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"Coronavirus, translated": A proposal for Subtitling Netflix "Explained" Spin-Off into Italian

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Introduction

The main purpose of this thesis is to propose a translation of the subtitles of a Netflix limited series called "Coronavirus, explained". To do so, I had to divide my work into different steps which are described in the following four chapters, each dealing with the definition of concepts and the discussion of issues relevant to this task. First, I will provide a theoretical overview of audiovisual translation and science popularisation by exploring the topics of languages for special purposes (LSP) popularisation and the language of medicine the challenges of audiovisual texts and subtitling. Second, I will deal with the more practical part of my work, by analysing the corpus I built for my translation and offering my translation proposal together with an analysis of particular extracts and issues. The complete translations and the corpus composition can be found in the appendices.

Popularising LSP is a challenging but necessary task. LSPs are characterised by terminology often obscure to the layperson, by phraseological constructions understood only by experts in the field, and, sometimes, by the use of common words with a particular, different meaning or connotation. Science and medicine are no exception, but due to the impact they have on laypeople's lives, it is important to make them as accessible as possible. In the first chapter of my thesis, I will explore in further detail what LSPs are and which strategies can be used to make them accessible to the general public, focusing then on medicine as an LSP. The language of medicine differs not only with reference to the various communication situations but also from one language to the other. For this reason, after an overview of the main features of the English medical language, I will describe the strategies and trends of medicine popularisation in English and Italian. In the last part of the chapter, I will highlight the challenges of interlingual medical translation.

In the second chapter, I will focus on audiovisual texts and subtitles. AV texts are rather complex, because they mix and rely on characteristics of both audio and visual communication channels, and so audiovisual translators must implement various techniques and strategies to overcome such challenges. After an overview of subtitling, I will describe the challenges related mainly to space, time, and readability that subtitling

in general and subtitling translation in a particular pose. I will also illustrate the guidelines and standards adopted by Netflix to guarantee a high-quality subtitled product, and then I will introduce the topic of translating documentaries, their features and their difficulties. The last paragraph of the chapter will be about the implementation of different strategies in interlingual subtitling, which will be an important part of my translation work.

In the third chapter, I will turn to the more practical part of my thesis, with the description of my four sub-corpora, including expert-to-expert and expert-to-lay communication texts in English and Italian, respectively. I will describe how I built my sub-corpora and analyse their main features, as well as give a theoretical framework to my work. The second part of the chapter is dedicated to the comparative analysis of my four sub-corpora, with a particular focus on terminology and term extraction. Corpus composition and content are available in Appendix a.

In the fourth and last chapter, I will give a brief synopsis and description of "Coronavirus, explained", a limited series available on the streaming platform Netflix. I translated the subtitles of its first two episodes, "This Pandemic" and "The Race for a Vaccine". I will examine the challenges they pose in the translation of their subtitles from English into Italian, in terms of both general language and popularisation strategies in subtitling, by commenting on examples taken by my translation proposal. The translation of both scripts will be available in Appendices b. and c.

I will then draw some conclusions and final remarks from my work and my literature, concerning medicine popularisation in subtitling, the main issues and challenges I found while translating these particular texts, and the strategies I implemented to solve and overcome them.

1. Popularising medicine

In this chapter, I will present the first theoretical framework within which my work develops: the popularisation of medical language. To do so, I divided this chapter into two subparagraphs. In the first one, I will explore the concepts of language for specific purposes (LSP) and LSP popularisation and their characteristics from a more general perspective; in the second one, I will focus in more detail on the features of medicine as LSP and the challenges of medicine popularisation and medical translation.

1.1. Popularising science

The process of popularisation is the means through which specialised discourse is made accessible to non-experts or laypeople. Popular and professional discourse write about the same topics but address different intended audiences, i.e. laypeople and students or expert members of that particular community, respectively (Rowan 1989: 161). However, popularisation is not the "mere simplification of specialised research accounts" (Musacchio and Zorzi 2019: 482). Popularisation is the mediation of specialised knowledge to a non-specialised audience (Raffo 2016: 163), and it is an important part of creating that specific specialised knowledge.

Specialised discourses are pervasive and affect, in more or less subtle ways, everyone's life. This is particularly relevant for scientific discourse, as communicating scientific discoveries and innovations can not only excite, entertain, or inform the laypeople, but also engage them, spark debates, or even affect their decisions, up to a point where science appears to be "co-constructed" by all the actors involved (Musacchio 2017: 9, 23; Musacchio and Zorzi 2019: 483). Even though in today's scientific communication at all levels there has been an "increase in the 'technical' content", it is still possible to establish a "cline" of popularised texts, in particular in science journalism. This cline would entail the following levels of communication (Musacchio 2017: 28):

1. intra-specialist level: specialised journals where experts of the same field communicate about recent discoveries and innovation;

2. high inter-specialist level: journals with publications and articles about different topics and from different fields with a particular focus on novelty;
3. medium inter-specialist level: magazines where authors such as scientists or science journalists publish articles from different fields and written in ways appealing to and understandable by researchers from different fields and educated (but lay) readers;
4. pedagogic level: mainly textbooks for students dealing with established science;
5. popular level: articles in newspapers and magazines, websites and blogs, radio and TV programmes.

However, as communication is never a linear process, the participation of laypeople in the co-construction of scientific knowledge is a particularly significant trend in today's societies, especially when regarding topics considered "controversial" (Musacchio 2017: 23; Musacchio and Zorzi 2019: 484).

As popularisation refers to the process of moving knowledge from experts in the field to non-experts or lay people (expert-to-lay communication), it is important to understand who the actors involved are. The phrase "lay people" seems rather self-explanatory: people who are not experts in a particular discourse. The term "experts", however, is more ambiguous. Experts are, of course, scholars, doctors, engineers, researchers and the like, but are not always directly involved in the communicative acts with the laypeople. A doctor talking to a patient is a clear expert-to-lay communication example, but these interactions are not that common, especially in the written medium. "Real" experts and laypeople can get in contact through a rather restricted range of communicative acts and genres, such as specialised columns in newspapers (Cortelazzo 1994: 37) or PILs (Patient Information Leaflets) because usually experts talk and write to experts. However, within expert-to-lay communication, the role of "expert" mostly falls upon the shoulders of people who are not chemists, physicians, or doctors themselves, but journalists (Cortelazzo 1994: 38), who behave as mediators between the experts and the lay (Ciapuscio 2003: 209). This implies terminological and phraseological differences in the different kinds of communications and texts (see paragraph 1.1.3).

1.1.1. Scientific languages for special purposes

The acronym LSP stands for Languages for Special (or Specific) Purposes (Newmark 1988: 286), whose definitions are varied. The ISO 1087 defines LSPs as "language[s] used in a subject field and characterized by the use of specific linguistic means of expression, [which] always include(s) subject-specific terminology and phraseology and also may cover stylistic or syntactic features" (cited in Wright 2011: 245). Cortelazzo (1994: 8, my translation) proposes a more articulate definition, i.e.

> a language for special purposes is a functional variety of a natural language concerning a specialised field of knowledge or range of activities. It is used as a whole by a restricted group of the speakers of that natural language, in order to fulfil the communicative – primarily referential – needs of that specialised sector. On the lexical level, an LSP is characterised by additional correspondences compared to the general and common ones of that natural language and, on the morpho-syntactic level, by a regularly recurring selection of the forms available in the language[1].

LSPs are then restricted codes of natural languages, whose aim is to satisfy the communicative needs of the limited group of people that use them, i.e. experts. Examples of LSPs come from every branch of human knowledge and human discourses, e.g. languages of science and its subdomains (chemistry, medicine, biology, or botany), the language of technology, the language of economics and business, the language of literature and linguistics, and the language of bureaucracy and administration.

In Cortelazzo's (1994: 8) definition, the purposes and characteristics of LSPs are made explicit. More specifically, LSPs' main purpose is to denote, define, and describe elements and concepts of a particular field as clearly and unambiguously as possible. To do so, LSPs rely mainly (but not only) on specific terminology. Experts' language is everything but fortuitous and using the correct terms is the first condition to talk or write about any field efficiently and effectively (Scarpa 2002: 28). Most LSPs in general and

[1] "per lingua speciale si intende una varietà funzionale di una lingua naturale, dipendente da un settore di conoscenze o da una sfera di attività specialistici, utilizzata, nella sua interezza, da un gruppo di parlanti più ristretto della totalità dei parlanti la lingua di cui quella speciale è una varietà, per soddisfare i bisogni comunicativi (in primo luogo quelli referenziali) di quel settore specialistico; la lingua speciale è costituita a livello lessicale da una serie di corrispondenze aggiuntive rispetto a quelle generali e comuni della lingua e a quello morfosintattico da un insieme di selezioni, ricorrenti con regolarità, all'interno dell'inventario di forme disponibili nella lingua" (Cortelazzo 1994: 8).

scientific LSPs, in particular, need to meet specific requirements, i.e. precision and transparency, lack of emotion and depersonalisation, economy and conciseness (Provenzano and Preite 2017: 213; Scarpa 2001: 36 and 2002: 29). These can be reached through different means.

Precision and transparency can be achieved through lexical, syntactic, and textual tools. At the lexical level, specialised texts use terms and phrases specific to the field, i.e. the so-called "jargon". Even though jargon has both neutral – "technical terminology" – and negative – "obscure, pretentious language" – connotations, in specialised texts it is not aimed to conceal, but rather to unambiguously define the elements of that particular field (Rowan 1989: 12-13). However, the use of highly specialised terminology may make texts inaccessible to the layperson, e.g. in the bureaucratic and administrative language (Cortelazzo 2021: 14). Technical terminology aims to minimise the inherent phenomena of natural languages, such as polysemy and synonymy. Ideally, terms in specific domains should adhere to the monoreferentiality principle, i.e. "the lexical parameter by which each term has only one referent, so […] only one meaning is allowed" (Provenzano and Preite 2017: 213). For this reason, LSPs tend to create neologisms to define and describe concepts and phenomena specific to their domain. However, absolute neologisms and coinage words are quite rare, and other strategies to create their terms are also adopted. Other forms and types of "new" words are, for example, compounds, borrowings, or words taken from the general language with a new, special meaning (semantic redetermination), e.g. "cloud", "bug" or "cookie" in IT (Cortelazzo 1994: 12-14; Scarpa 2002: 29). Syntax, too, can help make a text clear and unambiguous through connectors, as well as the visual structure of the text itself: the division into paragraphs with a title and the use of tables, images, diagrams, and footnotes (Balboni 2016: 128-9).

Lack of emotion and depersonalisation can be reached on the lexical level by using neutral terms and avoiding unnecessary connotations (Provenzano and Preite 2017: 213). The words chosen can steer the way a concept or an idea is perceived by the audience, a process defined as "lexical cosmetics" by Nida (1995, as cited in Sajous, Josselin-Leray and Hathout 2018: 71). This process can go in two directions, i.e. the positive features of a concept can be highlighted and its negative properties minimised or vice versa. On the syntactic level, nominalisations and passive constructions are used to background the subject of the action and to focus on the object of the phenomenon (Provenzano and Preite

2017: 214). Especially in scientific LSPS, these strategies are used to shift the focus of the reader on the phenomena and the processes and to keep an objective, neutral approach to the matter, rather than to "reject responsibility" (Rowan 1989: 173).

Lastly, various lexical tools are used to fulfil the requirement of economy and conciseness, such as the creation of acronyms, the use of symbols, juxtapositions, abbreviations, derivation or affixation (Provenzano and Preite 2017: 2013; Scarpa 2002: 28). On the syntax level, nominalisations accomplish also this task, as well as the use of noun compounds (Cortelazzo 2021: 16; Scarpa 2001: 55 and 2002: 31).

1.1.2. Diaphasic and diastratic variations in the language of science

LSPs are varieties of natural languages. Linguistic variations can be classified according to time (diachronic variation), space (diatopic), function and situation (diaphasic), social status of the speakers (diastratic), and the medium used, e.g., written or spoken language (diamesic) (Berruto 2011b). In particular, LSPs are diastratic and diaphasic variations, i.e. they depend on the social status and profession of the speakers and the situation (discussed topic, formal/informal register).

Diastratic variations concern the various social classes: based on the profession and the social status to which they belong, speakers tend to talk and write in different ways (Berruto 2011a). Diastratic variations develop on the vertical axis, i.e. the sociolinguistic level of the speakers.

Diaphasic variation, instead, is related to the single speakers, i.e. "it operates transversely to the other dimensions of variation" (Berruto 2011a, my translation). In addition, it has both a horizontal and a vertical axis of analysis: the horizontal axis refers to code variation (special languages), and the vertical axis registers variation (style, formality). Magris (1992: 4-5) states that, horizontally, general language can be divided according to subjects and topics, creating the different LSPs, e.g. the language of chemistry, physics, or medicine. This distinction is usually based on non-linguistic factors. Each of these LSPs can be further divided into sub-topics, one for each discipline and branch, e.g. the language of medicine can be divided into the language of gynaecology, oncology, or cardiology. Another horizontal distinction that can be drawn

in the language of medicine is the one between clinical language and theoretical-scientific language. Vertically, general language can be divided into formal and informal registers. In the case of LSPs, in particular, it is possible to identify three levels (Cortelazzo 1994: 20-1):

- the first one, the "high" level, refers to the communication between experts (*Theoriesprache*), where the language is highly specialised and formal and its structures and lexis are the farthest from the general language;
- the second one refers to the communication between technicians (*fachliche Umgangssprache*), where the language used is less formal but, still, the words and terms used are highly specific;
- the third one refers to the communication between experts and lay people (popularisation or *Verteilersprache*), where the language is the closest to general language, in terms of both lexical and syntactic features.

1.1.3. Science popularisation strategies

According to Rowan, popularisation has either of two goals, "making a profit or educating the masses", so it has to attract readers to survive (1989: 165). This is the reason why popular science writers need to adopt different strategies to make their text understandable and appealing to their lay audience. To explore the popularising strategies implemented in scientific texts, it can be helpful to understand how expert and popularising communication differ.

On a macro-textual level, the texts' structure and organisation are opposite (Rowan 1989). While in specialised texts, the core findings and results are presented towards the end, i.e. after sufficient proof and enough support are given, in popular texts, the writers need to catch the readers' attention and so the core claim or new information appears at the beginning and only afterwards it substantiated through evidence and details. On a micro-level (linguistic level), Rowan's analysis (1989) focused on a quantitative aspect – the use of terminology and passive or active forms – and on a qualitative aspect – the opposition "tentativeness vs. boldness" (Rowan 1989: 174). The quantitative analysis showed that passive forms are "consistently used" only in specialised texts and

that popular texts contain less jargon than their specialised counterparts: the field's terminology in popular texts is usually used "to make a point" or when the term in question is immediately defined (172). Qualitatively, it was noticed that specialised authors prefer to use verbs expressing more tentative claims, such as *suggest*, or modals like *may*, whereas writers of popular texts use more assertive verbs, such as *show* or *demonstrate*. The reasons lie in the different aims of these texts, i.e. trying to prove a claim, and thus making it easier by writing it "precisely worded and tentative" as opposed to establishing the novelty of a claim and getting the readers' attention (175).

Raffo's (2016) analysis of medical translation and popularising texts highlighted that scientific denominations are used even in popular texts, probably because nowadays the general public is more familiar with them. Of course, this hypothesis is context-bound and only applies to specific cultures. The difference between popular and specialised texts is the expressive diversity typical of the former, which are not constrained by the "scientific imperatives of accuracy and economy" (169). This does not mean that variants do not exist in specialised texts, but their usage is less significant than in popular texts. The real "hallmark of popularisation" appears to be discursive rather than lexical features, such as "definition, description, paraphrase, narration, modalization, and metaphorical and analogical expressions" (Calsamaglia and Van Dijk 2004, as cited in Raffo 2016: 169).

To sum up, it appears that popular texts use general language as a "metalanguage" (Cortelazzo 1994: 21). On the lexical level, terms are generally replaced by general-language words or with periphrasis and noun compounds tend to be broken down. When scientific denomination is used, notes and explanations are added and analogies and metaphors are employed to clarify concepts. On the syntactic level, a wider range of verb forms is used, nominalisations are replaced by their verbal correspondents, and more modal expressions are used. Finally, on the textual level, Cortelazzo highlights that the textual organisation of popular texts is less defined if compared to the precise and fixed structure of specialised articles.

Musacchio (2017) proposes a comprehensive overview of recommendations and strategies to follow while popularising scientific texts. Writers should have a clear idea about who their target readers are and what the purpose of their text is. They should

evaluate the "threats and opportunities" (Musacchio 2017: 94) of their publication, aiming for something either sensational or that the people can relate to. Musacchio provides also more practical tips, for example, she suggests using the "Ws + H as in any article" (Musacchio 2017: 94), creating a less complex narration with characters the readers can identify with, and providing a key to interpretation. Readers should be explained "what they need, not more and not less" (Musacchio 2017: 94), meaning that some background information as to why the news is important to the discipline should be given without going too much into details. Terms should be translated into simpler words if they come up only once or briefly explained if needed throughout the text. Writers should adopt a captivating style, for example by beginning the story with something particularly interesting or fascinating for the readers, going directly to the core of the story, and using fun facts and other rhetorical devices such as a question-answer structure "to keep the readers with [them]" (Musacchio 2017: 94).

1.2. Medicine as LSP

As Wright states (2011: 243), medicine is but one of the many sub-domains of the "Sci-Tech spectrum". What is particular about medicine, though, is the fact that, despite the great distance between the medical professional discourse and general language, medicine provides one of the most significant examples of popularisation, due to the almost daily necessity of expert-to-lay communication (Cortelazzo 1994: 29).

All communicative acts fulfil communicative functions and many scholars offered different classifications of them. Some of the most famous were proposed in the 20th century, e.g. Bühler's *Organon-Modell* (Nord 2014: 77) based on three main functions or Jakobson's 6-function model. Bühler (as cited in Munday 2016: 114-5) identifies 3 functions, i.e. the expressive function (*Darstellungsfunktion*), the informative or representation function (*Ausdrucksfunktion*), and the appellative or vocative function (*Appellfunktion*). To Bühler's model Jakobson (as cited in Newmark 1988: 42) adds three more functions, i.e. poetic (aesthetic), phatic, and metalingual. Needless to say, texts normally have more than one function, but it is useful, also from a translational perspective, to identify the main function(s) of a text or a text type. For example, Newmark (1988: 39-44) adapts the Bühler-Jakobson model and considers texts like

autobiographies or imaginative literature as mainly expressive, as their core is the author's emotions and thoughts. Texts such as advertisements or propaganda and other forms of persuasive writing, but also instructions, have mainly an appellative or vocative function, as they focus on their readership; this function has been given many names, e.g., "conative", "instrumental", "operative", "pragmatic" (Newmark 1988: 41). Technical-scientific texts like textbooks, scientific papers or even newspaper articles have mainly an informative function, as they concern objective, extra-linguistic facts and realities. Poems and, children's rhymes have a poetic function, as their aim is "to please the senses". The phatic function is instead achieved through phrases and particles used to maintain contact with the addressee that vary according to text types, medium, and register. Finally, the metalingual function is the possibility to use the language to talk about the language itself.

Even in more recent years, scholars have dealt with the functions of language. In particular, Magris (1992: 9, my translation) based her analysis of the medical language's functions on the Möhn-Pelka 7-function model, i.e. "descriptive, instructive, directive, metalinguistic, contactive, expressive, and isolative function". As previously mentioned, no text accomplishes only one function, and medical texts are no exception. Magris states (1992: 9) that medical texts, in general, are mainly descriptive and instructive, but they also fulfil the metalinguistic function, as they need to explain medical terms and phrases, and the contactive (or phatic) function.

1.2.1. Main features of English medical LSP

The language of medicine presents almost all the features of other scientific LSPs. In particular, medical language has to be as precise and clear as possible due to the repercussions and impact it can have on people's lives. In this paragraph, the main features of high-level communication and the communication between technicians will be presented, while the characteristics of lay communication and the relevant popularisation strategies will be analysed in paragraph 1.2.2.

In the medical field, a great variety of texts are produced to achieve different aims, such as presenting a new important discovery or describing how a drug must be taken.

Medical texts concern various genres and are addressed to various audiences. To use Cortelazzo's distinction (1994: 20-1), most "academic" texts be ascribed to the high level, e.g., scientific papers, conference proceedings, research papers, thesis, case studies and also textbooks for learners; discharge summaries and reports are part of the communication between technicians, i.e. doctors and nurses. Finally, many medical texts are directly produced for a lay audience and range from popular science books to PILs, to consent forms (Karwacka 2015: 272).

As the medical domain encompasses such a wide range of genres, it is clear that each medical text type is characterised by different features and uses of the language. If compared to the general language, experts in their communication tend to use more frequently structures such as nominalisation, pre- and post-modification, rather long sentences, and passive and third-person forms (Askehave and Zethsen 2000, as cited in Karwacka 2015: 273), in order to keep the "necessary high formality and style, and thereby the credibility of the text" (Sivanesan 2019: 516). However, the most typical feature of expert-to-expert communication is the use of specialised terminology, as it represents the linguistic aspect born to describe and explain scientific and technical phenomena as precisely, concisely, and neutrally as possible (Cortelazzo 1994: 7; Scarpa 2002: 27-8).

In expert-to-expert communication, doctors and technicians use various specialised terms "whose semantic value is taken for granted" (Karwacka 2015: 273) and therefore not explained. Also in research papers, authors may coin new words to define new concepts and discoveries, but, in this case, these need to be explained even to an expert audience (Gotti 2008, as cited in Karwacka 2015: 273). Usually, the roots of medical terms in English and other Western language lie mainly in Greek and Latin, as well as the translation in these classical languages of Arab words (Sivanesan 2019: 514), but there are many processes through which medical terms are formed and created in English, as the works of Magris (1992: 30-58) and Karwacka's (2015: 274-7) describe.

- Affixation is the process of creating new words, by adding affixes. In medical terminology, both prefixes and suffixes are used and, in particular, affixes of Greek and Latin etymology (e.g. *eso-*, *-itis*).

- Compression, i.e. the use of acronyms and other abbreviations, such as initialisms and clipped forms. While some acronyms and abbreviations have been used for a long time, others can be created *ad hoc* by the author. The process of compression fulfils the need for brevity and economy typical of LSPs (e.g. *X-ray*).
- Composition or word compounding, instead, is used to describe concepts, elements, and phenomena as precisely as possible. Word compounds can be defined also as multi-word terms and can be composed of different combinations of grammatical classes, such as noun + adjective, or noun + noun (e.g. *liver disease*). Sometimes, they merge and create a new, single word (e.g. *headache*). Particularly interesting is the compounding of Greek and Latin words, e.g., *leukocyte*, deriving from *leuc(o)-* (meaning white) and *cito-/-cyte* (meaning cell).
- Creation of eponyms, i.e. denominations for anatomical parts, diseases, substances, or medical procedures, tests, and instruments derived from the names of researchers, patients, geographical areas, or fictitious characters (e.g. *Achilles tendon*).
- Borrowings from other languages. Although English is nowadays the lingua franca of medicine, which mostly 'lends' rather than borrows new terms, it also loans words from other languages, especially Greek and Latin, as well as French (e.g. *triage*).

