 and Huertas Barros et al. 2019, among others), thereby contributing to a better understanding of how translators-to-be are assessed in the context of higher education. At the turn of the century, however, González Davies (2004), pointed out that more research was needed because key aspects of translation assessments, such as criteria and rubrics, were not always objective. This is perhaps due to the fact that, as explained by Martínez Melis and Hurtado Albir (2001, 273) "outside the academic context, the evaluation of published translations is generally carried out in the absence of any objective criteria of analysis and, sometimes without even a detailed comparison between the translation and the original text."

In today's higher education context, heavily influenced by competence-based models, education seeks to be as close to the professional reality as possible (see Section 3.3), so an "assessment must, as far as possible, simulate real situations that require students to make use of their acquired competences" (Galán-Mañas and Hurtado Albir 2015, 63). Indeed, Huertas Barros and Vine (2018) have argued that the development of assessment tasks reflects an attempt to further embrace competence-based education in response to seminal works (see HEA 2012), which places great emphasis on the importance of learning outcomes in connection with the professional applications of teaching and assessment.

3.4.1.1 Types of Assessment Tasks

Depending on who assesses the relevant tasks, three types of assessment emerge: *teacher* assessment (the task is evaluated by the educator who often awards a classification), *peer* assessment (the task is evaluated by another student) and *self*-assessment (the student evaluates their own progress). Although teacher assessments remain common for scoring and benchmarking purposes, recent scholarly works on the evaluation of translation competence reveal that new forms of summative assessment are currently being devised in an attempt to move away from traditional top-down, teacher-led evaluations of translated products.

Pinpointing whether translation trainees achieve progress "can be looked at from the perspective of the product (normally associated with summative assessment) or the process (normally linked to formative assessment)" (Huertas Barros and Vine 2018, 7). The traditional

approach to summative assessment focuses on the delivery of translations that students submit as part of their coursework or final exams assessed by the *teacher*. When translations are thus assessed as products, assessment tasks must clearly diverge from language competence evaluations (Dastyar 2019), even though some TS scholars have traditionally found inspiration in them. In so-called *practical* translation courses and modules – hereby understood as those components in which students carry out (quasi) authentic professional translations – the products that students deliver can be "translation only, translation and a commentary, translations with or without a commentary but including other forms of assessment" (Huertas Barros and Vine 2018, 15). In this scenario, as explained by Adab (2000, 215–216), translations can be used "to assess the suitability of the text for its intended reader and use; to evaluate language competence (usually L2, L3); to determine levels of intercultural awareness; or to identify levels and types of translation competence."

To better judge the quality of students' translations for assessment purposes, educators often request translation commentaries, also known as *commented* or *annotated translations*, which represent "a hybrid academic essay that requires students' critical reflection on their own process of producing a piece of translation" (Shih 2018, 308). Conceptual and terminological disparities aside, this type of assessment is "increasingly considered to be a default assessment method in translator education and yet little attention has been paid to it empirically" (Shih 2018, 291). Translation commentaries constitute a practical way for educators to ensure that students have made well-informed decisions and applied relevant strategies and techniques (see Johnson 2024). Students are thus prompted to discuss examples taken from their own translations and thereby engage with the theoretical and practical contents covered inside and outside the classroom. In the face of the many automation tools that can currently be used for both translation content (e.g. MT) and academic essays (e.g. generative AI), translation commentaries remain a practical format for educators to ascertain whether students have taken ownership of their work and identify indicators of critical thinking, originality, and engagement with the literature.

Peer- and *self-assessment* approaches are useful to foster learners' engagement with their own learning process while working towards competence acquisition and emphasising the importance of teamwork. *Peer*-assessment, on the one hand, constitutes a common type of formative assessment that is inextricably linked to project-based and situated learning approaches (see Section 3.2.2). Its ethos is that translators work in (semi)authentic environments in which work is delivered to peers to gauge external opinion. This usually takes the form of informal feedback that is shared among the students while the teacher monitors progress

and ensures that the assessment tasks are constructive and beneficial. Self-assessment, on the other hand, is useful for trainees to identify their own weaknesses by analysing their own progress. Way's so-called *Achilles' Heel Sheet* was first introduced in 2008 and subsequently perfected as "an effective tool to stimulate self-reflection on current levels of competences, pinpoint possible strengths and weaknesses and to consider and discuss possible remedies before, during and after each translation module" (Way 2023, 133). Haro-Soler and Kiraly (2019) call for more opportunities for authentic learning and focus on the translator's self-perceptions, such as self-efficacy beliefs, self-concept, self-confidence and self-esteem. This particular stance is arguably linked to the role played by motivation and the effectiveness of teacher-generated and peer feedback in translation assessments (see Way 2019). *Peer-* and *self-*assessments therefore constitute legitimate ways for educators to evaluate translation as a process, though traditional assessment infrastructures often require the submission of deliverables. In this case, educators can choose to assess students' capacity to reflect on their own learning process by integrating student reflective commentaries in summative assessments (see Shih 2018).

3.4.1.2 Marking Criteria and Rubrics

Today's higher education system still imposes *teacher* appraisal for summative assessment, which inevitably implies awarding classifications for benchmarking purposes (Presas 2012). The creation and use of criteria and rubrics is directly dependent on the educational context in which a programme of study takes place, but it could be argued that criteria used for practical translation assessments usually encompass descriptors that closely resemble translation competences and skills (see Section 3.3), hereby used as standards of judgement. Rubrics are often used to represent rating scales containing explicit standards of performance for each grade category; in the UK's grading system for postgraduate qualifications, classifications are divided into four bands (Distinction, Merit, Pass, Fail). Classifications are obtained holistically or by assigning specific scores to specific components of the relevant assessment.

Assessing translation work is not without its hurdles. Given the degree of subjectivity that any translation work entails, rubrics are warmly welcomed, particularly in decontextualised assessments such as certification tests offered by translator associations. Kim (2009) indicates the usefulness of criteria taken from (inter/supra)national competent bodies and suggests that the intricacy of assessing translation stems from its intrinsic subjectivity. As constructs that aim to measure competence, translation assessments ought to consider not only the authenticity of the tasks at hand but also the validity and reliability of the testing process (Angelelli

2009). It could be argued, however, that rubrics used by translator educators, when different to those used by associations and authorities, are oftentimes produced and updated following a trial-and-error approach or imposed by partner faculties or departments.

In TS, scholarly works on quality and translation quality assessment (see Section 2.4) – often associated with specific schools of thought that share a common theoretical understanding of *translation* – have deeply influenced the development of marking criteria and rubrics (see Angelelli and Jacobson 2009). In instances of profession-oriented training that aim to expose trainees to authentic translation quality assessment practices (e.g. Konttinen et al. 2021), scholars may use quality evaluation metrics taken from the translation industry such as the multidimensional quality metrics. Most models, however, seem to focus on errors to offer definitions of translation errors and categorisations or taxonomies for the assessment of translation work (see Waddington 2001). Alongside error categorisation and severity in scenarios where assessments are used for qualification purposes, Shreve (1997, 2002, 2006) and Shreve et al. (2018) have insisted on the importance of assessors' informative feedback. Students ultimately develop expertise in training environments when exposed to feedback that enables improvement. Following this approach, translations are necessarily well-defined tasks that students undertake in the form of deliberate practice. Educators, thus conceived as more experienced translators (i.e. *experts*), read those translations and propose areas of improvement, which allow trainees to repeat similar iterations in future and continue honing their translation skills.

Huertas Barros and Vine (2016, 2018, 2019) claim that translator training institutions have recently attempted to disrupt traditional assessment practices. In response to the changing landscapes of both the translation industry and translator education practices, Huertas Barros and Vine (2018, 21) argue that "assessment becomes more valid and prioritises validity over reliability, it is more transparent, and more authentic." Translation assessments clearly pursue authenticity in educational environments, so the professional applications of translation quality assessment inevitably need be taken into account and be further embedded in translator education (see Doherty et al. 2018). Having said that, the advent of automation tools, notably MT (see Section 4.2.2), is disrupting traditional marking criteria and ultimately challenging well-established assessment methods (Koponen et al. 2021). Some scholars have therefore proposed ad-hoc criteria for the evaluation of MT-focused assessments in which trainees perform a quality evaluation of MT-generated output using metrics such as adequacy, post-editing productivity and error taxonomies (Moorkens 2018). Further work is certainly needed to further triangulate

OBE approaches, translation assessment and the latest AI technologies in higher education.

3.4.2 Assessment in Audiovisual Translation

Few scholars have examined the implications of AVT-specific assessments. As with the assessment of practical translation work (see Section 3.4.1), the ultimate goal of AVT assessments is the development of AVT-specific competences and skills, and summative work is still often required for benchmarking and classification purposes. Informal and formal feedback, be it generated by peers or educators, is of utmost importance for students to hone their skills and work towards the acquisition of relevant skills (see Section 3.3.2).

As posited by Kruger (2008, 84), the "assessment of subtitles (as of translations) is a complicated and often subjective exercise and various attempts have been made to create evaluation grids." There have been some scholarly efforts to propose systematic assessment evaluations and rubrics for dubbing (Spiteri Miggiani 2022) subtitling (James et al. 1996, Díaz-Cintas 2001 and Kruger 2008), AD (Marzà 2010; Fryer 2019), SDH (De Higes Andino and Cerezo Merchán 2018) as well as DAT for foreign language learning purposes (Marzà et al. 2020; Talaván et al. 2022). Most efforts, however, tend to focus on national conventions while heavily relying on an error-based assessment of AVT output (Kajzer-Wietrzny and Tymczyńska 2015). Some translation quality models, such as the one developed by Romero-Fresco and Martínez (2015) and Romero-Fresco and Pöchhacker (2017) for intralingual and interlingual live subtitling, respectively, are based on errors but can be easily used in educational environments. In recent scholarly efforts on the integration of MT post-editing into AVT training, Bolaños García-Escribano and Díaz-Cintas (2023) and Cerezo Merchán (2023) also propose error classifications for post-editing purposes. These approaches are consonant with existing translation quality evaluation models in the industry (see Section 2.4) insofar as most taxonomies also capitalise on errors and leave little room for rewarding successful attempts.

The development of a taxonomy of assessment criteria is thorny and inevitably conducive to criticism of what it does not consider or how it categorises certain elements. However, the AVT education literature seems to be lacking in scholarly work on assessment in connection with professional competence and industry standards. For clarity purposes, it is hereby argued that the assessment of AVT practices should consider three umbrella categories of textual parameters: *technique*, *language* and *translation*. *Technique* refers to the synchronisation of the target text (e.g. subtitles, dubbing script, AD narration) with the original clip,[1] so

these parameters ought to encompass those that ensure the working files are usable and fully synchronised using existing conventions. *Language* refers to the student's capacity to produce a text that is correct, appropriate, fluent and attuned to the needs of the target audience; in addition, there are practice-specific conventions that would fall under this category, such as the use of punctuation marks and annotations where relevant. *Translation* refers to the transfer of the original utterances (e.g. dialogue and narrations) to a target language. When this component is included (e.g. interlingual subtitling and lip-sync dubbing), the translation has to undergo minute scrutiny in terms of accuracy, functionality and appropriateness while also paying close attention to certain challenges such as those related to culture, intertextuality and humour. This latter umbrella category, arguably influenced by existing translation quality models and traditional assessment criteria (e.g. comprehension and rendering of meaning), has one particularity when it comes to AVT – the fact that the translation of clips (i.e. multimodal constructs) is inherently subject to visual information and limitations, meaning semiotic cohesion deeply affects the resulting translation. Therefore, traditional translation-specific marking criteria surely have to be adapted for AVT practices, thereby emphasising the importance of closely linking the target texts with the visual component of the original clips.

Arguably, there are several parameters that overlap between the abovementioned umbrella categories; for instance, in the case of lip-sync dubbing, lip and kinesic synchronisation can be understood technically (i.e. adjusting the script to the visuals in terms of timestamps and specific word placement) and linguistically (i.e. wording the target text so that vowels and other relevant consonants are used to match lip movement in the voicing phase). Moreover, the actual translation of the dialogues is inevitably impacted by the decisions made for the sake of full synchrony with the visuals. For the sake of simplicity, however, all aspects related to the synchronisation of the textual output with the visuals have been encapsulated under the *technical* macro category.

Table 3.2 aims to encapsulate some of the macro parameters that educators can consider when drafting their marking criteria and rubrics to assess AVT work. The below list has been produced using the existing literature (as seen in Section 2, where the specificities of each AVT mode are fleshed out) as well as internal documents (i.e. marking criteria and rubrics) from several AVT courses in the UK and industry guidelines. To better understand this table, media accessibility practices including AD and SDH have been placed in a separate column. It should be noted that these macro parameters will have to be used in accordance with the practical uses of each AVT practice. For instance, the technical parameters of subtitling usually apply to SDH work with some minor exceptions, whereas isochrony

Table 3.2 Assessable elements in AVT practical work (macro textual parameters)

	Subtitling	*Revoicing*	*Media accessibility*
Technical	Text-video synchronisation		
	Layout (font size, colours, blank spaces, position) Spatial synchronisation (position, justification) Template functionality (file format) Temporal synchronisation (in and out timecodes, minimum gap, chaining)	Annotations and tags Isochrony Kinesic synchrony Layout (take segmentation) Lip synchrony	**AD** Cues and notes Identification and verbalisation of relevant visual input Script segmentation Synchrony (use of natural pauses) **SDH** Identification and verbalisation of relevant aural input Speaker identification Synchrony (use of sound cues)
	Subtitling	*Revoicing*	*Media accessibility*
Linguistic	Reduction (condensation and omission) Segmentation Subtitling-specific punctuation marks (dashes, inverted commas) and other orthotypographical rules (italics)	Dialogue writing (adaptation) and notes of expected articulation (e.g. foreign names and places) In-text pronunciation indications (as per reference materials) Naturalness (prefabricated orality) Phonaesthetics (cacophonies, repetitions)	**AD** Lexis (word choice, ambiguity and redundancy) Naturalness and fluency Speaker identification (including gender, race, age, pronouns) Syntax (sentence order and structure, verb tenses, verbal specificity) **SDH** Music, accents and pronunciation Speaker and sound descriptions Verbal specificity (sound effects, silence) Voice qualifiers (shouting, emphasis, intonation, whispering)
	Coherence and cohesion (including consistency) Grammatical accuracy Idiomaticity and clarity Lexical control Punctuation Spelling Style Syntax		

Table 3.2 (Continued)

	Subtitling	*Revoicing*	*Media accessibility*
Translation	Comprehension of nuances and semantic accuracy Genre conventions Linguistic interference Pragmatical appropriateness Reproduction of linguistic variation Semiotic cohesion (consideration of the visuals) Terminological consistency Text-specific challenges (e.g. cultural elements, humour, songs, language variety, intertextual references, inclusive language, and taboo language and swearwords)		

Source: Author.

in revoicing differs depending on whether it is considered approximate (superimposed VO track) or exact (lip-sync dubbing). In a similar vein, some overlaps can be identified when comparing revoicing practices such as dubbing and revoicing with AD, but in this case, revoicing parameters are not always applicable to AD.

Needless to say, there are many other parameters that do not naturally fit under any of the abovementioned three sections. For instance, Spiteri-Miggiani (2022) stresses that assessing dubbing practice necessarily entails non-textual parameters that affect the delivery of a dubbing script, and Fryer (2019) similarly discusses aspects of AD scripting and delivery that could easily fit under this additional category too. In addition to textual and non-textual parameters attached to the assessment of AVT and media accessibility practices, there are other aspects of the assessment process that could be taken into account, some of which fall under the so-called "script functionality parameter" in dubbing (Spiteri-Miggiani 2022, 91). For instance, educators may wish to place an emphasis on how students engage with their work, how they adhere to assignment-specific instructions, and whether they are aware of industry standards and practices beyond the contents covered in class. The integration of some of these parameters, reproduced in Table 3.3, can be complex in traditional marking criteria produced to assess final products (e.g. translations for practical work and commentaries as academic essays), though it helps educators integrate industry practices further into their teaching (see Section 3.6.2).

It could be argued that the assessment of AVT follows similar principles to other areas of specialism, and students' competence is often assessed through practical work that may include commentated translations (e.g. subtitles or captions, dubbing or VO scripts, AD commentaries).

Table 3.3 Assessable elements in AVT practical work (macro non-textual parameters and other)

	Subtitling	*Revoicing*	*Media accessibility*
Non-textual	**All captioning practices**	**Lip-sync dubbing**	**AD**
	Conversion Encoding and hardcoding Readability and legibility (display rate)	Accent and pronunciation Audio quality (distortions) Delivery (emotion, pace, stress, tone) and prosody (intonation, loudness, tempo, rhythm, tension) Voice performance (tense articulation)	**SDH** Colour contrast Target reader adaptation (age, cognitive abilities)
Other	Adherence to client instructions (e.g. assignment brief) Awareness of and compliance with industry guidelines Justified use of relevant strategies and techniques Originality and creativity (out-of-the-box thinking) Professional standard of presentation		

Source: Author.

When it comes to benchmarking, AVT trainers often rely on a combination of internal assessment criteria (often intended for general or specialised translations) and ad-hoc rubrics that aim to reflect to some extent the conventions and guidelines used in the industry for each practice. AVT assessment arguably remains an area worthy of further scholarly inquiry and one in need of academic standardisation.

Rubrics result from the combination of marking criteria and classifications, and they can have as little or as much detail as necessary. Holistic rubrics are one-dimensional and make use of performance descriptions written in paragraphs and usually in full sentences for one single criterion, whereas analytic rubrics are two-dimensional and use multiple criteria in the form of a table. Table 3.4 shows an example of a holistic rubric containing the marking criteria for translation output that is currently used in a general undergraduate module focusing on AVT theory and practice (with a focus on interlingual dubbing and subtitling) at UCL. These below criteria are complemented with a set of AVT-specific criteria depending on the nature of the assessment task (e.g. subtitling-specific criteria for both technical and linguistic dimensions).

Table 3.4 Holistic marking rubric for AVT assessments involving an interlingual translation

A 80–100 High First (Distinction)	*A 70–79 First (Distinction)*
• The translation is extremely accurate and entirely fit for the purpose specified, with no need for revision. • Student has fully understood all nuances of source text. • The translation reads like natural target language in appropriate register with no signs of linguistic interference. There are minor lapses that do not detract at all from the quality of the whole. • Relevant translation techniques and strategies have been successfully implemented. • Superlative grammar and vocabulary, underlining an excellent command of the style and very few errors. • Excellent use of appropriate register in target language. Excellent level of fluency and manipulation of the target language. • The translation is of a very good professional standard in content as well as presentation. Any errors in spelling and punctuation are minor. • There is an excellent awareness of cultural context at a level comparable to that expected at final-year level.	• The translation is accurate and fit for purpose with little need for revision. • Student has understood almost all nuances of source text. • The translation reads like natural target language in appropriate register with very few signs of linguistic interference and only a few minor distortions. There are occasional minor lapses that do not detract from the quality of the whole. • Relevant translation techniques and strategies have been successfully implemented. • Excellent grammar and vocabulary, underlining an excellent command of the style and few errors. • Very good use of appropriate register in the target language. High level of fluency and manipulation of target language in light of the demands of the translation. • The translation is of a good professional standard in content as well as presentation. • There is a very good awareness of cultural context.
B 60–69 2:1 (Merit)	*C 50–59 2:2 (Pass)*
• Convincing and accurately translated on the whole. Very few instances of unusual expression or word order, but the source text has been rendered rather accurately. • The occasional sentence or phrase has not been (fully) understood, but the most part seems to be effectively conveyed.	• The target text version reflects the content of the original reasonably well, with a significant number of successful attempts at difficult constructions. Nonetheless, misunderstandings are evident in places.

(*Continued*)

Table 3.4 (Continued)

B 60–69 2:1 (Merit)	*C 50–59 2:2 (Pass)*
• Student has been able to recognise and solve most of the translation problems involved. Some relevant translation strategies have been implemented successfully. • Most of the target text reads smoothly, showing good knowledge of vocabulary and idiomatic expression in the target language, with very few signs of linguistic interference. Errors, when present, probably occur as a result of a tricky translation challenge. • Very good grammar and vocabulary, with the odd inaccuracy or lexical infelicity. Student shows good level of autonomy and creativity in the use of the target language. • Mostly appropriate use of register. Good level of fluency and manipulation of the target language in light of demands of the translation. • Some further polishing/revision may be necessary in order to make the translation fit for its purpose. The use of register is mostly appropriate and there are minor spelling errors and largely correct punctuation. • There is a good awareness of cultural context.	• Student has recognised and solved some of the translation problems involved, but the target text still reads like a text translated and register is, at times, inappropriate. Student may have forgotten to translate a small part of the source text, without serious impact on the whole. • Some relevant translation strategies have been implemented, although not always successfully. • Most of the target text reads smoothly, although there are few signs of linguistic interference. • Good grammar and vocabulary, with the odd inaccuracy or lexical infelicity. Student shows some level of autonomy and creativity in the use of the target language. • Register is not always appropriate. Reasonable level of fluency and manipulation of the target language. • Considerable revision is needed at most levels of the translation as there is room for improvement in terms of grammatical accuracy, vocabulary and idiomaticity. A number of spelling errors and inaccurate punctuation detract from the quality of the translation. • There seem to be some failures to show awareness of cultural context.
D 40–49 Third (Fail)	*E/F 0–40 Fail*
• Student has misunderstood many ideas of the source text. • Student has been able to recognise and solve some of the translation problems involved, although not always successfully. • The meaning of the target text language requires some effort to follow it; some parts of the original have been misconstrued. Little control is evident over the original and the style of the target text suffers from it. Little signs of fluency and ability to manipulate the target language in light of demands of translation.	• Student has misunderstood too many ideas in the source text. There is little or very limited evidence of having understood the source text, which has been inadequately rendered overall. • Student has been unable to recognise and solve most of the translation problems involved, with little proof of successful translations. Very few relevant translation strategies and techniques have been implemented.

Table 3.4 (Continued)

D 40–49 Third (Fail)	*E/F 0–40 Fail*
• Grammar and syntax are not adequate and clear signs of linguistic interference are present. Syntactic structures very basic and accuracy is compromised by a number of intrusive and basic errors. Shortcomings in the use of appropriate vocabulary and idioms. • Few relevant translation strategies and techniques have been implemented. • Misrenderings of large parts of the source text. • The translation has significant problems with coherence and cohesion and numerous errors. • Evidence of limited understanding of cultural context.	• Very little control is evident over the original and the style of the target text suffers from it. • The meaning of the target text language requires a great effort to follow it; many parts of the original have been misconstrued. There are no clear signs of fluency and ability to manipulate the target language in light of demands of translation. • Grammar and syntax are very poor and very clear signs of linguistic interference are present. • Lack of knowledge of basic vocabulary. Frequent lexical errors compromise communication. • Little idea of appropriate register and very poor target language control. Frequent and repeated mistakes in the manipulation of syntax and inadequate grammar. • Misrenderings of large parts of the ST and serious accuracy infelicities, leading to the need to proofread the work very heavily. Communication is put at risk and/or undermined by frequent spelling and punctuation errors. • The translation has significant problems with coherence and cohesion and numerous errors. • Inadequate understanding of cultural context.

Source: Author.

When applying marking criteria to the assessment of specific work, some educators may consider using tailor-made breakdowns to explain how the relevant criteria impact specific scores, and how grades are obtained. Table 3.5 contains a fictional example of a rubric that combines the macro parameters from Table 3.2 and Table 3.3. The actual scores attached to each parameter depend on the goals that are expected to be achieved upon completion of the relevant assessment.

The following paragraphs contain an example of an interlingual subtitling assessment entailing the creation and translation of a subtitle

Table 3.5 Example of a rubric containing specific scores using a summative approach

	Criteria	*A First*	*B 2:1*	*C 2:2*	*D Third*	*E/F Fail*
Technical (__%)	*Layout*					
	Synchronisation (spatial / temporal)					
	Template functionality					
Linguistic (__%)	*Reduction*					
	Segmentation					
	Punctuation signs and orthotypography					
	Coherence and cohesion (including consistency)					
	Grammatical accuracy					
	Idiomaticity and clarity					
	Lexical control					
	Punctuation					
	Spelling					
	Style					
	Syntax					
Translation (__%)	*Comprehension of nuances and semantic accuracy*					
	Genre conventions					
	Linguistic interference					
	Pragmatical appropriateness					
	Reproduction of linguistic variation					
	Semiotic cohesion					
	Terminological consistency					
	Text-specific challenges					

Table 3.5 (Continued)

	Criteria	*A First*	*B 2:1*	*C 2:2*	*D Third*	*E/F Fail*
Non-textual (__%)	*Conversion* *Encoding and hardcoding* *Readability and legibility (display rate)*					
Other	*Adherence to client instructions* *Awareness of and compliance with industry guidelines* *Justified use of relevant strategies and techniques* *Originality and creativity (out-of-the-box thinking)* *Professional standard of presentation*					
		Classification				**__%**

Source: Author.

template. Emphasis is placed on the overall coherence of the target text alongside its presentation and delivery with the use of industry guidelines (see Section 2.3.2.1). Rubrics are often used as templates in which assessors match the student's work with the relevant criteria so as to justify a specific classification. Educators can thus produce and customise their assessment grids in order to substantiate the students' performance under each category. As shown in Table 3.5, the classifications can appear next to each category so that educators can assess the student's performance against the existing marking criteria and achieve a numerical grade using a summative approach. These rubrics can also contain the specific criteria, specifically verbalised so as to assess the students' performance for each category of the assessment task, so as to obtain a holistic grade.

Analytic rubrics are useful when customised for each assessment. They can be conceived as a summation of errors and positive moves under each category, thereby providing assessors with a quantifiable justification for

each score. When it comes to utilising analytic assessment methods, AVT educators are likely to follow an error-based approach. Just like the one developed by Spiteri Miggiani (2022), a rubric containing the previously mentioned parameters could be adapted to deduct points from the top mark as illustrated in the tables that follow. For the sake of clarity, sample penalties have been added to each type of error; however, educators have to adjust both errors and the penalties attached to each of them depending on the type of assessment task and the expected learning outcomes. Needless to say, when a specific error falls under more than one category or parameter (e.g. a mistranslation that also constitutes an example of poor lexical choice and is inconsistent with the visuals), educators may decide what the best way to proceed might be – for instance, the highest penalty can apply rather than a summation of all individual errors. This type of error-based assessment approach inherently has many shortcomings: firstly, students' achievements or good moves are not often rewarded, unless specified in the rubric; secondly, there is a very high degree of subjectivity that obviously impacts the listing and numerical classification of errors. Lastly, there are additional errors that may arise from specific language combinations, such as the use of inclusive language, which is dependent on each language (e.g. *-e* endings for neutral gender in Spanish or the use of *they* in English, among others).