Another lexical feature is the so-called "doublet phenomenon" (Salager-Meyer 1983, as cited in Karwacka 2015: 278), i.e. the existence of "high" terms of Greek and Latin origin, which have a "lower" counterpart, usually of Anglo-Saxon origin (e.g. *myocardial infarction* vs. *heart attack*). This is typical also to the English general language, but it is particularly relevant to the medical discourse and its popularisation.

In addition to terminology, syntax and text organisation also play an important role in medical language, as highlighted by Magris (1992: 66-77). Medical texts' primary function is to inform and describe phenomena as objectively and 'scientifically' as possible, without expressing the author's opinions or emotions. According to Hoffman (1985, as cited in Magris 1992: 66), the two main tendencies in medical language are the importance of the logical order and the generalisation through the abstraction of concepts.

- The widespread use of nouns and noun phrases and "nominalised" verbs or adjectives enables greater lexical density, thus fulfilling the requirements of economy and brevity typical to the medical language. Some scholars also state that nouns allow more precision than verbs, which in specialised discourse are considered vaguer.
- Verbs do not, of course, completely disappear, but they often are used in their nominalised form or as copulas in a noun phrase. In addition, they are usually found in the present indicative, as they are used to describe, define, or report concrete facts. Sometimes the need for the imperative arises, as instructions might need to be given. In order to adopt a neutral, objective perspective focusing on the phenomenon and not the agent, verbs are usually used in the passive forms or the third person singular – or sometimes the first person plural to make generalisations.
- Several strategies can be used to give the text a clear logical and coherent structure, both implicit and explicit, such as using repetitions or connectors. Contrary to other genres and text types – or languages, in medical English, lexical repetition is widely accepted, as it ensures conceptual precision and logic cohesion. However, repetition strategies include also the use of anaphoric and cataphoric elements, such as pronouns, and the use of hypernyms and synonyms. Also, the aforementioned doublet phenomenon can be a stylistic way to refer to the same concept without having to use the same word. Another technique to increase cohesion is to use connectors that clearly express the different relations between the elements, such as cause-effect, comparison, or exemplification.
- Finally, non-verbal elements, such as graphics, pictures, and symbols, are widely present in medical texts.

1.2.2. Strategies for popularising medicine

"[P]roducing a science popularization text basically means recontextualizing and reformulating one's source in such a way that it is comprehensible and relevant for a different kind of addressee" (Ciapuscio 2003: 210). To do so, writers can choose from a

wide range of techniques, most of which are discussed in paragraph 1.1.3. Medical popularisation, too, relies on them; however, some languages might rely more on some strategies rather than others for a variety of reasons, as the next paragraph will try to explain.

1.2.2.1. *Medical popularisation in English*

First, it is important to highlight again that popular science texts, such as newspaper articles, do not have the same goal as expert communication texts, such as research papers. Professional writing is "just one step in the enterprise of 'doing science'", while for popular authors writing is "the major task" (Rowan 1989: 165). This implies stylistic differences to ensure that the text is entertaining enough to attract as many readers as possible. Of course, this aim is typical to newspaper articles, while PILs –written, as well, for lay-readers – have a different aim and, therefore, implement different stylistic changes.

For example, reformulation in newspaper articles "entails a great number of conceptual, textual, and discursive transformation of the specialized knowledge structure" (Raffo 2016: 170), which might mean that readers have to rely more on contextual, linguistic, and encyclopaedic knowledge, rather than on the clear, explicit exposition of facts and correlations of specialised texts.

Second, it might be assumed that, in expert-to-lay communication, authors should generally use common words instead of obscure terms whenever possible. Otherwise, they should explain specialised terminology in simpler words when this occurs for the first time (Gotti 2008, as cited in Karwacka 2015: 273). This might be easier for a Germanic language, thanks to the doublet phenomenon. Although in English this trend is not as significant as in other Germanic languages, such as German, Dutch, or Danish, Viezzi (1993, as cited in Ross 2004: 108) reports that English doctors, too, use more general language words, as opposed to Italian linguistic habits.

In particular, English medical texts rely on acronyms and abbreviations that allow saving time and space but might be "the source of ambiguity", as they "obscure the meaning in many situations, […] since […] one acronym or abbreviation may stand for

several different terms" (Mangher 2019: 395). Popular writers need to make sure which is the right meaning in context and, at least the first time, explain what each acronym or abbreviation stands for (Mangher 2019: 395).

Third, popularisation can rely on a distinctive feature of human language and thought process: metaphors. Metaphors and analogies have always been used to describe phenomena using other words, but what can be useful when popularising is the notion of "conceptual metaphors" developed by cognitivist linguists Lakoff and Johnson (1980). According to them, metaphors operate not on the mere linguistic level, but on the conceptual system. Metaphors are then structures that allow a coherent organisation of knowledge in so-called conceptual domains, and thus "one of our most important tools for trying to comprehend partially what cannot be comprehended totally" (Lakoff and Johnson 1994: 134): they are used to conceptualise unknown domains through more familiar expressions. In the words of Kövecses (2010: 7), conceptual metaphors are a "set of systematic correspondences between the source and the target [domain]", meaning that to the same conceptual metaphor can be ascribed various "metaphorical expressions", i.e. the actual phrases. Conceptual metaphors can vary between languages and are a distinctive feature of LSPs, even medicine.

Some of the main conceptual metaphors used in medical English were analysed by Karska and Prażmo (2017) and include the following:

- HEALTH IS UP, ILLNESS IS DOWN: *to be in top condition* vs. *to fall ill*
- DISEASE IS A PHYSICAL OBJECT: *have a disease*, *pass on a disease*
- DISEASE IS AN ANIMATE OBJECT: *a disease attacks us*, *an aggressive disease*
- DOCTORS ARE MECHANICS: *to fix a problem*
- HEART IS A PUMP: *heart valve*
- DOCTORS ARE ARTISTS: *to perform an operation*

1.2.2.2. *Medical popularisation in Italian*

In Italian, the concept of "popularisation" is translated with the term *divulgazione*, which is a prolific sector, especially in the medical field. Popularisation techniques and strategies in Italian are similar to those implemented by English writers, though some

differences exist due to both linguistic and stylistic requirements and trends typical to the Italian language. Cortelazzo (1994) analysed thoroughly the Italian popular medical language and identified its main features, as well as some problems faced by popularising authors.

First, on a lexical level, medical terms tend to be replaced by their general language correspondent, e.g., *globuli bianchi* (white blood cells) in place of *leucociti* (leucocytes) or *orecchioni* (mumps) instead of *parotite* (parotitis). However, even though some examples of the doublet phenomenon exist in Italian too, they are not as widespread as in Germanic languages, thus medical terminology needs to be "translated" into general language words. This means that noun compounds, such as *rinoplastica* (rhinoplasty), must be broken down into their components, e.g. *chirurgia plastica al naso* (nose plastic surgery). In addition, acronyms and abbreviations as well need to be explained and made explicit. Unfortunately, these strategies sometimes cannot be used, so writers have to add an explanation or a note to the medical term to make it accessible to non-experts.

Second, on a syntactic level, popularisation techniques aim to reduce the lexical density typical of highly specialised discourse, i.e. sentence length is increased so that the communication and the relations between elements of the text are less obscure and ambiguous. This implies, for example, replacing nominalisations and noun phrases with verbal constructions. Verbs as a grammatical class are, indeed, more used in popular texts and they range on a wider spectrum of tenses and forms.

Third, metaphors and conceptual metaphors can help lay-readers to better understand complex processes (Maniowska 2018: 128). Indeed, medical phraseology and terminology per se are full of metaphors that were created as soon as the study of the human body began (Maniowska 2018: 121), e.g. *cavità orale* (oral cavity), *colonna vertebrale* (spinal column), *dorso del naso* (bridge of the nose). Conceptual metaphors in medical Italian are personifications and animations taken from the following semantic domains (Scarpa 2001: 57; Frezza and Gagliasso 2014: 27):

- WAR AND HUNTING: *lotta al virus* (fight against the virus), *sconfiggere la malattia* (defeat the disease)
- FAMILY AND OTHER RELATIONSHIPS: *malattie ereditarie* (hereditary diseases), *malattie orfane* (orphan diseases)

- AUTOMATISATION AND INFORMATICS: *la mente è un computer* (the brain is a computer), *codice genetico* (genetic code).

Lastly, it is important to focus briefly on borrowings, a widespread phenomenon in all medical languages. Due to the dominance of English in the scientific and medical discourse, over the last decades, Anglicisms are particularly frequent in Italian. Although some of them are quite familiar even to non-experts, e.g. *pacemaker*, writers that want to popularise Italian medical texts should consider these might not be understood by all lay-readers.

1.2.3. Challenges of translating medicine

In this last paragraph, I will consider some of the main difficulties that the translation of medicine poses, focusing in particular on the challenges of translating medical English used by experts into popular Italian. I will start from the macrostructure – textual and syntactic level – and then move onto the microstructure – linguistic and terminological level.

The main priority and challenge of medical translation are to transfer the "complexity of the original, embracing both complex terminological content as well as form with certain features typical of technical (scientific) texts in general" (Kościałkowska-Okońska 2012: 9). This implies a thorough knowledge of the medical field and the linguistic conventions of the target languages concerning both terminology and syntax. On the textual and syntactic level, the organisation of contents and the order in which information is presented change depending on the linguistic requirements of each language and on extra-linguistic factors, such as the function of the text. This is relevant to the medical field from a popularisation viewpoint because scientists writing a journal article about their most recent discovery follow a "narrative of science", in which information is organised hierarchically to support the authors' claim, whereas popular writers instead follow a "narrative of nature", i.e. they accompany the readers on the chronologically coherent journey that led to this discovery (Musacchio 2004: 90). This implies textual and syntactic changes when popularising, such as rephrasing "introductory statements as questions and answers", dividing complex sentences and

compounds into simpler sentences, or shifting from passive and impersonal forms to active constructions (Myers 1990, as cited in Musacchio 2004: 90-1). As emerged from Musacchio's analysis (2004: 94-102), translators need to pay particular attention to the transposition of English syntactic structures into Italian, as they can result in rather awkward translations. For example, Italian has a much freer sentence structure, meaning that additional information or clauses can be moved to the beginning of the sentence, while English requires long complex elements to move towards the end. In addition, the subject-verb inversion is not as marked in Italian as it is in English. Some verbs such as *accadere*, *succedere*, and *avvenire* (all meaning 'to happen') usually require this structure and if the translators recreate the English subject-verb unmarked order, the Italian text will appear unnatural. Translators also need to pay attention to the positioning of adverbs, as they do not always fit in the same positions of the English sentence, and to repetitions, which are an essential cohesive device in academic and scientific English but risk making Italian sentences heavier, without actually improving text cohesion. Finally, translators need to check in comparable corpora the "interplay between syntax and semantics" (Musacchio 2004: 102), i.e. how languages construct reality and how they put it into words. This means that even if some words have a clear, direct translation, they might not fit within a specific context, as in one of the examples provided by Musacchio: while in English it is possible to "understand something in a unified way", in Italian "one does not *comprendere* (understand), but does *descrivere* (describe) in a unified way" (Musacchio year: 101).

On the linguistic and terminological level, Halliday (as reported in Musacchio 2017: 43-55) identifies some features – or "difficulties" – of the language of science that can be seen also in the language of medicine and are issues worthy of being addressed when dealing with translation, namely interlocking definitions, technical taxonomies, special expressions, grammatical metaphor, and semantic discontinuity.

- Definitions are an essential feature of scientific discourse, but often they are embedded into one another, i.e. scientific texts present a "series of definitions where defining one concept requires reference to other interrelated concepts" (Halliday in Musacchio 2017: 44). This might be particularly challenging for translators, as interpretation problems are most likely to arise.

- One of the main problems with technical taxonomies is the fact that the relationships between concepts are often implicit and taken for granted in expert texts, but they should be made explicit when writing popular texts. In addition, when translating into another language, it is important to check if the target language conceptualises the discipline differently because it might lead to different semantic relationships between the elements.
- Special expressions are "a set of interrelated phenomena […] that have a grammar of their own", meaning they are not part of the LSP terminology, but rather of its phraseology and collocations (Halliday in Musacchio 2017: 50). "Special-language terminology is embedded in general language" (Wright 2011: 245), which means that LSPs use general language words in a special way, e.g. in Italian, the verb *accusare* in the sentence *il paziente accusa un dolore*. Such phrases require to be thoroughly checked when translating. Special expressions are characterised by high lexical density and syntactic ambiguity, especially if the relationships between the elements of the expression cannot be clearly defined.
- The tendency of scientific discourse to change the grammatical class of verbs, adjectives, and conjunctions into nouns and nominal groups falls within the definition of grammatical metaphor. Translators and especially writers of popular texts need to pay attention to these shifts, as both register and grammatical-syntactic constraints of the target language can require a different construction.
- Semantic discontinuity is what happens when experts take for granted some information or leave out some other "assuming that the reader will follow" (Musacchio 2017: 53). Indeed, in addition to its jargon, idiosyncratic phrases, and special expressions, "there is often an entire body of implicit knowledge underlying the actual written words" (Huseynova 2018: 1) and this can be a serious problem for translators as sometimes it would be impossible for them to completely understand the description of a process or a concept and, thus, correctly transfer it into the target language. This forces the translator to close these "gaps" left by the original writers, and sometimes to "take risks in interpreting that s/he may be reluctant to take" (Musacchio 2017: 54).

The distinctive features of the English medical language analysed in paragraph 1.2.1 are significant challenges for translators. Acronyms and abbreviations might not only, as already mentioned, carry different meanings, e.g. *CF* can stand for *cardiac failure*, *coagulation factor*, *cystic fibrosis* and many more phrases (Kościałkowska-Okońska 2012: 11), but they can also pose the question of whether to translate them into the target language or keep them in the original English form "in compliance to the international literature" (Magris 1992: 55). Some acronyms are already established either in their English form, e.g. *AIDS*, or in their Italian translation, e.g. *TAC*, but often translators have to deal with new acronyms and abbreviations. They can choose between keeping the English version after giving the extended English compound and its Italian translation, creating an Italian acronym or using the compound in its Italian translation throughout the whole text. It is not possible to set a rule that always works, but translators need to make every time a different choice based on audience, text type, goals of the translation, and the like.

Compounds in English are often of the noun + noun type, which may cause problems when translating if the relationship between the two elements is not clear. For example, translators need to understand whether a *treatment group* refers to a group being treated or a group that needs treatment before identifying the best rendition in the target language (Magris 1992: 53). Eponyms, as a special case of noun + (proper) noun compounds (Magris 1992: 53), present other difficulties. If eponyms are usually the same on the international level and, thus, require only the translation of the common nouns, that is not always the case and translators need to check how these concepts are named in the target language. Sometimes the proper noun has a word-class shift, e.g. from noun to adjective or vice versa (Magris 1992: 54), while other times it disappears completely (Karwacka 2015: 274-6; Kościałkowska-Okońska 2012: 10).

Translation from English into Italian requires also special attention to borrowings. If borrowings were originally taken from Latin and Greek, over the last decade the task of lending words was passed on to English (Magris 1992: 57). Scholars proposed many ways of classifying borrowings, for example, according to Hockett (1958, as cited in Hoffer 2005: 53-4), borrowings can be loanwords, loanshifts, calques, and loan-blends. In medical Italian, borrowings are mainly loanwords, i.e. foreign words transferred in the language as they are, both form and meaning (e.g. *shunt*), calques, which are item-for-

item native renditions of the foreign word (e.g. *postcarico* to translate afterload), and loan-blends, hybrid forms made of a foreign and a native element, (e.g. *colorazione post-embedding*). Translators then have to understand which terms must be left in English, which ones must be translated into Italian, and in which cases both solutions are possible and it is only a stylistic choice (Magris 1992: 58).

Other sources of problems are polysemy and synonymy. Although "monosemy" and "mononymy" are the most desired features of any terminological system, they are, unfortunately, not always present in medical LSPs (Karwacka 2015: 279). An example of an English polysemous term is *discharge*, which in Italian can mean either *secrezione* or *dimissione (dall'ospedale)*, while examples of synonyms can be found both at the expert level (see the list of all the synonyms of the term *myelofibrosis* in Magris 1992: 61) and in the "'mixture' of ordinary vs. specialist language", e.g. *collar bone* as a synonym of *clavicle* (Kościałkowska-Okońska 2012: 10). In this latter case, the choice of which term to use depends on the register and audience of the text.

As a concluding remark on the differences between English and Italian medical texts, Viezzi's analysis (1992) showed several dissimilar – and sometimes divergent – tendencies in medical writings. On the syntactic level, Italian texts tend to use more impersonal constructions if compared to English, e.g. *si consiglia riposo a letto* vs. *bed rest is indicated*. In addition, Italian sentences are usually more explicit and richer than English, but this does not mean that they are clearer: *i dati che è possibile ottenere* to translate *knowledge gained*, or *al fine di controllare le possibili cause di ansia* as a translation of *in such a stressful situation*. On the contrary, these stylistic tendencies only add non-functional elements that do not help the readers (Viezzi 1992: 53-6): such complex sentences make Italian texts usually less accessible than their English counterparts.

2. Audiovisual texts and interlingual subtitling

This chapter will discuss the second theoretical framework on which my work relies: audiovisual translation and subtitling. First, I will offer a brief overview of audiovisual texts and audiovisual translation techniques and strategies. Second, I will move on to the specific features and challenges presented by subtitling, with a focus on Netflix's requirements. In the third paragraph, I will analyse the peculiarities of the documentary genre and the difficulties of translating subtitles for this genre. Lastly, the final paragraph will be devoted to the description of the main strategies implemented in interlingual subtitles.

2.1. Audiovisual texts and audiovisual translation techniques

The term audiovisual translation (AVT) refers to "the transfer of multimodal and multimedial texts into another language and/or culture" (Pérez González 2009: 13). Audiovisual texts present several challenges, as they imply not only the same difficulties as other forms of more traditional translation, but also specific constraints related to space, time, and images (Linde and Kay 1999, as cited in Munday 2016: 279). For instance, subtitles should not be too long, so as not to hinder readability; lip-sync and voice-over should match the rhythm and length of the dialogue, and both should respect camera cuts, as the constraints placed by the images on the screen are inviolable.

Although subtitles and captions have been translated since the beginning of cinematography and intertitles in silent cinema, there has been a "dramatic" proliferation of studies in the field of audiovisual translation over the last few decades (Munday 2016: 275), due to the growing "presence of multimedia products in our daily lives" (Díaz Cintas 2003: 193). According to Díaz Cintas (2004: 50), audiovisual translation is "the most important translation activity of our time", due to the large number of people it reaches and the wide variety of products it produces, and thanks to the "immediacy of its reception". Since the 1990s, many economic, technological, and cultural factors have been the cause of this "upward trend" in audiovisual products' demands, such as the development of local and international TV channels or the diversification of TV products and transmission means (Díaz Cintas 2003: 192-3). In particular, the widespread access

to the Internet and the rise of on-demand platforms and online streaming platforms, as well as the popularity of videogames, caused a revolution in audiovisual translation and subtitling practices, giving rise to new challenges and forms, such as "fansubs" and "game localization" (Munday 2016: 286).

Many scholars in recent years have dealt with AVT and subtitling, proposing theoretical frameworks for the study of this new, ever-changing branch of translation studies and analysing various techniques and strategies that translators can implement, as I will show in the following paragraphs.

2.1.1. AV texts and translation analysis frameworks

According to the definition given by Pérez González (2009: 13), audiovisual texts are "multimodal" and "multimedial" products, as they rely on the combination of a wide range of "semiotic resources and 'modes'", such as "language, image, music, colour and perspective", and they are presented to the receiver through various media, with the screen "playing a coordinating role". Traditionally, AV texts include "films, television series, cartoons, sitcoms, soap operas and documentaries", but the recent development of the field gave rise to many more products "suitable" for this kind of translation, such as "political speeches" and "programmes [ranging from] cookery, travel, DYI, fashion, interviews, gardening [to] award ceremonies" (Díaz Cintas and Anderman 2009: 3).

Several scholars proposed various theoretical frameworks to define, describe, and analyse AV texts, especially from a translational point of view. Pioneering studies in the 1980s and early 1990s, such as the articles of Titford (1982) and Mayoral, Kelly, and Gallardo (1988), proposed a methodological approach to analyse this particular kind of "constraint translation" (Munday 2016: 276), focusing on the non-verbal constraints of AVT, while Zabalbeascoa (1993) adds the idea of "translation priorities (from a functional perspective)" (Chaume 2004: 14).

The same period saw the development of models of "textual analysis on general translation", such as Herbst's (1987), Delabastita's (1989), and Whitman's (1992). Herbst's model, focusing mainly on lip-synchronisation, is based on the concept of equivalence applied to genre, text quality, content, language variation and cultural context

of the target text, while Whitman proposes an "eclectic model" that takes into account issues related to semantics and syntax, register, pragmatics, and culture (Chaume 2004: 16). Delabastita's "groundbreaking article" (Munday 2016: 276) proposes a two-axis model based on the "verbal and non-verbal signifying codes" transmitted by the visual and acoustic channel and the operative realisations or techniques typical of Classical rhetoric (Chaume 2004: 16; Munday 2016: 276). The codes of AVT are the sign systems "that are used to produce the film's actual meaning" and are conveyed through the visual and the acoustic channel (or means), which are "simultaneously utilized" (Delabastita 1989: 196). Deabastita (1989: 196-7) identifies four main codes, namely the verbal code (an aggregate of "linguistic and paralinguistic subcodes"), the literary and theatrical codes (the narrative strategies and conventions), the proxemic and kinesic codes (related to non-verbal behaviours), and the cinematic code (rules and conventions of the cinema). What is particularly noteworthy of Delabastista's contribution is that he "avoids any simplistic verbal–non-verbal distinction", as he highlights how verbal signs can be conveyed by the acoustic channel and non-verbal signs can be transmitted by the visual channel (Munday 2016: 276).

At the turn of the 21st century, this branch of translation studies grew and more models were developed that took into consideration different aspects and different approaches, such as Discourse Analysis. For example, Agost's (1997, 1999) and Franco's works (2001) focus on the analysis of the ST's audiovisual genre in order to define its generic characteristics and thus the main problems that can arise when translating (Chaume 2004: 14). Other works had a pedagogical purpose, such as Bartrina and Espasa's (2001), who tried to analyse AV texts from the professional, technical, and ideological-cultural perspectives, which were deemed to "condition the translation operation" (15). Descriptivist works influenced other scholars, e.g. Díaz Cintas (1998) or Izard (1999), whose models focused on the translated text rather than "the perspective of its fidelity with regard to the source text" (15). Their models considered not only linguistic elements but also macro-textual and extra-linguistic factors, such as the history, economy, and society of the target culture, in which the translation process happened. A similar approach is found in the historical analysis of Ballester (2000, 2001) and Gutiérrez (1999, 2001), who dealt, among other things, also with censorship issues (15).

Other works that are worth mentioning include Karamitroglou's (2000), whose polysystemic model is based on an adaptation of Jakobson's scheme of communication and the concept of norms (15; Munday 2016: 281). In the model, four "horizontal factors" (human agents, products, recipients, and audiovisual mode) and two "vertical levels" (institutions and the market) combine into three different subsystems, i.e. the target translation system, the target audiovisual translation system, and the particular translated audiovisual text(s). This model highlights the importance of the "heterogeneous network of relations and levels that build the system" (Chaume 2004: 16) with a special focus on the macrostructural level – e.g. "political and economical agendas" (16) or the "catalytic role of the audience" (Munday 2016: 281) – rather than the microtextual level.

This is addressed instead by Taylor's (2003) multimodal transcription model (Munday 2016: 282). Taylor's analysis is a type of detailed, multi-layered table describing the AV text's elements, i.e. frames, shots and phases. Frames are described by their duration and visual presentation, shots by the components of the image and the actions and movements of the characters, phases by the dialogue and soundtrack and their metafunctional interpretation. This meticulous analytical model is useful in the translation and adaptation of the audiovisual text, for example for subtitlers who may need to "'spot' where to best locate subtitles and decide on where to omit verbal elements" (Munday 2016: 283).

Finally, an important contribution to the field was given by Chaume (2004: 13), who argued for the necessity of "the theoretical contributions of [both] Translation Studies and […] Film Studies" to the analysis of AV texts. Chaume sees audiovisual texts as the "semiotic construct" resulting from ten "signifying codes" concerning both the acoustic and the visual channels (Chaume 2004:16-22; Munday 2016: 283-6). It is important to underline how only one of these ten codes is linguistic, "a huge departure from the norm in most translation studies work" (Munday 2016: 286). To the acoustic channel, relate

- the linguistic code, whose distinguishing feature is that the written text "has to appear oral and spontaneous" (Chaume 2004: 17), which poses a significant translation challenge;

- the paralinguistic code, e.g. the "ortho-typographical uses", which in subtitling represents paralinguistic signs (Chaume 2004: 17);
- the musical code and the special effects code; and
- the sound arrangement code, concerning for example lip-synchronisation in dubbing or off-screen characters' voices in subtitling.

To the visual channel, refer instead

- the iconographic code, which is the most relevant visual code as it represents the main challenge for audiovisual translators, i.e. creating a translation that maintains coherence between the oral and visual channels;
- photographic codes, which relate both to the necessity of adjusting the subtitles' colour and the culture-specific colour associations;
- the planning code (types of shots), concerning lip-sync in close-ups or translation of important information that is not uttered;
- mobility codes, e.g. coordinating gestures and movements of the characters with their speech;
- graphic codes, concerning the problems that arise, especially in dubbing, from the representation of written language that appears on the screen; and
- syntactic codes (editing), which regard shot associations and sequence management and the need for translators to have a more comprehensive understanding of the sequence or the whole AV text to provide the best translation.

2.1.2. Communication channels and multimodality

As already pointed out by Delabastita (1989: 196), audiovisual communication "takes place [simultaneously] through two channels", the visual and the acoustic channel. Strictly connected to this duality in the communication channels is the multimodality of audiovisual texts, i.e. "the use of several semiotic modes in the design of a semiotic product or event" (Kress and Van Leeuwen 2001, as cited in Taylor 2013: 98). In linguistics and communication studies, modes or modalities refer to "resources for meaning-making that are used for representation and communication" (Kress 2010, as

cited in Ahonen 2021: 10). Even though "no text is strictly monomodal" (Torresi 2009: 8), audiovisual texts seem to be the archetypes of multimodality (Taylor 2013: 98). Several scholars have studied multimodality, especially with reference to systemic functional linguistics and semiotics and the relationship between words and images, music, and gestures. In particular, the main modalities of AV texts include a combination of pictures and sounds. Metz distinguishes five "channels of communication in the film", i.e. "moving photographic image, recorded phonetic sound, recorded noises, recorded musical sound, writing" (1974, as cited in Brewster and Hanet, 1974: 4). Ahonen's proposal (Figure 2.1) identifies two modes, the visual and the audio, and five sub-modes, i.e. pictoral, written, music, sound effects, and speech.

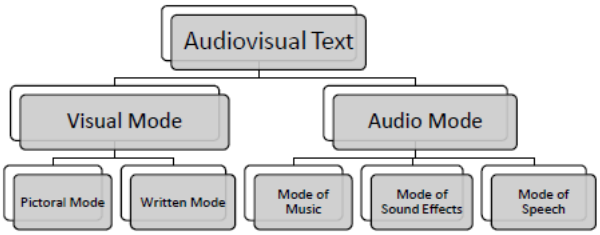


Figure 2.1: Modes and sub-modes of audiovisual texts (Ahonen 2021: 11).

Multimodality in AV texts can be the source of problems, in terms of both translation and accessibility (e.g. for visually or hearing impaired people). The reason is well explained by Jewitt (2009, as cited in Taylor 2013: 100), who says that although some things can be conveyed through images as well as words, "some others can only be realised in an image and others only in talk". Sometimes, the combined use of words and images or gestures simply reinforces the meaning, i.e. translators and writers of more accessible texts might even decide to simply leave out the translation of either one of the two modes. However, that is not always possible, as sometimes the integration between the modes extends the meaning, which might result in awkward audio descriptions for blind people or subtitling descriptions for deaf people, or difficult interlingual subtitling translation for foreign audiences. In other cases, the interplay between the modalities may instead be even helpful for translators, as it clarifies the meaning and can support the search for a more accurate translation.

Several scholars approached multimodality from a practical perspective, i.e. they created tools to help translators tackle multimodality issues. One of these tools is the

"multimodal description (MT)" proposed by Thibault in 2000 and developed by Taylor in 2003 (see paragraph 2.1.1). It is a complex table in which the translator describes, frame per frame, what happens from a visual, kinetic, and acoustic perspective. It is very versatile, as the translator can add columns if a more detailed description is required and can adapt the number of frames, i.e. the length of the intervals, to each task's purposes. Such thorough descriptions are impracticable for longer texts, thus translators should opt to analyse phases instead, i.e. "stretches of discourse which share […] consistent selection from the various semiotic systems" (Thibault 2000, as cited in Taylor 2013: 103). MT proved to be a helpful instrument to establish "where the meaning [is] created in a multimodal text", as it allows translators to clearly understand whether modes other than speech convey that meaning. As Taylor himself highlights (Munday 2016: 283), the role of the non-verbal material is essential in creating meaning, especially "the interpersonal component [which] is carried largely by the voice prosodies and the kinesic action". Subtitlers, in particular, need to carefully consider all the multiple connections between the different semiotic systems to understand when "condensation and reduction strategies" can be implemented (Ahonen 2021: 12).

2.1.3. AVT: activities, techniques, and issues

The definition of audiovisual translation encompasses a wider range of activities than what is usually associated with it. Gambier (2003, as cited in Munday 2016: 278) proposes this classification of the different kinds of audiovisual activities:

- interlingual subtitling, maybe one of the most studied activities by scholars and also the focus of this work, "is one of the two dominant forms of film translation" (Pérez González 2009: 17), mostly in countries like The Netherlands, the Scandinavian countries, Portugal, or Greece (Díaz Cintas 2003: 196);
- bilingual subtitling, which is typical of areas characterised by diglossia, such as Belgium;
- intralingual subtitling, i.e. captions for deaf and hard-of-hearing people;
- dubbing, or lip-sync, is the second dominant form, preferred in countries such as Italy, Spain, Germany, or France (Díaz Cintas 2003: 195);

- voice-over, which is mainly used in documentaries and interviews;
- surtitling, i.e. subtitles used in theatres and opera houses;
- audio description, i.e. an "intralingual audio commentary" (Munday 2016: 278) for the visually impaired.

AVT encompasses both some subtitling and revoicing practices. These practices are not one "inherently superior" to the other, as they all present advantages, costs, and constraints and viewers "tend to prefer the mode they are used to, and are critical of alternatives" (Schröter 2003: 105). Even though scholars do not agree on a single definition of revoicing, this term technically comprises "a range of oral language transfer procedures" (Pérez González 2009: 16) including voice-over, narration, audio description, free commentary, simultaneous interpreting, and lip-sync dubbing. However, in practice, lip-sync dubbing tends to be considered a practice per se. While the other revoicing practices are, if not cheap, not that expensive, the same does not apply to dubbing. It implies greater production costs, as it requires the work of many experts from different fields: in addition to translators, who transfer the ST into the target language, "dubbing writers" work on adapting the translated text so that it matches the lip movements of the on-screen actors. Dubbing actors, finally, re-record the dialogues and scenes "under the supervision of a dubbing director and a sound engineer" (Pérez González 2009: 16).

Subtitles are instead "snippets of written text […] superimposed on the visual footage […] while an audiovisual text is projected, played or broadcast" (Pérez González 2009: 14). In recent years, the subtitling process became easier thanks to new technologies and software that allow subtitlers to complete the entire project, from the translation "to the actual transference of subtitles onto the text" (Pérez González 2009:: 15). Interlingual subtitles are a rather cheap and fast form of AVT, even though subtitlers have to face and work under several constraints, connected mainly with time, space, and the "synchronous alignment between spoken sound and written subtitles" (Pérez González 2009: 16), which will be analysed in further detail over the next paragraphs. Although stylistic and linguistic requirements vary according to genres, there are some general "guidelines" that can prove to be helpful for subtitlers (Díaz Cintas and Remael 2007: 63-4), such as simplifying and cleaning up grammar, lexical items, and interactional features, so that the

most important features of speech are not lost in subtitles that are not "illegible and exceedingly long".

2.2. Challenges of interlingual subtitling

Interlingual subtitling is maybe the most prolific field of research in audiovisual translation studies. Gottlieb (1994: 104) defines this practice as "a form of 'diagonal translation'", in the sense that it implies not only the rendering of the source text in the target language but also the transposition of orality into written text. This is in contrast to the usual "'horizontal' transfer" forms, such as interpreting and interlingual translation, where the language changes, but the medium or communication channel does not (Munday 2016: 277).

2.2.1. General features of subtitling

Subtitling is a complex process in which it is necessary to consider all the different factors and elements involved and their interplay. Díaz Cintas and Remael (2007: 8) define subtitling as

> a translation practice that consists of presenting a written text, generally on the lower part of the screen, that endeavours to recount the original dialogue of the speakers, as well as the discursive elements that appear in the image (letters, inserts, graffiti, inscriptions, placards, and the like), and the information that is contained on the soundtrack (songs, voices off).

Luyken et al. (1991in Georgakopoulou 2009: 21) add that

> subtitles appear and disappear to coincide in time with the corresponding portion of the original dialogue and are almost always added to the screen image at a later date as a post-production activity.

To create a subtitled product, subtitlers need to take into account not only the spoken words, the images, and the subtitles themselves but also the size of the subtitles and the reading speed of the viewers. Subtitles must fulfil mainly three requirements, i.e. the semantic adequacy of the ST rendition, the synchrony with the spoken dialogue and the images, and the display on screen for an amount of time that allows viewers to read them (Díaz Cintas and Remael 2007: 9).

Gottlieb (1994) proposes a classification of subtitling by expanding Jakobson's categorisation of translation. In 1959, the Russo-American linguist distinguishes three types of translation, namely:

> (1) intralingual translation, or 'rewording' – 'an interpretation of verbal signs by means of other signs of the same language'
> (2) interlingual translation, or 'translation proper' – 'an interpretation of verbal signs by means of some other language'
> (3) intersemiotic translation, or 'transmutation' – 'an interpretation of verbal signs by means of signs of non-verbal systems'. (Munday 2016: 9).

Gottlieb (1994: 105) argues that subtitling is to be considered a form of "intrasemiotic translation", as it conveys the same meaning within the confines of the verbal sign systems, if only a different one (speech to written text), but not all scholar agree. For example, Taylor (2004: 157) defines subtitling as an intersemiotic translation, as he considers the interplay (images, music, words) and change of modalities (e.g. from visual to written language) that occur between the ST and the TT. Chiaro (2009: 142) defines them as "polysemiotic", as they are "made up of numerous codes that interact to produce a single effect".

What scholars do agree on is that subtitles, being written texts, differ inherently from the spoken language they translate or reproduce. As Gottlieb (1994: 105-6) explains, these differences concern:

- the implicit language and knowledge shared by speakers in direct contact with each other in spoken interactions as opposed to the need to explain or make things explicit in writing, as the reader is not present;
- the different "aesthetic norms", i.e. different understandings of what is to be considered correct/incorrect or formal/informal;
- the typical features of spontaneous speech, such as pauses, false starts, self-corrections, interruptions, unfinished sentences, grammatically incorrect constructions, self-contradictions, ambiguities and nonsense, and people talking over one another;
- the dialectal, sociolectal, or idiolectal features of some speakers, or some pronunciations, which cannot be fully transcribed in writing.

Considering all these elements at stake and the diagonal nature of subtitling translation, to assess the quality of a subtitled product it is necessary to know the "co-text and context" of the original, i.e. not only what is said, but also how and what is being done (Díaz Cintas 2004: 53). AV texts' multimodality implies the examination of "the degree to which the subtitled version *as a whole* manages to convey the semantic gestalt of the original" (Gottlieb 1994: 106) to evaluate the adequacy of the subtitle translation.

Subtitles can be classified according to different criteria, i.e. linguistic parameters, time available for preparation, technical parameters, methods of projection, and distribution formats (Díaz Cintas and Remael 2007: 13-25). From a linguistic perspective, subtitles can be divided into intralingual, interlingual, and bilingual subtitles. Intralingual subtitles can be used for a variety of purposes, such as the visual description for the deaf and hard-of-hearing (SDH), for language learning purposes, karaoke, dialects of the same language or notices and announcements. Interlingual subtitles can be both for hearing people and the deaf and hard-of-hearing. Bilingual subtitles are used in places where two languages are spoken. Based on the time available for preparation, it is possible to distinguish between pre-prepared subtitles (offline) and live or real-time subtitles (online). Offline subtitles can have different lexical densities, i.e. there can be subtitles in complete sentences or reduced subtitles. Online subtitles, instead, can be human-made or machine-translated. Technical parameters concern the availability of the subtitles to the viewers, i.e. open or closed subtitles. Open subtitles are embedded in the AV product and cannot be hidden, while closed subtitles (or closed captions, CC) can be added at the viewer's will. Subtitles can be projected through different methods, which have developed over the decades. The first methods were mechanical and thermal subtitling, photochemical subtitling, and optical subtitling, while the most recent and used nowadays are laser subtitling and electronic subtitling. The main difference between them is that laser subtitles are engraved, i.e. impressed, on the copy, while electronic subtitles are superimposed, thus they do not damage the copy. Even though laser subtitles are precise and excellent defined, this method is quite expensive and quite long to implement. Finally, subtitles can be categorised according to their distribution format, i.e. the cinema, the television, video and VHS, DVD, and the Internet.

2.2.2. Space limits

One of the main issues in subtitling concerns the spatial dimension, i.e. the positioning, length, and layout of the subtitles. Although there are no fixed rules, as everything depends on the medium and company or the client's guidelines, in more recent times, some common trends and uniform approaches have developed, as analysed by Díaz Cintas and Remael (2007: 23-35, 82-88). The question of space is a key problem in subtitling, due to the interplay between written text and images: the subtitles should be visible enough to not hinder readability, but should not take up more space than necessary to not obstruct the images on the screen. Visibility and readability are affected by different factors, such as layout, position, length, font size and type, and the number of characters.

As there are no standardised rules, Díaz Cintas and Remael (2007) offered an overview of the most established trends in the different media. Interlingual subtitles are generally limited to two lines, so as not to occupy too much of the screen. Differences can be found in SDH, in which they may occupy more than two lines, or bilingual subtitles, which sometimes can use up to four lines. Being "of lesser importance to the action" (Díaz Cintas and Remael 2007: 82), subtitles are usually positioned at the bottom of the screen. They can, however, be moved to the top of the screen if necessary, e.g. if the background at the bottom is too light, if there is some important action at the bottom of the screen, or if some data are displayed there, such as information about the speaker or other subtitles. In particular cases, they can be moved to the middle of the screen, but this should be the worst-case scenario. In the case of light background, another option is to enclose the subtitles in a grey or black box. In the past, TV subtitles were left-aligned, but now they tend to be usually centre-aligned, like in cinemas and DVDs. Centre-aligned subtitles were preferred in cinemas because, on such big screens, left-aligned subtitles would have been too far from the viewers sitting on the right side. In addition, centre-aligned subtitles require the eyes to travel less from image to text.

In general, subtitles should not be too long, because they quickly disappear, which implies that they should be easy and quick to read. Thus, if a subtitle can fit in only one line, it should be preferable not to split it into two lines, to prevent the eyes to travel from the first to the second line. However, long lines as well force the eyes to travel far and, especially with centre-aligned subtitles, aesthetic reasons might convince companies to

opt for two shorter lines of the same length. Even scholars do not always agree: for example, Lomheim (1999 as cited in Díaz Cintas and Remael 2007: 93) thinks that one-line subtitles are easier to read, whereas Ivarsson and Carroll claim that "viewers need proportionally more time to read short subtitles than longer ones" (1998, as cited in Díaz Cintas and Remael 2007: 93). Brondeel, too, prefers two-liners, arguing that they "offer the viewer more 'reading comfort'" (1994, as cited in Díaz Cintas and Remael 2007: 93), as they require only one onset. In the case of two-lined subtitles, though, another problem arises, i.e. line-breaking. Aesthetically speaking, most companies prefer to keep the top line shorter than the second one, but this is not always possible due to linguistic and grammatical motives. Subtitles should be split following sense blocks, punctuation marks, or new clauses. Companies usually provide subtitlers with guidelines and examples of how to behave in different situations.

Another issue particularly relevant to subtitling and connected to length is the number of characters. The maximum of characters allowed per line and per frame usually depends on the medium and screen used. Although the concept is nowadays becoming "blurred" (Díaz Cintas and Remael 2007: 84) due to the widespread trend of calculating text on the screen in pixels instead of characters, many companies still provide instructions using the latter unit of measure. Line length varies according to the alphabet and the screen through which the product is going to be viewed, e.g. there are usually 37 characters including spaces of the Roman alphabet per line on television subtitles, 40 on DVD subtitles, and up to 41 on cinema subtitles. This might depend on the fact that viewers can read more easily on cinema screens, thanks to their larger size, the "greater concentration that movie theatres afford viewers", or even the cultural profile of such viewers (Díaz Cintas and Remael 2007: 24). When using DVD, on the other side, it is possible to rewind the video and read again the missed subtitle(s); moreover, DVD viewers usually use subtitles as a way to improve their language skills and thus prefer translations closer to the original. The size of the font varies, and usually, black-outlined white fonts without serifs, such as Arial or Helvetica, are preferred.

2.2.3. Time constraints

Subtitles cannot stay indefinitely on screen, they need instead to be timed precisely and synchronised with the dialogues and cuts in such a way that the viewers have enough time to read them. This process is called "spotting", "timing", or "cueing" (Díaz Cintas and Remael 2007: 88) and depends on several spatial and temporal parameters. First, subtitles need to follow the pauses and other prosodic features of the original spoken text and their appearance and disappearance should be synchronised with characters' dialogues and shot changes, as "accurate timing […] reinforces the internal cohesion of the translated programme" and helps the viewers understand who says what (Díaz Cintas and Remael 2007: 90). Unfortunately, this is not always possible nor easy, e.g. in semantically dense dialogues, voices overlapping, or sound bridges (when actors still speak during a shot change). On such occasions, subtitlers have some flexibility and can spot the subtitles with a certain degree of asynchrony from the voices, e.g. have them appear or disappear a couple of frames before or after the actors' line, or leave them crossing over a shot change.

Second, subtitles need to be displayed for as much time as necessary for the viewers to read them and disappear shortly afterwards to impede rereading. For this reason, they should stay on screen for at least one second, to avoid "flashing subtitles" (Díaz Cintas and Remael 2007: 89), and, in the case of longer subtitles, last a maximum of six seconds. Thus if, as it happens, characters' lines last for more than six seconds, the corresponding subtitle events should be split into smaller units. In the case of utterances shorter than one second, they could be either projected with the preceding or the following line or, if not possible because surrounded by pauses, allow for some "asynchrony at the onset and the outset of the subtitles" (Díaz Cintas and Remael 2007: 90).

To help subtitlers spot their translations, subtitling programmes are equipped with essential features calculating automatically the number of characters per line, per second or frame, the reading speed, and sometimes even creating a small pause after the outset of the subtitle, to help the viewer's eyes realise that another subtitle has been projected (automatic delay function). The main help is provided by timecodes, which were implemented in the 1970s and further developed throughout the 1980s, substituting stopwatches. Timecodes are an "8-digit figure [assigned] to every single frame of the film

or programme" (Díaz Cintas and Remael 2007: 93) that indicate the hour, minute, second and frame of each frame of the AV text.

2.2.4. The issue of readability

Readability and reading time are probably the main issues in subtitling, as subtitles are one of the main three elements of AV text and possibly the channel through which the most information is conveyed. Reading speed and reading time are not fixed measures, but depend on the medium, the viewer, and their familiarity with subtitling. For instance, the reading speed applied to TV subtitles is usually slower, "the reason being that the profile of the television viewer is, in general, more heterogeneous and the subtitles have to satisfy all viewers" (Díaz Cintas and Remael 2007: 24). The guidelines for subtitling TV programmes implemented by the Italian national public service media company RAI provide that, for example, in a 5-second subtitling event – i.e. 125 frames – can fit a maximum of 74 characters including spaces; this time must have a 30% increase in case of child programmes (RAI 2021: 4-5). In all media, though, it must be considered that subtitles are not "mere reading exercise[s]", as meaning is made through "multiple information channels" (Lång 2016: 60), such as an audio track and the moving images, which require some time to be fully "read" by the viewers. As Chiaro (2009: 148) states, subtitles should be shorter than the audio because viewers need time to read the captions "while at the same time remaining unaware that [they are] actually reading", so that they have the chance to "read, watch and, hopefully, enjoy the film".