Tables 3.6, 3.7, 3.8 and 3.9 include examples of error-based analytic rubrics for practical subtitling assessment tasks, focusing on technical, linguistic, translation and non-textual parameters, respectively. The value of each error is proposed taking into account a maximum score of 100.00% for any given piece of practical work.

The examples shown in the previous examples are not meant to be exhaustive, and assessors have to apply a certain degree of abstraction when using rubrics. The principle behind the use of rubrics is that these need to be customised for each study programme, module, AVT practice, and assessment task. Furthermore, translation being a highly subjective practice, the assessor's perspective can heavily determine the category under which a certain error would fall, or if that error is really such for that matter (e.g. client instructions sometimes contravene normative or standard use). For instance, where a given subtitle contains a very long description for say a medical term, thereby impacting reading speed limitations, this type of error can be technical (i.e. synchronisation), linguistic (i.e. lexical control), translational (i.e. semantic accuracy) and non-textual (i.e. display rate) depending on the assessor's perspective.

Although many departmental policies impose the use of generic marking criteria and rubrics, the customisation of rubrics is an integral part of assessment design as allows for better alignment of

Table 3.6 Technical errors

	Parameters / Error	*Penalty*	*No.*	*Total*
Technical	*Layout* • Inappropriate font type or size • Incorrect colour, background, shadow • Illegitimate blank spaces • Position detracts from readability • Inadequate justification • Illegitimate blank spaces or lines • Blank subtitles	–0.25 per error		
	Synchronisation • Wrong in/out timecodes • Incorrect duration (below minimum or above maximum) • No minimum gap • Gap between consecutive subtitles is too long • Consecutive subtitles not identified (unchained) • Subtitle crosses over shot changes • Time before or after a shot change is inappropriate	–0.25 per error		
	Template functionality • Incorrect format • File format overrides properties • File is corrupted • File is not complete	–2.00 per error		

Source: Author.

Table 3.7 Linguistic errors

	Parameters / Error	*Penalty*	*No.*	*Total*
Linguistic	*Reduction* • Target text is too long • Illegitimate additions or omissions • Verbatim captions are unreadable	–0.25 per error		
	Segmentation • Utterances are not divided into subtitles clearly and grammatically • Word order is too different to source content and is difficult to follow • Subtitles run over too many subtitles and are difficult to follow	–0.25 per error		

(*Continued*)

Table 3.7 (Continued)

Parameters / Error	*Penalty*	*No.*	*Total*
Punctuation marks and orthotypography • Speaker dashes are misused • Italics for narrations, off voices and other extradiegetic elements are misused • Inverted commas are misused • Ellipses used for continuity between subtitles are misused	–0.15 per error		
Coherence and cohesion • Subtitles are incoherent and detract from legibility • Inadequate and connectors (or lack thereof) do not allow for a comfortable reading • Consecutive subtitles are not grammatically consistent • Consecutive subtitles consist of short single sentences (telegraphic style) • Inconsistencies in neighbouring subtitles	–0.15 per error		
Grammatical accuracy • Inappropriate verb tenses or conjugations • Inadequate use of pronouns, articles or any other elements	–0.15 per error		
Idiomaticity and clarity • Signs of unidiomatic language • Signs of unclear expression • Sings of linguistic interference • Signs of awkward or unnatural language	–0.15 per error		
Lexical control • Poor lexical range • Lexical repetitions or cacophonies	–0.15 per error		
Punctuation • Misuse of target language-specific punctuation conventions	–0.15 per error		
Spelling • Misspellings and typos	–0.15 per error		

Table 3.7 (Continued)

	Parameters / Error	*Penalty*	*No.*	*Total*
	Style • Stylistic mismatches	–0.15 per error		
	Syntax • Awkward word order • Sentence order impacts legibility negatively	–0.15 per error		

Source: Author.

Table 3.8 Translation errors

	Parameters / Error	*Penalty*	*No.*	*Total*
Translation	*Comprehension of nuances and semantic accuracy* • Mistranslation (contradiction, non-sensical passage, meaningless wording) • Inaccuracy or misrendering of nuance	–0.50 per error		
	Genre conventions • Text/speech genre standards have not been followed • Target audiences' expectations are visibly overlooked	–0.25 per error		
	Linguistic interference • Source language wording is followed too closely • Illegitimate use of literal translation and calques	–0.25 per error		
	Pragmatical appropriateness • Target text does not meet its intended purpose • Textual function differs from original one • Target text is incomplete because of missing translations (dialogue, narrations or text on screen)	–0.25 per error		

(*Continued*)

Table 3.8 (Continued)

	Parameters / Error	*Penalty*	*No.*	*Total*
	Reproduction of linguistic variation • Register and style of original have been misrendered • Relevant accents have not been identified or transferred	–0.25 per error		
	Semiotic cohesion • Target text contradicts the visuals • Target subtitles contradict text on screen	–0.25 per error		
	Terminological consistency • Specialised terminology has been rendered differently • Inadequate use of different terms in the same template	–0.25 per error		
	Text-specific challenges • Cultural element not identified or misrendered • Verbally expressed humour not identified or misrendered • Relevant song lyrics left untranslated • Intertextual element not identified or misrendered • Relevant inclusive language not identified or misrendered • Taboo language or swearing not identified or misrendered	–0.25 per error		

Source: Author.

the intended learning outcomes with the in-class teaching and the subsequent assessment tasks. The scholarship on AVT quality and assessment is patently limited. When available, current industry-led QA/QC approaches are not always applicable to the assessment of AVT practices in the classroom, especially regarding non-textual parameters (e.g. oral delivery of AD and dubbing scripts) and adherence to industry guidelines and standards. Further work is needed to establish closer synergies between QA/QC processes in the AVT industry and assessment practices in higher education for AVT courses to remain up-to-date and purposeful.

Table 3.9 Non-textual errors and other parameters such as positive moves

	Parameters / Error	*Penalty*	*No.*	*Total*
Non-textual	*Conversion* • Inoperable file format • Wrong frame rate	–0.25 per error		
	Encoding and hardcoding • Subtitles are not shown • Subtitles' properties are not preserved • Subtitles are out of sync due to incorrect encoding	–1.00 per error		
	Readability and legibility (display rate) • Subtitle stays too briefly on screen • Subtitle stays too long on screen • Too many characters per line	–0.25 per error		
Other	*Adherence to client instructions*	+0.50 per move		
	Awareness of and compliance with industry guidelines	+0.50 per move		
	Justified use of relevant strategies and techniques	+0.50 per move		
	Originality and creativity (out-of-the box thinking)	+0.50 per move		

Source: Author.

3.5 Provision of Specialist Audiovisual Translation Education

Research inquiry into the learning and teaching of AVT dates back to only a couple of decades ago. The dispiriting landscape depicted by Díaz-Cintas (2008a) in his introductory chapter now reflects an outworn reality. Thanks to the cross-pollination of the discipline and growing visibility of media localisation practices in the translation industry, a rapid expansion of AVT-specific courses has been witnessed in the last few years, and there is a substantial number of AVT-specific postgraduate courses, undergraduate modules, vocational training, and PhD programmes nowadays. One of the reasons for this growth may be the expansion of the multimedia market, one of the most crucial turning points being the emergence and democratisation of the internet, in particular streaming platforms, as well as the greater availability of trained specialists who can educate the next generation of AVT experts.

3.5.1 Programmes of Study on Audiovisual Translation

By the end of the 20th century, few universities and educational centres were offering AVT tuition in Europe, or the rest of the world for that

matter, whether at undergraduate or postgraduate levels. The first AVT-specific courses appeared in Europe in the late 1980s and early 1990s, such as the Postgraduate Diploma on Film Translation from the Université de Lille (Bréan and Cornu 2014) and the Screen Translation Course offered by the University of Wales (James 1998). The postgraduate-level course in AVT offered at the University of Lille in 1983 remained the only programme available in Europe for many years. The expansion of AVT tuition in tertiary institutions coincided with the graduation of the first generation of AVT trainers in the mid-1990s, along with the creation of international associations – e.g. ESIST, set up in Wales in 1996 – and the proliferation of audiovisual productions for distribution on DVD and TV stations. The flurry of professional and academic activity that shook the field in the 1990s led to the design and launch of a new wave of post-graduate studies in AVT at many universities, such as the Autònoma de Barcelona, Copenhagen, Granada, Helsinki, Leeds, Leuven, Manchester, Mons, Vigo, Roehampton, Saarbrucken, and Strasbourg, among others (Gambier 2006).

The early 2000s marked a major turning point in the provision of AVT tuition in higher education and many other universities around the world started to progressively incorporate AVT training as part of their programmes of study, both at undergraduate as well as postgraduate levels. Two decades later, in 2016, there were over 15 postgraduate courses in UK universities – and more than 12 in Spanish universities – that offered specific modules, or study routes and pathways, on the different practices of AVT (Bolaños García-Escribano 2016). Research advancements have also multiplied in recent years, leading to a growing body of literature on AVT education, which often focus on a specific AVT mode or a country's educational landscape. All this activity has aroused much interest among the academic community and would-be translators, thus foregrounding the definitive establishment of AVT as a formal discipline and area of study in tertiary education (Gambier and Ramos Pinto 2016).

Traditional AVT lessons used to focus on how to analyse and translate films by learning about basic cinema techniques and script writing, to then translate pieces of dialogue without necessarily adapting the output to the limitations and constraints of different AVT modes (Nornes 2017). Rooted in semiotics and closely related theories, this initial approach to the didactics of AVT covered little of what was really being done in the industry but set training institutions off in the right direction. Research studies published in those early years, which focused on how meaning is constructed in audiovisual texts, helped to lay the groundwork for linguistic-based approaches that have deeply configured today's AVT research and training landscapes. Having said that, the technological component of AVT is more and more important in today's globalised and technology-driven world, and courses

of study are required to provide students with comprehensive training on translation technologies, including professional subtitling software.

The advent of new technologies, and the flourishing of an audiovisual market propelled by digitisation and globalisation, have brought about a considerably higher volume of AVT activity. The exhaustive list of AVT courses offered by Mayoral (2001b) and Toda-Iglesias (2011) demonstrated that AVT-specific training and research courses have been available since the beginning of the century, though, as hypothesised by Díaz-Cintas (2007), the practice-oriented approach of many AVT courses at the time might have been one of the reasons for the low involvement of students in AVT research at doctoral level.

The Bologna Process (see Section 3.1.3) transformed undergraduate and postgraduate curricula across Europe, including official programmes on translation and interpreting (Rico 2010). As Pym (2012) outlined, this new education paradigm separated undergraduate and postgraduate education into three levels or cycles. Such levels are the following: bachelor's degree (level 6), master's degree (level 7), and doctorate of philosophy (level 8). There are two main well-established schemes for the provision of full long-term training in Europe: undergraduate degrees can last for four years and be followed by a one-year postgraduate degree, as is done in countries like Germany, Austria, and Spain; or they can last for three years and be followed by a two-year postgraduate degree, as is done in countries like France. Another change was the introduction of the European Credit Transfer and Accumulation System (ECTS), a credit system that aimed at further homogeneity among European countries and which has been central to promote exchange programmes. It also foregrounded the role of independent learning by awarding study time outside of the classroom (e.g. preparatory reading and homework) with credit value, hence incentivising students to continue learning independently, beyond the confines of the classroom.

On the whole, contemporary translation and interpreting curricula aim to qualify linguists to become translation professionals (see Section 3.3). In the case of AVT, translation and interpreting educators are hence expected to be able to design curricula that provide students with the knowledge and skills necessary to work as audiovisual translators. That is, AVT courses endeavour to consider subtitling and revoicing as professional practices and not as language learning methods. Universities are progressively embracing the potential offered by AVT, not only for pursuing a career in the translation and audiovisual industries but also for fostering technical skills that are highly transferable and necessary to work in the age of digital technologies. Trainers must therefore be familiar not only with the relevant technologies but also with the existing spatio-temporal

and linguistic conventions that regulate the various AVT modes. In the case of subtitling, Kovačič (1996, 115) argues:

> Teaching subtitlers is a socialization process which prepares trainees to function as those members of the society who will enable others to engage in a specific activity, namely understanding foreign language TV programmes and films. In being taught how to subtitle, future subtitlers are told which norms to follow so that their products will help viewers to comprehend the contents of foreign language programmes.

As expounded by Gambier (2006), the main transformations that have affected AVT revolve around the greater digitalisation and internationalisation of audiovisual productions, to which the internetisation and digital revolution have deeply contributed, in the form of VOD platforms and social media such as YouTube and Vimeo. Traditionally, and on account of their close links with film studies, revoicing and subtitling have been almost exclusively centred on fictional productions and, to a much lesser extent, on documentaries or corporate videos, for instance. This situation has changed substantially over the years as many courses have now widened their portfolio to incorporate more specialised audiovisual content, as well as the teaching of accessibility practices.

The use of specific content allows for students to be in greater contact with specialised fields (e.g. scientific and medical contexts), whereas the inclusion of accessibility practices leads to a greater comprehensiveness of translator training programmes. Even though the film and entertainment industry was once the only market available for trainee audiovisual translators, the situation has changed dramatically, to the extent that film productions represent only a small percentage of what is actually being localised these days (Esser et al. 2016). A fundamental point to be raised is that audiovisual texts cannot be considered specialised simply because of their multimodal and technology-driven nature (see Section 2.1). Specialised texts are defined as such because of the presence of highly cryptic content and jargon that relate to a given discipline (e.g. medicine or law), but there are audiovisual genres that may include specialised content (e.g. scientific documentaries, recordings of court proceedings, or training video material). This, of course, highlights the need for AVT professionals to not only be conversant with the technicalities of subtitling but to also be able to manage terminology and understand subject-specific texts. AVT training must therefore transcend the translation of films to also include scientific and technical texts as part of the gamut of audiovisual programmes; an approach that is currently being taken up in the curriculum of some universities, where authentic audiovisual materials that include specialised terminology are used in subtitling and revoicing modules.

The offer of AVT training at postgraduate level, either as core or subsidiary modules, in the UK's higher education institutions shows a steady growth since the landscape depicted in Bolaños García-Escribano (2016). It was clear then that those UK universities that were surveyed because they offered postgraduate courses in translation or interpreting saw their offer of AVT-related modules increased in the space of five years. In 2015, there were around 15 UK universities offering AVT-related modules at postgraduate level, whereas this number grew to at least 23 in 2020. The importance attached to AVT training varied, however, and with some modules being worth as much as 20 credits (e.g. Roehampton University's MA in Audiovisual Translation, today discontinued), or even 30 credits in practice-focused modules (e.g. the Open University's MA in Translation), but also as little as 7.5 (e.g. UCL's MSc in Translation and Technology or the University of Leeds' MA in Translation Studies, among others). Although some postgraduate programmes have disappeared at the time of writing (e.g. Aston University's MA in Translating for Business and International Institutions), there are other institutions that have recently incorporated AVT-related modules into their programmes (e.g. SOAS' MA in Translation). Some training institutions also showcase their industry links and technology offering, thereby demonstrating the importance attached to graduates' professional prospects and programmes' purposefulness.

Considering that a quick search on a study portal yields almost 150 results for postgraduate courses in the UK (including postgraduate certificates and diplomas as well as different strands of the same MA or MSc programme at various institutions), it could be argued that there is still plenty of room for more AVT training opportunities at most training centres in the UK. In addition to universities, some vocational institutions – i.e. private training centres – offer AVT-specific online and face-to-face courses that are commonly designed, developed and monitored by professional subtitlers, although academics are sometimes involved. The private training offer changes constantly, with many courses appearing and disappearing following demand. It can be concluded that in this day and age, the AVT training landscape is far from marginal; there is indeed greater scholarly interest in embedding practice-oriented AVT modules, including not only dubbing and (especially) subtitling but also media accessibility practices, such as AD and SDH, and respeaking to a somewhat lesser extent.

3.5.2 Learning Technologies in Didactic Projects

Today's educational landscape is one in which technologies play a major role in facilitating students' access to knowledge. The aforementioned concepts of b-learning and e-learning need to be understood as part

of a regeneration process that has been taking place at higher education institutions in recent decades (see Section 3.1.2) in the face of fresh technological advances and the most recent trends in education (Horvat et al. 2015). In the present higher education context, where students are placed at the centre of the formative action (QAA 2008) and monitored by teachers who design competence-based training models, b-learning has become the new norm as it boasts "the combination of classroom based sessions with non-classroom based sessions, in which much use is made of technology with the goal of optimising learning" (Galán-Mañas and Hurtado Albir 2010, 199). E-learning implies the use of a computer to deliver part, or the whole, of a course offered by an educational institution (Bartoll and Orero 2008), and has also gained particular momentum in recent years.

It could be argued that most AVT training courses – be they blended or online, synchronous or asynchronous – currently make use of virtual learning environments, and online learning applications, such as Moodle or Blackboard (blackboard.com). In addition to these, there are online platforms that have been designed for AVT training specifically. Online environments constitute a perfect testing ground for new didactic initiatives in translator training (see Kiraly et al. 2015), and they have proved to "hold great potential for translator training, both in national and international educational contexts" (Ketola and Bolaños García-Escribano 2018, 197). Yet new educational approaches need to be carefully selected and monitored, so that they respond to a pedagogical action plan without being counterproductive (Kim 2013). There have been many academic projects that have sought to bring the learning and teaching of AVT closer to e-learning and vice versa, of which some examples are:

- The Subtitle Project was a didactic resource that included a list of bibliographical references on AVT, online resources, a news section and a list of subtitling firms operating in Italy (Rundle 2008). Although conceived as a repository rather than a proper online platform for the teaching of AVT, this project pioneered the use of e-learning practices and soon evolved to focus primarily on SDH, though the website is discontinued at the time of writing.
- AVT-Lp (Audiovisual Translation Learning Platform) is an online learning platform developed by the Universitat Autònoma de Barcelona and used exclusively by their own postgraduate students to undertake AVT activities. As discussed by Arumí-Ribas et al. (2010, 2013), this platform includes manually designed exercises for students to practise different AVT practices without having to be physically present on campus, and allows for greater student-teacher interaction (Igareda and Matamala 2011).

- ClipFlair (Foreign Language Learning through Interactive Revoicing and Captioning of Clips, clipflair.net) is an online learning platform, fruit of a research project funded by the European Commission from 2011 until 2014. Developed by several higher education institutions throughout Europe, its main focus was on foreign language learning through interactive revoicing and captioning of clips. The chief outcomes of the project included the creation of an AVT-related online platform targeting foreign language learners and instructors, a library of resources containing over 300 activities in several language combinations, guidelines for activity creation and evaluation criteria, and an online community of learners, teachers and activity creators. Teachers can design ClipFlair activities in a task creation platform.
- TRADILEX (Audiovisual Translation as a Didactic Resource in Foreign Language Education, www.tradilex.es/en) is an online platform that resulted from a three-year research project funded by the Spanish Ministry of Science and Innovation. The project proposes methods and sequences for the use of didactic audiovisual translation practices to meet the needs of English language learners (see Talaván and Lertola 2022). At the time of writing, the TRADILEX platform offers 60 self-contained lesson plans for B1 and B2 learners of English as a foreign language. Upon completion of each lesson plan, feedback is automatically released, and teachers' corrections can be sent to the students as long as they have registered to the relevant virtual classroom. The platform, launched in 2023 following a three-year international project, allows students to complete lesson plans at their own pace in an online ecosystem that allows users to create their own revoiced clips (i.e. AD, dubbing, and VO) as well as subtitles (i.e. interlingual and intralingual). Teachers can monitor progress and assess the students' outcomes, but students also receive immediate feedback in the form of answer keys.
- Sl@VT (Audiovisual Tools and Methodologies to Enhance Second Language Acquisition and Learning) is a project funded by the University of Sapienza, Italy, between 2022 and 2024. The ultimate goal is the development of an online learning tool where students can complete AVT activities for foreign-language learning purposes. As a novelty, the platform is designed to cover several languages other than English, including French, German, Polish, and Spanish.

Besides the projects hitherto described, other scholarly attempts that do not necessarily draw on e-learning practices have also produced tangible results. These include LvS (aka LeViS, Learning via Subtitling), an offline learning environment developed by the Laboratory of Educational Material of the Hellenic Open University, Greece, to emulate subtitling professional practices (Sokoli 2006), and PluriTAV (Audiovisual Translation as a Tool

for the Development of Multilingual Competences in the Classroom, http://citrans.uv.es/pluritav), a two-year international project funded by the EU's European Regional Development Funds for the fostering of plurilingual competences through DAT (Martínez Sierra 2021).

As the number of online tools grows, the application of innovative methodologies and materials becomes more visible in b- and e-learning ecosystems. Leading translator education scholars have argued that technologies should be embedded in translator training with a focus on new teaching practices (see Hurtado Albir 2019), while language instructors have similarly highlighted the benefits of ad-hoc AVT technologies for the fostering of language skills (see Talaván et al. 2024). Web-based teaching practices are therefore growing alongside web-mediated storage and two-way interaction in higher education, though it could be argued that online repositories are progressively being replaced with fully-fledged online platforms in which students can complete activities by themselves (e.g. ClipFlair and TRADILEX) or with the teacher's assistance (e.g. cloud-based editors).

3.5.3 Curriculum Design Challenges

One of the pedagogical outcomes of Biggs's (1999) constructive alignment principle (see Section 3.1.1) is the importance given to the curriculum, an umbrella term that encompasses courses of study, syllabi and study guides. A programme's intended curriculum is a planned sequence of learning experiences, that is, an official academic plan that expresses educational ideas in practice. The curriculum is necessarily the result of human agency and includes the following elements: purpose of the curriculum, content, sequence, instructional methods, resources, assessment, evaluation approaches, syllabus, aims, intended learning outcomes, competences, goals and objectives. In a nutshell, curriculum design is not only the process of defining and organising the above elements into a logical pattern but also a way in which academic institutions engage with the students' learning experiences throughout their undergraduate and postgraduate studies.

There are two main types of curriculum models: prescriptive and descriptive. The behavioural objectives and OBE learning models of curriculum are examples of the former, whereas the situational model is exemplary of the latter. Prescriptive models, which are the most common in today's competence-based study programmes at university focus on what students should do during their studies and are thus concerned with the end goals of the training. The aims have thus been predetermined before the students access the study programme, whereas in situational models an analysis of contextual factors can alter how the curriculum is conceived depending on varying internal and external circumstances.

Following a translation task-based approach (see Section 3.2.1), Hurtado Albir (2007) offers a distinct framework for competence-based curriculum design in translator training programmes. The premise is that such programmes should culminate in the acquisition of so-called translation competence (see Section 3.3). Study programmes are made up of a certain number of individual modules, which should hone the development of any or all of the sub-competences previously mentioned. According to Hurtado Albir (2007), the focus of module design should be on tasks, sequencing and assessment. For the teaching to be aligned with the intended learning, the teaching units included in the syllabus must be constructed according to the competences that students are expected to acquire. The assessment, which can be for diagnostic, formative or summative purposes, should form part of a learning continuum and be purposefully sequenced along with the various teaching units. It goes without saying that curriculum design can also be understood as the combination of modules that together compose a specific translator training programme.

As maintained by Hatim (2001), translation courses should be cyclical, that is, units and learning stages must build on and extend beyond each other. This approach also applies to the teaching of AVT practices (see Section 2.3), all of which require the application of different methods, skills, strategies, and conventions, as well as the use of different software. Despite their differences, all professional practices converge on the same foundational ground: they all involve the translation of audiovisual, multimodal, and multimedia texts (see Section 2.2). In practical terms, this means that they require the activation of specific methods, strategies and techniques that aim to overcome the challenges posed by these texts because of their specific nature. Some skills are interchangeable between the different AVT modes. For instance, learning how to time clips according to a predefined set of parameters will help the spotting of interlingual subtitles as well as intralingual subtitles (e.g. SDH), and vice versa. Similarly, learning how to fully appreciate and analyse images, narrativity and filming techniques used in audiovisual programmes will help students both to translate scripts for dubbing or VO and also to describe audiovisual programmes as well as plays for the blind and partially sighted audiences. This crossover is the reason why some universities have a general module on AVT and then specific modules on each of the various modes.

Designing a general module on AVT requires a balance between theory and practice. It should start by offering a broad perspective of what translating audiovisual texts entails from different angles – e.g. pragmatic, semantic and semiotic – in academic as well as professional terms. Theory on the semiotics of audiovisual texts is extensive and merits discussion in AVT-specific training. For instance, the trainer should elucidate the

differences between oral and written texts versus printed, audiovisual, multimedia, and multimodal texts. As previously illustrated, audiovisual texts are "semiotic constructs comprising several signifying codes that operate simultaneously in the production of meaning" (Chaume 2004, 16) and, as such, the aural and visual components play a major role in the construction of meaning (see Section 2).

Awareness of the specificities of audiovisual texts and the different translation modes that are available to deal with them has to be highlighted from the very beginning of the course, module or training programme, thereafter establishing a conceptual paradigm that is paramount to the successful development of translation competences in AVT. As for the linguistic, paralinguistic and extralinguistic characteristics of audiovisual texts, much research has traditionally been conducted by academics, especially in terms of spoken discourse, gender, humour and wordplay, cultural references, written constraints, and register, to name but a few. As further posited by Chaume (2004), the connections between film studies and AVT are many. The interaction between verbal and non-verbal signs in audiovisual programmes gives rise to a semiotic conglomerate, whose networked intricacies can be missed by novice translators if they are not well versed in cinematic language and its communicative value.

In translator training programmes offered at undergraduate level, the weight of modules dealing with AVT is normally low by comparison with the number of modules offered on language and culture, as well as general, literary, and specialised translation. AVT-specific postgraduate studies, on the other hand, tend to display a wider range of modules focused on different professional practices, such as media accessibility, revoicing, subtitling, and video game localisation.