Adequate readability can be ensured linguistically, e.g. by condensing the original dialogue or avoiding over-complicated syntactic constructions and obscure lexical items, and through "more technical" expedients, e.g. presenting the information at a lower speed. Reading speed, as already mentioned, is not standardised, but it is possible to make some generalisations. For example, according to D'Ydewalle et al. (1987, as cited in Díaz Cintas and Remael 2007: 23) and Brondeel (1994, as cited in Díaz Cintas and Remael 2007: 96), it is possible to apply the so-called "six-second rule", which states that an average viewer can read two full subtitles lines, i.e. around 74 characters, in six seconds. This rule is based on a rather low reading speed (145 words per minute) and some companies nowadays have increased it to 160 words per minute, which implies a total of

78 characters in six seconds (two lines of 39 characters). In DVD, companies nowadays usually opt for an even higher reading speed, i.e. 180 words per minute (for more details, see Díaz Cintas and Remael 2007: 97-9 and their "Equivalence tables" between seconds/frames and spaces below). It is important to remember that these measures are approximate values and that each company sets its guidelines.

145 words per minute		Seconds : frames	Spaces	Seconds : frames	Spaces
		01:00	16	02:00	29
		01:04	17	02:04	32
		01:08	18	02:08	34
		01:12	20	02:12	36
		01:16	23	02:16	38
		01:20	25	02:20	40
Seconds : frames	**Spaces**	**Seconds : frames**	**Spaces**	**Seconds : frames**	**Spaces**
03:00	44	04:00	58	05:00	70
03:04	46	04:04	60	05:04	71
03:08	48	04:08	62	05:08	72
03:12	50	04:12	64	05:12	73
03:16	52	04:16	65	05:16	73
03:20	54	04:20	67	05:20	74
				06:00	74

Figure 2.2: Equivalence table between seconds/frames and spaces in case of 145 words per minute (Díaz Cintas and Remael 2007: 97).

160 words per minute		Seconds : frames	Spaces	Seconds : frames	Spaces
		01:00	17	02:00	31
		01:04	18	02:04	34
		01:08	20	02:08	37
		01:12	23	02:12	40
		01:16	26	02:16	42
		01:20	28	02:20	44
Seconds : frames	**Spaces**	**Seconds : frames**	**Spaces**	**Seconds : frames**	**Spaces**
03:00	48	04:00	63	05:00	75
03:04	50	04:04	65	05:04	75
03:08	53	04:08	67	05:08	76
03:12	56	04:12	69	05:12	76
03:16	58	04:16	71	05:16	77
03:20	60	04:20	73	05:20	77
				06:00	78

Figure 2.3: Equivalence table between seconds/frames and spaces in case of 160 words per minute (Díaz Cintas and Remael 2007: 98).

180 words per minute		Seconds : frames	Spaces	Seconds : frames	Spaces
		01:00	17	02:00	35
		01:04	20	02:04	37
		01:08	23	02:08	39
		01:12	26	02:12	43
		01:16	28	02:16	45
		01:20	30	02:20	49
Seconds : frames	**Spaces**	**Seconds : frames**	**Spaces**	**Seconds : frames**	**Spaces**
03:00	53	04:00	70	05:00	78
03:04	55	04:04	73	05:04	78
03:08	57	04:08	76	05:08	78
03:12	62	04:12	76	05:12	78
03:16	65	04:16	77	05:16	78
03:20	68	04:20	77	05:20	78
				06:00	78

Figure 2.4: Equivalence table between seconds/frames and spaces in case of 180 words per minute (Díaz Cintas and Remael 2007: 99).

2.2.5. Netflix standards

In this paragraph, both the General Requirements and the English and Italian guidelines found in Netflix's Timed Text Style Guide will be analysed. On Netflix, subtitles should be centre-aligned and placed either at the bottom or at the top of the screen to prevent any overlapping with onscreen text. If overlapping is unavoidable, the text should be positioned where it is easier to read. There can be a maximum of two lines per subtitle and a maximum of 42 characters per line, for both English and Italian, and, in the case of multiple speakers, only one speaker per line. According to Netflix's general rule, "[t]ext should usually be kept to one line unless it exceeds the character limitation" and two-liners should be shaped like a "bottom-heavy pyramid", with the top line including more than two words (Netflix English TTSG). Any subtitle event must last between 5/6 and 7 seconds; reading speed is set at 20 characters per second (CPS) for English adult programmes and 17 CPS for English children's programmes, and at 17 and 13 CPS for Italian adult and children's programmes, respectively. However, in the case of SDH, the reading speed can be increased to, respectively, 20 and 17 CPS also in Italian.

2.3. Translating documentary subtitles

Translating documentary subtitles implies knowing the norms and conventions of the documentary genre, as well as respecting the audiences' assumptions and expectations.

2.3.1. Features of documentaries

The definition of the genre "documentary" is particularly problematic, as there is not "a single set of shared characteristics" among all the products defined as documentaries (Nichols 2001: 21). Documentaries are connected with the "*representation* of the world we already occupy" and in this sense, they stand "for a particular view of the world" (Nichols 2001: 20). As definitions, in general, tend to change over time to mirror new evolutions and perspectives, it might be better to use "prototypes" or examples, which present features that it is possible to consider as typical of documentaries but do not set requirements that all documentaries should fulfil. According to Nichols (2001: 22), it is

possible to approach the definition of documentaries from four perspectives, i.e. "institutions, practitioners, texts (films and videos), and audience".

Institutions play an important role in defining documentaries because of the assumptions viewers make when knowing who produced or sponsored them. In this sense, institutions are the context in which an AV text is created, e.g. a news program on CBS or a show on Discovery Channel, and this gives information about its objectivity or credibility in the light of the institution's activity and the conventions and requirements they set. Although it might seem circular, a text can be defined as a documentary if its creators label it as such. This institutional approach based on the expectations viewers have of such institutions "achieves a clarity […] that implies [a] direct, truthful access to the real" (Nichols 2001: 24), although it does not allow a further investigation of the relationship between reality and its representation offered by such documentaries.

Practitioners, i.e. the people who make documentaries, do not necessarily have the same methods, approaches, or perspectives, but they do share "a common, self-chosen mandate to represent the historical world" (Nichols 2001: 25) and a language, which includes the jargon, the terminology, and the techniques implemented. They share (ethical) problems that are different from those faced by other filmmakers. They do not have to respect the institutions' rules and limits – and sometimes the tension between them is the cause of innovation and change in the industry. This push towards change is one of the elements that make defining documentaries such a complex process because documentaries change and evolve as "those who make [them] change their idea of what is they make" (Nichols 2001: 26).

Another way to understand what documentaries are is by analysing the corpus of texts labelled as documentaries searching for common features, techniques, and approaches. Documentaries, like all genres, have gone through different trends and movements as well as phases and periods. The members of a movement "share a common outlook or approach" (Nichols 2001: 32), thus texts that belong to the same movement offer similar perspectives on the issues that are considered important to tackle. Periodisation, too, helps to find a definition and identify the features that distinguish documentaries from other genres (and documentaries of other periods), as the definition of documentaries is always considered "relational or comparative" (Nichols 2001: 20).

For example, the 1960s were characterised by the invention of hand-held cameras used with synchronous sound, while the 1970s saw increased use of archival film material and interviews. Nichols (2001: 33-4) also offers a categorisation of documentaries modes, namely:

- poetic mode, in which visual associations, descriptive passages, tonal or rhythmic qualities, and formal organisation are emphasised;
- expository mode, which is what most people associate with documentary as a genre, as it focuses on verbal commentary and argumentative logic;
- observational mode, in which there is a direct engagement with the observed subjects;
- participatory mode, characterised by interviews and other forms of interaction between the author and the subject;
- reflexive mode, which focuses on documentary-making and the conventions and assumptions made about it;
- performative mode, which rejects notions of objectivity in favour of the emphasis on the filmmaker's expressivity.

Modes are characterised by shared techniques and features, but elements of different modes can intermingle in a single product.

Lastly, it is possible to define documentaries in relation to their audience and their assumptions, as "the sense that a film is a documentary lies in the mind of the beholder as much as it lies in the film's context or structure" (Nichols 2001: 35). The main assumption is that documentaries come from the observation and replication of the real world, and the camera is the symbol of that. Audiences expect a "reportorial balance", i.e. they assume that documentaries do not take sides, but present, instead, all the viewpoints on the topic discussed (Nichols 2001: 26). However, this assumption must be challenged because documentaries do not replicate reality, no matter how close to it they appear to be. Every film offers a representation of the world, created to support the author's claim or perspective, so the "indexical relationship" that recorded images and sounds have with the (actual) elements must be carefully examined. Audiences also have "a desire to know" (Nichols 2001: 40) and expect documentaries to teach them something

new or to persuade them of "possibilities that pertain to the historical world" (Nichols 2001: 39).

Nichols (2001: 34) identified also some of the norms and conventions that characterise documentaries as a genre, i.e. "an organizing logic, evidentiary editing, and a prominent role for speech directed at the viewer". First, documentaries rely usually on an informing logic to structure their information. Organising the text in this way supports "an underlying argument, assertion or claim about the historical world" (Nichols 2001: 27). For example, they can arrange their text according to a problem-solving structure or focus on the effects and results. Second, information is presented not necessarily as part of a narrative, but more as evidence and proof for what the documentary-maker is claiming. Cutaways to interviews, places, and things are shown to support the author's perspective and "a logic of implication bridges these leaps" (Nichols 2001: 29). Third, contrary to fictional pieces, which rely mainly on images, "documentaries rely heavily on the spoken word" (Nichols 2001: 30-1), i.e. soundtrack, social actors' dialogues, interviews, and voice-over commentaries.

2.3.2. Challenges of translating documentaries

In her corpus-based analysis, Matamala (2009) addressed the main challenges encountered by translators when working on documentaries, with a particular focus on terminology. Some of the problems she identified do not concern exclusively documentary translation, but she argues that documentaries as AV texts have some features that make these issues all the more relevant. Some strategies and techniques cannot be used due to the relationship with the visual elements (e.g. omission), or because of the "ephemeral nature" of audiovisual communication (e.g. footnotes) (Matamala 2009: 101). In addition, both the oral (dubbing and voice-over) and the written transfer modes (subtitling) present even more specific constraints.

The first issue documentary translators face is the wide range of subjects and topics they will have to work on, which include nature, science, history, art, and politics. This practice is then a peculiar kind of specialised translation, as it is specialised because of the communication channel and mode rather than the topic: translating documentaries

means having to deal with "almost any topic and, therefore, audiovisual translators must be ready to find information about almost anything" (Matamala 2009: 95).

Second, documentaries are usually polyphonic products. The aforementioned essential "spoken word" is conveyed in various ways, namely, through a generally off-screen narrator, interviewees or "talking heads" (Matamala 2009: 96), re-enacting actors, or spontaneous dialogues and archival footage. Each voice fulfils specific purposes – i.e. the narrator makes the whole documentary coherent – and is usually to be translated with a different technique or "transfer mode" (Matamala 2009: 95). Generally, off-screen narrators are off-screen dubbed in the target language, interviewees are transferred using voice-over, and dialogues and archival footage can be subtitled (or revoiced). Each mode presents different challenges, mostly related to synchronisation issues.

Concerning subtitling documentaries, Díaz Cintas and Remael (2007) identified some specific challenges. Both scripted and unscripted speech present problems, the former due to its "heavy information load" (Díaz Cintas and Remael 2007: 64), the latter because of the typical features of oral speech, e.g. hesitations, self-corrections, or unfinished sentences. Moreover, subtitlers must act as an "intermediary" between the interviewees and the audience (Reid 1996, as cited in Díaz Cintas and Remael 2007: 64), as interviewees might speak poor English or sometimes provide answers counting on the interviewer's knowledge, e.g. using specialised vocabulary or taking for granted some background knowledge that the audience might not possess. In these situations, the role of the subtitler becomes particularly important, as the viewers cannot – usually – count on images during interviews.

Finally, the language register used in documentaries appears to be the source of additional challenges. In the Hallidayan model of language (Munday 2016: 144), the register comprises three elements, i.e. mode, tenor, and field. The mode is "the form of communication", the tenor concerns "who is communicating and to whom", and the field is "what is being written about". As AV texts, documentaries are inherently multimodal, relying mainly on oral speech and images. Speeches must be rendered in the target language either orally or through subtitles, while visual elements should be left "unaltered, except for all meaningful written language", which is usually translated in subtitles (Matamala 2009: 98). Concerning their tenor, documentaries are an example of

expert-to-lay communication and tend to adopt a formal language, even though they are an "evolving filming product" (Matamala 2009: 103) and, as such, they have undergone several innovations and might present today examples of colloquialisms and less formal utterances. Deciding whether to represent the different tenors faithfully or adapt them to the target language and mode is a challenge for translators. The field is one of the main issues for documentary translators, as already mentioned, because of the wide range of topics discussed. Even though the language is usually "not highly technical", topic-specific terminology is frequently used and poses several challenges for translators in terms of "equivalence, usage […], absence of terminology, and ambiguity" (Matamala 2009: 99). Equivalence can be a problem, as it might be difficult to find the right equivalent in the target language. Usage refers to the dichotomy proposed by Cabré (1999, as cited in Matamala 2009: 99), i.e. terminology *in vitro* vs. *in vivo*. This means that translators sometimes face the problem of choosing whether to use the equivalents proposed in terminological works of the target language and the terms actually used by the experts in the field. Another problem is when equivalents in the target language are missing (or cannot be found), as translators might even have to create new terminology. Other times, the equivalent might be ambiguous or obscure to the audience. In the next paragraph, the main solutions used by translators will be discussed.

2.3.3. Strategies and solutions

Documentary translators have to face various challenges and might resort to "explicitation, explanation and even interpretation" strategies to better transfer the source text to their target audience (Díaz Cintas and Remael 2007: 64). This can happen when translating (and, sometimes, summarising) both information-dense voice-over commentaries and, especially, unscripted interviews with experts, characterised by the typical features of spoken language and by potentially unknown background knowledge.

In another paper, Matamala (2010) analyses some of the main strategies used by documentary translators, especially when confronted with terminological challenges. After having identified the term in the source text, a task that might not be as straightforward as it appears because, sometimes, field-specific terms coincide with general language words, translators need to make sure that they have understood it

correctly. In this case, the audiovisual nature of documentaries can be an advantage, as the images can provide helpful insights. To find the right equivalent, then, translators can rely on mono and multilingual terminological databases and specialised dictionaries.

However, sometimes, it happens that translators cannot find the right equivalent, for various reasons, ranging from lack of time to the absence of such term in the target language. According to Matamala (2010), translators can implement different strategies to overcome this obstacle, from paraphrasing the sentence or the whole paragraph, to creating a new term following the same language mechanisms of general language, e.g. "pre-fixation, analogy, and blending" (Matamala 2010: 266). Sometimes, they can use hypernyms or opt for "leav[ing] the term in the original language as a loanword" (Matamala 2010: 263).

Other times, the target language not only has a right equivalent but even two or more acceptable options. A common example is given by the previously mentioned *in vitro* vs. *in vivo* terminology phenomenon. When this happens, translators are forced to choose which one is the most appropriate, carefully considering each time the different factors at stake, e.g. the target audience or the register used, and the potential effects, as translators play a key role and their decisions have also "linguistic consequences" (Matamala 2010: 268).

2.4. Strategies in interlingual subtitling

Translating subtitles is a "complex process" (Blini and Bon 1996: 319) that comprises at least three different operations, i.e. translating the source text into another language, adapting it to the spatial and temporal constraints of subtitles, and switching modality, from the original oral speech to the target written text. A practice-oriented definition of interlingual subtitling was proposed by Gottlieb in 2000 (as cited in Taylor 2004: 157-8; cf. Chiaro 2009: 148), i.e. "subtitling consists in the rendering in a different language of verbal messages in filmic media in the shape of one or more lines of written text presented on the screen in sync with the original verbal message". This makes subtitles a possibly unique form of translation, as they are "added" to the source text, rather than "substituting" it (Chiaro 2009: 151). In addition, this puts subtitles (and subtitlers) in a

difficult, even "vulnerable" situation. As explained by several scholars, "[n]ot only must the subtitles respect space and time constraints, they must also stand up to the scrutiny of an audience that may have some knowledge of the original language" (Díaz Cintas and Remael 2007: 57) but is "unaware of how the subtitler's work is conditioned by media-related constraints" (Pérez González 2009: 16). Even though interlingual subtitling has been criticised also for its interference with the images and the cognitive effort it requires from the viewer, it represents a cheaper and faster AVT technique compared to dubbing and can lead to improvement in the viewer's language skills, especially in their listening skills (Danan 2004: 76).

Translating subtitles implies taking into account all the technical constraints analysed in the previous paragraphs and other more linguistic and textual, turning them into a "'series of balancing acts' between reading time, translation equivalence and synchronicity, […] conformity to both the programme's aims and the audience's needs" (Ghia 2012: 163). As there is not a "one-fits-all" solution to convey the meaning of the ST to the viewers in the most effective, accessible, and enjoyable possible way, translators must thoroughly analyse each issue based on different factors, such as:

- Function (relevance to the plot).
- Connotation (implied information, if applicable).
- Target audience's assumed knowledge of the language and culture of the source language programme.
- Feedback effect.
- Media related constraints. (Georgakopoulou 2009: 29).

Translators and subtitlers can implement a wide array of strategies, classified by scholars in different ways and with varying levels of precision. For example, Gottlieb (1992) identified ten strategies – i.e. extension, paraphrase, transfer, imitation, transcription, dislocation, condensation, decimation, deletion, and resignation – while Schjoldager (2008) indicated 12 – direct transfer, calque, direct translation, oblique translation, explicitation, paraphrase, condensation, adaptation, addition, deletion, substitution, and permutation (Khalaf 2016: 128). In this final paragraph of the chapter, however, I will focus only on the most general and widespread strategies used in interlingual subtitles translation.

2.4.1. Reduction

The most common practice adopted by subtitlers is the simplification of the ST by omitting or condensing "superfluous" elements, especially for temporal, spatial, and synchronization constraints (Ghia 2012: 163). Antonini (2005, as cited in Chiaro 2009: 148) calculated that the number of words in the original dialogues can be reduced even by "between 40 and 75 per cent". Scholars have given this process many names, such as total and partial reduction, elimination, omission, simplification, and condensation. In this paper, the term reduction will be used, but also inputs from scholars who used other names will be taken into account.

According to Kovačič (1994, as cited in Ghia 2012), there can be two types of reduction, namely total reduction – i.e. elimination or omission – and partial reduction – i.e. condensation. Total reduction refers to the "deletion of linguistic information which is generally deemed as not necessary for general comprehension and easily retrievable from context" or because concerns the form rather than the meaning. Partial reduction, on the other hand, "is achieved through condensation strategies and is mainly a syntactic phenomenon" (Ghia 2012: 163), which means that the original syntax is simplified and fragmented "so as to promote comfortable reading" (Chiaro 2009: 148). Reduction cannot be applied indiscriminately, as the elements of the text fulfil different purposes and functions. Kovačič (1991 as cited in Georgakopoulou 2009: 27) classifies the different elements of the text into:

- The indispensable elements (that must be translated).
- The partly dispensable elements (that can be condensed).
- The dispensable elements (that can be omitted).

The elements most relevant to the plot cannot be left out, as this would prevent the viewers from understanding, whereas the partly dispensable and dispensable elements can be omitted or condensed either because they concern the form rather than the meaning or they can be retrieved from the multimodal context, i.e. soundtrack (in subtitles for hearers) and visual images. This operation is based on subjective and personal considerations, which requires the subtitlers to have a thorough analysis and profound comprehension of the movie's "narrative mechanisms" (Blini and Bon 1996: 322, my translation). The omitted or condensed elements usually fulfil pragmatic or interactional

functions typical of the spoken speech that can be difficult to translate in written form, and their deletion implies "loss and variation along three dimensions: a) the pragmatic–affective component of meaning, b) the dimension of orality, and c) the sociolinguistic level" (Ghia 2012: 163-4). Subtitlers are not expected to produce a transcription of the original spoken text but they should try to reduce these kinds of losses by recreating a (written) text that keeps sufficient features of the spoken dialogue to be "associated to the images without any distortion" (Blini and Bon 1996: 329, my translation).

The linguistic elements that are usually eliminated are, for example, repetitions, false starts, exclamations, phatic words, hesitations, redundancies, ungrammatical constructions, or expressions followed by gestures, such as a nod of the hand or the waving of a hand (Georgakopoulou 2009, Chiaro 2009). However, sometimes these are not completely omitted, but rather condensed, as they can fulfil some communicative purposes or carry some sort of connotations, e.g. repetitions can mean either exasperation or a sense of urgency and ungrammatical expressions can be distinctive of some characters.

2.4.2. Cultural explicitation and chunking

According to Klaudy's classification (1996, 1998, 1999, as cited in Perego 2003), there are four types of explicitation, i.e. obligatory, optional, pragmatic, and translation-inherent. Obligatory explicitation depends on the "differences in the morphological, syntactic and/or semantic structure between languages", while optional explicitation is determined by the stylistic choices of the translators while trying to create "natural, native-like sentences" (Perego 2003: 69). Pragmatic explicitation is, on the other hand, "extra-linguistic in nature" (Perego 2004c: 146) and is what Perego (2003: 70) defines as cultural explicitation, i.e. the necessity to fill "possible cultural gaps" by making explicit concepts or information taken for granted in the ST. Finally, translation-inherent explicitation refers to the reconceptualisation of thoughts and ideas in the target language.

As films and other AV texts are rich in cultural references that might not always be clear or entirely understandable to the audience, pragmatic or cultural explicitation is one of the most common practices in subtitling. As already discussed, in some cases the

multimodal nature of AVT helps the viewers and the translators, thanks to the interplay of the different communication channels, but it can be a source of problems in other instances. Omitting cultural references can be impossible if they are present in one of the other channels and trying to explain them might be as difficult, because of the temporal and special constraints analysed above. However, there are some strategies and techniques that translators can implement when dealing with culture.