When possible, AVT-specific courses should cover a series of primary content, including:

1. theoretical principles;
2. film narration and event sequencing analysis;
3. script editing and production;
4. visual-aural synchronisms;
5. professional conventions and workflows;
6. translation methods, strategies, and techniques;
7. decision making and critical thinking (e.g. translation commentaries);
8. language- and culture-specific challenges and constraints;
9. textual reduction strategies; and
10. software programs used in industry.

In principle, the aforementioned contents could be sequenced in the previous order but it is understood that some contents are intrinsically

intertwined and, additionally, the contents can be adapted to be used with various types of specialist software, hence contributing to the development of a more holistic curriculum.

As for the pedagogy of AVT practices during class time and in independent work, the curriculum would ideally involve both teamwork and individual work that reflect current practices in the professional market, thus falling in line with the postulates of the socioconstructivist teaching approach. The teaching methodology would also benefit from being student-centred and situated in the sense of using semi-real projects whose difficulty is graded depending on the students' progress and expectations, concatenating the commissions as per the syllabus and amending the latter depending on the rapidity with which the learning outcomes are observed to be successfully met throughout the duration of the teaching.

Despite the abundance of audiovisual productions circulating on the internet, one of the challenges when teaching AVT is the difficulty of securing the right materials. Although it is preferable to utilise authentic materials, these are often subject to copyright infringement, and it is not always easy for trainers to obtain the necessary permissions. On top of the hurdles posed by secrecy in the industry, a substantial quantity of material available on the internet has already been translated, which risks leading some students astray.

Another issue to consider when developing modules on AVT is the rather high cost of most professional software and their updates, which force some institutions to use freeware. The latter's main advantage is clear: both students and staff can have a copy of the program without incurring any costs; on the downside, freeware editors often have limited functionalities and do not always allow the user to cover all tasks necessary for the localisation of a product. It is understood that the skills students hone whilst learning how to use a program are transferrable and may be useful for learning similar programs, i.e. transferable skills. Paid and proprietary software still prevail in the industry, so many institutions endeavour to acquire paid programs and thus enhance the students' employability.

Some institutions may invest in the building of dedicated spaces, such as computer labs or media rooms, for students to have access to commercial tools. Due to software developers' policies on licenses and updates, access to the said tools is often heavily restricted to the institution's premises. Some software companies do offer student discounts and time-limited trials but often curtail access and functionalities too (aka crippleware). For many training centres, be they universities or vocational centres, the cost of equipment and technical assistance still constitutes a disincentive. To avoid the costs of physical study spaces, higher education institutions may consider acquiring cloud-based tools and build a remote learning space where students can access the software without unnecessary hurdles.

3.6 Rethinking and Reshaping Audiovisual Translation Education

There is little doubt that the swift development of new technologies, notably AI in general and language automation tools in particular, calls for reflection as to the current directions of AVT education (Rodríguez de Céspedes and Bawa Mason 2022). Jiménez-Crespo (2020) argued that technological advancement experienced in the past few decades has foregrounded a paradigmatic change in TS, and this so-called *technological turn* has undoubtedly had repercussions on the ways in which trainers approach the teaching of (professional) translation in higher education. The turn of the century was a crucial time in which translation was starting to be progressively driven by technological advances in an increasingly internet-using society. It was then that five experienced translator trainers were interviewed on the then status quo of translator training (with a focus on innovation) during an online symposium on translator training (Pym 2000). The questions posed and the responses, which were followed up by conference participants (totalling 605 messages) were a testament to the then-changing landscape of translator training. Technology was starting to receive greater attention in the training of professional translators insofar as "the idea was shared that the most important common thread to be systematically applied to translation and interpreting training is the use of up-to-date technologies as everyday resources, from the internet as a search tool to electronic databases and specialised discussion groups" (Di Giovanni, in Pym 2000, 261), though AVT received much scanter attention. Over two decades later, this debate remains particularly pertinent in curriculum design, and given the increasing importance of AVT scholarship, it only follows that further efforts be devoted to considering the future of AVT education and how to make it future-proof.

This section draws on the questions and responses from the aforementioned symposium while keeping a strong focus on AVT. It is divided into four main sections that aim to answer the *what*, *who*, *how* and *why* of today's AVT education. The answers draw on the contents previously explored in this chapter (see Sections 3.1, 3.2, 3.3, 3.4 and 3.5) as well as on the literature and my personal experience as an AVT educator, researcher and practitioner.

3.6.1 What is Taught? Industry- and Research-led Education

Ideally, AVT professionals should be trained to be employable in their field of expertise by being exposed to simulations of professional activities in the classroom (Way 2009). It is therefore customary to teach AVT practices using professional guidelines and conventions that are widely used in both local and international industries. Where trainers

can establish links with local companies providing AVT services, students could ultimately boost their employability in the area by taking advantage of situated experiences (e.g. internships or work placements). At the same time, trainers ought to embed the latest research, to prepare students considering pursuing a scholarly career (e.g. new trends and topical areas and empirical methodologies).

As rightly pointed out by Rodríguez de Céspedes (2019, 108), "translation curriculum is at a crossroads" between traditional translation principles and cognitive processes on the one hand, and the increasing role of automation in professional practices and market needs on the other. It is commonly agreed that AVT professionals need to have a thorough command of the existing tools so that they have a place in today's professional market (Kenny 2019). Subtitlers, in particular, are expected to have advanced computing skills and a solid command of subtitling software as they often have to spot clips themselves. However, translation continues to be a human activity and, as such, it does not only require sufficient background knowledge on different fields of expertise (e.g. medicine or law) but also a good understanding of linguistics and related subjects as well as encyclopaedic knowledge and cultural sensitivity. In addition, academic curricula should stimulate critical thinking, with the ultimate goal of training future professionals who are conscious of their past, present, and future role in the world.

Specialist training in AVT is thus the combination of sequenced student experiences that aim for the acquisition of specific sub-competences (see Hurtado Albir 2017; Cerezo Merchán 2018). As Chaume (2003, 285) explains, students should demonstrate enough language proficiency and competence in translating when enrolling on an AVT-related module. These prerequisites reflect, to a large extent, the reality of AVT curricula. Revoicing and subtitling modules are usually offered at postgraduate level, and trainers are often expected to hold a market-oriented approach while aiming to hone the students' professional skills in developing semi-real translation commissions and projects.

One example of duly integrating industry-led innovation would be the use of subtitle templates in pedagogical environments (see Section 2.3.2.1). Templates provide useful materials for educators to focus on textual reduction strategies in professional subtitling, although they can also be used to focus on language transfer skills (translation competence) while reducing the time spent on mastering the technology (instrumental competence). Using templates in the classroom also guarantees that all students are working to the same specifications, which can have its benefits when discussing translation solutions in groups. Templates can be pre-configured, exported and shared with all layout and properties previously set (for instance, the open standard file and data interchange format .json). From a pedagogical

perspective, this allows the teacher to customise subtitling tasks and tailor them to specific settings, levels of difficulty and goals. They can also be easily customised to focus on specific learning objectives or outcomes. For instance, verbatim transcriptions can help to practise condensation and the inclusion of blank subtitles and – despite the difficulties they impose – can foster listening comprehension skills, among many other possibilities.

Generally speaking, AVT training ought to reflect on both current and future practices, as well as consider the potential and limitations of technology, and open the door for future improvements. Following a constructivist approach, the curriculum should be designed according to a set of appropriate aims and learning outcomes, that is, transparent goals that are embedded throughout the learning process and assessment (Morss and Murray 2005). Aims and outcomes need to be purposefully adjusted depending on the specificities of AVT modules or courses, clearly establishing what is expected from the students by the end of the learning process (e.g. full command of standard software, awareness and systematic use of industry conventions, expertise in technical processes such as subtitle synchronisation and dialogue writing).

Translators should preferably obtain both academic and professional qualifications. Several UK-based translator organisations, such as the Chartered Institute of Linguists (CIoL, ciol.org.uk) and the Institute of Translation and Interpreting (ITI, iti.org.uk), offer an array of certifications and diplomas as well as qualifications and memberships in different areas. In the case of AVT, there is no recognised professional accreditation and independent courses are not often as well recognised as those offered by large translation companies that include technological training (e.g. SDL Education or TAUS). The first respeaking certification, the Live Respeaking International Certification Standard, was launched by the GALMA research centre and observatory on media accessibility from the Universidade de Vigo, Spain, in 2019 (galmaobservatory.webs.uvigo.es/services/certification). Some major multimedia companies have recently resorted to new, creative ways to attract talent; for instance, Netflix developed an online testing platform, called Hermes (tests.hermes.nflx.io), whose principle was to hire qualified professionals and to subsequently assign them a specific number for tracking purposes. Although this testing platform was discontinued soon after its release, similar initiatives have followed, such as OOONA's The Pool (https://ooona.net/the-poool) and the AVTPro certification (https://avtpro.ooona.net). Similarly, administering entry tests and close scrutiny during onboarding remain commonplace today as companies struggle to find and retain talent.

As AVT becomes more globalised, it is advantageous to have supranational academic and professional organisations that work together to enhance teaching quality and professional standards across continents.

One of the major achievements has been the greater visibility of the profession, along with the expansion of AVT-specific studies across the globe. The industry seems to be expanding globally with the fast development of VOD platforms and the translator's involvement is also gaining greater recognition thanks to the role played by AVT associations and organisations. Some examples would be AVTE (avteurope.eu), which is the European federation of national associations and organisations for media translators, and ESIST (www.esist.org). However, since AVT practices differ across nations, supra-national organisations and higher education institutions may encounter difficulties to cater for local educational environments, which has the potential to become a logistical nightmare.

3.6.2 Who Teaches? Training the Trainers

In an ideal educational setting, AVT trainers are academics with previous or ongoing professional experience as translators in the industry. Some scholars have argued that trainers need to meet the twofold desirable condition of being experienced translators and interpreters and qualified to teach at university (Mayoral 1998). However, Chaume (2003, 289) pointed out that meeting such criteria is "utopian, insofar as [the university] imposes a series of obligations on the university lecturer," and these differences between academia and the industry are far from being easily resolved. A fundamental one is the fact that academics are required to conduct research as part of their duties, though this does not always translate into pedagogical improvements because, as Cronin (2005, 243) warned, "a danger for researchers in translation teaching is that emphasis on translation can lead to a neglect of teaching, and undue concern with teaching can lead to a neglect of the specificity of the subject taught, to wit, translation."

Furthermore, as posited by Cravo and Neves (2007, 101), "teachers of translation quite often come into the profession from a wide range of initial education/training which is not specifically directed towards translation." Companies' frenetic pace and requirements make working in the industry simply incompatible with equally frantic academic careers, which is why scholars tend to have less time for working as freelance translators, and, on the other, professional translators cannot offer many teaching hours in higher education institutions. Some universities also impose exclusive teaching and research contracts in which freelancing would be deemed inappropriate and hence even illegal. Teaching-centred pathways in higher education institutions (e.g. teaching fellowship positions in UK universities) were conceived to bridge such a gap, as well as to help cover for teaching buy-outs and research excellence goals. However, the evolution of

such positions has led to an overall impoverishment of working conditions and distribution of labour in higher education (Peters and Turner 2014).

Ideally, AVT trainers should hold an AVT-specific qualification from either taught or research study programmes at postgraduate level. As Nord (1991/2005, 214) suggests, "trainers need both practical and theoretical knowledge. They should know the skills and abilities that are required in the profession [. . .], and they should know how to describe them using the concepts and terms of some kind of theory." It is also important to have received training in professional environments, although this is not often the case as academic careers – especially tenured – tend to be incompatible with professional work, as discussed above. As Rodríguez de Céspedes (2017) explains, the onus is on translator trainers to anticipate the impact that new technologies can have in the profession and act accordingly. She also maintains that having inside knowledge or real-life experience of the translation industry is fundamental to offering profession-oriented training that caters to the latest demands and enhances students' employability, which is considered key in today's higher education landscapes (see Rodríguez de Céspedes 2017). It would therefore be advisable for trainers to engage with the industry or receive regular professionally oriented training (e.g. Continuous Professional Development). Today there are associations and companies that offer training courses for both translators and translator trainers. One such example would be GALA (www.gala-global.org), a US-based globalisation and localisation association with a global ethos that offers MT and post-editing training to academic partners for free. At the time of writing, some companies offer free access to training courses and university-focused programmes to academic partners; these include media localisation company ZOO (www.zoodigital.com/about/zoo-academy) and translation PM system XTRF (https://xtrf.eu/xtrf-university-program). Most associations, including CIOL and ITT, also offer free courses and talks to members.

There should always be an active and fluent dialogue exchange between all members of staff before, during, and after the length of the study programme. The various AVT modes often require hiring specialists in each mode, but some skills and tools are consistent across various modes. For instance, the teaching of a specific AVT practice such as SDH is directly linked to professional activities such as interlingual subtitling and respeaking. Despite time and space constraints, AVT trainers should foresee calling periodical meetings or using electronic communication among colleagues for monitoring purposes. Some universities may encourage staff to participate in peer dialogue to review their teaching practices through constructive discussion among trainers. Close collaboration between colleagues and peer feedback enables trainer to (re)consider

aspects of their pedagogical approaches, including delivery methods, assessment feedback or material creation, among others.

In an ever-changing industry landscape, heavily driven by AI developments, keeping up with technological advancement is no longer an advantage but rather a requirement for trainers (see Rodríguez de Céspedes 2019, 2020). Indeed, AVT practices have proved to evolve and adopt new forms very rapidly over time and will continue to do so (Nikolić and Bywood 2021). Among the latest innovations are the use of (audiovisual) corpora, TM and MT systems, AI, and post-editing, which were first explored for script translation and subtitling and are currently widespread in (automatic) dubbing practices. The wider use of accessibility practices, along with respeaking, are expected to have a greater impact on the number of viewers that audiovisual programmes can reach. Furthermore, ASR constitutes a promising area, not only in respeaking but also for dialogue transcription (e.g. Translectures, mllp.upv.es/projects/translectures) and, generally speaking, for improving productivity. Customisable and integrated (sub)titles (see Section 2.3.2.2 and Section 2.3.2.5) are also being incorporated into different devices (e.g. tablets, phones and computers). Embedding accessibility and localisation from the pre-production phase has also been envisaged by authors that are currently exploring the potential of accessible filmmaking (see Romero-Fresco 2019). There are also new video formats, with cutting-edge viewing technologies being developed (e.g. 4D film, virtual reality, 360° video immersion), which will also require new ways to localise the relevant programmes. The integration of PM routines through platforms in training practices would also help institutions to better prepare future AVT professionals. Last but not least, cloud-based systems have had a profound impact on working routines and workflows in the industry, so it is only a matter of time before higher education institutions start employing such tools to exploit them in educational environments. The incorporation of cloud-based tools into AVT training goes hand in hand with the progress made by higher education institutions in embracing distance education.

3.6.3 Where to Teach? Training Institutions

This chapter has previously expounded on the importance of university campuses and classrooms as physical learning spaces. The learning community, comprising educators, professionals and students, requires environments that facilitate an adequate delivery of specialist teaching. A high-quality AVT training centre should therefore have experienced academics and translators who teach in industry-like environments, such as specialised labs, where students have access to most translation systems and additional tools, as well as (paper and electronic) dictionaries and

bibliographical resources for research-oriented modules. As posited by Kiraly (2000:126), "a networked classroom with a workstation for each student makes it possible for each individual to get extensive hands-on experience actually using his or her emerging computer-based translation skills."

Following this idea of computer-based classrooms, AVT teaching rooms often take the form of PC clusters where revoicing, subtitling and video editing software is made available to both students and members of staff. It is also important that the institution provides students with enough self-learning methods and tools that can be used at home. The learning environment should promote the learning and teaching of professional translation skills, by including teacher-student contact, b-/e-learning methods (Kiraly et al. 2015) and enough up-to-date resources to stimulate critical thinking throughout.

The provision of computer labs and similar spaces in higher education institutions is never hassle free. As previously mentioned, it might be advisable to consider acquiring cloud-based tools and building a remote learning space where students can access the software. Not only does this promote easier access to resources whenever the campus is closed – for instance, the COVID-19 pandemic forced higher education institutions to close down temporarily and rapidly shift towards distance learning (Li and Lalani 2020) – but it also allows students to work more flexibly and as long as they need. In the absence of on-campus computer labs, online platforms constitute appropriate alternatives as long as students have access to the tools they require from their own devices and two-way communication is ensured.

Although classroom sizes depend on a number of factors, such as universities' teaching traditions and funding, among others, practical AVT modules would ideally integrate individual teacher-student contact on a monthly basis for monitoring and pastoral care. For this reason, some institutions resort to the role of (personal) tutors, who hold periodical small-group workshops and seminars with their allocated tutees. When students are less numerous in the classroom, chances are that they will participate more actively and carry out translation tasks more regularly. Theory classes (e.g. lectures) can be held with larger groups than in practical seminars, and doctoral students are sometimes keen to provide tutoring or class support as needed to hone their teaching skills.

3.6.4 How to Teach? Learning and Teaching Delivery Methods

Albeit primarily a professional practice, AVT is also an academic discipline and, as such, theory cannot be obliterated when designing the curriculum and devising the delivery of content. It has already been highlighted, earlier in this chapter, that translation and interpreting pedagogical approaches should always be based on appropriate theories (Kiraly 1995), or else they would result in ineffective teaching that will not prepare students for the

world of work. Bartrina (2005, 187) also argues in support of the use of theory in the translation classroom as "translators and interpreters need a theoretical field that helps them to be articulate in evaluating all the relevant questions concerning the translating process and the final product." Theory and practice ought to be interconnected throughout the curriculum and the key issue is to strike a fine balance between the two, with the use of purposeful practical and theoretical activities (e.g. guided translations and translation commentaries) so that students are exposed to academic inquiry and can thus develop critical thinking skills.

In contradistinction to the long list of general translation theory and practice textbooks available in the market, there are only a few AVT-specific training books. Routledge's *Translation Practices Explained* series now includes monographs on AD (Fryer 2016), dubbing (Chaume 2012), respeaking (Romero-Fresco 2011) and subtitling (Díaz-Cintas and Remael 2007, 2021), as discussed in Section 2.2. There are non-academic, specialist books addressed to would-be professionals, such as the voice-over manual by Pageon (2007). In addition to the general textbook contribution by Pérez-González (2014), lately followed by the introductory book authored by Szarkowska and Jankowska (2024), other AVT-specific manuals that are widely used across non-Anglophone countries are those by Paolinelli and di Fortunato (2005), Pavesi (2005), Perego (2005), Lavaur and Şerban (2008), Martínez-Sierra (2012), Bréan and Cornu (2014), Bartoll (2015), and Talaván et al. (2016), among others. Albeit chiefly aimed at researchers, the last lustre has witnessed the publication of three handbooks of AVT and media accessibility that can also be used in specialist research-led training: Pérez-González (2019), Bogucki and Deckert (2020), Taylor and Perego (2022), and Künzli and Kaindl (2024).

The focus of AVT modules is placed on the development of translation competence with an emphasis on localising audiovisual texts with the relevant software. As such, interpreting has not usually been considered an essential part in AVT-specific study programmes even if it could prove fundamental for the development of many skills. Since AVT concerns itself with audiovisual texts, it could be beneficial to include interpreting tasks (e.g. note taking, conference interpreting, sight translation) at the beginning of AVT training, though lack of time during the academic year may play against it. Romero-Fresco (2015, 350) argues that interpreting-related skills, which require one "to listen, comprehend and synthesize the source text and to reformulate it and deliver it live as a target text" are essential in respeaking training too. Though perhaps slightly outdated in light of the newest ASR technologies, Arumí-Ribas and Romero-Fresco (2008) and Romero-Fresco (2012) offered holistic proposals for the training of respeakers in the age of digital technologies. More recently, experimental research has shed further light on the close connections between respeaking and interpreting, demonstrating that interpreters can

be excellent respeakers provided formal training is embedded in the curriculum (see Szarkowska et al. 2018).

When it comes to teaching delivery, today's wider use of online technologies legitimates the use of cloud-based resources. Online tools allow for new methods and pedagogical practices that can be ultimately applied to the learning and teaching of AVT, both in face-to-face and distance-learning environments. Alongside the industry's migration to the cloud (see Section 4.1.2), recent research projects also seem to be capitalising on the benefits of online platforms for AVT training purposes (see Section 3.5.2). In most AVT study programmes, students are often required to use specialist tools, be they freeware or commercial software, commonly employed in the industry today. In those universities that do not enjoy a specialised lab, the use of freeware and online platforms would be the most convenient solution.

When commercial subtitling software is employed, subtitling trainers may have to schedule homework, team projects, individual portfolios and other activities so that students have enough time to carry them out in the classroom, unless students are given 24/7 classroom access, software dongles or remote-desktop tools. The first option can have far-reaching managerial implications, e.g. security and access to campus, and may be deemed inappropriate in certain circumstances, e.g. in light of 2020's global pandemic that forced higher education institutions to shut down completely. Software dongles and remote-desktop tools may seem useful alternative solutions, but the former need to be handled with extra care (in case they go missing or break) and the latter often require the use of private network connections and are considerably slower, even when broadband is fast. Purchasing commercial software licenses may sometimes be out of the question for some universities as they may not have enough economic resources despite existing educational discounts. When they acquire such technology, students are often limited to working on the PCs available in the classroom, where the licences are usually installed, because they have no access to the software at home. Investing relatively large sums of money to provide students with the technical equipment and commercial software that is used in the industry is not always possible and may be curtailed depending on financial circumstances. Given these financial and availability issues, some universities prefer to use open-source software, even though it may not meet the demands of the real AVT market.

Adopting a (semi-real) project-based or (real-life) situated learning approach in the AVT classroom requires, first and foremost, acknowledging the importance of the stages and roles involved in professional AVT and media accessibility projects (see Section 3.2.2). Díaz-Cintas (2008b, 102) highlights that when teaching subtitling "students should learn about the different stages that are needed from the commission of

the work until the broadcast, screening or distribution of the subtitled programme." Materials and resources are key components of learning experiences that reflect or simulate professional practice. However, it was previously stated that textbooks hardly ever focus on AVT and, when they do, many publications lack the multimodal dimension and only contain text, thus hindering practical, real-life explanations. The use of authentic audiovisual materials for educational purposes is hardly ever a straightforward operation because of copyright issues. Apart from confidentiality issues, monetary retributions would also present intricate ethical and administrative challenges. The industry's zeal for copyright compliance may also hamper the retrieval and use of audiovisual materials, especially international entertainment productions like films and TV series. Some educational initiatives, such as ZOO Academy, offer authentic materials that have been provided by clients for educational use at partner universities. Establishing closer connections with the industry seems therefore imperative, and those educators who seek authentic materials in their attempt to provide translators-to-be with professionally oriented teaching will have to be creative and mindful of the legal constraints that may arise.

Lastly, student-centred support has also become a key factor for student retention and success (see Thomas et al. 2017). There is an expectation that university students will be offered an array of support options (e.g. financial assistance, psychological services, pastoral care, career guidance). Furthermore, academic support is provided by educators, but also (in)directly by personal tutors, course and module convenors or directors, as well as student representatives and alumni networks. This means that educators represent only one of the many stakeholders that offer academic support to students in higher education. Universities currently strive to build inclusive and sustainable communities of learners in which diversity, equality and inclusion are brought to the forefront of institutional agendas.

3.6.5 Why Teach? Future Training Landscapes

As opposed to the idea that translation courses are saturating the labour market with graduates (Pym 2012), prospective careers in AVT look bright (Estopace 2017), mirroring the expansion that the media and the translation industries have experienced in the last few decades (see Section 2.1.1).

The exponential growth of programmes that are distributed in audiovisual format across the globe nowadays (see Section 2.1.3), as well as the financial progress experienced by the language and translation industry in the last decade (LIND Expert Group 2019), support the prediction that the demand for experienced and well-trained audiovisual localisers will continue in the near future, with some language combinations in more demand than others. In a nutshell, "audiovisual translation is here to stay,

as companies and organisations around the world continue to recognise the immense value of adapting their content into multiple languages to extend their global reach" (Díaz-Cintas 2019, 180).

To train the professionals of tomorrow, however, forward-looking AVT modules need to be designed and developed now, taking into account the linguistic dimension as well as the market reality and the possibilities offered by technology. In this respect, cloud-based ecosystems, translation automation, memory tools, ASR and AI are some of the leading trends that will prevail over more traditional practices (Massey 2018). In this sense, the rise of new professional roles, such as post-editors, is a reality in today's AVT industries (see Mejías-Climent and De los Reyes Lozano, 2023). New professional activities call not only for further reflection on training methods but also on the ethical implications of embedding automation in educational settings.

As posited by Rodríguez de Céspedes and Bawa Mason (2022, 249), there is little certainty in what the future holds, and "while we can be aware of the role of MT and TMs in the profession and their application in translator training, rapid technological change and automation means the full impact of AI on the profession and translator training currently remains unknown." Training centres need to re-examine and modify existing curricula and also embrace certain language combinations in which trained translators fall short. Programmes of study need to strive not to lag behind technical advancements as well as to cater for the ever-changing needs of a changing industry. However, striking a balance is key to also nurturing the linguistic and creative aspects involved in the localisation of audiovisual material as well as the enhancement of key skills such as critical thinking, communication and creativity.

Note

1 As with any other attempt to classify assessment parameters, the creation of tight-fit categories is certainly daunting. Taxonomy is hardly ever effectively applicable to all assessment contexts, nor is the aim of this book to offer a one-size-fits-all approach to AVT assessment. Therefore, this disclaimer should be duly borne in mind by educators wishing to utilise this taxonomy. The macro parameters presented in this section can and should be adapted to each specific assessment scenario.

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4 Technology

The evolution of translation as a discipline is inextricably related to technological advances. Translation has outgrown rudimentary translation methods and ergonomics, leading to more versatile and dynamic work environments brought about by digital technologies. The translation profession had not undergone changes as dramatic as those in Modern Europe, when the parchment glosses translated by monks in medieval scriptoria were replaced by modern printing, until the changes triggered by the invention of modern computing in the mid-20th century. Translation progressively evolved from prints and typewriters to computer text editors and started to make the most of new specialist software. Fast-forwarding to the first quarter of the 21st century, the surge of new technologies, especially the internet although more recently AI too, has enabled an unprecedented expansion of the domains in which translating processes occur.

Mainly thanks to technology, the global demand for translation, in general, and media localisation, in particular, has skyrocketed in a panoply of regional and local languages as well as a wide variety of translation domains (see Folaron 2013). Some translation scholars such as Cronin (2005, 2013), opine that these profound changes have shaped, and reshaped, the variable nature of translation, which indeed scarcely resembles the interlingual renderings of the written text accomplished in the pre-computer era. Following groundbreaking computing advancements, translation experienced a twofold exponential growth with the introduction of digital technologies: not only did the volume and nature of translations widen (e.g. localisation of films, videogames, websites and software), but the proliferation of translation tools and resources also allowed for a significant improvement of translators' efficiency, materialised in a higher number of words translated per day, immediate communication and speedier job delivery to clients. A closer look at the media localisation industry reveals that since the advent of digital media, "the ability to work with technology has become more crucial for the AVT translator"

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(Bywood 2020, 504), and to carry out their job, AVT professionals need dedicated workbenches or workstations (see Section 4.2).

The development of translation tools has traditionally been "driven by the commercial imperative to make translation quicker and more accurate" (Rothwell et al. 2023, 11). Although these technologies started to be developed in the mid and (mostly) late 20th century, it was at the dawn of the 21st century that tool developers were urged to fine-tune existing text editors and other tools so that translators could cope with greater volumes of work in considerably shorter spans of time (Matamala 2005; van der Meer 2018). As discussed by O'Hagan (2016), globalisation, spearheaded by the seemingly never-ending advances of the internet, has accommodated new practices, expectations and experiences in interlingual communication, and, consequently, the translation industry. The so-called *Language Technology Atlas*, developed by the US-based market research and consulting firm Nimdzi, is updated on a yearly basis, and, at the time of writing, its latest atlas (Nimdzi 2023) reveals that there are currently over 800 providers of language technology solutions, and existing tools range from editing, translation (business) PM, MT and interpreting tools to marketplaces and platforms as well as integrators, quality management, speech recognition systems, and – more importantly for this book – media localisation software.

Given this changing environment in the industry, translator education institutions arguably ought to ensure that future translators are familiar with the latest technologies. Indeed, the unbridled development of language automation tools such as ASR and MT can by no means be ignored by educators anymore (Rodríguez de Céspedes 2019). The tertiary institutions offering translator education programmes that embraced the teaching of translation technology long ago were few until fairly recently (see Scherf 1992 and Kenny 1999), and the relentless pace of industry changes means that trainers need to keep up with changes more consistently. As argued by Massey (2018, 48):

> Future translators will, to a greater degree than before, have to become masters of those technologies rather than the other way around. They will have to learn both with and about them, developing procedural and declarative knowledge of how and when to use them to the greatest effect; but they will also have to know, and be able to advise others, about when and how to rely on high-quality human translation instead.

Professional translation is, nowadays, more technologically driven than ever before, so it can be argued that "the use of technology by translators is no longer a luxury but a necessity if they are to meet rising market demands for the quick delivery of high-quality texts in many languages"

(Bowker and Corpas-Pastor 2015, online). It is imperative that higher education institutions keep up with technological advancements and embed them in their curricula. Furthermore, as is the case in many other liberal professionals, translators are expected to undertake CPD so as to keep up with fast-paced technological advancements.

Along with software and website localisation (see Esselink 2000), AVT is one of the translation-related fields of expertise that relies on technology the most. Indeed, as argued by Díaz-Cintas and Nikolić (2017, 4):

> To a large extent, AVT has been at the mercy of the twists and turns of technology and it is thanks to the instrumental role played by technology that subtitles can today be successfully produced live with minimal latency, that subtitlers can work in cloud-based environments, usually from the comfort of their own home, that subtitlers' productivity has been enhanced thanks to the development of user-friendly software that enables professionals to work at a faster pace than before, and that audio-described content for the blind and subtitles for the deaf and the hard-of-hearing have become a common occurrence on our screens.

Both subtitling and revoicing have always been closely linked to technology, with the use of specialist software (e.g. subtitling solutions) and equipment (e.g. dubbing studios). The introduction and spread of DVDs can be hailed as one of the main developments that changed the AVT landscape across the globe (see Georgakopoulou 2003 and Díaz-Cintas 2013), not least because it allowed for the inclusion of several subtitled and dubbed tracks in the same product (i.e. an optical disk). Much has changed since then, with more recent technological milestones including the arrival of streaming (i.e. OTT and VOD) and cloud ecosystems as well as the wider application of automation tools in AVT ecosystems (Georgakopoulou 2012; Georgakopoulou and Bywood 2014; Díaz-Cintas and Massidda 2019).

This section sets out to depict the technologies that, at the time of writing, are being used in the AVT industry, with a particular emphasis on cloud systems.

4.1 From Desktop and Legacy Software to Cloud Ecosystems

In the midst of the so-called fourth industrial revolution, "which creates a world in which virtual and physical systems of manufacturing globally cooperate with each other in a flexible way" (Schwab 2016, 13), the cloud has come to be a new ecosystem (Linthicum 2017). Following the consolidation of desktop-based translation tools in the industry in

the early noughties, the next evolutionary step was a steady migration of workbenches and other applications to the cloud, thanks to the use of servers in data macro-centres (Garcia 2009). Two decades into the 21st century, in an age where remote work is more widespread than ever before, translators no longer need to work from static offices or handle file storage in hard disks; instead, the whole translation process and workflow, including file sharing, storage, processing, and delivery, is handled online with web-based tools that maximise flexibility in terms of both geographical and temporal spaces. The industry landscape described in Section 2.1.1, alongside the aforementioned language technology atlas (Nimdzi 2023), is one where most technologies – including, for instance, TM and MT tools, and project and quality management systems – are steadily migrating to cloud environments in search for more dynamic solutions that operate online. Desktop-based software programs continue to be supported by developers and are reliable, but in the height of remote work, with translators' workplaces being increasingly flexible, web-based environments are convenient alternatives to legacy desktop-based programs. According to Nimdzi's website, the majority of translation tools are now on the cloud, with most translation and interpreting software developers now offering online or hybrid solutions. At the time of writing, it arguably makes little sense to point out that tools are being migrated onto cloud-based environments, because cloud ecosystems have now become the norm across the industry, even if their use in the AVT classroom visibly remains under-explored (see Valdez et al. 2023).

As occurs with all technological developments, existing systems will inevitably be followed by more innovative tools for sharing information and handling projects more efficiently. It is therefore just a matter of time until the way in which we operate in cloud computing environments experiences a new metamorphosis.

4.1.1 The Development of Cloud Computing

Starting off in the late 1990s, and spreading over the early noughties, cloud computing has experienced a rapid expansion around the globe, leading to a major shift in the way we use applications and store information in the age of big data. The average 21st-century computer user has progressively become more aware of the many cloud tools that are now at their disposal. Storing files in off-site servers, sharing document links, working with colleagues on the same documents simultaneously and remotely, playing video games and streaming videos online are only some of the many tasks that are commonly accomplished on the cloud.

From an epistemological point of view, pinning down the essence of cloud computing seems to be an arduous task to undertake on account of

the many, sometimes even competing, definitions that coexist (Vaquero et al. 2009). According to Birman et al. (2009), the lack of terminological consensus arises from the diverging positioning that scholars can adopt, as they can explore the cloud in a so-called inward way (i.e. as developers and traders) or in an outward manner (i.e. as end users). The most widely agreed definition of cloud computing is perhaps the one drafted by the US National Institute of Standards and Technology, according to which cloud computing is "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell and Grance 2011, 1). From a more business-oriented perspective of the role of cloud applications in working environments, cloud computing can be understood as "any IT resource, including storage, database, application development, application services, and so on, that exists outside of the firewall that may be leveraged by enterprise IT over the internet." (Linthicum 2010, 7)

These systems provide service developers and users with resources that are typically offered on a subscription basis, which can be expanded or contracted, and which include storage services, database services, information services, testing services, security services, and platform services (Linthicum 2010). One of the main economic benefits of cloud platforms resides in the absence of upfront capital expense (Armbrust et al. 2010) as the pay-as-you-go or pay-per-use scheme allows users to hire the tool for a certain period of time in order to carry out their translation commission. A further advantage of cloud-based solutions is the enhancement of time- and cost-effectiveness in the development and sale of a specific application. By way of illustration, the creation of on-premises hardware applications or platforms would entail the purchase of the software and their installation in data centres, followed by integration testing, deployment and acceptance. In off-premises or cloud environments, however, installations may only take a few hours so long as existing public cloud providers are used. Another main advantage, which has undoubtedly propelled the expansion of clouds in everyday computing at end-user level, is the delocalisation of file-based data storage, which reduces the costs of hardware and facilitates access via the internet.

To understand how clouds work, one needs to understand the different deployment and service models that govern them. As explained by Sriram and Khajeh-Hosseini (2010), cloud systems share five essential characteristics:

- they are self-services that can be acquired and used by cloud service providers because they are on-demand services;

- they are accessed over a network from a device;
- their resources are shared by multiple users by means of multitenancy (also called pooling);
- they are more quickly acquired by scaling out, i.e. adding components horizontally (linking new servers to an existing server network), rather than vertically (adding memory and storage resources to an existing server); and
- all usage of the services and resources is metered to determine the payment which users may incur.

Clouds began to be marketed according to four different deployment models – i.e. public, private, community and hybrid – but, with the passing of time, these systems have also taken the form of computing ecosystems (including cloud management applications) and tools for building private clouds. The main difference between the aforementioned cloud types rests on the ownership, and physical location, of the hardware and software necessary for the deployment, running and use of the applications on the cloud. The different components, and sub-components, needed to engineer the power of cloud resources are known as the *cloud architecture*, which comprises five main levels: application, network, processing, data and storage.

There are three main service models depending on the use of resources and the level of abstraction:

- software as a service (SaaS), which are finalised applications that can be rented and customised on the open internet and are designed to replace information located in data centres;
- infrastructure as a service (IaaS), which virtually provides servers, storage and network end points through an automated web-based management console and replaces traditional applications so as to access computing resources remotely; and
- platform as a service (PaaS), which is a complete deployment platform leveraged on demand and is a cloud version of an application that is hosted remotely.

At the time of writing, there are three major public cloud service providers (also known as *hyperscalers*) where applications can be hosted and whose common ground is that they offer an IaaS cloud (Shroff 2010). These hyperscalers are Amazon Web Services (2006–, aws.amazon.com), Google Cloud (2008–, cloud.google.com) and Microsoft Azure (2010–, azure.microsoft.com). Applications can be initiated on the cloud from scratch, while analogue or legacy software – i.e. applications that are often desktop-based and run on the computer's processing power and

memory – can be migrated to the cloud by means of re-configuration, customisation and deployment. Tools are normally a service (also known as *utility computing*) made available to users via SaaS provision. In plain terms, a cloud application instance (e.g. an online CAT tool) needs several components to run, mainly the data storage and central processing units, which can be either on or off the premises, so cloud providers (e.g. Amazon Web Services) supply developers (e.g. OOONA) with the infrastructure necessary to run a specific application and it is up to developers to leverage the technology and resources required and thereafter acquire the cloud services they need – i.e. SaaS, IaaS or PaaS – on a pay-as-you-go basis.

One of the main challenges posed by cloud computing is security. There is general consensus that cloud computing "has changed how organizations should assess and mitigate information security risks because of the significant changes in how computing resources are technically designed, operated and governed" (BSI 2015a, 2).[1] Cloud services usually market their infrastructures by putting an emphasis on secure cloud computing environments, but scholars have systematically pointed out that they can pose additional threats to both developers and end-users (Vaquero et al. 2011) inasmuch as "traditional security mechanisms may not work well in cloud environments because it is a complex architecture that is composed of a combination of different technologies" (Hashizume et al. 2013, 11). This is why users need to take extra caution with sensitive data (e.g. copyright material) on account of the multitenancy nature of cloud environments, whereby users can store and share resources. Security is highly relevant in the AVT industry, where materials are usually subject to confidentiality and copyright infringement policies, but research on this front remains visibly scarce to this date.

4.1.2 The Migration of Translation Technologies to the Cloud

Cloud computing advancement has led to major inroads in the translation industry in general (see Muegge 2012 and Garcia 2023) and AVT in particular (see Bolaños García-Escribano and Díaz-Cintas 2020). Today, the translation industry has warmly embraced cloud-based tools and is progressively migrating work environments to cloud environments in an attempt to replace legacy desktop-based solutions. Translation work is often being undertaken with proprietary cloud software developed or offered by translation agencies and service providers, although it is also fair to argue that translation technology developers currently offer cloud-based solutions to end-clients (e.g. freelancers working with direct clients). As Rothwell et al. (2023, 27) explain, "whether they began life on the workstation or in the cloud, many of the most popular CAT tools

are converging on a model combining local and online access to projects with variously sophisticated resource-sharing and project management capabilities."

Cloud tools have been catalysts for change in AVT, especially in interlingual practices such as subtitling (Artegiani 2021) and dubbing (Chaume and de los Reyes Lozano 2021; Spiteri-Miggiani 2023). Over fifteen years ago, YouTube pioneered video streaming and launched a captioning feature allowing users to add subtitles to their own audiovisual content in 2008. Their auto-captioning component was officially integrated in 2010, and the platform also utilises a speech-to-text tool for automatic captioning as well as an auto-translate feature powered by Google Translate, a popular MT system providing real-time translation of video captions. In 2009 ZOO Digital developed the first web-based proprietary subtitling system (ZOOsubs, www.zoosubs.com). An array of cloud-based subtitling tools have followed suit, some of which are proprietary and can be used exclusively by company employees, e.g. Plint (formerly known as Nordisk Undertext, plint.com), iMediaTrans (mediawen.com), Deluxe Sfera (bydeluxe. com), MediaWen (mediawen.com), and Netflix (Subtitle Originator and QC 2.0). Other platforms, such as OOONA Tools (ooona. ooonatools. tv), and Yella Umbrella (www.yellaumbrella.tv) are available on demand to end-users.

While in the past translators would set up their workstations by purchasing single-version licenses of specialist software, which represented high up-front costs, today's vendors can provide their workforce with access to complimentary cloud-based private and proprietary software. Long gone are the days when translators would acquire single-version tools in the form of shrink-wrap, desktop-based software with little or no possibility of receiving updates for newer versions of the same software. Industry-led changes have also led to deep transformations in the ways in which these practices are now taught (see Bolaños García-Escribano et al. 2021 and Bolaños García-Escribano 2023).

More innovative systems will inevitably supersede the swift current cloud environments, allowing users to share information and handle projects more efficiently as a response to the challenges posed by security due to the multitenancy nature of cloud environments but also because of the growing importance of AI integration. Two decades into the 21st century, in the midst of third-generation internet and the development of LLMs, translators now have access to a myriad of translation technologies, ranging from project and quality management systems to multilingual content generators. The likes of Google's Bard (bard.google.com), Microsoft's Copilot (copilot.microsoft.com) or OpenAI's ChatGPT (openai.com) – to name but a few of the generative AI tools that are currently being deployed using cloud services and are open to end users – are bound to cause further

changes in the uses and applications of language technologies as we know them today (see Section 4.3).

4.2 Audiovisual Translators' Workstations

In general terms, a translation workstation is "a single integrated system that is made up of a number of translation tools and resources such as a translation memory, an alignment tool, a tag filter, electronic dictionaries, terminology databases, a terminology management system and spell and grammar-checkers" (Quah 2006, 93–94). In the last few decades, the sizeable growth of technological developments in general, and the democratisation of automation tools in particular, have led to a gradual transformation of the tasks carried out by translators, localisers, revisers, terminologists, and project managers. AVT workstations have traditionally been characterised by dedicated revoicing and subtitling editors as well as certain automation tools that allow speech to be processed. Revoicing and ASR tools have been latecomers, whereas subtitling has traditionally been a much more technology-driven practice (Díaz-Cintas 2023). There have been a few attempts at describing AVT workstations (see Matamala 2005; Cerezo-Merchán et al. 2016; Matamala 2017; Torralba-Miralles et al. 2019), but the reality is that technology is often too fast-paced to offer an up-to-date account of what is available to AVT professionals at any given time. Indeed, just like in other translation domains, the tools used by AVT professionals continue to experience continual shifts and transformations.

According to Bowker and Fisher (2010, 60), CAT tools typically refer to "software designed specifically with the translation task proper in mind, rather than tools intended for general applications (e.g. word processors, spelling checkers, e-mail)." They can also be more generally understood as any computerised tool that help translators do their job (Bowker 2002; Garcia 2012; Chan 2023); indeed, as posited by Garcia (2023, 76), they were "created with the specific purpose of facilitating the speed and consistency of human translators, thus reducing the overall costs of translation projects while maintaining the earnings of the contracted translators and an acceptable level of quality."

Bowker (2002, 7) first established that there are three main types of translation tools: human translation tools (e.g. text editors and word processors, spelling and grammar checkers, electronic resources, internet and email); CAT tools (including data-capture programs, e.g. speech and optical character recognition; corpus-analysis software, e.g. terminology-management systems, translation memories, localisation and website localisation tools); and diagnostic tools); and MT tools. Twenty years after the aforementioned taxonomy was first proposed, its

limitations are patent. For instance, Indeed, Bowker and Corpas-Pastor (2015) later proposed five categories: TM and terminology management systems, term extractors, concordancers, localisation tools, and MT systems. Garcia (2023) posited that CAT tools usually fall under seven types: editors, TM, terminology management, translation management, alignment and term extraction, quality assurance (also known as quality control), and localisation. A quick look at the existing literature reveals that prescriptive classifications can become obsolete in no time at all due to the fast pace of technology advancement, so Bowker's (2023) latest discussion of CAT tools, to name a recent example, is more timeless and does not attempt to neatly categorise CAT tools.

Many scholars, such as Rothwell et al. (2023), typically associate CAT tools with TM and termbases that assist during the translation process (as opposed to automation technologies such as MT, for instance). A similar stance is taken in the industry; for instance, Nimdzi defines CAT tools as those that "allow users to work with [a] bilingual text, that is, the source (original) and the target (translation) languages" (Akhulkova 2022, online). Following this understanding of CAT tools, it could be argued that media localisation editors (such as dubbing and subtitling tools) and PM systems would easily fall under this category. For the sake of consistency, and following the AVT literature, the term CAT tool is hereby used to refer to the tools that allow translators to (semi)automate their job to improve efficiency; therefore, language automation tools – including MT and ASR – and AI tools (such as LLMs) are considered separately.

The use of dedicated software is inextricably linked to AVT practices and to subtitling more specifically, so the fact that technology has received remarkable attention by AVT scholars in recent years comes as no surprise (see Díaz-Cintas 2013, 2015; Burchardt et al. 2016; Baños 2018; Díaz-Cintas and Massidda 2019; Georgakopoulou 2019; O'Hagan 2019; Bywood 2020). According to Baños (2018, 4), AVT "is often associated with technology and technological developments also due to the complexity and nature of audiovisual texts." Scholarly interest has gradually shifted towards further automation, in particular from TM to MT and from ASR to AI, which feature more and more prominently in academic discussions on the translation and revision of revoicing scripts and subtitles (e.g. Bywood et al. 2017; Koponen et al. 2020a, 2020b; Hu et al. 2021; Karakanta 2022). The democratisation of AI in media localisation necessarily implies a greater need to revisit AVT education with a particular emphasis on new technologies.

The sections that follow focus on four translation tools typically used in the AVT industry: revoicing and subtitling editors, TM and MT systems, speech recognition, and PM tools.

4.2.1 Media Localisation Editors

Editors constitute the main working environment in which translators localise audiovisual texts by having access to both the clip and the target text, which can be a (dubbing or audio description) script or subtitles among other possible outputs. The latest revoicing and subtitling editors often allow translators to embed their translations and produce fully localised clips by, for example, encoding a video with burnt-in subtitles or adding a new soundtrack containing audio descriptions or dubbed dialogues.

Subtitling software developers have spearheaded the latest advances in media localisation editors. One of the reasons why technological advances have been much slower in revoicing is perhaps because translators have traditionally focused on the linguistic transfer without taking care of the dialogue adaptation, often done by the dubbing director or dialogue writers. Another reason is that technical components concerning the recording and editing of the new soundtrack tend to fall outside the translators' remit. Script translations and dubbing projects have traditionally relied on basic technology, such as text editors, and tools remained scarce for many decades (Chaume 2007, 2012; Martí Ferriol 2009; Cerezo-Merchán et al. 2016). As a matter of fact, translation and adaptation practices have often been referred to as "human dubbing" (Brannon et al. 2023, 419), thereby reinforcing the idea that technology is often limited in the revoicing work undertaken by translators.

Innovations in the field of AI, such as speech-to-speech technologies in general and automatic dubbing in particular, are currently leading technological advancement and propelling the development of a myriad of revoicing tools that aim to semi-automate the dubbing of videos (see Section 4.2.4.3). Similar attempts to incorporate automatic practices in media localisation have been common in subtitling workflows (Díaz-Cintas and Massidda 2019), though, in contrast to most dubbing editors, fully-fledged editors often allow subtitlers to provide end-to-end services. Albeit rarer, audio description editors have also been available for some time and often closely resemble the features of dubbing editors, also making use of the latest automation tools available (see Section 4.2.4.2). Finally, there are media localisation PM tools that often integrate revoicing and subtitling editors; however, these fall beyond the scope of this section.

4.2.1.1 Revoicing Editors

Although this section discusses instances of both desktop- and cloud-based editors, the latter have become the new norm in the industry (see Bolaños García-Escribano et al. 2021, Chaume and de los Reyes Lozano 2021,

and Spiteri-Miggiani 2023, among others). Nimdzi's (2023) latest translation technology report reveals that dubbing and subtitling editors are still being distinctly separated from other media localisation tools such as remote recording and AI-enhanced dubbing tools. However, the fast-paced advances seen in the field of speech-to-speech technology in recent years point towards a steady integration of these tools into professional cloud dubbing and subtitling editors, thereby blurring the lines of separation.

Most of the new dubbing editors currently available draw on the so-called *rythmo-band* approach, which has been used in France (see Le Nouvel 2007; de los Reyes Lozano 2019), revoicing has always been done in an idiosyncratic manner, whereby translators also undertake the adaptation of the script (*détection*) as well as the synchronisation of the visuals with the translated script (*repérage*). Commercial dubbing editors, including Synchronos (synchronos.fr) and Mosaic (www.noblurway.com/fr/solutions/doublage) are commonly used in France. An open-source equivalent is Cappella (cappella.tv), a dialogue writing tool that synchronises translated dubbing scripts and video, though it only exists in French and has not been updated since 2008. In Spain, Zio Audio's Dialog Spotting, and its newest version iDoblaje (zioaudio.com), are professional tools that allow users, normally employed by dubbing studios, to work with dubbing scripts, video recordings, timecodes, dialogue lists, and takes within the same interface. Dubbing post-synchronisation programs also exist to record the voice actors' performances and to mix the soundtracks.

In light of a greater volume of English-language revoicing by leading streaming services and media producers, such as Netflix, the rythmo-band systems have been adopted by some cloud-based dubbing editors (e.g. ZOOdubs) and are making inroads (see Section 4.5.2). Coinciding with the surge of mainstream dubbing practices, especially in the Anglosphere, alongside the expansion of remote work fuelled by the 2020 pandemic, cloud dubbing now constitutes a common practice in the AVT industry. According to Spiteri-Miggiani (2023, 172), "time effectiveness, language focus and quality enhancement are possibly the key words that emerge when closely observing cloud dubbing workflows versus traditional ones" inasmuch as web-based tools help to narrow the translator's focus down to translating and adapting content rather than managing the project with a variety of offline tools.

AD scripting can also be performed using media localisation editors that allow for the descriptions to the be timed. There are ad-hoc AD solutions, such as Yella Umbrella's Stellar, that incorporate voice recording functionalities. AD scripting and recording interfaces are very similar to dubbing and subtitling editors, which is why they are included in the list of revoicing editors shown in Table 4.1.

Table 4.1 Revoicing editors

Revoicing Editors			
	Paid	**Proprietary**	**Free**
Desktop-based	Adobe Audition	OneDub	Cappella
	Descript		
	Magix		
	Mosaic		
	n-Track Studio		
	Synchronos		
	VoiceQ		
Cloud-based	Adobe Audition	OneDub	YouDescribe
	Descript	VideoLocalize	
	iDoblaje Cloud		
	MediaNEXT GlobalLink Media Manager		
	MediaNEXT GlobalLink Virtual Studio		
	MateDub		
	ScribitPro		
	Stellar		
	Swiss TXT		
	VoiceQ		
	ZOOdubs		

4.2.1.2 Subtitling Editors

As seen in Section 2.5, the subtitling of audiovisual content has always required tools to overcome technical challenges, such as rendering video while being able to process text, synchronising dialogue and subtitles, inserting timecodes and simulating the subtitles against the images, among many other tasks. Indeed, Kuo's (2015) survey on the professional aspects of the subtitling industry demonstrates that three-quarters of 465 translators that took part in the survey used subtitling software on a regular basis.

Paid subtitling systems, also known as commercial packages, started to be developed in the late 1970s and have greatly evolved over the last five decades. They require monetary compensation through a single purchase (CD/DVD, license key, or electronic file) or, much more recently,

rental fees. In this respect, a transition has taken place from a capital expenditure model, i.e. investing in the purchase of tools, to an operating expenditure one, i.e. renting a piece of software on a pay-as-you-go basis, which spares freelancers having to invest a large sum of money up-front. The democratisation of technology has led to the development of free tools that are omnipresent on the internet and are used in commercial and cybersubtitling activities (Díaz-Cintas 2018). Other subtitling programs, known as proprietary subtitling solutions, are tailor made, internally developed by translation agencies or vendors and commonly offered free of charge to freelance translators in their databases. They have the potential to reduce costs by competing against more expensive commercial solutions. Examples of desktop-based proprietary systems were SDI Media's Global Titling System (GTS) and Deluxe's EddiePlus, now discontinued.

Following the steady migration from desktop to cloud environments explained in Section 4.1.2, a substantial number of cloud-based translation systems are currently used. Commercial cloud-based solutions such as OOONA Tools (ooona.ooonatools.tv) are becoming increasingly popular among freelancers and agencies because they can be purchased for a specific period of time and do not require installation packages. Many subtitling initiatives conducted in cloud environments were the fruit of collaborative projects, initiated and powered by specific organisations or teams of volunteers, rather than commercial ones. To avoid having to download and install any specialist programs locally, they provided online tools built for the specific purpose of subtitling, which are relatively easy to learn how to use because the contributors are meant to be volunteers with limited subtitling skills rather than professional subtitlers. Some of the free platforms, such as YouTube Studio (studio.youtube.com) and Amara (amara.org), were developed before paid and proprietary systems, to be used in very specific scenarios, e.g. Amara is used for voluntary localisation commissions for TED Talks.