In her study, Perego (2004c: 162) identified some of the most used devices in subtitling, i.e. addition of information, specification/substitution, reformulation, distortion, equivalence, and the adoption of culturally preferred linguistic patterns. Addition means giving the audience "new or more explicit information" (148). Subtitlers can add various kinds of information to better frame and contextualise scenes and characters, e.g. temporal references or information about social classes and diastratic varieties. The use of semantically richer words or disambiguating expressions is considered a typical specification technique. Reformulation and paraphrasing, which will be analysed in further detail in the next paragraph, are other strategies to make the source culture more explicit and accessible to the target audience. Katan (1999, as cited in Perego 2004c: 153) defines distortion as the "way of directing the addressee to what the speaker or writer considers is important", which does not imply an "objective picture of reality, but functions like a zoom lens allowing the [audience] to focus on certain aspects, leaving other aspects in the background". Distortion occurs when, for example, the target text omits the proper name of some town or building to offer instead their spatial collocation that can be more useful to the target audience to better place the action. Replacing a culture-specific element with a semantic equivalent in the target language is an effective way to make the viewer better comprehend what happens in the movie, e.g. substituting currency or more or less known celebrities and famous people. Equivalents can be useful also when translators need to convey particular connotations. With culturally preferred linguistic patterns, Perego refers to the tendency of some languages to resort to certain rhetorical structures rather than others, e.g. assertions as opposed to questions to "perform the same speech act" (2004c: 159).

Chiaro (2009) uses the term "chunking" to refer to practices that deal with culture-specific references (CSRs). According to her definition, CSRs are "entities that are typical

of one particular culture, and that culture alone" (Chiaro 2009: 156) and they can be either exclusively visual or verbal or a mixture of both. They can occur in 10 main areas, namely

- legal formulae
- education
- place names
- units of measurement
- monetary systems
- national sports and pastimes
- food and drink
- holidays and festivities
- books, films, and TV programmes
- celebrities and personalities.

To handle them, Chiaro suggests opting for so-called "chunking" practices, which can be implemented in different directions, i.e. upwards, downwards, and sideways (Katan 1999, 2004, as cited in Chiaro 2009: 157-8). Chunking up means "replacing [a CSR] with a more general example of the same object in the target language", i.e. a hypernym, while chunking down implies the "substitution with an example of an extremely culture-specific and (therefore) extremely different item, in the target language" (Chiaro 2009: 157). Typical examples can be found in the area of food and drink, where translators can opt for rendering highly culture-specific dishes that might not be known to the viewers with either a more general hypernym or something highly specific and typical of the target culture's cuisine. Such changes can always be problematic, as viewers could know the original item and spot the differences between what is shown in the images and what is conveyed through the translation. Chunking sideways entails the replacement of the source CSR "with a target feature which is neither more general nor more specific than the original, but of the same level" (Chiaro 2009: 158). An example can be using the name with which a product is marketed in the target culture when referring to something known to both the source and target audience under different names.

2.4.3. Reformulation and paraphrasing

Reformulation and paraphrasing can be considered, from a certain perspective, as particular kinds of explicitation strategies (Perego 2004a). According to Catford (1965, as cited in Ghia 2012: 164), substitutions through reformulation or paraphrasing strategies entail both compensation or displacement measures and shifts "at any linguistic level from a rank category or word class to another" and they are not exclusive to subtitling nor translation. In intralingual reformulation or paraphrasing, the sender conveys the message through other words or linguistic elements, which share similar "semantic, pragmatic, logic, and functional" features with the original textual segments (Norén 1999 and Mortara Garavelli 1979, as cited in Perego 2004a: 186, my translation). These concepts are not new to the field of translation studies, as they date back to the 17th century in Dryden's triadic model (metaphrase, paraphrase, and imitation) and have been used again in the 20th century, even if under different names, e.g. "equivalence" in Vinay and Dalbernet's model or "rephrasing" in Hervey and Higgin's (Perego 2004a: 188).

However, in the subtitling field, paraphrasing and reformulation are not synonyms. In his classification, Gottlieb (1992, as cited in Khalaf 2016: 128) defined paraphrasing as "altered expression, adequate content", thus without considering any "semantic proximity" between the texts (Perego 2004a: 188, my translation). According to this definition, paraphrasing in subtitling refers to all cases and instances in which the subtitlers render the ST with a "functionally similar" translation (Perego 2004a: 189), i.e. humorous situations or references to particular cultural, historical, or social notions that could not be understood by the audience. This implies then a "radical rewriting" of the segment that might leave out eventually any reference used in the original version and aims only to maintain the "functional identity between the units" (Perego 2004a: 190, my translation). Reformulation, on the other hand, refers to the cases in which the translation uses different linguistic expressions that preserve also semantic proximity.

Perego (2004a: 190-201) tried to identify some of the reasons why subtitlers opt for reformulation strategies by analysing two Hungarian movies subtitled in Italian. From her study emerged that the main motivation is to make the original text clearer, more explicit and accessible to the target audience on a textual level, rather than on a merely lexical one (Perego 2004a: 200). The first reason is not typical of subtitles but to

translation activities in general, as it might be possible that the audience does not share the same background extra-linguistic knowledge, i.e. cultural, historical, or social references, and the subtitlers might have to choose a more generic, yet explicative, expression. Other reasons more specific to the subtitling process are the necessity to save space, to make more explicit some emotional information, or to "refine" some features typical of the spoken language like repetitions. Reduction strategies can be the exploitation of semantic relations through the segments, such as cause-effect, to condense otherwise long sentences or the use of exclamations and interjections. Even though they can sometimes be problematic for subtitlers, as the target language might not have an exact equivalent and a full sentence might be required to make them explicit, the opposite can also happen and subtitlers might be able to convey the message of a long sentence by using the right exclamation or interjection.

It is important to highlight, as did Perego (2004a: 199-200), that reformulation implies a certain degree of interpretation on the part of the translator. When reformulating and condensing long sentences into more economic structures and expressions, subtitlers inevitably convey their view and evaluation based on their knowledge of the source and target language and culture and of the whole audiovisual text.

2.4.4. Text movements

The last practice that will be analysed in this dissertation is the phenomenon of text movements to re-organise information. Perego (2004b: 425, my translation) defines text movements as the "different positions given in the target text to some of the elements of the source text" that are not always dictated by structural divergences between the two languages but may occur for a variety of reasons. Not all scholars agree on the fact that this strategy can be used (Perego 2004b: 426), as this implies a different hierarchy of information necessarily based on the translators' opinions and knowledge of the movie. In general, text segments are anticipated but, on rarer occasions, can also be postponed.

Unsurprisingly, one of the main motives behind text movements in subtitling is the necessity to reduce the source text. Subtitles must inevitably be denser than the spoken dialogue due to temporal and spatial constraints and this requires "text manipulations"

(Perego 2004b: 430, my translation) and redistribution of the information, to create a "well-planned and highly informative written text" (Perego 2004b: 431, my translation). Other reasons why text units can be anticipated are to give a framework to the audience, i.e. a tool to "interpret in the right way new or implicit information" (Perego 2004b: 434, my translation), or to put greater emphasis on some elements that are stressed in the spoken dialogue through intonation. In addition, as mentioned above, languages tend to organise elements and units in different orders; thus, the reason behind text movements can be a merely linguistic one. Lastly, even though there is not a fixed rule, vocatives tend to be postponed towards the end of the sentences, in order to present to the viewers "the cognitive content of the sentence, i.e. the message communicated by the speaker, first" (Perego 2004b: 444, my translation). However, at times subtitlers opt for this kind of solution for any of the motives analysed here, creating instances of potentially annoying discrepancies between the spoken dialogue and the written text (Perego 2004b: 442).

3. The language of medical popularisation: A corpus analysis

Before beginning any actual translation work, it is important to find adequate reference material, which in this case is in the form of a corpus. The word "corpus" comes from the Latin word for body and in linguistics defines "a 'body' of language, or more specifically, a (usually) very large collection of naturally occurring language, stored as computer files" (Baker 2010: 6). Although there are several different definitions of what a corpus is, scholars agree on what its fundamental features are and what its main goal is, i.e. using the findings of the corpus analysis to make generalisations about the language. To do so, the corpus must be representative of a language or language variety, and the collected data and texts need to be machine-readable, authentic and structured according to specific criteria. The texts must be available in a digital, computerised form so that they can be tagged. Tagging means "automatically [assigning] grammatical tags or codes to words, thus enabling corpus software" (Baker 2010: 11) to recognise and classify words marked as nouns, verbs, articles, etc. It would also be preferable to collect the texts by using statistical sampling methods, but this is not always possible. In this chapter, I will describe the corpus I used as a reference for my translation and I will analyse it, in order to highlight the features typical of expert-to-expert and expert-to-lay communication in both English and Italian.

3.1. Corpus structure

The corpus[2] includes four different sub-corpora of comparable texts: two sub-corpora include expert-to-expert texts originally written in English and Italian, respectively, and the other two sub-corpora include native English and Italian expert-to-lay texts. In total, my corpus counts approximately 475,000 tokens and 385,000 words. Although the number of tokens gives a clear indication of the size of a corpus, it is not particularly significant for linguistic analysis. As Naldi (2014: 39, my translation) explains, tokenisation is "the process that divides the text into its basic units", i.e. its tokens, "which do not necessarily correspond to words". Corpora have tokenizer tools that divide the

[2] See "Appendix a. Corpus composition and content" for a complete overview of the four sub-corpora and a full list of the texts included.

texts into tokens following language-specific rules. For example, the Sketch Engine User Guide defines tokens as the smallest units that corpora consist of and they can be words (every word form) and non-words (punctuation, digits, abbreviations, and anything else between spaces). It classifies words as tokens that begin with a letter of the alphabet and non-words as punctuation, numbers, and other tokens that do not begin with a letter of the alphabet. According to this definition, tokens such as *covid*-19 or *sars-cov*-2 are words, while tokens such as *2-year-long* or *2-dose* are non-words.

3.1.1. Building the corpus

To build my corpus, I used Sketch Engine, an online platform founded by Adam Kilgarriff and used "to explore how language works", as its homepage[3] explains. Through its algorithms, the software analyses authentic texts in order to identify what is typical or rare in a given language. The platform offers around 500 ready-to-use corpora in 144 languages, collecting different types of texts and/or regarding different topics. For example, in addition to the general language corpora that usually comprise all the texts in that language available on the Web, e.g. the "English Web 2020" corpus, there are more specific corpora, such as the "EUR-Lex judgments English 12/2016" and the "EcoLexicon English (Environment)" corpora. What I was interested in was, however, the possibility to build my corpus.

Building a corpus on Sketch Engine is a rather simple and intuitive process. The user can upload their own texts (the software supports different formats, such as PDFs, Word documents, .txt files, etc.) or they can look for the texts on the internet. In this latter case, there are three possible ways:

- Web Search: the user inputs between three and 20 words or phrases that define the topic or selects words and phrases suggested by the software. Sketch Engine randomly groups the seed words and searches into the Bing search engine webpages that include them. It presents them to the user, who can select which ones need to be downloaded and processed into a corpus (compiling). The user can refine the web search, i.e. they can

[3] https://www.sketchengine.eu/

instruct the software to search for more or less relevant webpages by defining how many URLs per group of words need to be found and how many seed words need to be in each group of seed words.

- URLs: the user provides the software with a list of links leading to specific web pages previously found.
- Website: the user inserts the link to a website, which will be completely downloaded. With this method, only 2,000 words per website can be compiled by the software.

To add texts to my corpus, I used different methods: I began by searching "manually" on the Internet for articles and websites that could have been relevant and I then used the URLs function to compile them. I expanded the corpora through the Web Search function, using words and phrases like *coronavirus*, *covid-19*, *covid vaccine*, *pandemic* and others suggested by Sketch Engine. I chose the parameters so that the engine would present me only the more relevant results: I limited the size to 20 URLs per search and four seed words per search. I also uploaded PDF files, in particular specialized papers and articles found in academic and scientific journals and the PDF version of two pages of the Italian Government's website, whose link versions could not be compiled by Sketch Engine.

3.1.2. Description

As previously mentioned, I built four different sub-corpora, which included, in total, 207 texts. All the texts in the corpus were accessed during the first two weeks of February 2022 and the articles and texts I chose were published in a two-year timeframe, from January 2020 to February 2022. I chose papers, articles, and websites that dealt with the COVID-19 pandemic and its development, focusing in particular on the description of the virus and the disease, and the development of the vaccines, as the episodes that I will be translating describe, respectively, how pandemics expand and how vaccines are developed.

For my research, I wanted to build four sub-corpora two by two comparable. Comparable bilingual or multilingual corpora are "specialized collections of similar STs in [different] languages" (Munday 2016: 293), meaning they "share one or more

variables, allowing corpus linguists to make comparisons […] that have a reasonably high degree of reliability" (Baker 2010: 14). My four sub-corpora can be classified as "specialised corpora, which have clear restrictions placed on the texts that can be included within them" (Baker 2010: 14). Specialised corpora are useful when compared to (usually larger) reference corpora, as these can provide "information on language 'norms' which can [be used to] identify what is comparatively frequent or infrequent in the more specialised language variety" (Baker 2010: 14), or, in Munday's (2016: 293) words, they are "a yardstick of the language against which to measure deviation". Sketch Engine automatically uses the "English Web 2020" and the "Italian Web 2016" corpora as reference corpora and, although there is no such thing as "a 'perfect' reference corpus" (Baker 2010: 14), the size of these can surely offer insightful findings. My special-language corpora were, evidently, smaller; however, Ahmad and Rogers (2001: 593) inferred from empirical studies about the differences in the size of vocabulary used in special-language and general-language texts that "a smaller corpus (e.g., ca.100,000 words) would be a good starting point for corpus-based terminology management in a highly-specialized discipline". According to their "rule of thumb", a special-language corpus starts to become useful for extracting the key terms of the domain "in the tens of thousands of words" (Ahmad and Rogers 2001: 594).

For the expert-to-expert sub-corpora, I collected texts from similar sources, mainly scientific journals. I built two corpora of similar size: my "English expert" sub-corpus counts 15 texts and 117,755 tokens of which Sketch Engine automatically classifies 86,934 as words, while in the "Italian expert" sub-corpus, there are 20 texts and 112,364 tokens of which 86,832 are words. The 14 English papers and publications were found in scientific journals, such as *Nature*, and medical or university reviews, such as the *Journal of biomedical science*, and they count 85,092 words in total. I found the 19 Italian texts in medical journals such as *Epidemiologia & Prevenzione* or *Giornale Italiano di Cardiologia*, and they count 84,792 words in total. I also included the English version of an EMA communication on vaccines (1,842 words) as well as the Italian version of the same communication (2040 words).

The English and Italian expert-to-lay sub-corpora consist of, respectively, 94 and 78 texts. The "English lay" sub-corpus counts 121,440 tokens and 105,845 words, the "Italian lay" 124,327 tokens and 106,132 words. I selected similar sources, mainly

institutional websites and daily newspapers, but also science or medicine magazines such as *National Geographic* or *Focus*. I also included a small percentage of articles from general magazines, such as *USA Today* and *Wired*. In detail, the 26 English web pages of institutional bodies, such as the UK Government, the NHS or the WHO, count 29,626 words, while the 24 Italian pages from the Government's website or universities' websites count 29,906 words. Newspaper sources provide the English sub-corpus with 30,242 words divided into 31 texts and the Italian one with 30,376 words and 24 texts. In the English sub-corpus, there are 23 articles from science magazines (31,520 words); in the Italian one, 31,727 words and 18 articles from similar sources. Lastly, general public magazines count 14 texts and 14,457 words in the English sub-corpus and 12 texts and 14,123 words in the Italian one.

3.2 Corpus analysis

The types of investigation and analysis that a corpus-based approach enables are "both quantitative and qualitative" (Munday 2016: 294). Quantitative analysis includes the comparison of figures and statistics for words – e.g., keywords and word frequency; qualitative analysis regards instead the "close analysis of concordance lines of individual instances" (Munday 2016: 294). These types of analysis can be particularly interesting in translation studies, using comparable and parallel corpora, and in sociolinguistics studies, to explore how usages change in the different language varieties and domains. As I want to compare two different language registers in two different languages, the following paragraphs will investigate "the use and patterns" of expert-to-expert communication and expert-to-lay communication in both English and Italian from a quantitative and a qualitative point of view.

3.2.1. The language of medicine: expert-to-expert communication

As already mentioned, I tried to build my sub-corpora as balanced and similar as possible, for my analysis of the findings to be reliable. Both the English and the Italian expert sub-corpora count almost 87,000 words that are compared to much larger reference corpora, respectively the English Web 2020 corpus, with almost 45 billion words, and the Italian

Web 2016 corpus, which has almost 6 billion words. Figure 3.1 and Figure 3.2 show an overview of the characteristics of my sub-corpora.

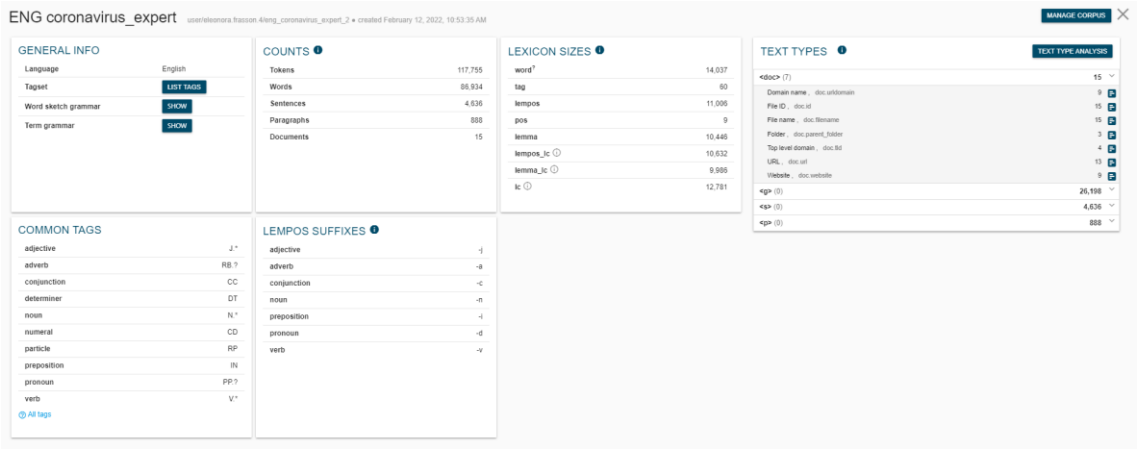


Figure 3.1: Statistics of the English expert sub-corpus.

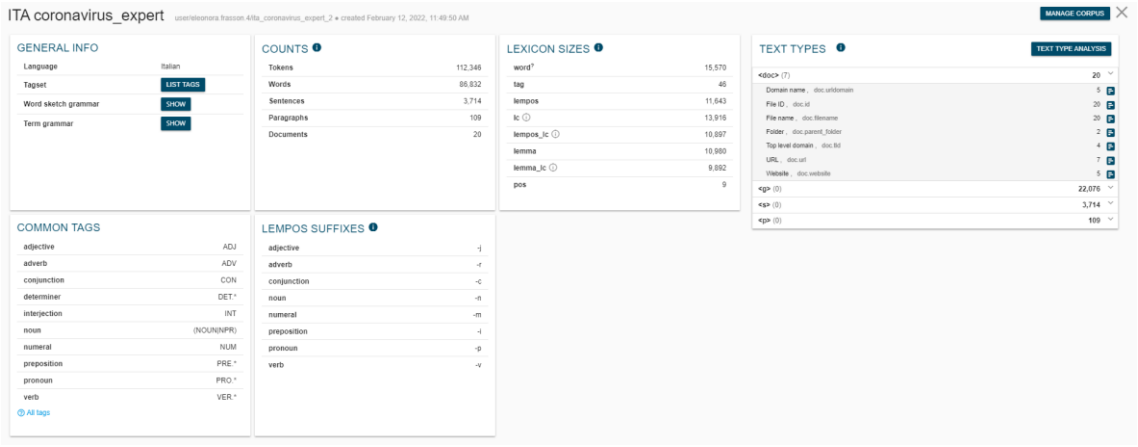


Figure 3.2: Statistics of the Italian expert sub-corpus.

3.2.1.1. *Terminology*

Sketch Engine (as well as other digital infrastructures for corpora) enables an easier and quicker term extraction from domain-specific corpora like my own. Terms can be extracted using different methods, such as "statistically-based procedures, linguistically-based procedures and hybrid procedures" (Ahmad and Rogers 2001: 584), but the great development of new technologies made "[a]utomatic processing and computer-assisted terminology compilation […] qualitatively superior to conventional methods" (Sager 1990: 136) and today "corpus analysis became the *conditio sine qua non* for term extraction" (Soglia 2002: 20, my translation). Thanks to the widespread use of platforms

like Sketch Engine, this process became increasingly "user-driven" (Sager 1990: 135): digital infrastructures offer many different tools that can automatically generate lists of candidate terms. According to Ahmad and Rogers (2011: 599), a simple frequency count is "one of the most straightforward operations in processing a corpus". Another useful procedure is the comparison of frequency, or keyness analysis (Gabrielatos 2018: 227). With Sketch Engine, it was possible to apply to my sub-corpora both methods, as described in paragraphs 3.2.1.1 and 3.2.2.1.

Frequency analysis examines each token in the corpus listed according to its frequency of occurrence (Ahmad and Rogers 2001: 599). Sketch Engine prepares automatically various kinds of "wordlists" that show

> - nouns, verbs, adjectives and other parts of speech
> - words beginning, ending, containing certain characters
> - word forms, tags, lemmas and other attributes
> or a combination of [these] three options (Sketch Engine website).

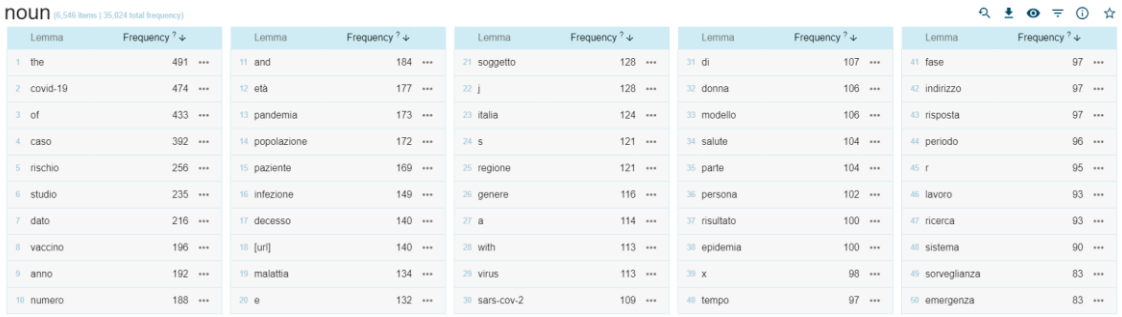
In its interface, Sketch Engine proposes first the frequency lists for word forms and lemmas. All the forms a word can assume, i.e. the set of lexical forms that belong together, compose the lemma. In these lists, there is a lot of noise, as in the lemma lists of both the English and the Italian sub-corpora the comma, the full stop, and the placeholder *[number]*, which refers to all the actual numbers used in the texts, occupy the first three positions. This is not surprising, as it is uncommon that a term ranks so high in the frequency list of all the lemmas of the corpus. It must be noticed, though, that, considering the first 50 positions, it is possible to find some possible terms, such as *vaccine* (13th position), *covid-19* (16th place), *protein* (28th), *sars-cov-2* (31st), *cell* (36th), *vaccination* (37th), *mrna* (38th), *disease* (40th), *virus* (42nd), *infection* (44th), and *patient* (49th). In the lemmas list of the Italian sub-corpus, there are fewer possible terms: *covid-19* (ranking 18th), *caso* (34th), and *rischio* (47th).