Back in 2009, the first web-based proprietary subtitling system was launched by ZOO Digital (ZOOsubs). Since then, a wide range of cloud-based subtitling tools has been developed by other major media localisation agencies such as Deluxe and Plint. Netflix seems to be the only large audiovisual media producers and distributors to have developed a tool to improve the overall productivity and quality of the translation outcome achieved by vendors (i.e. Subtitle Originator and QC 2.0). Paid tools, such as OOONA Tools, allow freelance professionals to carry out their translation commissions on a pay-as-you-go basis and are becoming increasingly popular in the market (Fernández-Moriano 2019; Salotti 2019). These offer many advantages to professionals and translator trainers alike but require monthly or yearly subscriptions, which would work best for translators who only receive the odd subtitling commission. These tools

hold enormous potential as they can allow for a leaner workflow whilst permitting translators to work synchronously and help each other, thus leading to more interactive ecosystems when built-in social networking is introduced.

Table 4.2 offers a list of some of the most popular editors, some of which might no longer exist at the time of reading:

Nowadays, AVT projects involve close collaboration with many stakeholders based in different geographical locations (Díaz-Cintas 2015, 2020).

Table 4.2 Subtitling editors

Desktop-based Subtitling Editors			
	Paid	**Proprietary**	**Free**
Desktop-based	Annotation Edit	Global Titling System	Aegisub
	Cavena TEMPO	EddiePlus	AHD Subtitles Maker Professional
	EZTitles		DivxLand Media Subtitler
	FAB Subtitler Pro		Jubler Subtitle Editor
	InqScribe		Open Subtitle Editor
	iSubtitle		LvS
	Lemony Pro		SubMagic
	SubBits		SubStation Alpha
	Softel Swift Creator		Subtitle Edit (Nikse)
	SoftNI Subtitler Suite		Subtitle Processor
	Spot 5		Subtitle Workshop
	Sub Machine		VisualSubSync
	Subtitle Editor		
	Titlevision Sub Machine		
	Wincaps Qu4ntum		
Cloud-based	CaptionHub	Deluxe One	Amara
	OOONA Tools	GlobalLink Play	Dotsub
	iMediaTrans		Khan Academy
	MediaNEXT		Subtitle Edit Online
	SHIRE	MediaWen	Viki
	Subtitle Editor	Netflix Originator	YouTube Studio
	Stellar	Plint	
		VideoLocalize	
		ZOOSubs	

Alongside cloud tools, there is certainly greater interactivity and connectivity among AVT professionals, and a substantial number of individuals can work simultaneously, often with different language combinations and in different geographical locations, as long as the project managers prepare the workflow for this purpose. Shared script and subtitle templates, whose timecodes are often locked, contribute to maximising resources and cutting costs by sharing the same timed subtitles, dialogues, narrations or audio descriptions. The imposition of templates as a common working file in the subtitling industry (Georgakopoulou 2012) also occurs in the realm of revoicing practices such as dubbing and audio description, thereby legitimising their inclusion in state-of-the-art cloud-based editors. Many systems, however, may not allow different linguists to work on the same file at the same time, so the source files, including templates and other translatable documents, would have to be made available multiple times for each stakeholder. In such scenarios, the output is collated under the scrutiny of the project manager. Enabling teams of translators to work on the same scripts or templates would contribute to a smoother sharing of data and teamwork.

Finally, many software developers are usually eager to receive end users' feedback so that they can fine-tune their solutions and customise them to their customers' needs in a more agile way. Cloud-based systems are credited with being quick to react to change, which is evident in the manner in which they can recover and come up with quick updates whenever bugs or missteps might occur, thus promoting a more stable and seamless work environment. These enhancements, nurtured by the hand-in-hand collaboration between software developers, researchers, and end users, help to reshape newer versions of subtitling systems and are exemplary of the fruits that collaboration among stakeholders can yield (Bolaños García-Escribano 2024).

Although cloud-based tools were not very popular among subtitling trainers a few years ago, many have expressed their willingness to incorporate them into their programmes of study (Bolaños García-Escribano 2018). In a recent study on the didactics of subtitling, Roales-Ruiz (2018) claimed that one of the technological advances that could be applied to the teaching of subtitling, and therefore AVT, would be the development of ad-hoc AVT-specific tools tailored for educational purposes.

4.2.2 Translation Memory and Machine Translation Systems

The multimedial nature of audiovisual texts has often made it difficult to use CAT tools, such as TM systems, in professional revoicing and subtitling. As explained in Section 2.1, words, expressions and sentences can undoubtedly take many forms in written texts (e.g. social implications,

metaphorical values and implicit meaning, to mention but a few), but the number of possibilities increases quite substantially with the incorporation of image and sound, which has traditionally been a stumbling block in the use of tools that aim to (semi)automate the localisation of audiovisual texts (Díaz-Cintas 2013). Despite this, and as explained by Bywood (2020), there have been some attempts at incorporating CAT tools in AVT workflows, which seem to have taken two main forms: one is when existing TM systems have integrated AVT-specific functionalities (e.g. subtitle files and timecodes), whereas the other is when media localisation editors have incorporated CAT tools. A closer look at the AVT industry shows that interest in language automation (especially ASR and NMT) has been considerably greater than in TM, termbases and terminology management systems. Scholars such as Baños (2018) have previously criticised the industry's stagnation and missed opportunities in this area.

4.2.2.1 Translation Memory

TM systems work on a segment level basis and, contrary to MT, are not fully automated, which means that they still necessitate action from human translators to operate. As Kenny (1999, 74) explained, "the basic technology employs a database to store segments of a source text as it is being translated, and the corresponding segments of the target text as input by a human translator." TM tools store and prompt the translator to reuse sets of previously translated segments that are suggested in real-time as the translator works (see Rothwell et al. 2023, 40).

TM tools operate on a segment-pairing basis, allowing for the creation of large data and term banks that can be exported and used across different workbenches. In general terms, the use of TM enables translators to work faster and more consistently, contributing to greater coherence in translations, particularly when it comes to the use of repeated terminology. They have usually taken shape as paid desktop-based software, such as memoQ, SDL Trados Studio, and Wordfast, but there are also open-source solutions such as "OmegaT, Virtaal, GlobalSight, and other open source tools, but also the Google Translation Toolkit and Wordfast Anywhere" (Garcia 2023, 92). Among the most popular TM tools that currently operate in the cloud are the following: Wordfast Anywhere (2009–, freetm.com), Memsource Cloud (2011–, cloud.memsource.com), MateCAT (2011–, matecat.com), memoQ Cloud (2014–, memoq.com/cloud), Smartcat (2015–, smartcat.ai), and Trados Enterprise's Online Editor (2017–, sdltrados.com/products/language-cloud/online-editor, currently marketised by RWS). Before being acquired by RWS, SDL launched Trados Studio 2021 using their cloud system, SDL Trados Live, in a hybrid fashion.

Nowadays, though, TM tools are being timidly integrated into AVT with the aim of maximising AVT productivity and reducing costs. Athanasiadi (2017) established that subtitlers were very eager to utilise subtitling tools with functions like TM and translation databases to improve their efficiency. Some TM developers spearheaded the integration of AVT-specific workflows by introducing functionalities such as video preview players: Kilgray (www.memoq.com), Star AG (www.star-uk.co.uk), Transifex (www.transifex.com), and Wordbee (www.wordbee.com). Following memoQ's launch of its video player add-on in 2018, the former Trados Studio (currently known as RWS Studio) launched an ad-hoc subtitling app, in early 2019, for professionals to translate pre-timed subtitle templates within the main interface of their TM system, and the cloud-based tool Transifex offers an editor tool that supports video preview to help translate subtitles whilst being able to watch the clip within the same interface. None of these developments, however, managed to offer text-timing features, which remain essential for the production of subtitles even if the industry has recently given precedence to template-translation practices (e.g. origination) over text-timing in the interest of efficiency (Georgakopoulou, 2006, 2012; Nikolić, 2015). What is more, as argued by Baños (2018, 14), "the integration of these resources with existing AVT tools is essential as what is translated is the audiovisual text as a whole and not just audiovisual dialogues or scripts."

4.2.2.2 Machine Translation

MT systems aim to automate the translation process by instantly transferring copious amounts of text from one language to another. Many MT tools can be easily incorporated into existing CAT tools, and their importance seems to be casting a shadow on legacy TM systems and termbases in a drive for further automation. In plain terms, MT systems facilitate the "automatic production of a target-language text on the basis of a source-language text" (Kenny 2022, 32). Contrary to TM tools, they are designed to (at least partially) replace part of the human agency in the translation process (see Torrejón and Rico 2012 and Robert et al. 2023). In light of MT, language professionals (including translators) can carry out editing tasks (e.g. pre-editing and post-editing), which are different from traditional translation and revision (see Mossop 2019).

MT systems can be traced back to the mid-20th century, when pioneer linguist and language engineer Warren Weaver "proposed the use of cryptographic techniques to mechanise translation." (Quah 2006, 59). MT systems have moved away from early rule-based approaches – first-generation systems that worked on a word-for-word basis with no clear built-in linguistic component (Wilks 2009) – and take many different

forms today. There are three main types of MT systems: knowledge-based, corpus-based, and neural. In corpus-based MT, "previous unseen texts are automatically translated using information gleaned from examples of past translations produced by humans" (Hearne and Way 2011, 205). Example-based MT and statistical MT (SMT) are their two primary strategies (see Koehn 2010), but hybrid systems have also been developed over the past few years. Both approaches are based on existing parallel texts, but they differ insofar as example-based MT is accomplished via analogy – given one or more parallel texts, the system analyses the translatable sentence, divides it into smaller segments whose translations are found in the parallel texts, and combines them to produce a new translation in the target language – whereas SMT is accomplished via statistical models whose parameters are automatically learnt through monolingual and parallel texts and also combine various statistical models (Sánchez-Martínez 2012). A decade ago, phrase-based statistical MT was the predominant paradigm (Way 2010), with popular cloud-based MT engines such as Google Translate, which was first launched in 2006 (Le and Schuster 2016).

In the mid-2010s, Devlin et al. (2014) and Cho et al. (2014) suggested the application of deep neural network language models in natural language processing (NLP) within existing SMT models. These studies provided strong empirical evidence that SMT output was considerably improved with the use of conditional probabilities of phrase pairs computed through these new models. Large companies, such as Google, soon echoed these early research studies to develop enhanced NMT engines (Wu et al. 2016). Since the launch of Google's NMT engine in 2016, the field has been virtually dominated by advances in neural networks and deep learning applied to NLP (Bokka et al. 2019). As explained by Koehn (2020), neural networks can be applied to neural language and translation models, whereby the input of linguistic information (i.e. encoding) leads to the prediction of linguistic output (i.e. decoding) by means of association (i.e. attention mechanism) and training (i.e. unrolling). Among the several MT engines that are currently available in the cloud are DeepL (deepl.com/en/translator), KantanMT (kantanmt.com), Language Studio (omniscien.com/language-studio / language -studio-2), Iconic Translation Machines (iconictranslation.com), Pairaphrase (pairaphrase.com), Microsoft Translator (translator.microsoft.com), SmartMATE (smartmate.co), and Systran (systransoft.com). LLMs also allow users to machine-translate texts out of and into English as well as in other language combinations, but at the time of writing, the system yields the best results in Dutch, English, French, German, Italian, Portuguese, and Spanish. Many cloud-based TM tools also feature internal or external MT engines. Among the external MT engines that can be linked to TM tools are Apertium (apertium.org),

Bing Microsoft Translator (bing.com/translator), Google Translate (translate.google.com), Promt (online-translator.com), and Yandex Translate (translate.yandex.com).

MT systems have traditionally, if not systematically, raised concerns about the quality of their output (Arnold et al. 1994; Pym 2018; Mellinger 2018). However perfected some hybrid systems may be, there are many factors – including "language distance, text type, definition of quality, the metric used and who the post-editor is, with this last factor perhaps being the most crucial" (Pym 2018, 442) – that may prevent any MT system from translating a given text adequately. Translation scholars and computational linguists have explored MT in salient contexts such as quality assessment (e.g. Federico et al. 2014; Rivera-Trigueros 2022), evaluation metrics (e.g. Babych 2014), post-editing effort (e.g. O'Brien 2005; O'Brien et al. 2014; Koponen 2012, 2016), productivity (e.g. Plitt and Masselot 2010; O'Brien 2011; Federico et al. 2012), the training of translators-to-be (e.g. Gaspari et al. 2015) and end-users' perception (e.g. Moorkens et al. 2018; González Pastor 2021).

MT necessarily calls for yet a new understanding of quality, as the raw output is generally of a lesser quality than human translations. To comply with quality standards, machine-translated raw output must be edited by a human translator. MT *post-editing* is a task that involves revising raw MT output (BSI 2015b),[2] so the type of errors encountered and the final level of quality expected often differ from human translation revision. For some scholars like Pym (2011), post-editing risks undermining professional translators' agency and power, as amateurs and paraprofessionals can post-edit MT output with relative success. Others, like Krings and Koby (2001), claim that post-editing involves highly specialised (extra)textual processes and, therefore, professional translators with training in the field are better qualified for the task. Torrejón and Rico (2012) argue that the competences required for post-editing are analogous to those of conventional interlingual translation.

Post-editing guidelines in the market tend to be individually elaborated for each institution, thus leading to a general lack of homogeneity (Allen 2003). In Hu and Cadwell's (2016) analysis of academic and professional post-editing guidelines, however, it is clear that most guidelines distinguish between two main degrees of post-editing: light post-editing (from which an understandable and usable text is produced even if it is not linguistically or stylistically perfect) and full post-editing (which pursues human-like quality by producing text that is stylistically appropriate and linguistically correct). Scholars have also looked into the potential of automatic post-editing (do Carmo et al. 2021) with the prospect of improving the expected quality of MT output.

In the specific case of AVT, the integration of MT functionalities into AVT workstations has not taken place seamlessly. Existing MT systems are currently unable to ascertain how the visuals interact with the verbally expressed messages, hence potentially leading to incongruent literal translations devoid of context, not least because "MT systems have been developed using large databases of translated *written* (vs. originally *spoken*) texts that are grammatically correct" (Burchardt et al. 2016, 212). As previously explained, audiovisual texts are composed of instances of spoken dialogue that are characterised by spontaneity and (prefabricated) orality (see Section 2.1), which constitute additional challenges when producing translations of scripts and subtitles automatically.

According to Karakanta (2022), scholarly attempts at examining MT in AVT in general, and subtitling in particular, can be traced back to the early 2000s. Since then, numerous researchers have examined the challenges of integrating MT in subtitling, with many focusing on output quality (Popowich et al. 2000, Armstrong et al. 2006, Burchardt et al. 2016), post-editing and effort (De Sousa et al. 2011, Georgakopoulou and Bywood 2014; Koponen et al. 2020; Bolaños García-Escribano and Declercq 2023) and subtitlers' productivity (Volk 2008; Volk et al. 2010), among other topical areas.

A number of EU-funded research projects pioneered close examinations of the possibilities offered by MT when embedded in AVT workflows. Among those projects was MUSA (Multilingual Subtitling of MultimediA content, 2002–2004, sifnos.ilsp.gr/musa/index.html), whose first projects explored the applicability of MT engines in subtitling at the turn of the century (see Piperidis et al. 2005). However, MUSA's findings were disappointing due to the inefficiency of the MT system at the time. Other projects followed including eTitle (2003–2004, upf.edu/en/web/glicom/e-title), SUMAT (2011–2014, Subtitling by Machine Translation, cordis.europa.eu/fp7/ict/language-technologies/project-sumat_en.html), and EU-BRIDGE (2012–2015, eu-bridge.eu). Originally funded by the EU, the TransLectures (Transcription and Translation of Video Lectures, 2011–2014, http://www.translectures.eu) project developed a cloud-based tool that combines ASR and MT systems for the localisation of academic video lectures.

The application of NMT in subtitling has been deemed more satisfactory as the years have gone by (Bywood et al. 2017), and further attempts have followed suit, with commercially funded, industry-led projects trailblazing the production of auto-generated subtitle templates (see Gupta et al. 2019, from Amazon, and Mehta et al. 2020, from Netflix) or even the editing and revision that a human reviewer would undertake of auto-generated translations (Gupta et al. 2021). The latter developments are often found in proprietary tools that are not always made available to

end-users, but there are cloud-based editors that have experimented with MT functionalities in their existing interfaces for some time now, too. For instance, the Chinese subtitling software tool named YYeTs (shimo.im/ docs/ AIYgzUxvrXg5QWJs/ read), created by the company Yi Shi Jie [Translate – Visual – World] (1sj.tv), is available on the cloud and combines AI, ASR for the transcription of dialogue, TM, and MT features within the same interface, alongside a PM tool in which the work can be better distributed among translators. Also in China, the cloud-based platform NetEase Sight (sight.netease.com) claims to be able to automatically produce bilingual subtitles in English and Chinese. Other tools that currently offer ASR and NMT functionalities include Matesub (matesub.com) and Syncwords (http://www.syncwords.com). There are also MT engines that have been specifically designed for AVT work, such as AppTek (www.apptek.com) solutions, which can be integrated into existing cloud-based editors (see Matusov et al. 2019).

4.2.3 Automatic Speech Systems

Automatic speech technology enables computers to identify and process human speech as well as to convert text into artificial speech. There are three main modes of ASR technology depending on the nature of the output: speech-to-text, text-to-speech, and speech-to-speech. These technologies are making ground-breaking progress and are having a noticeable impact on industry workflows, especially for the creation of subtitle templates (e.g. automatic time synchronisation) and scripts (e.g. voice recognition) as well as the production of videos with the use of synthetic voices (e.g. translated courses and tutorials).

4.2.3.1 Speech-to-Text

Speech-to-text tools such as Nuance's Dragon NaturallySpeaking (www.nuance.co.uk) are used by professional translators to convert spoken language into written text in order to improve their efficiency. In AVT, these tools are often used in subtitling projects as they can assist translators in creating (live) captions or translating subtitle templates, among other tasks. In respeaking, which is a form of ASR-assisted live subtitling, subtitles are produced live by dictating the speech to an ASR tool integrated into a subtitling editor (Romero-Fresco, 2011). Speech-to-text technology can be used to identify the nature of sound and automatically produce a written description; in such cases, the output of this intersemiotic transfer is often referred to as *audio captions*.

Despite the growing importance of speech-to-text tools in interlingual (media) translation and localisation, translation scholars' examination of

ASR-generated content seems to be limited to small-scale projects such as Matamala et al. (2015), Tardel (2020, 2021), and Vitikainen and Koponen (2021). Large-scale projects on the use of ASR technologies in AVT include TransLectures (Transcription and Translation of Video Lectures, 2011–2014), EU-BRIDGE (Bridges Across the Language Divide, 2012–2015), HBB4All (Hybrid Broadcast Broadband for All, 2013–2016), and MeMAD (Methods for Managing Audiovisual Data: Combining Automatic Efficiency with Human Accuracy, 2018–2021). Another scholarly attempt is the small-scale project entitled ALST (*Accessibilidad Lingüística y Sensorial: Tecnologías para la audiodescripción y las voces superpuestas*, 2013–2015), which focused on audio description and voice-over and did not show promising results for ASR output "[. . .] probably due to the testing conditions" (Matamala, 2015, p. 81). Yet, as claimed by Georgakopoulou (2019, p. 526) "[. . .] ASR certainly has the potential to revolutionize the AVT industry further through improvements and innovations in its use." ASR developments are indeed accelerating and are expected to have a noticeable impact on the profession in certain language combinations (e.g. automatic text timing).

Today, ASR and MT engines seem far-reaching in subtitling practices, with advanced speech-to-text and transcription tools that offer high accuracy rates, such as AWS (aws.amazon.com/transcribe), HappyScribe (www.happyscribe.com), Omniscien (omniscien.com), Rev (www.rev.com), and Speechmatics (www.speechmatics.com). Some companies are developing their own systems – or finetuning their proprietary tools – to further automate in-house translation labour using ASR combined with MT systems (Mehta *et al.* 2020). In contrast, professional subtitling systems are starting to offer ASR and MT functionalities thanks to API integrations; for instance, MateSub (https://matesub.com) and SyncWords (www.syncwords.com) can generate auto-timed templates in various languages employing ASR and MT, whereas commercial cloud subtitling software programs such as OOONA Tools (ooona.ooonatools.tv) now integrate ASR for automatic template creation as well as MT engines – such as AppTek (www.apptek.com), XL8 (www.xl8.ai), and Amazon Translate (aws.amazon.com/translate) – for automatic template translation followed by post-editing.

4.2.3.2 Text-to-Speech

Text-to-speech is a form of assistive technology that employs synthetic voices to deliver written information orally by reading digital text aloud. In AVT, these tools are often used to render audio description scripts and create talking subtitles for visually impaired audiences (Verboom et al. 2002). Whereas incipient text-to-speech tools were characterised by

unnatural synthetic voices as a result of reading words in isolation, more recent solutions achieve a greater degree of naturalness and intelligibility by utilising text segments that have been previously curated by technology providers, annotated by linguists and performed by voice talent. As Kaur and Singh (2023) explain, there are many types of text-to-speech systems, but recent approaches focus on deep learning developments in a similar fashion to NMT (see Section 4.2.2.2).

The use of text-to-speech tools is common in media access (see Greco and Jankowska 2020). Scholars such as Szarkowska (2011) and Fernández-Torné and Matamala (2015) have argued that many blind and partially-sighted users often resort to artificially voiced speech to access visual information. Alongside the two aforementioned studies, most reception experiments, however, have led to the conclusion that natural-sounding speeches are significantly preferred by audiences (Cryer and Home 2008). Despite this, there are many reasons why text-to-speech tools are used, among which are financial constraints, immediateness and unfamiliarity with existing products.

4.2.3.3 Speech-to-Speech and Automatic Dubbing

Speech-to-speech technologies automatically transform speech into artificially produced speech, meaning ASR and text-to-speech are combined to further automate the production of speech, often in a different language in what some technology developers branded as "spoken language translation." Models that aimed to combine ASR and MT engines date back to the 1980s–1990s (Waibel 1996), when the first prototypes drew on connectionist acoustic modelling, stochastic language modelling techniques and speech synthesis (Waibel et al. 1991) while heavily relying on knowledge-based MT technology (Tomita and Carbonell 1987). ASR systems were subsequently refined with the introduction of SMT engines (e.g. Casacuberta et al. 2015; Chinea-Rios et al. 2015), but it is thanks to the latest NMT developments that speech-to-speech technologies have reached more desirable results with a greater proportion of accurate and natural-sounding translations. One of the most recent applications of this technology is AI-enhanced dubbing, also known as *machine* or *automatic dubbing*, which utilises existing speech-to-speech translation techniques while considering the specificities of dubbing (Federico et al. 2020a).

Although dubbing has traditionally been less influenced by automation technologies, a number of recent studies, perhaps fuelled by trailblazing works such as Taylor et al. (2015), have discussed the potential of automatic dubbing in the last few years (see Saboo and Baumann 2019; Kim et al. 2019; Federico et al. 2020a, 2020b; Hu et al. 2021; Virkar et al. 2021, 2022; Tam et al. 2022). Automatic dubbing synergises ASR, NMT

and text-to-speech technologies while incorporating certain techniques such as prosodic alignment, which allows the segmenting of the target sentences "to optimally match the distribution of words and pauses of the source sentence" (Federico et al. 2020, 259) as well as audio rendering, which enriches the output "with background noise and reverberation" (Federico et al. 2020, 263).

Automatic dubbing tools can utilise face detectors to determine whether utterances are on or off screen, but according to Nayak et al. (2020, 233), "automatic facial behaviour analysis tools are not sufficient for successfully detecting a speaking face on screen for the purpose of applying synchrony constraints." Some research works have recently attempted to introduce "phonetic synchrony constraints that describe de 'dubbability' of a proposed translation" (Saboo and Baumann 2019, 94) in existing NMT engines, and developments on this front are indeed promising as regards the production of synthetised, translated speeches (see Harby, n.d.). Some of these technologies – such as the one developed by FlawlessAI (www.flawlessai.com) – are currently able to analyse and edit the visuals, via photo-realistic reanimation, so as to adjust mouth movement to target dialogues by manipulating facial expressions, and there are promising results in transferring "full 3D head position, head rotation, face expression, eye gaze, and eye blinking from a source actor to a portrait video of a target actor" (Kim et al. 2018, 1). These developments, which are today marketed to end-users by the likes of HeyGen (www.heygen.com), have attracted much attention in mass media (see Ross et al. 2021).

As argued by Mejías-Climent and de los Reyes Lozano (2023, XVI), most of the existing research and implementations often obliterate the specificities inherent to dubbing translation such as pre-editing, post-editing and effort. As a novelty, Brannon et al. (2023) build on the existing AVT literature to identify the main challenges encountered by human translators and integrate solutions into automatic dubbing techniques. The first challenge is isochrony – that is, matching the source duration of dialogue lines with the target machine-translated passages – which directly impacts isometry – that is, the length constraint imposed by the similarity of text length, measured in characters, between source and target utterances – inasmuch as target (dubbing) translations must be "within ±10% of the source character length" (Brannon et al. 2023, 425). The second challenge is speaker rates (alongside naturalness), which also falls under the scope of studies on prosody (see Sánchez-Mompeán 2020) and orality (see Baños 2014). The third challenge is lip synchrony, which is an inherent feature of dubbing, often dealt with by dialogue writers who adapt scripts so as to preserve the suspension of linguistic disbelief (see Romero-Fresco 2020) by adhering to certain writing principles (see Spiteri Miggiani 2019).

Despite progress made by the new automatic dubbing technologies, audiences' perceptions of these techniques remain under-explored as studies often come from businesses investing in said technologies (e.g. Brannon et al. 2023). It also transpires that recent developments in the field of automatic dubbing solutions draw heavily on the literature on synchronies and therefore attach great importance to the fact that quality in AVT transcends text-to-text accuracy.

4.2.4 Project Management and Translation Quality Assessment

There seems to be consensus that the digitisation that has previously been discussed in this book also coincided with a so-called *projectisation* of an ever-growing and diverse language industry that has capitalised on the outsourcing of translation labour (Dunne 2012). In language services, there is typically no direct contact between clients and translators, so the role of project managers is key to ensure that the transaction of supplying translation services is successful (Olohan 2021). According to the Project Management Institute (2023, online), "projects are temporary efforts to create value through unique products, services, and processes," so their management requires specific knowledge, skills and techniques for such efforts to be successful upon completion and "in accordance with the defined specifications" (Walker 2023, 8).

Projects can be compared to "series of action chains involving interactions of various kinds" (Olohan 2021, 93) that pursue the exchange of translation services for a commonly agreed financial reward. According to Dunne and Dunne (2011, 2; emphasis in original), "the essential characteristics of projects are *temporariness* and *uniqueness*," which make projects clearly distinct from others. In the translation industry, as in many other industries, projects are shaped by constraints, including timescales, costs, scope, quality, time, benefits, resources and risks (Dunne and Dunne 2011; Walker 2023). Project managers oversee the end-to-end development of translation or translation-related projects, ensuring high levels of productivity and efficiency while establishing a trusting rapport among all stakeholders involved (see Olohan and Davitti 2017).

According to the BSI's (2018) *EN ISO 17100:2015+A1:2017* (which is virtually identical to *ISO 17100:2015* except for a minor amendment), projects are prepared by registering and assigning work in compliance with the client's agreement and project specifications as well as in a manner that allows project managers to identify, track and ultimately archive them. PM tools that traditionally operated as desktop-based software programs (e.g. Asana, Microsoft Project and Trello) have now migrated to cloud environments or operate in a hybrid fashion. There are some prominent cloud-based translation PM tools, including Plunet (www.plunet.com),

Transifex (2009–, transifex.com), XTM Cloud (2010–, xtm-cloud.com), and XTRF (https://xtrf.eu). Most PM tools allow for a smooth integration of CAT tools and other editors. An example of the former would be the proprietary system developed by Plint (https://plint.com) for media localisation projects. This tool offers seamless management of localisation, translation, and subtitling workflows in a single cloud-based interface, and it can be acquired by external companies to create their workflows and integrate editors.

Translation quality assurance systems are key to maintaining high quality standards in translation projects. Among the free translation quality assurance systems is Xbench, a desktop-based solution (www.xbench.net) that is particularly useful for setting up ad-hoc checklists and identifying discrepancies, terminological inconsistencies, misspellings and other errors that are frequently found in TM and MT output. Nowadays, most TM tools, such as memoQ or Trados Studio, include their own quality assurance tools or plugins, which linguists and translation project managers can use to check translations prior to delivery.

As seen in Section 2.5, AVT is governed by industry conventions, so when it comes to the production of localised content, most LSPs have their own guidelines and style guides. These help linguists enforce quality standards by ensuring that all professionals involved in the localisation of audiovisual content – including translators, revisers and project managers, among others – share a common understanding of quality. Although many clients have their own style guides for revoicing and subtitling projects (e.g. Disney, NBC Universal, Warner Bros), LSPs' guidelines often contain detailed parameters and examples for linguists to follow. The proprietary tools used by certain LSPs contain their own quality checks, and linguists are required to go through the checklist before they are allowed to submit their work via the PM system. Some companies have also developed their own guidelines on quality assurance, outlining the steps to undertake to ensure that programmes are localised adequately from beginning to end and that there are verification measures at the end of the localisation process prior to delivery. Among these, Netflix (partnerhelp.netflixstudios.com) made their guidelines fully available to the public, thereby allowing educators to further observe industry practices in the field of translation quality assessment and inform their own training (see Section 3.4).

4.3 Generative Artificial Intelligence and Large Language Models

Besides instances of text generation automation seen in Section 4.2.2 and Section 4.2.3, generative AI is perhaps the best-known examples of automation advancements that both practitioners and educators might find of great interest and concern. Generative AI can create content such as text,

images, audio and synthetic data using algorithms from deep-learning models.

At the time of writing, most freely available LLMs (i.e. a generative AI tool that primarily creates text) can perform and automate translation tasks. However, when it comes to localising audiovisual texts, their functionalities are severely limited inasmuch as the input provided by the user cannot be multimodal. For example, if a subtitler were to use a prompt such as "Can you please translate subtitles from English into Spanish?" the LLM is likely to request that the user copy-paste or transcribe the relevant subtitles manually. Whereas AI's ChatGPT recognised timecodes and provided a translated template containing the same number of subtitles with untouched timecodes, Google's Bard and Microsoft's Copilot were unable to process timed text. The latter offered a few links to tools and TSPs that offer subtitling services instead. Both LLMs, however, translated the subtitles when provided in the form of an untimed transcript as illustrated in Table 4.3.

Table 4.3 Example of large language models being prompted to generate translations out of a timed subtitle template

Prompt	Please translate these subtitles from English into Spanish.	
Original subtitles	00:00:01,940 --> 00:00:04,500 In Harry Potter, J. K. Rowling created 00:00:04,637 --> 00:00:08,274 one of modern fiction's most alluring and magical worlds.	
Google Bard	**AI's ChatGPT**	**Microsoft's Co-Pilot**
En Harry Potter, J. K. Rowling creó uno de los mundos más fascinantes y mágicos de la ficción moderna.	00:00:01,940 --> 00:00:04,500 En Harry Potter, J. K. Rowling creó uno de los mundos más atractivos y mágicos de la ficción moderna. 00:00:04,637 --> 00:00:08,274 Pero es una visión basada en algo más que simple imaginación.	En Harry Potter, J. K. Rowling creó uno de los mundos más atractivos y mágicos de la ficción moderna.

As seen in the above example, two LLMs did not maintain the timestamps that preceded each subtitle, thereby producing an untimed transcription that requires technical post-editing for re-timing purposes. Furthermore, LLMs' output does not take into consideration subtitling-specific conventions such as logical segmentation, textual reduction and line breaks, let alone italics and other layout features such as position. Nor does it consider the visual input from the relevant video, thereby turning the output into a rough, unformatted translation that has to be post-edited and resynchronised as well as fully reviewed in a subsequent QC phase. Interestingly, LLMs do not often disclose which MT engine is used; in this example, the prompt "Which machine translation engine have you used to produce these subtitles?" remained unanswered and followed by default statements about privacy.

The patterns that emerged as being common among the aforementioned LLMs when using them for translating subtitles are as follows:

- The LLM does not use a specific machine translation engine. Instead, it generates responses based on a mixture of licensed data, data created by human trainers, and publicly available data.
- The LLM has not been directly trained on specific translation datasets or by using a particular translation engine.
- The LLM does not disclose sensitive or confidential information as the developers trained it to protect proprietary information.
- The LLM generates translations in real-time and may now always be as accurate or fluent as those produced by dedicated translation engines.
- The LLM disclaims that when any specific concerns or requirements for translations arise, it is always a good idea to double-check the output with a native speaker or use a dedicated translation service for critical tasks.

As with any other MT output, subtitles generated by LLMs have to be fully post-edited by an AVT specialist using dedicated software. AI systems would therefore be useful for linguists when the auto-generated output – be it a subtitle template or a dubbing script – can be subsequently edited by linguists within the same environment. This is not often the case with the likes of AI-enhanced dubbing systems, especially automatic dubbing tools (see Section 4.2.3.3). When the output has to be exported and processed using existing AVT software – be it desktop- or cloud-based – the principles of AVT work that have been discussed in this book remain unaltered and thus legitimate.

Further research is required on the uses of generative AI, but it seems that this field is starting to attract wide attention from translation scholars

who are exploring the potential of LLMs and other instances of generative AI in augmented translation contexts (see Pym and Yu 2024).

4.4 Examples of Media Localisation Systems and Editors

Despite the enormous growth of automation tools in AVT workflows, revoicing and subtitling editors (with or without TM or MT features) remain essential for the localisation of video materials. AVT practitioners require, at the time of writing, access to these editors, which are therefore worthy of further attention and examination. This section contains examples of (cloud-based) solutions used in the industry that can also be used for the teaching of AVT practices.

4.4.1 Subtitling and Captioning: OOONA Tools and OOONA Edu

OOONA Tools is a modular editor that offers a wide range of tools to perform the cueing or text timing of interlingual as well as intralingual subtitles, to translate from templates, review and proofread other linguists' translations, convert files into some of the most widespread subtitle formats, transcribe the original utterances with automatic speech recognition, burn subtitles and images onto a single video file, compare subtitle files, and to view final versions of subtitled videos, among other capabilities. Although originally developed for professional subtitling, an educational version of the tool is now offered to training institutions (OOONA Edu, https://edu.ooonatools.tv), which is a platform where students can simulate all subtitling phases on the cloud, from receiving the original materials to spotting, translating, converting, burning, and encoding videos.

4.4.1.1 Creating and Translating Subtitle Templates

The text-timing interface includes the essential features needed to spot a clip. The subtitler can add, remove, and edit subtitles in synchrony with the video player situated at the top left-hand side of the tool. The timeline, at the bottom of the screen, displays subtitles in the form of blue events that can be shortened or enlarged, and dragged from left to right, and vice versa. It shows the soundwave (grey) and the shot changes (orange vertical lines). When events are customised in the timeline, the timecodes change automatically too. The text editor, where the subtitles can be written out, edited and deleted, is located on the right-hand side of the interface.

The settings menu allows the subtitler to readjust the file properties at any time, as shown in Figure 4.1. The properties encompass six main categories: (1) general (subtitle type, language, and text position, alignment, and direction), (2) display (text size), (3) screen (safe area, length of subtitle

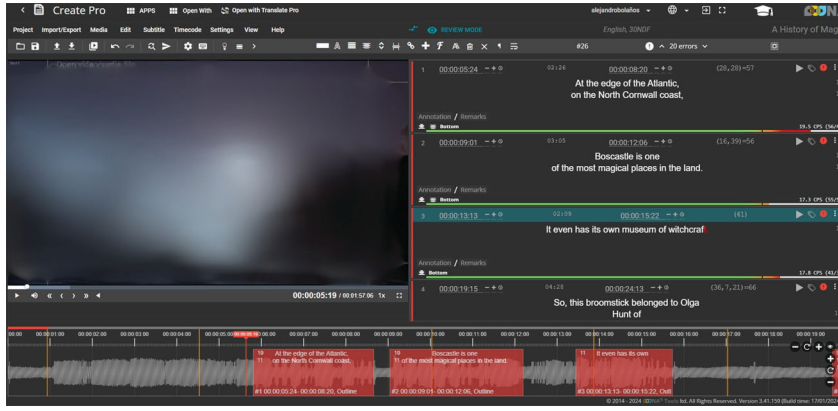

Figure 4.1 Text timing tool © OOONA.

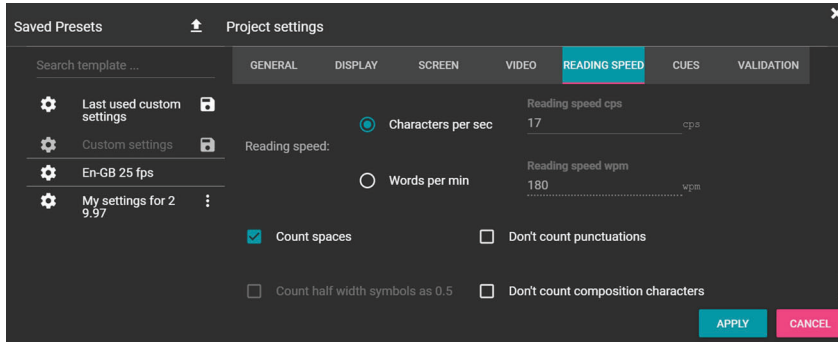

Figure 4.2 Subtitle project settings © OOONA (software).

lines, and spacing), (4) video (encoding, frame rate, timecode format, and audio scrubbing), (5) reading speed (display rate and counting method), and (6) cues (subtitle duration, minimum gap, and shot changes). As discussed in Section 2.3.2.1, the properties of a subtitle file need to be adjusted following the technical parameters of subtitling, which can vary depending on the conventions and style guide used for each project.

It is also relevant to highlight that shortcuts to operate the tools can be fully customised by the user, thus promoting a more customised working environment. To edit a pre-set shortcut, it suffices to edit the settings of the new shortcut using the dropdown menus on the right-hand side of the

menu. Shortcut configurations can also be saved and exported to be shared with other users of the tool.[3]

The text editor, containing the individual subtitle events, displays subtitles alongside key information such as in and out timecodes, duration and number of characters at the top of the event, as well as the reading speed (in CPS or WPM) at the bottom of the event. As the target-text editor is filled in with the new subtitles, the coloured bar below each subtitle event will progressively change from green to orange to red as a way to measure the reading speed (CPS or WPM), thus alerting users when the translation needs to be further condensed so that it can be comfortably read by the audience. Any technical errors present are displayed on the text itself highlighted in red and in the form of a red alert round icon on the top bar of each subtitle event. Each subtitle can be customised in terms of font, style, position, alignment, background and shadow, colour, among many other aspects by toggling the different options present in the toolbar, as shown in Figure 4.3.

During the text-timing process, any temporal or spatial discrepancies with the pre-defined parameters set for the project are marked in red and flagged, but once the task is completed, users can run a series of semi-automated checks to correct any punctuation issues, highlight potential blank spaces and empty subtitles, draw attention to any violations of timing or reading speed, and warn against potential typos and spelling mistakes. This functionality can also be utilised by educators to obtain an error report, which can be useful for assessment purposes (see Section 3.4.2).

Once a template has been finalised, the output can be saved as a project (.json), thus retaining more information than a simple subtitle text file, such as spatial and temporal parameters and settings, colours and also the URL link to the video, which is most fruitful when preparing examination papers for students. As it stands, the tool does not allow for sharing a project with other users within the tool. Alternatively, the material can be downloaded as a subtitle file (e.g. .srt), which in essence contains the

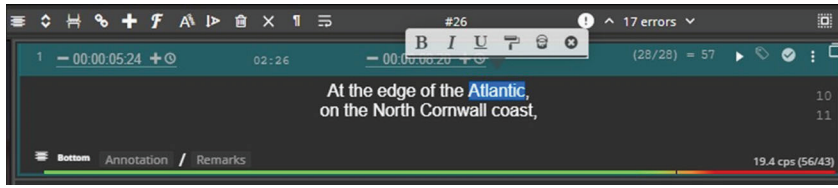

Figure 4.3 Subtitle event in text editor showing pop-up font toolbar © OOONA.

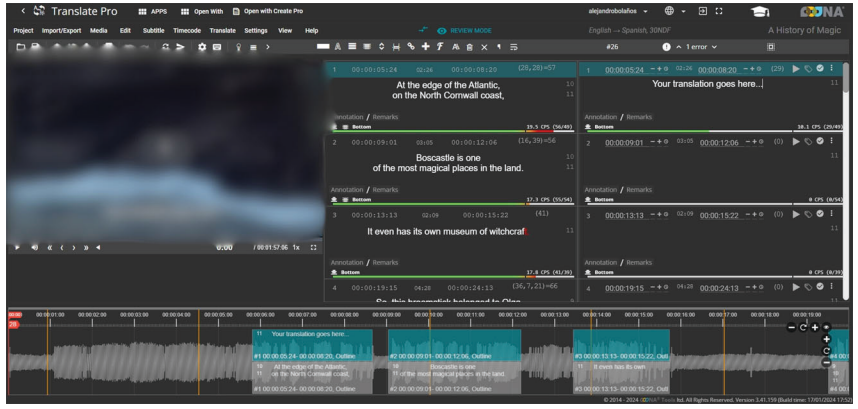

Figure 4.4 Subtitle template translation tool © OOONA.

timecodes and the text, and can then be used in any other subtitling editor. The tool creates .ooona subtitle files and allows for conversion into a variety of different formats, including .dfxp, .fcpxml, .pac, .rtf, .srt, .stl, .txt, .xml, and .vtt.

Once a template has been finalised, the subtitler can choose to translate the timed subtitle templates into another language. The subtitle template translation interface, as shown in Figure 4.4, is identical to the previous tool, but the text editor contains two different columns: one for the source text and another for the target text. The video player remains in the same place and is operated using the same media bar. The timeline, positioned at the bottom of the screen, displays both the source (grey) and target (blue) timed text in juxtaposed events. Upon creation of a project, both subtitle events will coincide, but the translator may decide to readjust the target subtitle events so as to better accommodate the translation in the target file.

When translating templates, only target subtitles can be shortened or enlarged, or dragged from right to left, and vice versa. If target-subtitle events are relocated in the timeline, timing changes are instantly reflected on the right-hand side editor. When timecodes have been locked in the project settings, the template translator will be unable to alter the template unless it is unlocked. Trainers may prefer to lock timecodes so that greater emphasis is placed on reduction strategies and so that students do not become too distracted by issues surrounding timing; alternatively, they may ask students to manipulate the timecodes so that they better adapt to the conventions and linguistic needs of their target language.

Figure 4.5 Text editor within template translation tool with source-text and target-text events © OOONA.

In the text editor, the translation is inserted in the right-hand columns, as illustrated in Figure 4.5. Subtitle events include the display rate of both the source and the target text, as well as a warning for any errors present in the subtitles. In the below examples, both subtitles' display rates are too high, and the first line of the second subtitle contains too many characters, as duly warned by the red highlighter and the red alert round icon.

Similarly to the Create Pro tool, users can run a series of semi-automated checks and finally save the project online or export and download it as a .json, to store it on their devices and share it with other people. Alternatively, the subtitle file can be exported in the preferred format so that it can be opened in other editors.

4.4.1.2 Reviewing, Converting and Burning Subtitles

Subtitle editors can be used to revise the subtitles produced by other subtitlers. The interface is normally very similar to the template translation tool (Figure 4.6) – the text editor is broken down into two columns; in this case, however, the right-hand column is used to annotate any changes to the translation, which is displayed on the left-hand side. This view can be customised to have only one column, as well as to show only those subtitles that have been edited by the reviewer. Ideally, however, the user should be able to see three columns, i.e. source text, translated text, and revised text. This three-column view would also be useful in the case of projects involving a pivot translation.

A fundamental part of reviewing subtitles is the identification of errors, so recent subtitling software packages are often manufactured with technical, linguistic, and format error recognition functionalities. OOONA Tools and OOONA Edu are no exception and therefore include an error-checking component that can be used across all tools to enhance

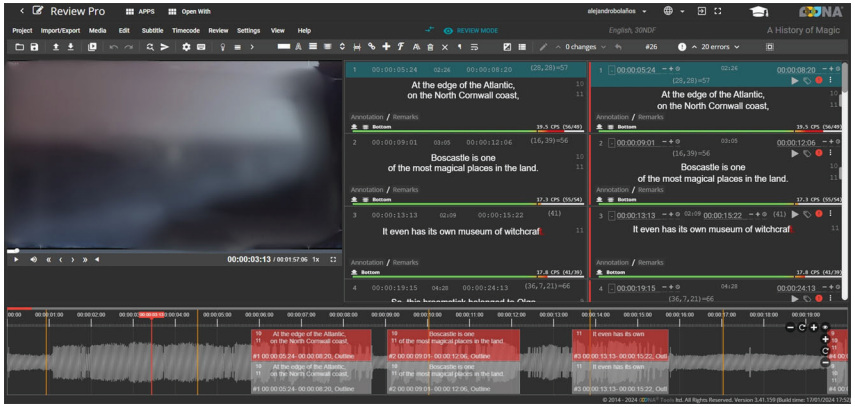

Figure 4.6 Template review tool © OOONA (software) and BBC (video).

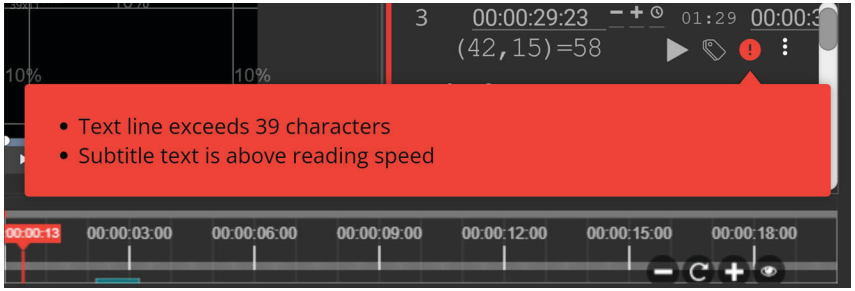

Figure 4.7 Error display with a list of errors in an individual subtitle event © OOONA.

automation whilst identifying and amending errors relating to text-timing, translation or language.

In Figure 4.7, subtitles 6 and 7 contain various technical errors, which are notified in four ways. Firstly, all characters and words exceeding the maximum number of CPL are displayed in red; secondly, the subtitle event that contains errors automatically becomes red in both the timeline and its left-hand-side border; thirdly, a red warning icon appears at the top right-hand side of the subtitle, thus replacing the former grey tick sign; and, lastly, the top bar displays the total number of errors present in the subtitle file, allowing the user to jump from one to the next.

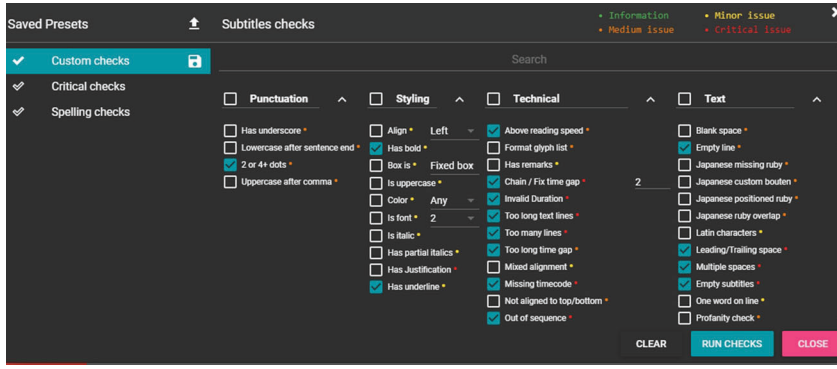

Figure 4.8 Customisable quality checks © OOONA.

When the nature of each error cannot be recognised at first glance, the reviewer can drag the cursor to the warning icon and toggle the error display, which automatically drops down. In the pop-up menu, each error is explained in a bullet point, signposting the user to the source of the problem and detailing the reasons why certain lines or subtitles do not comply with the project parameters. Drawing on the parameters originally set up in the settings menu, the system warns users that a character limitation error has occurred by displaying, in red, all characters that exceed the threshold. The coloured bar at the bottom of each subtitle represents its reading speed, which contains a black line to indicate the ideal length and turns from green (within the threshold) to yellow, orange, and red (beyond the threshold).

The customisable subtitle checks (Figure 4.8) allow users to include or exclude common subtitling errors categorised under four main headings: text, technical, styling, and punctuation. Examples of critical errors that reviewers can easily identify with this check are single-word lines, lack of minimum gap, blank spaces, empty lines or subtitles, and time overlaps, to name but a few. The ticked elements will be activated in the automatic error checks run by OOONA Tools, which will then alert the user to any divergence present in the template (including an explanation of each error), thereafter allowing the user to fix them automatically or manually.

All changes are automatically tracked by the tool and can then be consulted in a summary display, as illustrated in Figure 4.9. Red and green highlights are used to signal deletions and additions, respectively, as well as any other replacement. When the reviewer alters timecodes, these changes are displayed on the left-hand side, where the red highlight shows

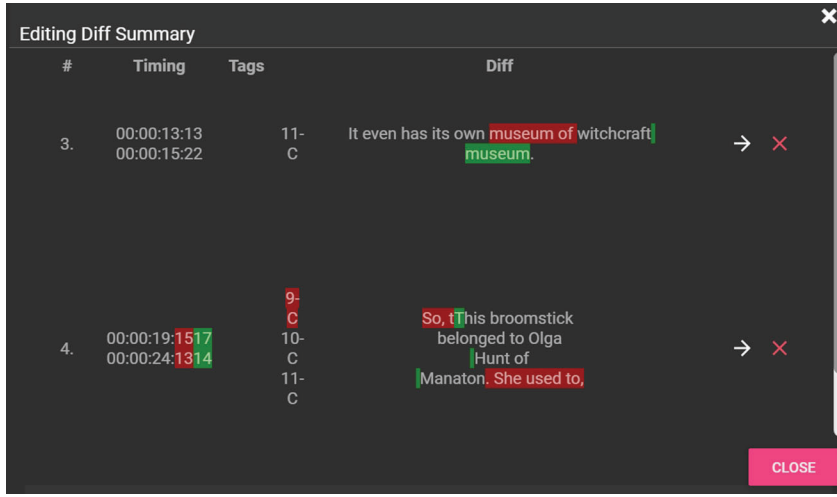

Figure 4.9 Editing summary within template review tool © OOONA.

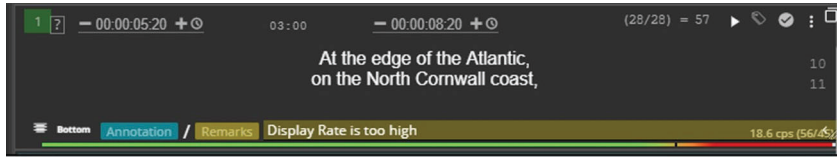

Figure 4.10 Annotations and remarks options in text editor © OOONA.

the former timecode and the green highlight shows the new timecode. The editing summary can be exported and downloaded as a text document (e.g. .doc); however, tracked changes or subtitle formatting are not kept in mainstream text editors, such as Microsoft Word, which instead show a table containing a column for the original subtitles and another for the revised ones with no line breaks or layout features of any nature.