It stands out that the majority of these possible terms are nouns. Of all the wordlists that Sketch Engine shows, if the goal is to find the terms of a domain-specific corpus, the noun frequency list is indeed the best place to start from. Despite some (inevitable) noise, the noun frequency list seems to be much more promising, as Figure 3.3 and Figure 3.4 show:

noun (7,385 items | 41,568 total frequency)

	Lemma	Frequency	Lemma	Frequency	Lemma	Frequency	Lemma	Frequency	Lemma	Frequency
1	vaccine	1,432	11 doi	269	21 response	193	31 n	129	41 k	112
2	[number]	1,170	12 virus	267	22 [url]	180	32 a	127	42 age	111
3	covid-19	801	13 mrna	265	23 t	170	33 sars-cov	125	43 wang	111
4	protein	389	14 infection	243	24 m	157	34 day	123	44 number	109
5	j	349	15 study	226	25 datum	149	35 thrombosis	120	45 health	107
6	sars-cov-2	324	16 patient	219	26 dose	143	36 control	118	46 dna	106
7	cell	284	17 antibody	209	27 people	142	37 development	118	47 j.	103
8	vaccination	279	18 coronavirus	202	28 spike	140	38 y	116	48 contact	102
9	s	273	19 trial	202	29 effect	140	39 m.	115	49 l	101
10	disease	270	20 case	196	30 phase	131	40 rna	113	50 s.	101

Figure 3.3: Noun frequency list of the English expert sub-corpus.



noun (8,546 items | 35,024 total frequency)

	Lemma	Frequency	Lemma	Frequency	Lemma	Frequency	Lemma	Frequency	Lemma	Frequency
1	the	491	11 and	184	21 soggetto	128	31 di	107	41 fase	97
2	covid-19	474	12 età	177	22 j	128	32 donna	106	42 indirizzo	97
3	of	433	13 pandemia	173	23 italia	124	33 modello	106	43 risposta	97
4	caso	392	14 popolazione	172	24 s	121	34 salute	104	44 periodo	96
5	rischio	256	15 paziente	169	25 regione	121	35 parte	104	45 r	95
6	studio	235	16 infezione	149	26 genere	116	36 persona	102	46 lavoro	93
7	dato	216	17 decesso	140	27 a	114	37 risultato	100	47 ricerca	93
8	vaccino	196	18 [url]	140	28 with	113	38 epidemia	100	48 sistema	90
9	anno	192	19 malattia	134	29 virus	113	39 x	98	49 sorveglianza	83
10	numero	188	20 e	132	30 sars-cov-2	109	40 tempo	97	50 emergenza	83

Figure 3.4: Noun frequency list of the Italian expert sub-corpus.

Of course, not every noun proposed by the software will be considered as a term of this domain nor this variety, such as *people*, *day*, *control*, or *development* in English and *anno*, *numero*, or *età* in Italian. Software only proposes potential candidates, but then the user or the terminologist must evaluate their terminological relevance. Some of the highest-ranking proposals can definitely be considered relevant for this analysis, such as *vaccine* in English, *vaccino* and *pandemia* in Italian and *covid-19* and *sars-cov-2* in both. Other nouns pose a difficult question, namely whether *response* and *risposta* or *case* and *caso* should be considered domain-specific terms or not. Both are common words used in everyday language, but they gain a specific meaning in medical and coronavirus discourses. There is not a single, right answer, but the terminologist must choose one of the options, according to their reasoning. As Rega (2002: 54, my translation) stated, in terminology collections, there is always "a certain degree of arbitrariness". However, the other tools offered by Sketch Engine offers can help make a more reasoned decision.

To this end, I decided to examine the verb frequency lists as well (Figures 3.5 and 3.6). Unsurprisingly, the most used verbs in English are the auxiliaries *be* and *have*, while in Italian the most frequent verbs are the auxiliary *essere* and the modal *potere*. In the Italian verb table, just like in the noun table, a lot of noise is due to the presence of English

abstracts in almost every paper in the sub-corpus. Verbs such as the English *vaccinate*, *neutralize*, *prevent*, *contain*, *inactivate*, *protect*, *test* or the Italian *vaccinare* can be extracted as terms of this domain, while other verbs such as the English *induce*, *receive*, *bind*, *produce* and the Italian *presentare*, *identificare*, *rispondere*, *ricevere* need to be the object of further analysis.

verb (973 items | 10,565 total frequency)

	Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency
1	be	2,277	11	do	95	21	access	71	31	make	53	41	express	41
2	have	671	12	follow	94	22	find	71	32	say	51	42	produce	40
3	show	179	13	report	90	23	prevent	69	33	suggest	51	43	describe	40
4	induce	151	14	lead	89	24	receive	62	34	involve	50	44	recommend	40
5	use	144	15	vaccinate	84	25	provide	61	35	compare	48	45	occur	39
6	include	137	16	increase	80	26	take	57	36	review	47	46	become	39
7	get	133	17	neutralize	76	27	demonstrate	56	37	protect	47	47	phase	38
8	cause	111	18	base	74	28	need	55	38	bind	42	48	see	36
9	develop	106	19	reduce	73	29	contain	55	39	require	42	49	test	36
10	give	99	20	associate	71	30	inactivate	53	40	know	42	50	reserve	35

Figure 3.5: Verb frequency list of the English expert sub-corpus.

verb (1,483 items | 9,537 total frequency)

	Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency
1	essere	748	11	fare	75	21	riportare	54	31	risultare	42	41	basare	36
2	potere	282	12	utilizzare	71	22	rappresentare	52	32	of	41	42	mrna	35
3	and	220	13	n	64	23	registrare	50	33	ottenere	40	43	effettuare	34
4	dovere	157	14	stimare	62	24	condurre	48	34	identificare	39	44	confermare	34
5	et	151	15	dare	59	25	mostrare	47	35	gg	39	45	andare	33
6	to	133	16	suppl	58	26	riguardare	47	36	rispondere	39	46	ridurre	33
7	avere	116	17	essere|stare	57	27	presentare	44	37	aumentare	37	47	definire	32
8	t	101	18	osservare	57	28	produrre	43	38	fornire	37	48	coinvolgere	32
9	considerare	85	19	valutare	55	29	raccogliere	42	39	dire	36	49	ricevere	31
10	doi	77	20	vaccinare	54	30	mettere	42	40	associare	36	50	descrivere	31

Figure 3.6: Verb frequency list of the Italian expert sub-corpus.

Frequency lists per se are not the most effective method to extract terminology and phraseology, especially when they consider only unigrams, like in the previous wordlists. Sketch Engine, however, offers the possibility to study the frequency of so-called n-grams (up to 6-grams), an important function, given the fact that many terms in specific domains are multi-word units. As n-grams are words that co-occur, i.e. occur directly one after the other, they can be a strong indicator of collocations. However, in this case, this function was not as useful as it could be due to the noise, especially in the Italian tables. Despite that, some terms could be extracted from both the English and (*COVID-19 vaccine*, *spike protein*) and the Italian list (*proteina Spike*, *infezione da SARS-CoV-2*).

The most significant findings emerged from the keyness analysis, which involves detecting the keywords and key items, i.e. those that "occur with unusual frequency in a given text" (Scott 1996, as cited in Gabrielatos 2018: 225). Sketch Engine has a tool that

can calculate the keyness of words, which means comparing their relative frequency in both the general and the domain-specific corpora. The following tables show the single-word and multi-word terms detected by Sketch Engine in English (Figures 3.7 and 3.8) and Italian (Figures 3.9 and 3.10).

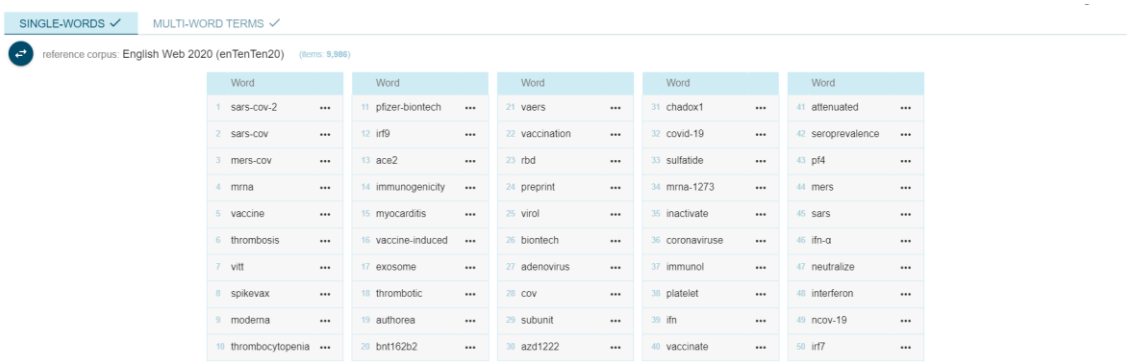


Figure 3.7: Single-word terms in the English expert sub-corpus.

Figure 3.8: Multi-word terms of the English expert sub-corpus.

Figure 3.9: Single-word terms of the Italian expert sub-corpus.

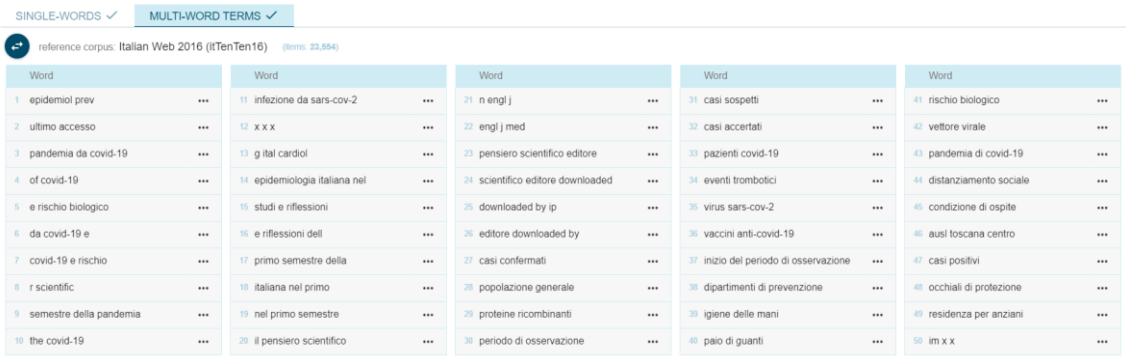


Figure 3.10: Multi-word terms in the Italian expert sub-corpus.

Despite some inevitable noise, the keyness analysis has the highest usability. The comparison of the relative frequencies proves to be a more effective method than the ranking according to absolute frequencies. The extraction of keywords enables the retrieval of new terms, such as *thrombosis*, *immunogenicity*, *vaccine-induced*, *hospitalization*, (63rd place), *neutralizing antibody*, *mrna vaccine* and *contact rate* in the English list and, in the Italian, *trombosi*, *lockdown*, *distanziamento* (51st place) *tampone* (54th) *contagio* (74th), *pazienti covid-19*, *eventi trombotici*, *distazionamento sociale*, *periodo di osservazione*. Questions that were raised in the previous paragraphs might find an answer thanks to the multi-word term analysis: in English *response* can be considered part of the terms *antibody response* and *immune response* and in Italian *caso* is part of terms such as *casi confermati*, *casi sospetti*, *casi accertati*, *casi positivi*.

3.2.2. The language of medicine: expert-to-lay communication

To explore expert-to-lay communication, I built two more sub-corpora, again trying to build them as similar and balanced as I could. Both the English and the Italian lay sub-corpora include around 106,000 words and their reference corpora are, once again, the much larger English Web 2020 and Italian Web 2016 corpora. Figure 3.11 and Figure 3.12 offer an overview of their general features.

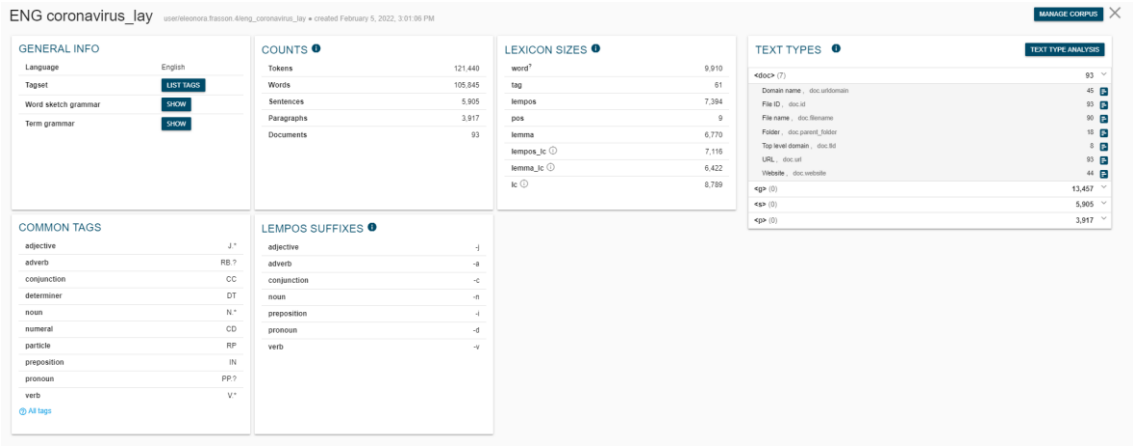


Figure 3.11: Statistics of the English lay sub-corpus.

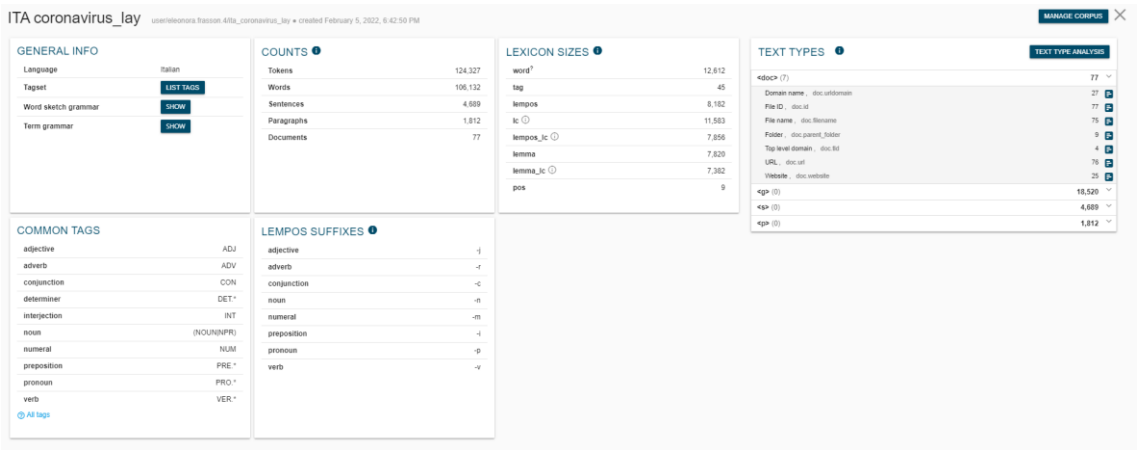


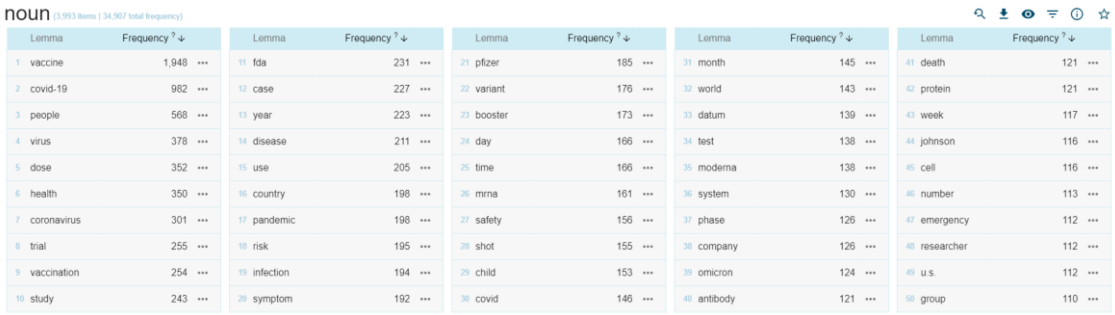
Figure 3.12: Statistics of the Italian lay sub-corpus.

3.2.2.1 *Terminology*

I carried out my analysis following the same order, i.e. starting from the frequency analysis of the lemmas, with results similar to the expert sub-corpora: once again, the full stop, the comma and the article *the* in English and the preposition *di* in Italian occupy the first three positions. When considering the first 50 positions, it is possible to find candidates, such as *vaccine* (11th place), *covid-19* (16th place), *coronavirus* (48th place) in the English sub-corpus and, in the Italian one, *coronavirus* (9th place), *vaccino* (19th place), *virus* (31st place), *covid-19* (34th place), *vaccinare* (48th). In the Italian sub-corpus, the word *caso* (42nd place) can be also noticed, which is most probably part of a multi-word term.

The analysis of the noun frequency list provides more relevant candidates: many of them are similar to the candidates retrieved in the expert sub-corpora, as shown in

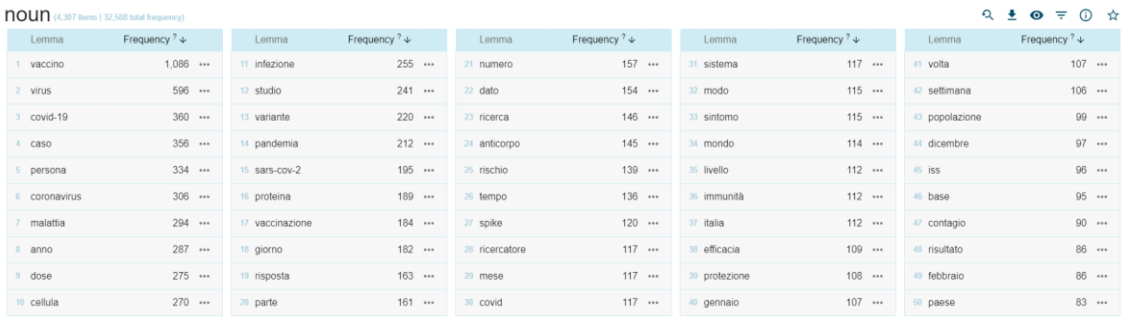
Figures 3.13 and 3.14. Interestingly, noise is reduced as compared to the noun lists of the expert sub-corpora. A possible explanation might be that the lay sub-corpora are larger than the expert ones. Size is not the only nor the best indicator of the representativeness of a corpus or of the reliability of the findings that emerge, but it can help. Unfortunately, as Sager (1990: 130) declared, there are "no reliable guidelines as to what quantity of text represents a representative corpus".



noun (3,993 items | 34,907 total frequency)

	Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency
1	vaccine	1,948	11	fda	231	21	pfizer	185	31	month	145	41	death	121
2	covid-19	982	12	case	227	22	variant	176	32	world	143	42	protein	121
3	people	568	13	year	223	23	booster	173	33	datum	139	43	week	117
4	virus	378	14	disease	211	24	day	166	34	test	138	44	johnson	116
5	dose	352	15	use	205	25	time	166	35	moderna	138	45	cell	116
6	health	350	16	country	198	26	mrna	161	36	system	130	46	number	113
7	coronavirus	301	17	pandemic	198	27	safety	156	37	phase	126	47	emergency	112
8	trial	255	18	risk	195	28	shot	155	38	company	126	48	researcher	112
9	vaccination	254	19	infection	194	29	child	153	39	omicron	124	49	u.s.	112
10	study	243	20	symptom	192	30	covid	146	40	antibody	121	50	group	110

Figure 3.13: Noun frequency list of the English lay sub-corpus.



noun (4,307 items | 32,588 total frequency)

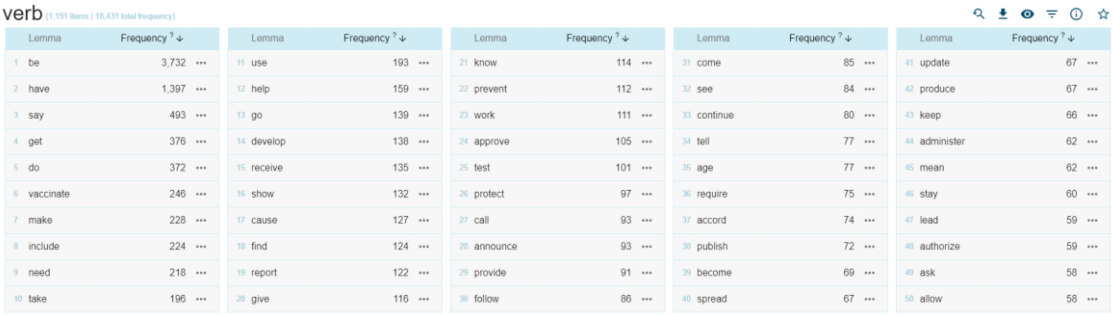
	Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency
1	vaccino	1,086	11	infezione	255	21	numero	157	31	sistema	117	41	volta	107
2	virus	596	12	studio	241	22	dato	154	32	modo	115	42	settimana	106
3	covid-19	360	13	variante	220	23	ricerca	146	33	sintomo	115	43	popolazione	99
4	caso	356	14	pandemia	212	24	anticorpo	145	34	mondo	114	44	dicembre	97
5	persona	334	15	sars-cov-2	195	25	rischio	139	35	livello	112	45	iss	96
6	coronavirus	306	16	proteina	189	26	tempo	136	36	immunità	112	46	base	95
7	malattia	294	17	vaccinazione	184	27	spike	120	37	italia	112	47	contagio	90
8	anno	287	18	giorno	182	28	ricercatore	117	38	efficacia	109	48	risultato	86
9	dose	275	19	risposta	163	29	mese	117	39	protezione	108	49	febbraio	86
10	cellula	270	20	parte	161	30	covid	117	40	gennaio	107	50	paese	83

Figure 3.14: Noun frequency list of the Italian lay sub-corpus.

The candidates that were proposed by the frequency list of the expert sub-corpora can be found in the high-ranking positions in Figure 3.13 (*vaccine*, *covid-19*, *virus*, *coronavirus*, *vaccination*, *mrna*, *antibody*) and Figure 3.14 (*vaccino*, *virus*, *covid-19*, *coronavirus*, *pandemia*, *vaccinazione*, *risposta*, *anticorpo*). There are also new relevant candidates, such as in English *dose*, *pandemic*, *symptom*, *variant*, *booster*, *shot*, *covid* (without the number), and in Italian, *dose*, *cellula*, *variante*, *covid* (without the number), *sintomo*, *immunità*, *efficacia*.

In the verb tables (Figures 3.15 and 3.16), there are again *be* and *have* and *essere* and *potere* in the first two positions of the English and Italian lists, respectively. Domain-specific candidates might be *vaccinate*, *develop*, *receive*, *protect*, *spread* in English and *vaccinare*, *sviluppare*, *ricevere*, *proteggere*, *infettare*, *contenere*, *somministrare*,

diffondere in Italian. Many of these candidates might be part of multi-word terms, so the most frequent n-grams were also analysed. Despite the larger size of the sub-corpora, there is still noise, but it was possible to extract some potential candidates, such as *COVID-19 vaccine*, *clinical trials*, *immune system*, *fully vaccinated*, *mRNA vaccines*, *immune response* in the English list and *sistema immunitario*, *risposta immunitaria*, *proteina spike*, *anti Covid-19*, *vaccini a mRNA*, *immunità di gregge* in the Italian one.


verb (1,191 items | 18,431 total frequency)

	Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency
1	be	3,732	11	use	193	21	know	114	31	come	85	41	update	67
2	have	1,397	12	help	159	22	prevent	112	32	see	84	42	produce	67
3	say	493	13	go	139	23	work	111	33	continue	80	43	keep	66
4	get	376	14	develop	138	24	approve	105	34	tell	77	44	administer	62
5	do	372	15	receive	135	25	test	101	35	age	77	45	mean	62
6	vaccinate	246	16	show	132	26	protect	97	36	require	75	46	stay	60
7	make	228	17	cause	127	27	call	93	37	accord	74	47	lead	59
8	include	224	18	find	124	28	announce	93	38	publish	72	48	authorize	59
9	need	218	19	report	122	29	provide	91	39	become	69	49	ask	58
10	take	196	20	give	116	30	follow	86	40	spread	67	50	allow	58

Figure 3.15: Verb frequency list of the English lay sub-corpus.


verb (1,414 items | 14,175 total frequency)

	Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency		Lemma	Frequency
1	essere	1,615	11	sviluppare	96	21	arrivare	77	31	mettere	60	41	raggiungere	50
2	potere	603	12	dare	89	22	anti	74	32	entrare	59	42	aumentare	50
3	vaccinare	311	13	utilizzare	88	23	sembrare	73	33	somministrare	57	43	avvenire	50
4	avere	303	14	pubblicare	87	24	iniziare	72	34	usare	53	44	presentare	50
5	fare	228	15	spiegare	81	25	essere|stare	71	35	diffondere	53	45	permettere	50
6	stare	179	16	portare	80	26	infettare	69	36	vedere	53	46	basare	49
7	dovere	177	17	ricevere	79	27	andare	66	37	proteggere	52	47	id	49
8	dire	142	18	causare	79	28	continuare	65	38	rendere	51	48	affermare	49
9	mrna	138	19	sapere	78	29	prevenire	62	39	dimostrare	51	49	osservare	47
10	produrre	126	20	diventare	78	30	contenere	61	40	ridurre	51	50	parlare	47

Figure 3.16: Verb frequency list of the Italian lay sub-corpus.

The next step is the keyness analysis, whose main findings are shown in Figures 3.17 and 3.18 for the English sub-corpus and Figures 3.19 and 3.20 for the Italian sub-corpus.


SINGLE-WORDS ✓ MULTI-WORD TERMS ✓

reference corpus: English Web 2020 (enTenTen20) (items: 6,422)

	Word		Word		Word		Word		Word
1	omicron	11	biontech	21	coronavirus	31	fda	41	efficacy
2	moderna	12	eua	22	fauci	32	afrigen	42	pandemic
3	vaccine	13	coronaviruse	23	self-isolation	33	mers	43	unwell
4	pfizer-biontech	14	ihs	24	unvaccinated	34	cdc	44	paxlovid
5	vaccinate	15	covid-19	25	astrazeneca	35	curevac	45	comirnaty
6	sars-cov-2	16	covid	26	pan-coronavirus	36	two-dose	46	bottazzi
7	pfizer	17	booster	27	sars	37	corbevax	47	dose
8	novavax	18	vaccination	28	janssen	38	hospitalisation	48	virus
9	mrna	19	protein-based	29	myocarditis	39	antibody	49	hospitalization
10	self-isolate	20	self-isolating	30	sinopharm	40	immunocompromised	50	adjuvant

Figure 3.17: Single-word terms of the English lay sub-corpus.

Figure 3.18: Multi-word terms of the English lay sub-corpus.

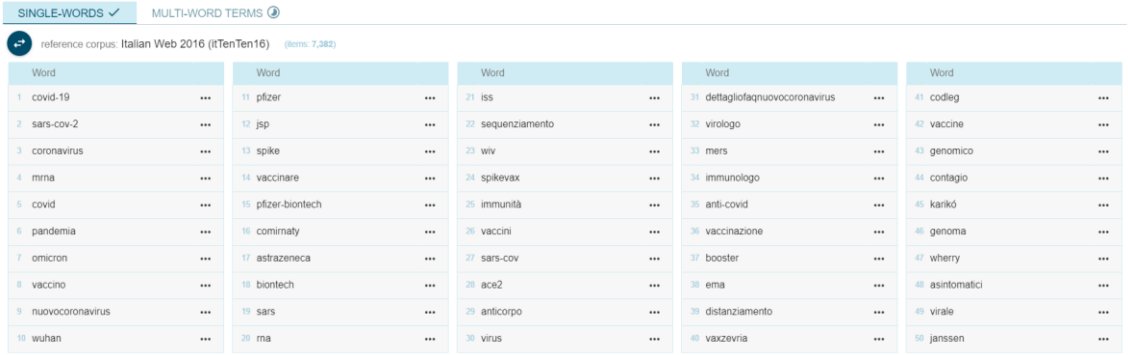


Figure 3.19: Single-word terms of the Italian lay sub-corpus.

Figure 3.20: Multi-word terms of the Italian lay sub-corpus.

Despite some noise, especially in the Italian table due to the PDF versions of the FAQ pages on the Government's website, there are significant candidates, as expected. In addition to the nouns already found through the frequency analysis, the single-word terms that can be extracted from the English list are *self-isolate* (and its other word forms), *pan-coronavirus*, *immunocompromised*, *variant*, *jab*, *virologist*, *immunity*, *mutate*, *immunization* and, from the Italian list, *sequenziamento*, *virologo*, *immunologo*, *contagio*, *genoma*, *asintomatici*, *spillover*, *gocciolina*, *mascherina*, *mutazione*, *focolaio*. Among the multi-word terms, some new candidates are *emergency use*, *third/booster/second dose*, *vaccine development*, *vaccine safety*, *(acute) respiratory syndrome*, *weakened immune*

system, *vaccine candidate* in the English list and *seconda/terza/prima dose*, *sindrome respiratoria (acuta)*, *anticorpi neutralizzanti*, *trasmissione del virus*, *reazioni avverse*, *terapia intensiva*, *memoria immunologica*, *sequenza genetica* in the Italian list.

3.3 Application of the findings

Since the main goal of this dissertation was to propose a translation of a documentary meant for the general public, I used this corpus mainly as a terminological and phraseological database to help me find the most suitable terms and collocates in case of doubt. In addition, I could gather some information about differences and similarities between expert-to-expert and expert-to-lay communication, despite the limited corpus examined. The extracted terms, especially when considering nouns, proved to be consistent in both communication types, probably due to the fact that information about this pandemic was made widely accessible to the general public and now medical terms such as *immune response*, *mrna vaccines* or *respiratory syndrome* are more easily understood and used by lay people.

However, differences in the use of language can be noticed when considering verbs: expert-to-expert communication seems to rely more on nominalisation, whereas expert-to-lay texts seem to prefer the use of verbs (see also paragraphs 1.1.1, 1.1.3 and 1.2.1). Analysing the frequency lists of the sub-corpora, it is possible to see that most of the verbs extracted come from the expert-to-lay lists. For example, in the first 50 positions of the Italian expert verb list, there is only one verb that is exclusive to the medical domain, i.e. *vaccinare [to vaccinate]*. For the most part, the verbs extracted are "empty" verbs that obtain a more precise meaning from the nouns they co-occur with, such as *valutare [to evaluate]*, *condurre [to carry out]*, *fornire [to provide]*. In the lay verb list, on the other hand, it is possible to find, in addition to *vaccinare*, *sviluppare [to develop]*, *infettare [to infect]*, *contenere [to contain]*, *somministrare [to give (a vaccine)]*. Similar considerations can be made for the English sub-corpora, where the noun *vaccination* ranks always higher than its verbal form *vaccinate*, but while in the lay sub-corpus the difference is minimal (56th place for the noun and 59th place for the verb in the lemmas frequency list), in the expert sub-corpus this difference is definitely more significant, i.e. the noun is found at the 37th place and the verb in the 165th position. Furthermore, when

considering the English language, it can be noticed that high-register and specific-domain verbs such as *neutralize* and *inactivate* cannot be found in the lay sub-corpus.

To have a better understanding of the topic, however, this analysis should be repeated using larger corpora and expanding the focus from terminology to other language aspects, and further research is needed to assess the accuracy of the claims here proposed.

Despite its limited size and the need to use other tools to translate, such as larger corpora, dictionaries and vocabularies, and ad-hoc web searches, the corpora analysed in this chapter played in fact an important role especially to support terminological decisions, e.g. when choosing between *goccioline* or *droplet*, as it is discussed in further details in paragraph 4.3.2.1. Even though my work concerned popularisation and I did consult more frequently the Italian lay sub-corpus, the Italian expert and the English sub-corpora as well have proved to be useful references that guided my decision-making process, e.g. the decision whether to translate *il* or *la covid(-19)* (see paragraph 4.3.2.1).

4. Subtitling a medical documentary

This last chapter is dedicated to the translation of the subtitles of two selected episodes of Netflix's series "Coronavirus, explained". In the first paragraph, I will present the series and the episodes to contextualise my translation and describe the main challenges I met. In the second paragraph, I further examine the translation issues I encountered, dividing them into "general language" and "medical language" problems. The solutions I adopted to comply with Netflix's requirements will be discussed in the following paragraphs. When relevant, I will also compare my translation with the official Netflix Italian translation. The English scripts and the complete Italian translations of the episodes can be found in Appendices b. and c., respectively.

4.1. "Coronavirus, explained" on Netflix

"Coronavirus, explained" is a spin-off of the well-known Netflix series "Explained". According to its website, Netflix is "a subscription-based streaming service that allows our members to watch TV shows and movies without commercials on an internet-connected device". Especially in the last decade, the platform knew widespread success all over the world. Founded in 1997 by Reed Hastings and Marc Randolph, it originally offered only a rental DVD service by mail in the USA. Ten years later, it introduced the possibility to stream movies directly to its subscribers' homes and, in 2010, included a streaming-only plan. In the span of six years, it was available in more than 190 countries. Even though it is known mainly for its streaming service, which is its "biggest income generator", the rental service is still available and profitable (Hosch 2022). Since 2013, Netflix has been offering also a vast array of original content and titles, such as the "Explained" documentary series.

"Explained" is a Netflix original documentary series produced by Vox Media, whose first episode aired on 19 September 2018. As reported by Vox Media Studios (2021), viewers can "learn all about cults, athleisure, billionaires and so much more in this enlightening explainer series that digs deeper into a wide range of culturally relevant topics, questions, and ideas". It includes three seasons and originated several spin-offs, series and limited series that focus on particular topics, such as "The Mind, explained",

"Sex, explained", "Money, explained", "Whose Vote Counts, explained", and "Coronavirus, explained". Like many documentaries, they are narrated by off-screen narrators and include various interviews with experts and archival footage. In Italian, the series "Explained" and its spin-offs were distributed with the title "In poche parole".

4.1.1. A topical limited series

"Coronavirus, explained" is composed of three episodes that were distributed on Netflix in the spring of 2020, when, due to the outbreak of the COVID-19 pandemic, "the world changed", as Netflix's summary reports. It also states that "[t]his topical series examines the coronavirus pandemic, the efforts to combat it and ways to manage its mental health toll". The first episode, "This Pandemic", narrated by J.K. Simmons, explains how and why this new coronavirus became a global pandemic, by retracing what happened between December and March 2020 and analysing what the countries did, did not do and should have done. Interestingly, many footages and interviews with experts are taken from another episode of the main series "Explained", namely the 7th episode of the second season, "The Next Pandemic" that aired on 7 November 2019. The second episode, "The Race for a Vaccine", narrated by Laura Linney, provides an overview of how vaccines were invented and how they are developed and focuses on "one of the most high-stakes scientific races in history", i.e. the development and testing in a record time of a new COVID-19 vaccine. Finally, the third episode, "How to Cope", narrated by Idris Elba, tries to offer coping mechanisms and strategies to deal with the fear, anxiety, and stress that many people all around the world have been suffering since living through a global pandemic.

4.1.2. Translation challenges

In this paragraph, a general overview of the main challenges encountered while translating the first two episodes will be provided, while a more detailed and thorough analysis of specific issues and their proposed solutions will be offered in the following ones. Unsurprisingly, most of the issues were related to subtitles' temporal and spatial constraints. On average, Italian sentences and words are longer than English ones, which

can be a source of difficulty when trying to respect the 42 characters per line rule and the 20 characters per second reading speed. For example, the facts that many short English phrasal verbs need to be translated with longer Italian phraseological constructions or that Italian conjugates verbs while English tends to have the same form for most grammatical persons, e.g. *i virus possono infettare* (25 characters including spaces) vs. *viruses can infect* (18 characters including spaces), make the Italian version significantly longer than the original English dialogue. Thus, the time allocated per each English subtitle is not always enough for a close Italian translation, making adaptations and reformulations of the target text necessary or requiring subtitles to stay longer on the screen.

Unscripted speech and spoken language features have generally been refined, mainly to save space and time and the translation of SDH too presented some challenges, as the rendering of audio descriptions sometimes seemed awkward and unnatural in the Italian translation. Netflix's official Italian subtitles do not include SDH, so I could not compare the solutions I came up with, but I based them entirely on Netflix's criteria and examples. Creating SDH meant subtitling also Italian lines in the closest possible way, even though it implied, on some occasions, a slight increase in the reading speed of these subtitles, as they often included identifiers, e.g. *[in italiano]* (*[in Italian]*).

Concerning documentary and medical language, the problems were connected in part to terminology, in which cases the sub-corpora analysed in the previous chapter proved to be useful, and in part to the visual images displayed on the screen, for example, the *vehicles* and *keys* represented on screen when the narrator explained how viruses work in episode 2, as the Italian translation needed to be synchronised with them so that the sentence structure needed to follow the original English organisation of information pretty closely. Information about the interviewees, such as professions and dates, and, save for a few exceptions, written information from and about the graphics was not translated in dedicated captions because it was considered redundant, as it was usually given by the (subtitled) off-screen narrator, and was not the main focus of this work. In addition, translating everything would have hindered readability and comprehension, it was decided to follow Netflix's guidelines and thus only the most plot-relevant information was translated, i.e. the off-screen narration. Fortunately, much of this written information was considered to be easily retrieved by the viewers, as many diseases and

viruses mentioned in the graphics (e.g. *polio*, *HIV*) have similar names – or even the same name – in Italian and English.

4.1.3. General translation strategy

The source text presented various translation problems that "compel[led] the translator to make a conscious decision to apply a motivated translation strategy, procedure and solution from amongst of options" (Hatim and Mason 1990, as cited in Mangher 2019: 393). The key term in this definition is "motivated", meaning that the "translator should be able to justify the translation *solution* chosen in accordance with the translation context and considering text, genre, discourse, function and assignment" (Hatim and Mason 1990, as cited in Mangher 2019: 393). This implies that a one-size-fits-all solution is not possible in translation, as translators are required to determine each time what is the best option for each different issue at hand.

This concept is also explained by Nord (2014), who proposes a classification of translation into two types, i.e. "*dokumentarische Übersetzung*" and "*instrumentelle Übersetzung*". Documentary translation "reproduces communication acts and specific components of the source culture […] with forms of the target language", which means that the text keeps a degree of "strangeness, foreignness" in the eyes of the readers (Nord 2014: 82, my translation). Instrumental translation, instead, is a "new communication instrument […] used for the same goal of the original text", meaning that the readers are almost "unaware" that the final product is a translation (Nord 2014: 82 my translation). It is impossible to decide a priori in which way a text type or genre should be translated. Instead, translators need to make a new decision every time, justified by the requirements and expectations of each task, which is what I try to do in paragraph 4.3.

However, there should always be a general strategy that guides the overall translation. First, the translator should identify the intended target audience of their work. In my case, I decided to maintain the same target audience of the source text, i.e. a general, lay public. In particular, since intralingual subtitles are usually meant for deaf and hard-of-hearing people (see paragraph 2.1.3), I decided to produce an SDH version of the Italian subtitles as well, which entailed different requirements and limits that will be

described in paragraph 4.2.1.2. Second, I needed to decide how to take my translation decisions. To be able to justify my solutions, I relied on authoritative and objective sources of information, such as reliable monolingual dictionaries and international entities or standards. For example, for the Italian language, when I had a doubt, I consulted the Treccani online vocabulary and encyclopaedia. I also often consulted digital corpora (both those I created and more general corpora, such as the Italian Web 2016 corpus in Sketch Engine) to check collocations. I followed Netflix's standards to make decisions concerning subtitles features such as layout and positioning.

4.2. AegiSub

The software used to translate the subtitles is Aegisub. As defined on the Aegisub blog, it is an open-source subtitle editor freely available and developed in 2005 by Rodrigo Braz Monteiro, Niels Martin Hansen, Thomas Goyne et al., whose main screen looks like this (Figures 4.1 and 4.2):

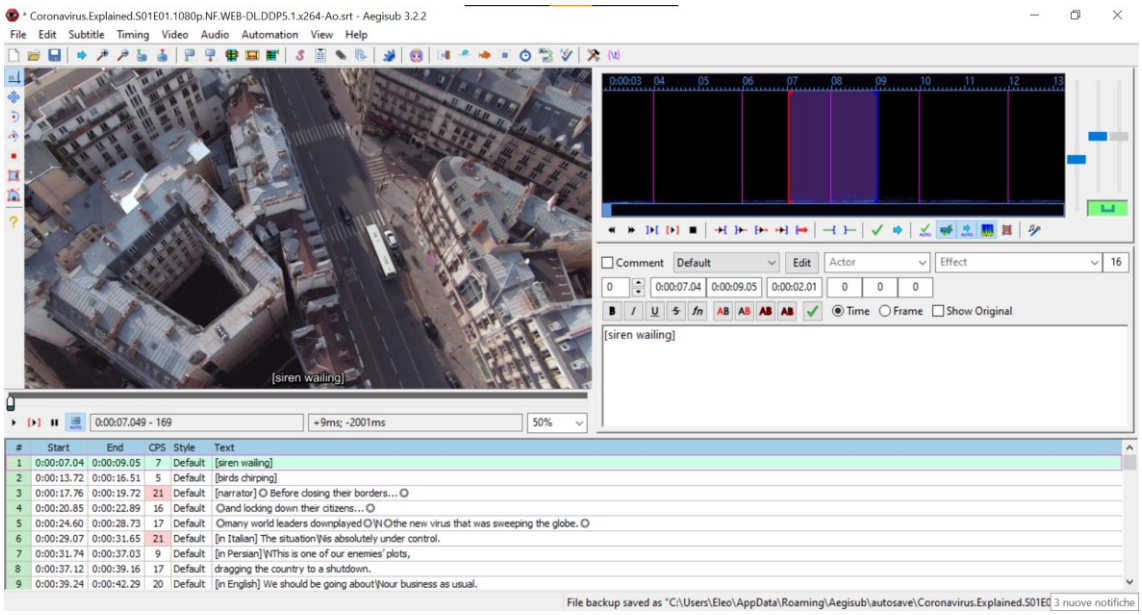


Figure 4.1: Home page of Aegisub showing video and English subtitles of episode 1x01.

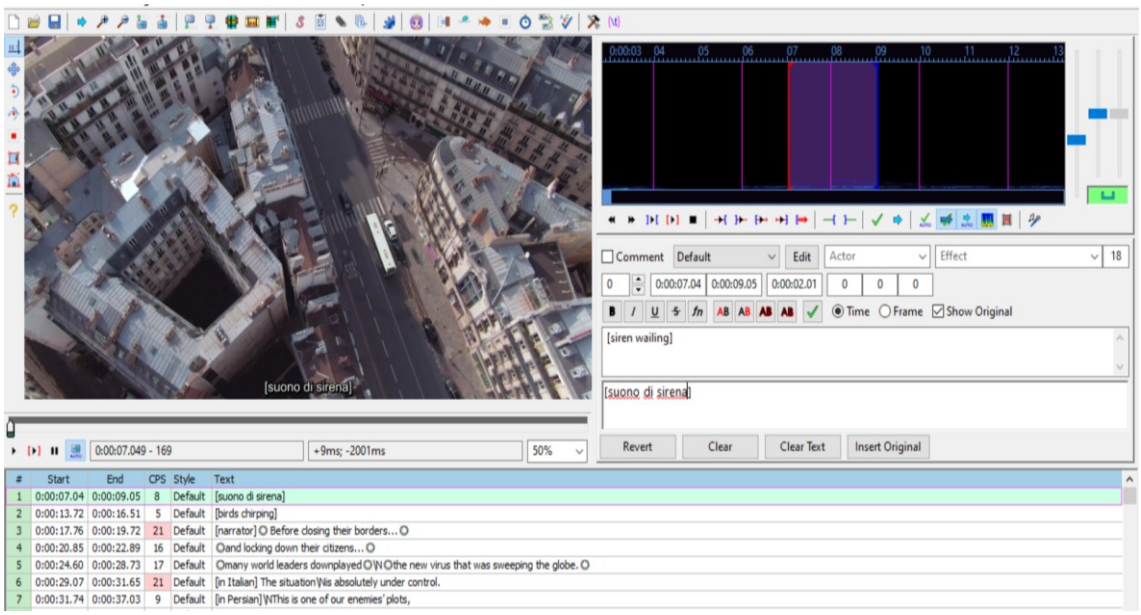


Figure 4.2: Aegisub home page with translation assistant.

When opening a new project, the main screen presents at the top the setting bar, with options similar to many other writing programmes such as “File”, “Edit”, “View”, “Help” and others specific to subtitling platforms, e.g. “Subtitles”, “Timing”, “Video”, “Audio”, “Automation”. The programme offers the possibility to have a complete overview of all the key elements of a subtitling project: the video where the translated subtitles will appear, the subtitle script, and the edit box, with some tools, such as the “Show Original” function, particularly useful for translation.