Reviewers can also include annotations and remarks at the bottom of each subtitle (Figure 4.10). These remarks may be internal notes for the next person working on the project, whereas annotations are mainly used in subtitle template creation to help translators understand certain linguistic features therein. Both can be transferred from the template creation and translation tools in the original project file (i.e. translator's notes) or

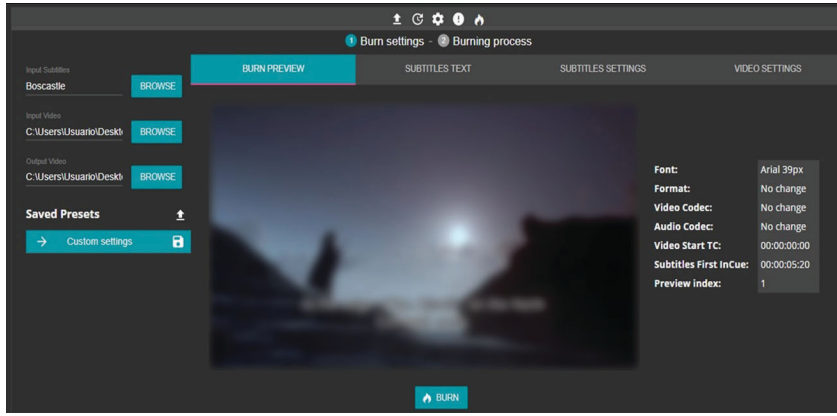

Figure 4.11 Subtitle burning and encoding tool © OOONA (software) and BBC (video).

can be created from scratch for the attention of other project members (i.e. reviewer's notes).[4]

Once a subtitle project file has been fully reviewed and is ready to be exported, the tool allows for the subtitle file to be downloaded into a variety of subtitle file formats whose settings can also be customised to preserve positioning and layout among other features. As a novelty, this cloud-based tool allows the user to create a new video clip with subtitles embedded electronically (Figure 4.11). Although the subtitles can be customised in terms of presentation (e.g. font size, safe area and position), they cannot be textually edited at this stage. The tool does not allow the user to edit the subtitles either. An added function is that users can also encode a clip in a different video format or frame rate.

The subtitle burning and encoding tool, still missing in most free and paid subtitling editors, is pedagogically impelling as it allows students to produce a tangible output of their labour. Once the subtitle file is considered final, students can produce a video with embedded subtitles that they can then view using a video player of their choice.

4.4.2 Dubbing and Voiceover: ZOOdubs

ZOOdubs is an end-to-end dubbing platform developed by ZOO Digital. As a proprietary cloud-based software program, the tool is made available to the company's pool of linguists for paid projects. As part of the company's educational ethos, however, the ZOO Academy initiative

currently provides free access to the tool to AVT students and educators. This system allows users to originate and translate dubbing scripts as well as to perform video recordings using the rythmo-band interface.

At the time of writing, the videos can be previously set up by the ZOO Academy team and thereby offered in the form of a ready-to-use project template. When accessing the tool, the dashboard shows the projects that have been assigned to the relevant user. Students (as translators) are shown projects to which they have been assigned, but lecturers (as PMs) are shown all projects, which is relevant for readers to know. Furthermore, lecturers have the ability to upload a file (.xls or .json, for instance) but students do not have this access. However, lecturers can assign learners to work on the native language script or translation (provided a template has already been uploaded or created by the lecturer or relevant ZOO team in the case of professional projects). Should users prefer to create new projects and upload videos, they can decide whether to create the script and time it or to upload a pre-timed template (preferably a slightly modified subtitle template downloaded from ZOOsubs in .xlsx format or a .json file from ZOOscripts). Once created, each project contains the relevant video materials as well as the aforementioned master template that is subsequently used for scripting purposes. Upon accessing a project, the dubbing streams can be created with one for the source language, which is called the native stream, and other streams for translation into other languages (see Figure 4.12). The system presupposes that the original dubbing stream has to be created first and is subsequently used for translation purposes in the relevant languages, which are added to the workflow by the project manager. Nevertheless, the system also allows the

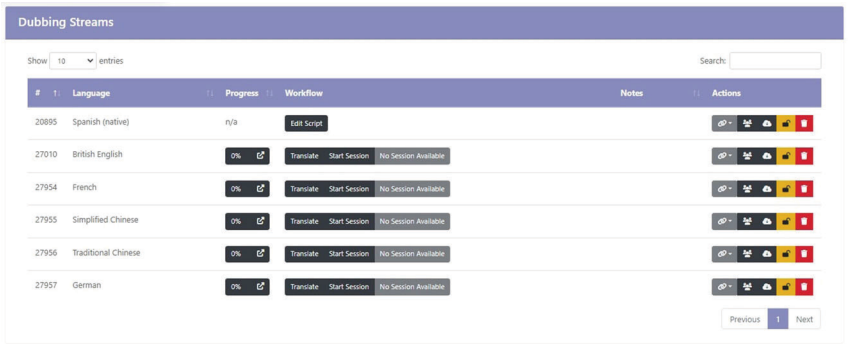

Figure 4.12 Dubbing streams from an educational simulation project © ZOO Digital.

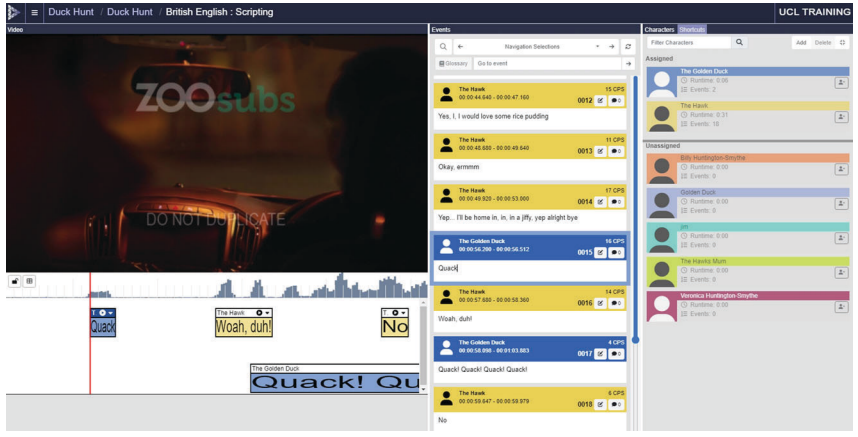

Figure 4.13 Scripting interface with rythmo-band approach © ZOO Digital (software and video).

user to create dubbing streams for translations without necessarily having to carry out work within the native-language dubbing stream beforehand.

When originating the master script in the source language (see Figure 4.13), the scripting interface is divided into three main sections: on the left-hand side of the screen is the video player, in the middle of the screen is the script containing the events[5] in individual editable boxes, and the right-hand side of the screen includes a menu where information can be added about the characters present in the video. As with other software programs, ZOOdubs allows the use of shortcuts to work more efficiently. However, shortcuts, which can be toggled using the right-hand panel, are predetermined and cannot be manually altered by users.

Similarly to subtitling editors, a timeline appears below the video player and contains the script events (i.e. utterances), which can be manually adjusted length-wise. The different utterances in a master template can alternatively be created in the native stream by right-clicking on the timeline and selecting the *Create event* function (see Figure 4.14). As ZOOdubs uses rythmo-band, the utterances are shown in the event boxes rather than on the video player as they need to be clear for voice actors to perform them and they will not ultimately appear on the video for end-users. When adding new events, users have the option to add new characters and select the character to which the relevant utterances correspond. The menu also displays the in and out times of the event, which can be manually tweaked using the timecodes or by dragging the event box in the rythmo-band.

Figure 4.14 Rythmo-band timeline containing new event pop-up menu © ZOO Digital.

Figure 4.15 Rythmo-band timeline containing an example of an event with higher and lower reading speed values, respectively © ZOO Digital.

As per the rythmo-band approach, the font and size of the script events' text are displayed so that the voice talent can modulate speed. For example, if the utterance from the example shown on the left-hand side of Figure 4.15 was extended past the original one, thereby adding perhaps a lingering effect or a different speech pace, the event box would look like the one on the right-hand side. The same would happen, for instance, if the text was shortened while keeping the same in and out timecodes. The user can also insert pauses within an event on the rythmo-band, thereby overriding the need to include dubbing notations in the script itself.

The changes triggered in the timeline are automatically reflected on the text editor in the middle-right side of the screen. As seen in Figure 4.16, the out time change in the first event box means that its duration is longer, so the expected reading speed goes down to 9 CPS from 14 CPS because the original utterance remains unedited. In this particular instance, this technical adjustment would mean that the voice actor will take longer to

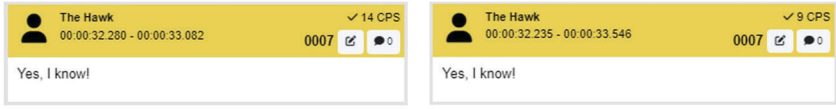

Figure 4.16 Script events showing timing changes and their impact on reading speed © ZOO Digital.

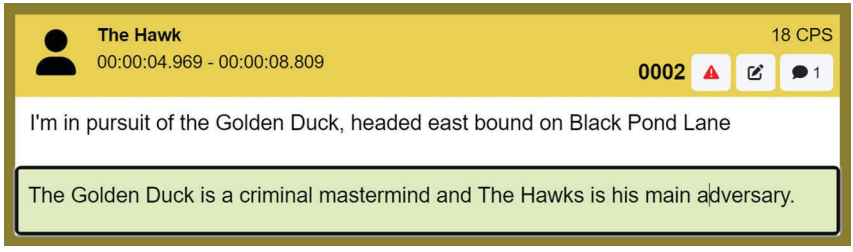

Figure 4.17 Script event showing an annotation and a bubble-shaped comment sign © ZOO Digital.

read this sentence, which is particularly useful for performance purposes. For example, the fact that a sentence's duration is longer could imply that the character is bored, annoyed or disappointed. However, note should be taken that isochrony ought to prevail over this type of liberty.

The text editor includes two main functionalities: annotations and comments. Whereas the former can be seen appended to the original utterance in the event (see Figure 4.17), the latter can only be seen by toggling the comments menu. A warning sign is displayed when an event contains comments so that linguists can identify them more easily.

The dubbing script translation tool is accessed individually for each language through the aforementioned dubbing streams. Similarly to the template translation feature of subtitling editors (see Section 4.5.1), ZOOdubs displays the source and target events using a two-column text editor on the right-hand side of the tool (see Figure 4.18). The rythmo-band timeline contains the target-language events by default, but the source-language counterpart is displayed when the user is editing the translation in the editor. This allows the translator to see the original utterance and reproduce elements such as pauses, markers and lip-sync reminders (e.g. bilabials) as well as to ensure that the expected reading speed is similar to the original one (depending, of course, on the voice actor's performance).

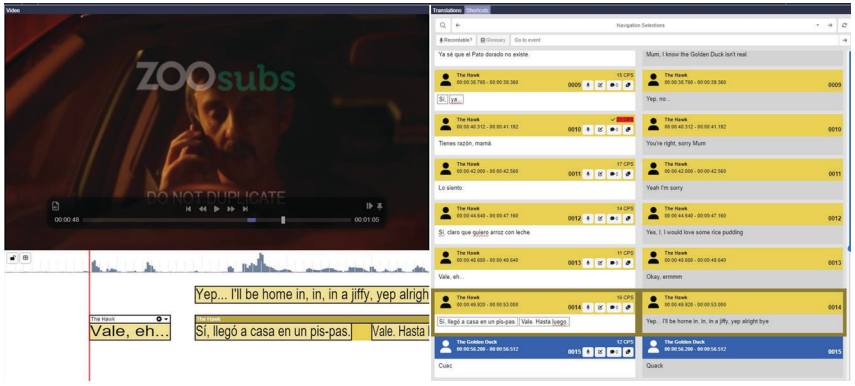

Figure 4.18 Dubbing script translation tool © ZOO DigitalZOO (software and video).

Last but not least, the ZOOdubs tool also allows the recording of new soundtracks. Once the user has timed and translated the script, a new session can be started. The user can create loops that include a specific number of events. Each loop can then be recorded in the target language and saved as takes. The user can record multiple versions of each loop, and the preferred version is marked as approved and added to the menu containing the final recordings. Needless to say, each recording can be deleted and replaced, but it can also be exported and downloaded in .wav format. Rather than recording the video on a single attempt, the user is prompted to record each loop one by one and listen to the newly added soundtrack using the video player. At the time of writing, ZOOdubs requires users to complete a session test and onboarding test before recording and the tool checks the sound environment, which can prove problematic if students do not have access to a sound-proof space.

As mentioned in Section 2.3.1.1, the voicing of dubbing scripts is not carried out by translators or script adaptors, rather by a voice talent cast by a dubbing director. Although the creation of the target audio tracks containing the dubbed utterances is often undertaken in soundproof rooms located in dubbing studios, it is also true that remote work patterns have recently enabled many voice actors to work from home and attain equally satisfactory sound quality standards. The fact that linguists can test their own translations using this recording tool is of great benefit, as is the pedagogical potential of this feature in foreign language and translation classrooms.

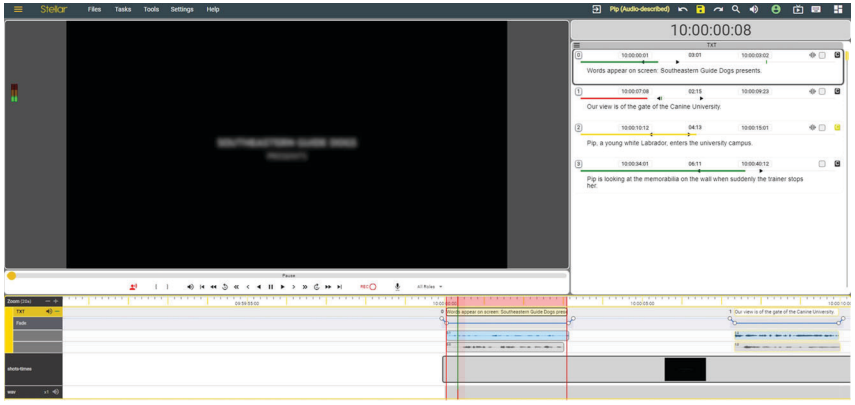

Figure 4.19 View of scripting interface on Yella Umbrella's Stellar © Yella Umbrella.

4.4.3 Audio Description: Stellar

Stellar is a media localisation tool developed by Yella Umbrella. Although Stellar includes both a subtitling and an AD scripting interface, this section solely focuses on the latter, which is the one that allows describers to script, edit, record and mix descriptions in a web-based environment. Stellar is a professional tool that can be used by AD scriptwriters as well as any other voice talent and sound engineers involved in the AD-making process. It is made freely available to university staff and students at the time of writing; hence its inclusion in this chapter.

Similarly to the subtitling and dubbing editors described in the two previous sections, the Stellar interface (see Figure 4.19) includes a video player on the top left-hand side and a text editor on the right-hand pane as well as a complex timeline at the bottom, which contains not only the audio waveform and shot changes but also multiple layers that represent the description events created in the text editor as well as the recordings added by the user when voicing the script. As with OOONA Tools and Edu and ZOOdubs, Stellar allows the user to work on the timeline by adding, replacing, editing and deleting events as well as following the video content using the time bar.

The timeline, which appears at the bottom of the tool's interface, contains a waveform that represents the sounds from the original soundtrack. The waveform is very useful for describers to identify those parts in which the lack of dialogue or relevant sounds could accommodate a description. In Figure 4.20, for instance, the description event (see

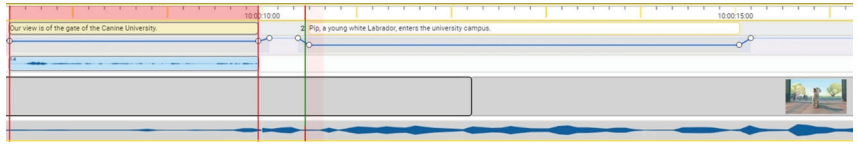

Figure 4.20 Scripting timeline containing audio waveform and a shot image © Yella Umbrella.

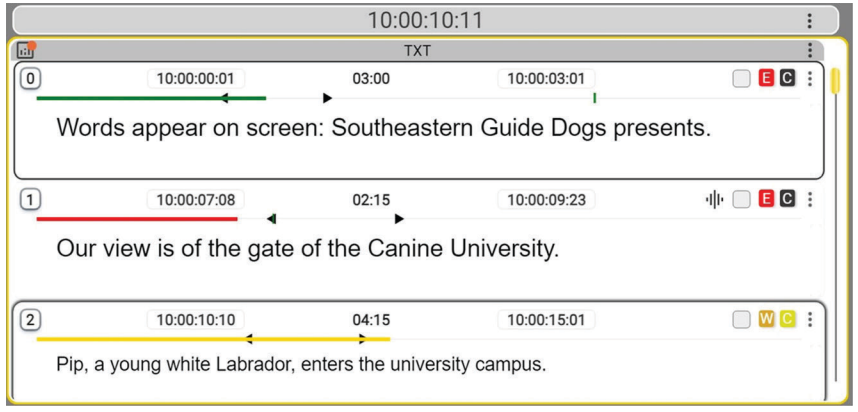

Figure 4.21 Text editor within AD scripting tool © Yella Umbrella.

yellow-highlighted box) that appears on the left-hand side has been placed coinciding with the flat shape of the waveform below. The recording added by the user (see blue-highlighted box) ends when the sounds start (see red vertical line). The system also applies a fully customisable fading effect to recorded descriptions, ensuring that the volume of the original soundtrack (containing any music, sounds, narrations and dialogues) is lowered to accommodate the newly added AD soundtrack.

The text editor, illustrated in Figure 4.21, allows the user to create individual script events. Each event appears in an individual box, which contains essential information such as the event number, start and end timecodes, and duration. Additionally, the text editor displays retiming options – such as adding and subtracting frames or retiming the event to the exact timeframe that is being displayed on the video player – as well as QC features including manual approval (see ticking box) and annotations (see icon with the letter C on the top right corner of the event).

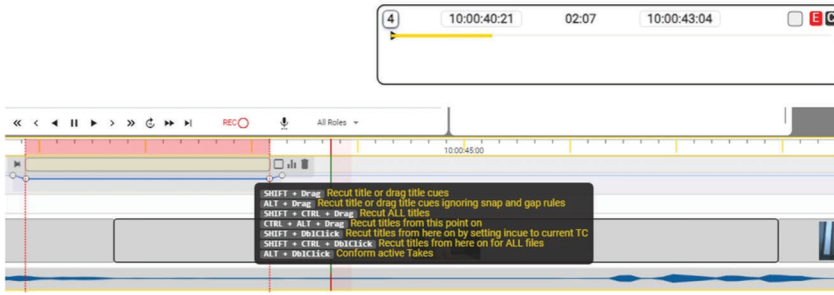

Figure 4.22 New script event box in the text editor and its equivalent on the timeline © Yella Umbrella.

Figure 4.23 Individual script event in the text editor © Yella Umbrella.

When a new description event is created, a blank text box appears in the text editor alongside a blank event on the timeline (see Figure 4.22). The user can manually alter the timecodes or use the mouse to move the event around the timeline as well as trim it by adjusting the left and right borders. Changes in timing will automatically be reflected in the text editor, where the user can input the description according to the time limitations imposed by the relevant timecodes.

When editing a particular description event (see Figure 4.23), the text editor shows the in and out timecodes alongside the overall duration of the event. It also shows an expected delivery speed rate in a coloured bar, which uses the traffic-light system used by other editors such as OOONA Tools and Edu. When dragging the pointer on the reading speed bar, a pop-up menu displays the ideal duration for the amount of text used as well as the expected reading speed in both WPM and CPS. The top-right corner of the event box shows warnings and errors as well as any comments that might have been added by the user. In this example, there is a comment that clarifies that the character being described is a female Labrador pup.

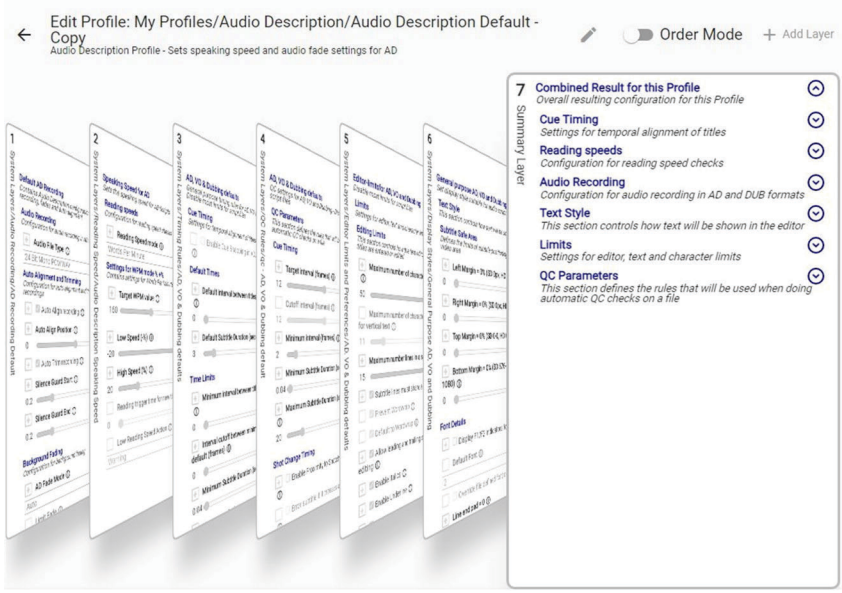

Figure 4.24 Profiles and layers manager © Yella Umbrella.

This information can be important for any subsequent translations of the AD script, especially when it comes to transferring grammatical pronouns and adjectives that relate to sex and gender.

As with other media localisation editors, adjusting the project and file properties upon starting any AD work is a fundamental part of the pre-scripting process. It also guarantees that the editor's QC functionalities can work properly and assist the user while producing the descriptions. Stellar's project properties menu is exhaustive and allows the user to create, edit and store settings profiles and layers. The profiles have a combination of properties that the software applies for similar projects (e.g. AD scripts), whereas layers can be manually added or removed for each project, thereby adding extra customisation to the localisation and QC processes. Figure 4.24 shows an example of the AD default profile, which contains a number of pre-set parameters that will be automatically applied when activated.

When adding new layers, the user can also manually adjust the different properties under each layer. For instance, Figure 4.25 shows the AD speaking speed layer (subsumed under the reading speed layer group), which contains some parameters such as the value configuration (e.g. CPS

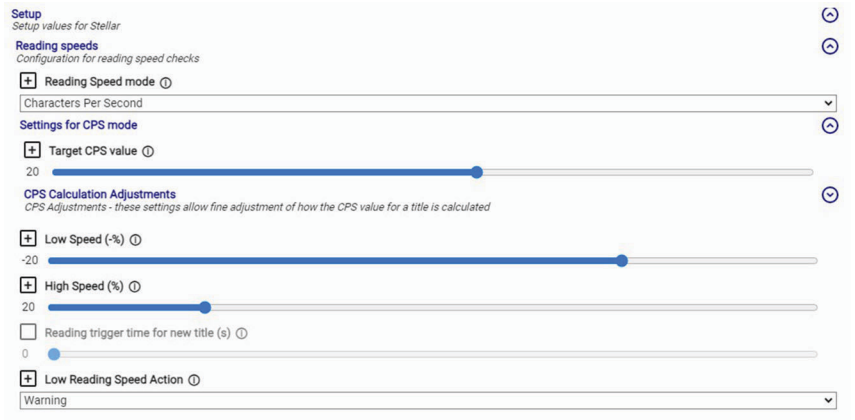

Figure 4.25 Layer customisation menu © Yella Umbrella.

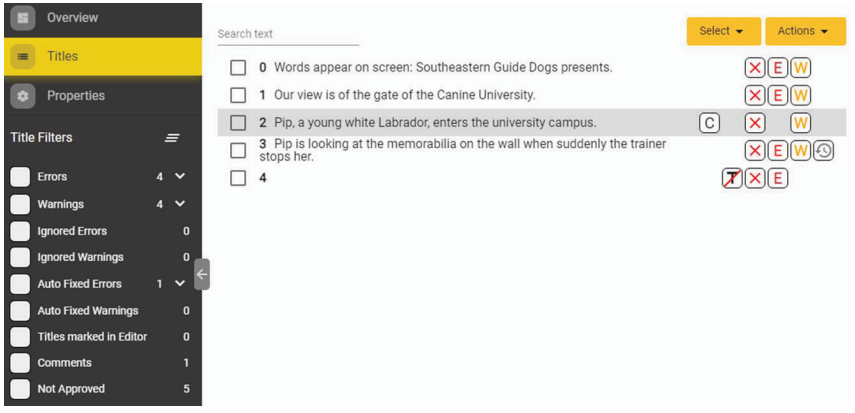

Figure 4.26 Text file menu showing QC analysis © Yella Umbrella.

or WPM) and the default reading speed value that the user should aim to obtain alongside the margin of error expressed in percentage values, among other features.

Once the profile and layer options have been applied to the relevant project, the QC features are automatically activated for the user to check any errors present in the script. The user can access the QC features by opening the text file status menu, which is illustrated in Figure 4.26. This menu displays the script events created alongside their approval status

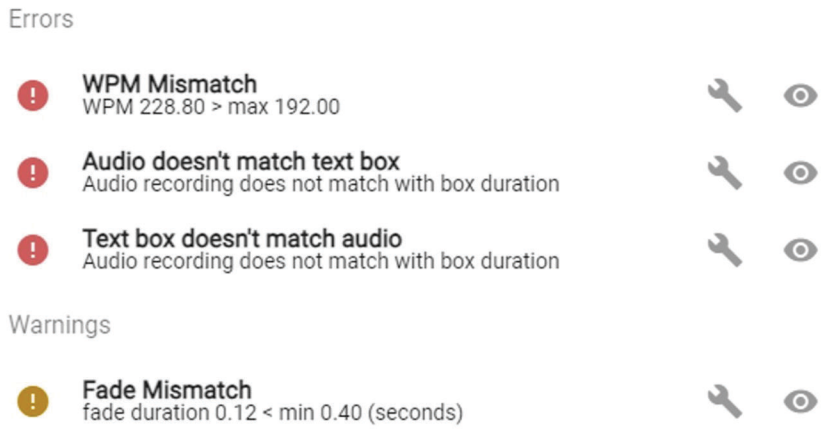

Figure 4.27 Pop-up menu containing errors and warnings © Yella Umbrella.

and comments; more importantly, the user can instantly see and check the errors and warnings identified by the QC tool in accordance with the file and project settings. The tool categorises the errors present in the events depending on their nature and allows the user to individually check each event and error as well as to amend errors automatically or manually. Within the set of actions displayed, the user can copy, edit or download the errors or apply certain layout and formatting changes; alternatively, the events can be marked as approved, thereafter overriding the errors and warnings identified by the tool.

The user can also choose to check the warnings and errors for each AD event. Figure 4.27 shows that a particular script event contains three errors and one warning. The QC tool allows the user to amend the error automatically by clicking on the fixing symbol (see wrench) or, alternatively, the error in that particular event can be displayed by clicking on the visualisation symbol (see eye).

Although Stellar's features include many more functionalities that would be worthy of further consideration for education purposes, the last element that is discussed in this section is the set of AI tools that are available, among which are ASR, audio alignment, NMT and audio separation. The first and third tools are particularly relevant for AVT training purposes as discussed in Sections 4.2.2.2 and 4.2.3. The ASR engine, on the one hand, can be useful for multilingual AD projects that include, for instance, audio subtitles, but it is also a helpful way to identify silent gaps and non-verbal sounds for inserting script events while avoiding the original

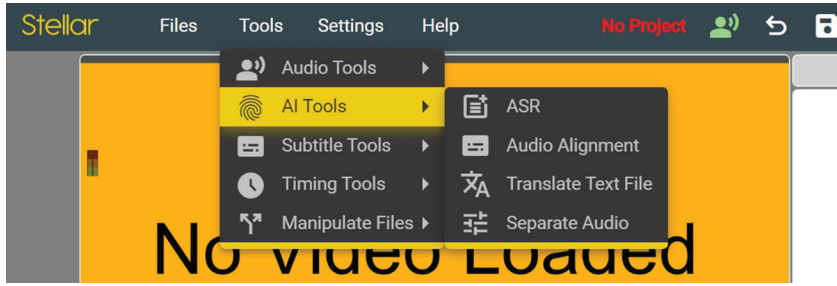

Figure 4.28 AI tools within AD tool © Yella Umbrella.

dialogues and narrations. The NMT engine, on the other hand, can be used to produce rough translations of the AD script – again including, for example, any subtitles that will subsequently be voiced – for post-editing purposes. The combination of ASR and NMT can also be key for projects that require not only AD scripting and translation but also interlingual subtitling or dubbing, thereby creating the possibility of exposing students to the various jobs subsumed under a media localisation project.

In light of its comprehensive functionalities, Stellar is a useful tool for educators to teach not only AD scripting and recording but also PM, script template origination and QC. The wide variety of customisable settings and properties make it a powerful tool to expose AVT students to the principles of QC in localisation workflows in general and AD script creation and translation in particular. Having said that, Stellar has many features that some educators might not find strictly relevant insofar as they pertain to processes such as recording and mixing, which are not necessarily taught as part of AVT training courses. The potential of AI tools alongside QC functionalities, however, is a welcome addition to further embrace industry-led practices and therefore worthy of further exploration in classroom settings.

4.4.4 Language Learning Platforms: TRADILEX

As discussed in Section 3.5.2, AVT practices have traditionally been used for the learning and teaching of foreign languages. This last section shows how the main functionalities seen in the previous editors have been adapted to an online language learning platform called TRADILEX (www.tradilex.es/en), which is free to use for language students and educators. The TRADILEX platform currently offers subtitling, VO, AD and SDH exercises to foster English language skills. It offers ready-made lesson

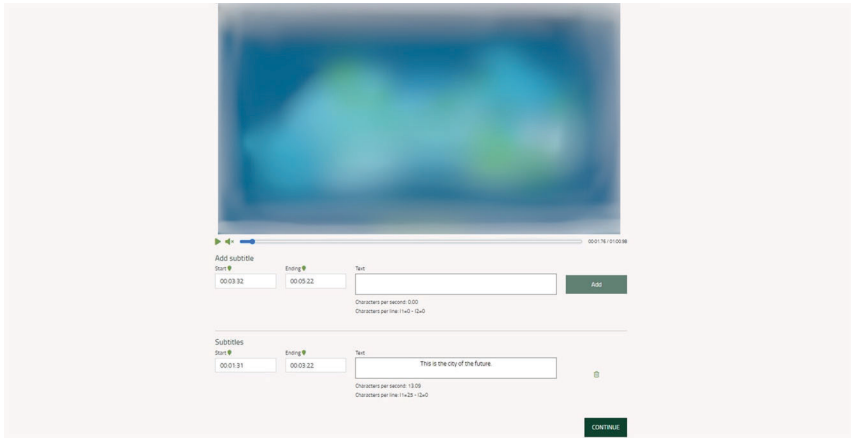

Figure 4.29 Didactic subtitling editor © TRADILEX.

plans that are divided into four main parts: warm-up, video viewing, AVT practice task and post-practice task. For practical reasons, the discussion will hereby centre on the two editors that are made available during the AVT practice task.

The subtitling editor that is used for interlingual and intralingual subtitling (including SDH) is shown in Figure 4.29. The tool contains a video player, which shows media content drawn from an external file hosted on the streaming platform YouTube. Subtitles are cued in and produced using a simple editor in which the user can manually introduce the timecodes on the left-hand pane and write out the utterances on the right-hand side. The tool displays the display rate (CPS) and subtitle length (CPL) values so that the student tries to abide by the subtitling instructions given for each exercise. As the focus is put on language learning – specifically, oral reception and written production for this particular type of exercise – the editor does not include the professional features seen in Section 4.5.1. For instance, timecodes have to be edited manually, and subtitles cannot be merged or split, and position and layout options are inexistent as they are not considered strictly relevant for the development of didactic AVT tasks.

Some of the subtitling sequences, such as the SDH task seen in Figure 4.30, contain practical exercises prompting learners to fill in the gaps. In this particular example, a set of subtitles has already been timed and partially transcribed. The focus is therefore put on oral reception skills as well as spelling for the dialogues and on written production for the creation of sound labels and other descriptions (e.g. speaker identification).

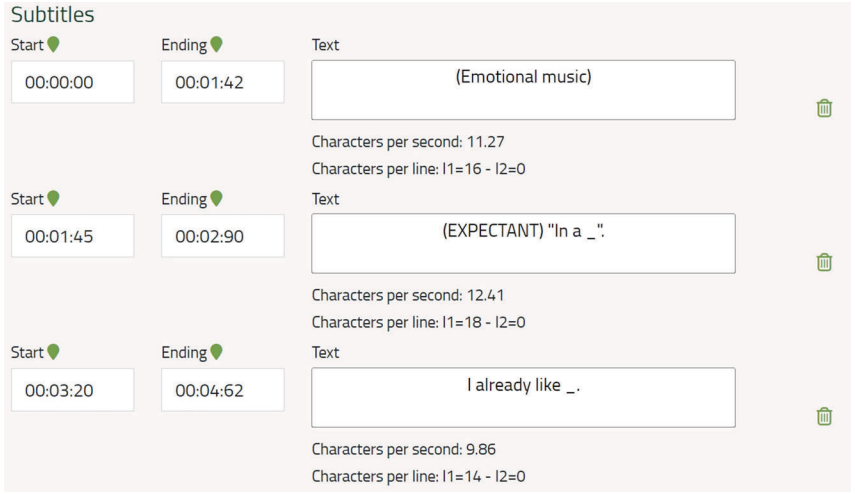

Figure 4.30 Pre-timed template for didactic SDH © TRADILEX.

The revoicing editor is used for AD, dubbing and VO. The tool's interface includes a video player as well as a voice recording feature and a script editor. Students use the latter to produce their scripts with no predetermined layouts. Depending on the language proficiency level expected from learners, some of the exercises contain a transcription of the original dialogues and narrations. As seen in Figure 4.31, the user can generate their own script using the text editor and include in and out timecodes where relevant. Once the learner has finished the script, they can use the recording feature, which will start the video and allow the user to voice their script. Contrary to professional revoicing tools (see Section 4.5.2), learners can pause and stop the recording, but they cannot divide their recording into loops.

As a welcome novelty, this platform includes both student and teacher access modes. The sequences appear in the student mode only, but the teacher mode allows educators to set up virtual classrooms, thanks to which educators can monitor progress and mark students' work without leaving the online platform. When setting up virtual classrooms, the platform assigns an individual code that is then shared with the students. When students insert the code from their end, they allow the classroom owner (i.e. the educator) to access their submissions and view progress, including the number of completed lesson plans and sequences.

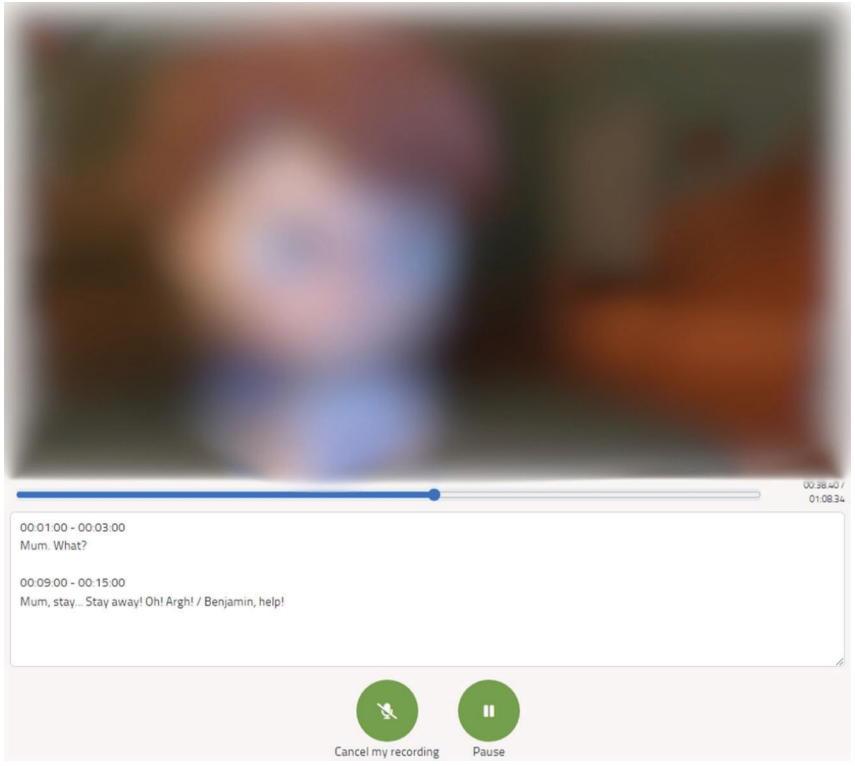

Figure 4.31 Didactic revoicing tool © TRADILEX.

When educators access students' work, they can check the students' responses. Whereas the multiple-choice questions have an answer key that is automatically shared with the students, the open-ended questions need to be manually reviewed by the relevant language instructor. Upon accessing the didactic AVT task itself (for example, an SDH template as shown in Figure 4.32), a rubric appears at the bottom of the tool. This rubric allows educators to include a general comment on the student's performance and allows them to award a global mark, which is obtained by combining the individual scores attached to each of the assessment parameters. Each type of AVT practice has its own rubric with customised parameters. The global marks given by educators to a student for each lesson plan and sequence are thereafter displayed in the student's menu and should be duly recorded by the classroom owner.

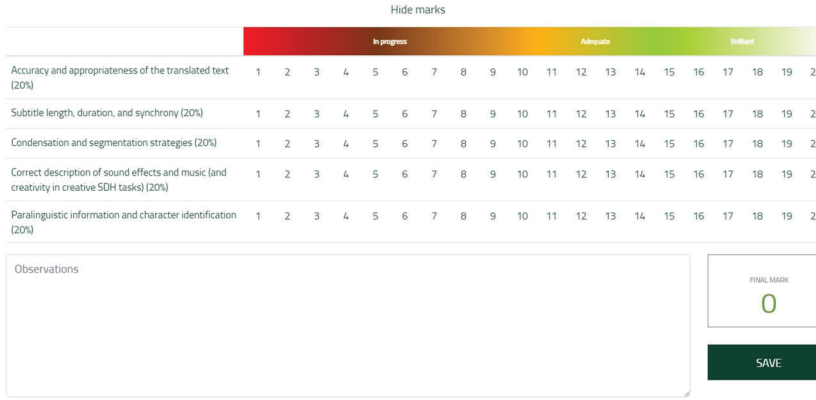

Figure 4.32 Assessment rubric in teacher mode for didactic AVT tasks © TRADILEX.

With a progressively greater and swifter integration of AVT practices not only into translator training curricula but also in language education settings in general and modern foreign language teaching in particular, it is expected that similar research efforts to the TRADILEX project will follow suit. The creation of more ad-hoc AVT teaching and learning platforms is therefore highly possible in the near future. Furthermore, in the face of rapid technological development and changing societal and industry needs, the development of educational platforms that can be used for the training of future AVT professionals is not only warmly welcome but also urgently needed, and the zeal demonstrated by many software developers in sharing private or proprietary software programs has been pivotal in AVT education – a trend that, hopefully, is here to stay.

Notes

1 According to the information provided by the International Organization for Standardization (www.iso.org), *ISO/IEC CD 27017* is under development and will soon be replacing *ISO/IEC 27017:2015*.
2 According to the information provided by the International Organization for Standardization (www.iso.org), *ISO/AWI 18587* is under development and will soon be replacing *ISO 18587:2017*.
3 From an educational perspective, comprehensive settings and shortcut menus may be employed to develop concrete instrumental skills such as file sharing and PM. On the one hand, adjusting subtitle file properties adequately forms part of the necessary training in pre-spotting file preparation as well as post-production

compliance and QC. On the other, customised shortcuts help to make the tools fit for purpose and suitable as well as tailored to everyone's needs and habits. Additionally, students can be trained on techniques that will help them improve work efficiency as well as flexibility to work across tools.

4 From an educational perspective, teachers can use this tool to assess their students' work, so that they can receive the corrections alongside written feedback in the form of annotations or comments in each subtitle. Students can greatly benefit from having both files simultaneously displayed to review the work of other students. They can also use it to see what other students, or teachers, think of their translation. The tool can be exploited from many more angles by students and teachers alike to check their own work and identify any linguistic or technical errors that might have gone unnoticed. Students can be trained to observe, analyse, assess, correct, and comment on their peers' work in this tool. It can equally be used in the context of a project simulation activity in which the work is split among different project members, and students have to revise each other's work in order to achieve a finalised product.

5 The dubbing loops or takes (see Section 2.3.1.1) appear on the right-hand side of the screen during the subsequent recording phase.

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5 Conclusions

In this book, I have undertaken a close examination of the language and translation industry as well as current teaching practices and the latest technologies, to better understand the status quo of AVT education. The AVT industry is a technologically driven one (Baños 2018; Díaz-Cintas and Massidda 2019), so gathering the latest industry trends is not only desirable but also key for the training of the future generations of AVT specialists. However, there is still much room for exploration of the use of new technologies, such as cloud-based media localisation editors (see Section 4.4) in training settings. In the wake of technological advancement, notably AI and language automation tools such as ASR (see Section 4.2.3) and NMT (see Section 4.2.2.2), this book endeavoured to reflect on our current understandings of AVT practices, education and technology so as to ultimately open up new research avenues for subsequent studies that might aim to explore not only the uses and applications of technologies in AVT education but also the value of both teaching-oriented research and research-led education.

Primarily spearheaded by globalisation, today's ground-breaking societal transformations in the field of media entertainment include the novel ways in which audiences access and interact with media content, mainly via the internet. These changes have deeply impacted the distribution of media content worldwide (see Section 2.1.3) and, in turn, localisation workflows (see Section 2.1.2). If anything, this century's AVT landscape is characterised by the immediate nature and decentralisation of work, wherein there is a clear shift towards glocal translation labour. There is an urgent need to train media localisers and project managers who have the skills necessary to undertake media localisation and accessibility projects, and these projects boast a greater presence of cloud tools in both educational and professional settings.

New translation technologies – such as media localisation editors, management systems, and language automation tools – have acted as

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true catalysts for a change of paradigm in the localisation of audiovisual products. Arguably, these changes have been steered by the advances in cloud computing of the last few decades (see Section 4.1.1). As workflows become increasingly web-based, and more visibly automatised, AVT projects are currently handled from start to finish on the cloud with the aid of online management platforms, where professionals can access a wide variety of language-related technologies using multi-componential interfaces and can also communicate and share media files and other essential components with other stakeholders. The vast majority of systems have been and are still being developed mostly by private agents in the translation industry in response to increasing work volumes and their individual needs (see Section 4.2.1). On the one hand, some large media distributors and broadcasters of audiovisual productions have created their own media localisation systems to improve the overall productivity and quality of the translation outcome achieved by their preferred vendors. On the other hand, translation companies have also introduced their own online translation tools, which they make exclusively available to their pools of translators (e.g. iYuno, Plint, and ZOO). Other software developers, however, have developed dedicated web-based systems that remain open to all users on a pay-per-use basis (e.g. OOONA). It would be safe to claim that desktop and legacy software programs that were once commonly used in the industry now come with many limitations on account of their more rigid nature, so they are bound to be less frequently used as time goes on, unless hybrid solutions are devised.

The media localisation industry moves at a relentlessly fast pace, so AVT scholarship and courses continuously risk becoming obsolete in a rather short space of time. The study of cloud ecosystems and AI-enhanced AVT systems remains scarce in AVT education, and there is still plenty of room for reflection and (re-)consideration on how AVT practices, such as revoicing and subtitling (including media accessibility modes such as AD and SDH), are being taught using these new technologies (see Sections 2.3.1 and 2.3.2). Furthermore, alongside the ever-growing demand for localised content is a nascent interest in revoiced content by major media producers (see Sections 2.1.3 and 2.3.1.1), particularly in the Anglosphere (Díaz-Cintas and Hayes 2023), which is also accompanied by an interest in the making of fully accessible content (Romero-Fresco 2018). Moreover, there should be greater emphasis placed on quality standards and how industry guidelines inform AVT practice (see Section 2.4) as well as on the role played by humans in an age where CAT tools are expected to prosper and be further enhanced by the use of AI and LLMs (e.g. ChatGPT) amid the burgeoning AI-enhanced speech-to-speech tools (see Section 4.2.3.3).

Few would deny the fact that AVT has been – and in some countries continues to be – quite a late-comer to (higher) education when compared

to TS programmes. This delay is even more noticeable when comparing AVT to other disciplines within the humanities, such as linguistics, modern foreign languages, and literature, which have been established for a longer time within the academe. However, alongside institutional changes across higher education discussed in Section 3.1.3 is the unprecedented rise of undergraduate and postgraduate courses of study that include instances of AVT tuition (see Section 3.5.1), which has risen in parallel with an increasing interest in the academic study of AVT practices that gathered palpable momentum over the past twenty years (see Section 2.2). The expansion of AVT scholarship, however, has not been homogeneous outside of Europe and has often been associated with the infamous *talent crunch* reported by major media localisation industry stakeholders in the past few years (Estopace 2017; Nikolić and Bywood 2021). The inclusion of digital technologies in translator education curricula is on the rise, and AVT is a discipline that has evolved apace on account of its close links to technology and industry innovation (Chaume 2018). The integration of AVT into translator education curricula is exemplary of the need for higher education institutions to accommodate emerging fields of study, respond to industry realities and prepare students to enter the workforce in as up-to-date a manner as possible.

Gough (2011) argued that the success of any new tool is dependent on whether translators remain open or reluctant to embrace technology, and the reality is that not all professionals have permanent access to commercial software programs, be they for media localisation or other types of translation services. When they do, this is often provided by the clients (Kuo 2015) or combined with freeware (Granell 2019), and some long-standing practices such as dubbing have been devoid of dedicated (translation-specific) technologies until relatively recently (Granell and Ferriol 2016). The importance conferred on new technologies in the AVT classroom varies enormously across the globe, and the use of desktop-based software, especially open-source freeware, is an enduring reality (Roales-Ruiz 2018) as commercial software is often limited to higher-education institutions with the wherewithal to pay for licences. In the AVT classroom, the use of new, dedicated systems for the revoicing and subtitling of media content is not always embraced or duly acknowledged (see Section 3.5), but as programmes currently face a radically different market reality to the one depicted by early AVT scholars in the early noughties, educators must remember the importance of embracing the latest technologies and the latest changes occurring in the industry if they are to remain competitive.

To simulate real-world practice, translator education approaches have traditionally built on long-standing educational approaches such as socio-constructivism as well as project- and task-based methods (see Section

3.2), while at the same time observing the principles of translation competence and AVT-specific skills development (see Section 3.3) and assessment (see Section 3.4). Being a practice-oriented area of study, there is a need in AVT to strike a balance between theory and practice, and this book has advocated for the development of industry-informed training courses, when and where possible (see Section 3.6), to better prepare translators-to-be and make them more employable in a rather competitive professional market. The existing models for the study of translation competence have traditionally paid scant attention to the honing of instrumental competences and knowledge of the industry, except for perhaps the most recent competence framework published by the EMT Expert Group (2017). As for AVT competences, the works of Cerezo Merchán (2012, 2018) constitute a stepping stone to better orientate the learning and teaching of AVT practices in the realm of higher education. It is hoped that future research endeavours, such as those undertaken by international projects EFFORT (effortproject.eu) and NACT (Hurtado Albir and Rodríguez-Inés 2022), will consider AVT as part of their translation competence descriptors and levels of specialism.

The AVT classroom has also experienced profound changes insofar as higher-education institutions have increasingly embraced the use of distance learning tools (see Section 3.1.2). Traditional face-to-face lectures and seminars are gradually leaving greater room for instances of hybrid and remote education alongside independent learning. Needless to say, the COVID-19 pandemic was a turning point as higher-education institutions were forced to adapt learning and teaching delivery methods practically overnight (Li and Lalani 2020). It is little wonder that distance-learning tools, including video-conferencing and virtual tutoring platforms, are far more prevalent today than ever before. Where neither the staff nor the students have a physical, on-campus classroom to attend their lessons, virtual classrooms can be created to provide a suitable learning environment as well as to store the resources and applications that may be necessary to teach AVT practices. In traditional face-to-face settings, b-learning tools and platforms (e.g. Blackboard and Moodle) provide the resources and opportunities necessary to continue the learning process outside of the classroom – notably, independent learning and homework – though video-conferencing tools are still being used by many institutions in an attempt to offer hybrid solutions for educational events (Nechita et al. 2023). In remote learning scenarios, one of the main bottlenecks training institutions encounter for the provision of AVT training, particularly though not exclusively in the case of fully online lessons, is the use of specialist software to simulate real professional scenarios in the industry. In this context, ad-hoc training spaces in virtual environments (e.g. ZOOdubs, see Section 4.4.2)

and dedicated learning platforms for DAT (e.g. TRADILEX, see Section 4.4.4) have been welcome initiatives.

When it comes to physical learning spaces (see Section 3.1.2), some AVT training centres may afford the creation of dedicated computer labs where students can access commercial software and practise during and outside of teaching hours using university-owned hardware. On-campus computer rooms, however, pose major accessibility challenges as campus access cannot always be guaranteed, and software developers are zealous guardians of commercial software and do not always make programs available to students off-campus. Some institutions may opt to offer remote desktop connections for those who need online access to on-campus machines but cannot travel to campus. The need to access learning and teaching tools remotely was perhaps exacerbated by the COVID-19 pandemic as existing computer labs were of little use despite the availability of specialised software. Yet, even when students can access software programs through remote desktop applications, their use can be severely affected by their personal devices' performance and connectivity, particularly when working with larger materials (e.g. video files), and there are external factors such as servers' resilience and access that can affect, or potentially curtail, remote access to software. There have been successful attempts at teaching translation technologies, particularly CAT tools, in remote learning settings (e.g. Kodura 2022), but the focus is often put on the students' access to software beyond the effectiveness of the learning. With regard to university campuses and teaching facilities, many questions arise as to whether educators are being fully supported by their institutions in these endeavours, and how educators feel when integrating new practices and teaching delivery methods in the age of remote education and work (see Section 3.6.3).

As higher-education institutions retrench since 2010 in countries such as the UK (see Clark 2023), the premise that AVT training centres require substantial investment to build specialised hubs, equipped with the latest commercial software, is ceasing to be a priority. Indeed, even when there are designated facilities available on campus, access to some of the latest solutions (e.g. proprietary software) is purposely restricted by software developers or companies that often make their tools available to their pools of linguists alone. Commercial cloud-based tools can provide full access to AVT software programs both on and off campus, in both b- and e-learning environments, in a time where the internet and web-based technologies are becoming the norm across higher education (Bolaños García-Escribano et al. 2021). Cloud-based media localisation editors, such as the ones discussed in Section 4.4, represent agile solutions for educators to use professionally oriented and cutting-edge solutions in the AVT classroom. Having said that, these tools are conceived for professional practice and can inevitably become obsolete as time passes. Ideally, and despite

the varying realities that can be observed when it comes to AVT education (e.g. Baños and Sokoli 2015; Talaván et al. 2024), higher-education institutions would have to devise new and more efficient ways to provide students and staff with access to the latest tools used for teaching purposes, perhaps with a fully-fledged integration of existing systems into remote learning environments (e.g. virtual classrooms).

Although some research efforts have been devoted to the creation of tailor-made modular educational platforms for the teaching of AVT and DAT (see Section 3.5.2), little has been done yet to duly integrate professional tools into existing learning technologies (e.g. Moodle) while making them suitable for teaching purposes and abiding by industry practice standards. The creation of these platforms is highly desirable so that educators can use learning ecosystems that are both pedagogically sound and compliant with industry standards. As utopian as this approach may be, this may well be one of the most sustainable investments AVT training centres can make. In this scenario, developers of AVT-specific teaching tools and ecosystems should be cognisant of the need to assess their suitability through experimentation (e.g. user-end experience, usability and perception). Data-driven action research can arguably support software development while informing educational practice as evidenced by previous studies on the potential of commercial, cloud-based subtitling systems for the teaching of AVT (see Bolaños García-Escribano 2024). This latter study was conducted by exposing students to professional subtitling simulations in the form of user-focused experiences, subsumed under several action research cycles, which contributed to the progressive improvement of a cloud-based subtitling editor.

This book's approach to media localisation practices, translator education and industry technologies reveals that much-needed consideration should be given to the role of the human translator in the face of increasingly pervasive language automation technologies. The use of AI tools, including generative AI and LLMs that hint at a much wider presence of automation in the language services industry are an enduring reality in the ever-changing nature of media localisation practices. It only follows that further attention be paid to the study of new technologies and the ways in which educators and students engage with them in the classroom. Bearing this in mind, the discussions in the three chapters that constitute this book have emphasised that establishing closer links with industry partners, especially those developing the latest technologies, is a priority. Scholars must undertake closer examinations of new professional scenarios to better understand the current provision of certain services as well as to identify areas of improvement in professional practice and training. Future research endeavours will surely change considerably when we know more about the technologies that are yet to come.

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