In the script table, there are six columns, i.e. the “#” column, with the numbers that identify each subtitle, the “Start” and “Finish” columns, with the start and end frame of each subtitle, the “CPS” column, where the reading speed is displayed and that assumes different graduations of red depending on how much it exceeds the one set by the user, the “Style” column, with the name associated to the style set up by the user, and, lastly, the “Text” column, with the text that appears on the video. Based on Netflix requirements, I set the reading speed to 20 CPS and, concerning the style, Arial font, size 20, in white colour. As it can be seen in the images, in some lines there is a circle symbol (tag {\i1}, {\i} in the edit box), which indicates that that subtitle is italicised. This tag has often been used in these projects, as Netflix requires subtitles of off-screen characters and narrators to be in italics. The tag \N instead indicates the start of a new line.

4.3. Translating "Coronavirus, explained" subtitles

The problems encountered and the challenges faced were of two main types, i.e. general language and popularisation issues.

4.3.1. General issues in subtitling

In this paragraph, I will analyse and describe the main issues I encountered with reference to (a) the characters per line limit and the reading speed, (b) adding visual sound descriptions for deaf and hard-of-hearing people and some dedicated additional captions to translate on-screen texts, (c) matching the subtitles to images and visual references displayed on the screen. I will also describe the strategies I implemented and justify the solutions I opted for, i.e. (a) rearranging the original English source text's order of the elements, (b) using specific verb tenses, and (c) translating idiomatic expressions or particular (general language) vocabulary.

4.3.1.1. *Respecting characters per line limit and reading speed*

To respect the 42 characters per line limit and the 20 characters per second reading speed, I had to implement different strategies, among which rephrasing wordy and "empty" expressions, such as *The fact is* (Table 4.1) or using metonymic expressions to save characters, e.g. *il nostro corpo [our body]* instead of *il nostro sistema immunitario [our immune system]* (Table 4.2). Sometimes, I reformulated sentences that, if translated more literally, would have been too long and would have implied a too high reading speed, as shown in Table 4.3 below and Figure 4.3. Specifically, a more literal translation of the exchange between the interviewer and Dr Weintraub (- *Servono miliardi di vaccini? – Esatto. [- Billions of vaccines need to be made? - That's correct.]*) would have had a reading speed of 25 characters per second, which is definitely too high. In this case, I thought that conveying the content of the dialogue was more relevant than respecting the order of the information, this is why I decided to reformulate the question and the answer (- *Quante dosi servono? - Miliardi. [- How many doses need to be made? - Billions.]*). In

this way, the reading speed is within the limit of 20 characters per second and viewers can read the exchange more easily.

Episode	Version	Start-End	
2	English ST	0:07:45.46 0:07:46.59	[narrator] *The fact is,*
		0:07:46.67 0:07:50.51	*vaccines are one of the most significant inventions in human history.*
	My translation	0:07:45.46 0:07:46.59	[narratrice] *I vaccini*
		0:07:46.67 0:07:50.51	*sono una delle invenzioni più importanti nella storia dell'uomo.*

Table 4.1: Comparison of original English and my translation.

Episode	Version	Start-End	
2	English ST	0:06:17.62 0:06:21.88	*After it deals with a virus, our immune system remembers the antigens,*
	My translation	0:06:17.62 0:06:21.88	*Quando incontra un virus, il nostro corpo ne ricorda gli antigeni,*

Table 4.2: Comparison of original English and my translation.

Episode	Version	Start-End	
2	English ST	0:18:22.22 0:18:23.89	[interviewer] *Billions of vaccines need to be made?*
		0:18:23.97 0:18:24.97	That's correct.
	My translation	0:18:22.22 0:18:23.89	[giornalista] *Quante dosi servono?*
		0:18:23.97 0:18:24.97	Miliardi.

Table 4.3: Comparison of original English and my translation.

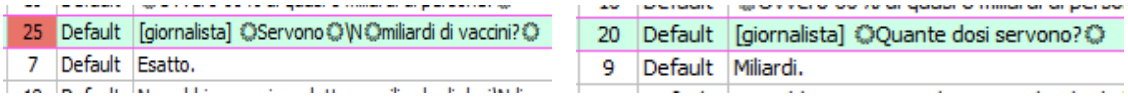


Figure 4.3: Comparison of reading speed of two different translation solutions.

In other cases, the only solution was to increase the subtitle's on-screen time in order to reduce the reading speed (tab. 4.4). I implemented this type of solution only in the presence of identifiers, such as *[in italiano] [in Italian]*) or *[narratore] [narrator]*, that are usually not read as carefully as the meaning-carrying subtitles. For example, in the subtitle events I reported in Table 4.4, I could not change the words, as Italian viewers could understand Conte's speech in Italian and might be bothered by discrepancies

between audio and text. In the second subtitle, the higher ratio between characters and time was due to the ellipsis, which is considered as characters even if it is not "read" by the viewers. The third example was, instead, particularly challenging, as *Seconda Guerra Mondiale* is significantly longer than *World War II* and there is no standard Italian abbreviation such as *WW2*. At first, I considered the option "Guerra" (war), relying on the fact that with *i soldati Alleati [Allied soldiers]* (or just *gli Alleati [the Allied]*), Italians refer only to British and American soldiers who fought in the Second World War. However it implied as well an increased events' length, so I eventually decided to increase it even more and write a clearer and more understandable translation.

Episode	Version	Start-End	
1	English ST	0:00:29.07 0:00:31.65	[in Italian] The situation is absolutely under control.
	My translation	0:00:28.79 0:00:31.70	[in italiano] La situazione è assolutamente sotto controllo.
2	English ST	0:02:06.19 0:02:07.91	[narrator] *...to pharmaceutical giants...*
	My translation	0:02:06.19 0:02:07.96	[narratrice] *…a giganti farmaceutici…*
2	English ST	0:13:02.69 0:13:04.03	[narrator] *During World War II,*
		0:13:04.11 0:13:06.91	*Allied soldiers were vaccinated for yellow fever.*
	My translation	0:13:02.08 0:13:04.42	[narratrice] *Durante la Seconda Guerra Mondiale,*
		0:13:04.48 0:13:07.44	*i soldati Alleati vennero vaccinati contro la febbre gialla.*

Table 4.4: Comparison of original English and my translation.

4.3.1.2. *Translating SDH*

My subtitle proposal is an SDH file, meaning then that it includes all the context information about the background sounds and speaker identifiers needed to make the final product accessible also for deaf or hard-of-hearing people. As anticipated in paragraph 2.2.5, this meant that the reading speed of the subtitle events was increased to 20 CPS in order to include the necessary additional information. To translate it, I followed Netflix's guidelines and examples and the images below show the final result (Figures 4.4, 4.5 and

4.6). As shown in Figures 4.6 and 4.7, when this kind of information interrupted the narration or the dialogues, ellipses were used to mark it.

Figure 4.4: Sound identifier.

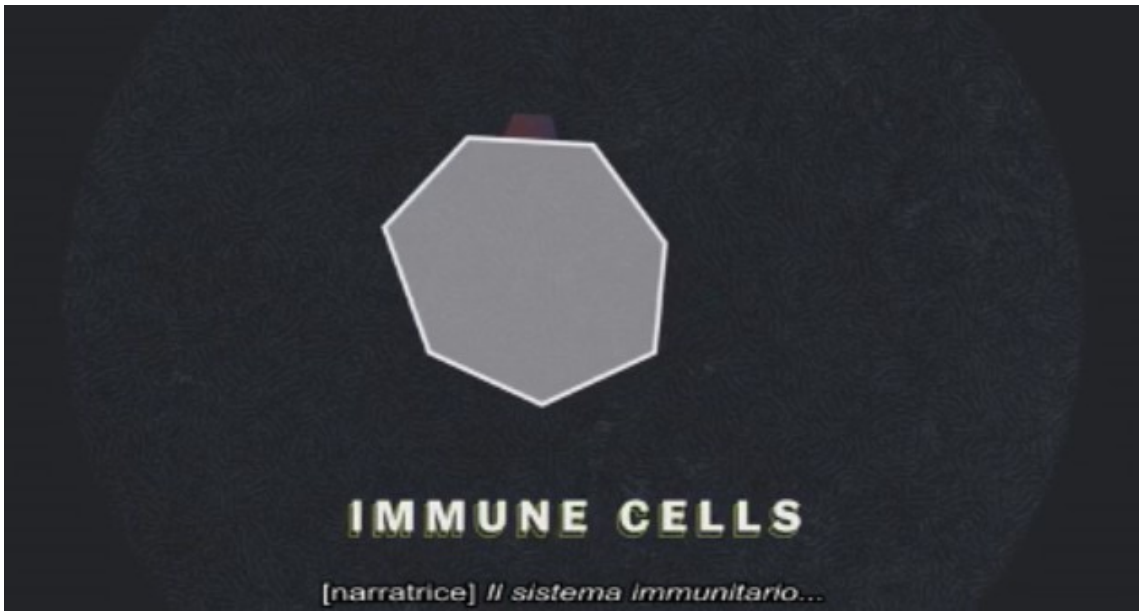


Figure 4.5: Speaker ID.

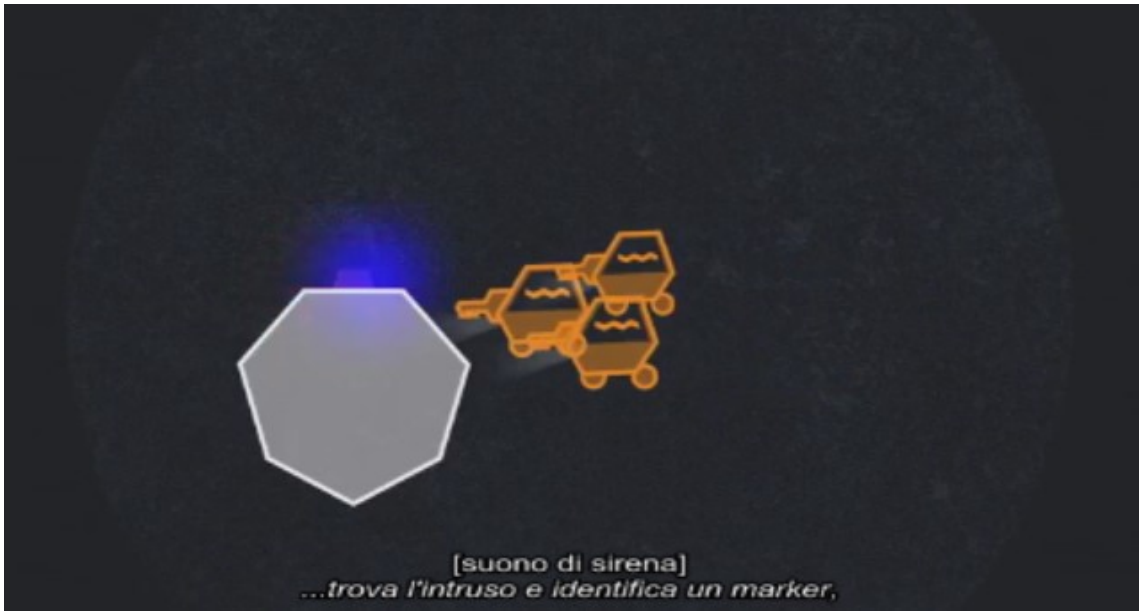


Figure 4.6: Sound identifier interrupting the off-screen narration.

The first draft of my proposal aimed also to make as much data as possible accessible to (hearing and non-hearing) viewers who do not know English, which meant that also information usually distributed in forced narratives subtitles files was included, too. As explained on Netflix's website, forced narratives subtitles (FN) are "text overlay[s] that clarif[y] communications or alternate languages meant to be understood by the viewer". They are meant to be distributed as separate timed text files that do not appear when full Subtitles or SDH files are activated, meaning that this kind of information regarding texted graphics and location/person IDs should be included also in the full Subtitle or SDH file. However, it was not possible to include this kind of information in normal subtitles and the only seemingly satisfying solution would have been to let these additional captions appear at the same time as the "normal" subtitles (Figure 4.7). Eventually, however, I decided that the best option would be to leave out this kind of information, as it was not relevant neither to the plot nor to my study.

Figure 4.7: Discarded option: plot-relevant subtitle (below) and additional caption (above).

The episodes' titles were translated but the show's title was not, according to Netflix's guidelines (Figure 4.8).

Figure 4.8: Translation of episode's title.

Information about and from the graphics was not translated, as it would have been redundant because it was also available in the subtitles narration. Particularly challenging was the example below, as it was considered that providing a translation of all the other symptoms might hinder readability, so it was considered at first to not translate them and change the subtitle accordingly, i.e. *molti altri sintomi* instead of *questi altri sintomi*

(Figure 4.9). However, eventually, it was decided to leave the translation available (Figure 4.10) as the main communicative function of this genre – a documentary – is to inform and the device – a streaming platform – allows the viewer to stop the narration and replay certain passages if not understood completely. In the attempt of making the additional caption readable in a faster and easier way and to save characters, the order of the symptoms was changed from *shortness of breath, sore throat, loss of appetite, diarrhea, loss of sense of smell, lack of taste* to *fiato corto, mal di gola, diarrea, perdita di appetito, gusto e olfatto*. Graphically, this information was written in all-caps and placed at the top of the screen, so that the viewers could continue to read the meaning-carrying dialogues at the bottom, without forcing the eye to travel unnecessarily across the screen, as can be seen in the screenshots below.

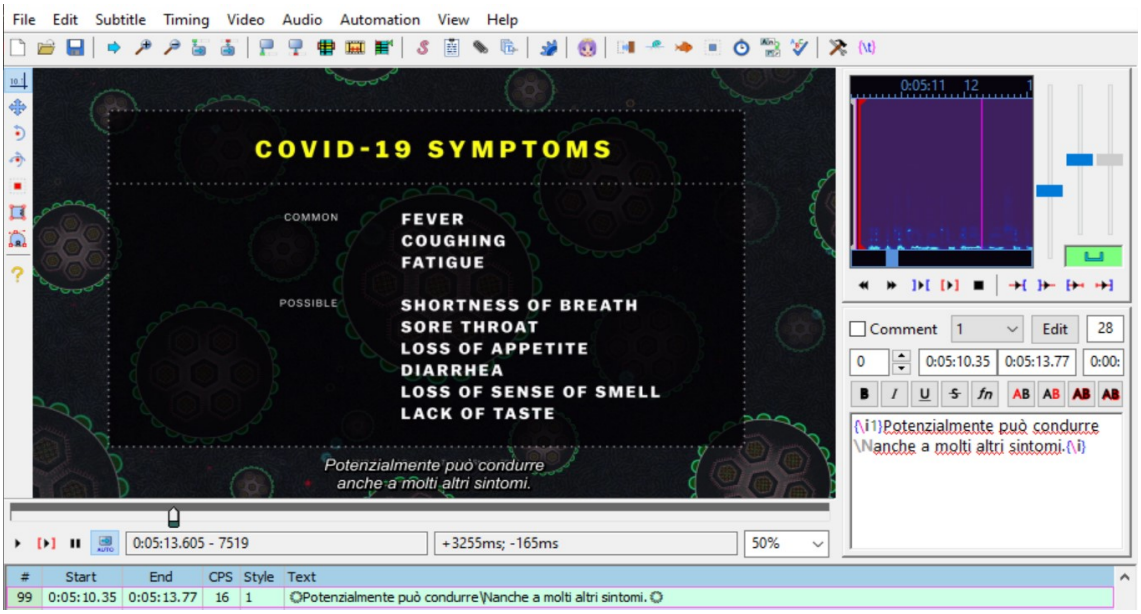


Fig. 4.9: Discarded option.

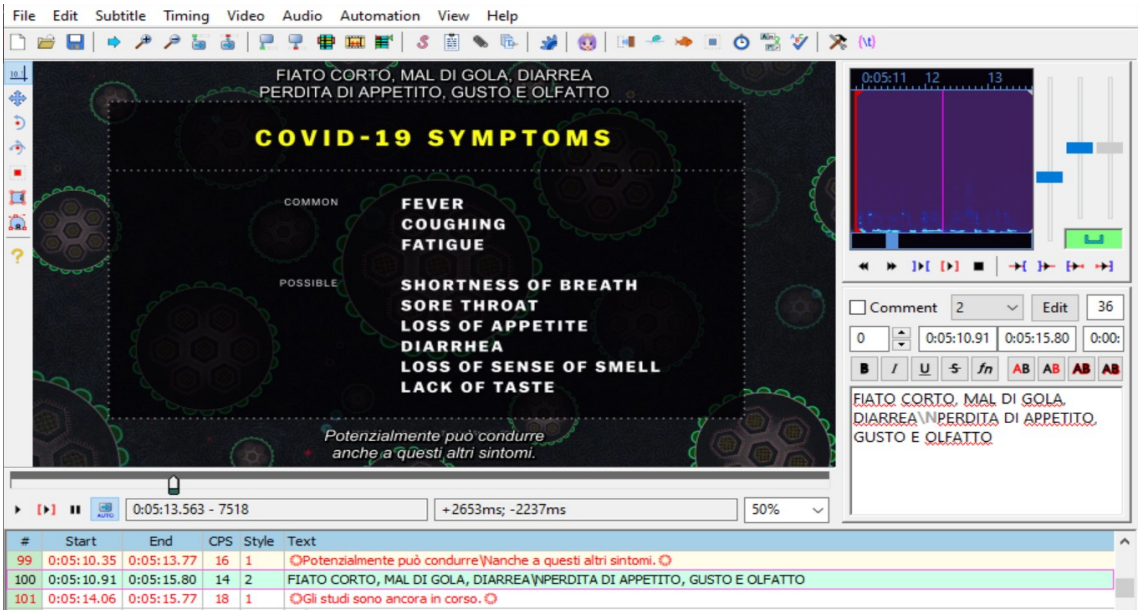


Figure 4.10: Final translation solution.

4.3.1.3. *Matching visual references*

Another important aspect connected to the translation of documentary subtitles is to make sure that they match the images displayed on the screen. For example, in the first episode, many graphs are displayed, so the subtitle events needed to appear at the right moment, as shown in the screenshots below (Figures 4.11, 4.12, 4.13).

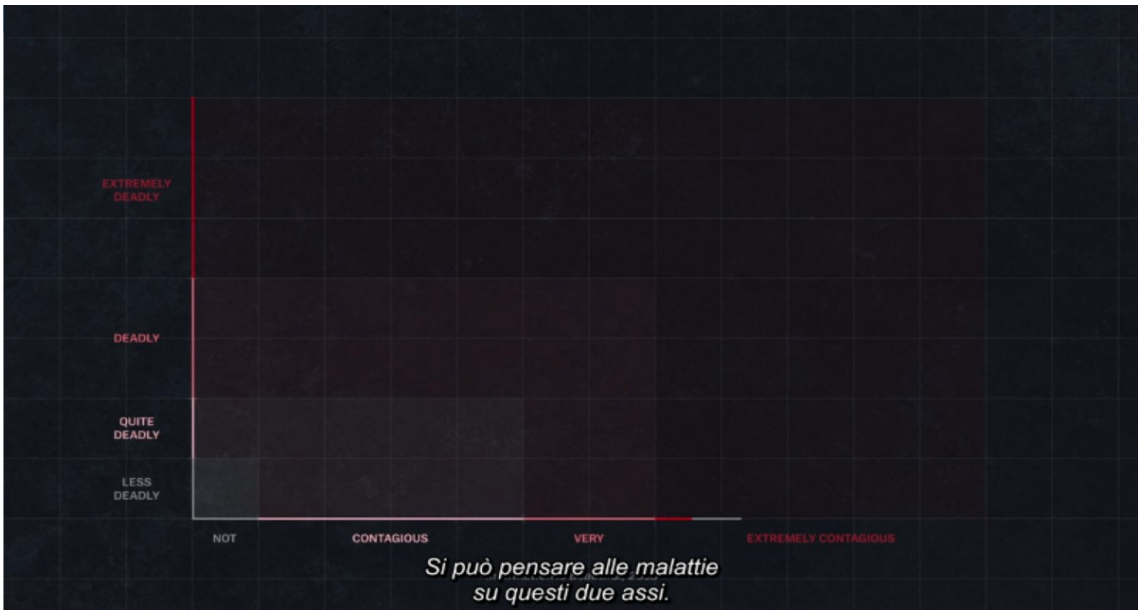


Figure 4.11: Subtitle event matching the images displayed on the screen.

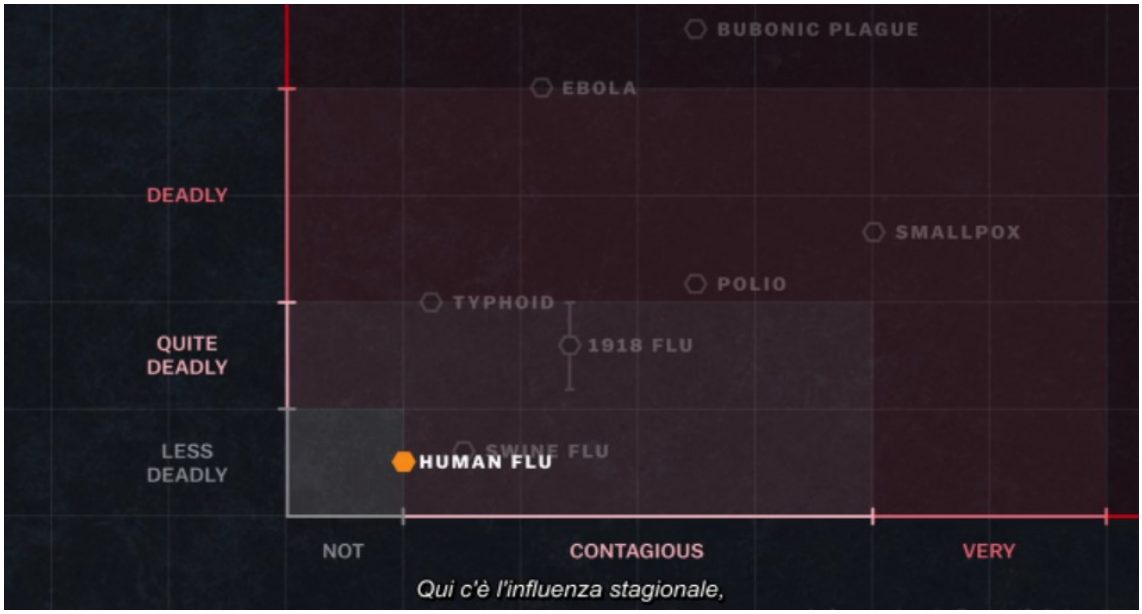


Figure 4.12: Subtitle event matching the images displayed on the screen.

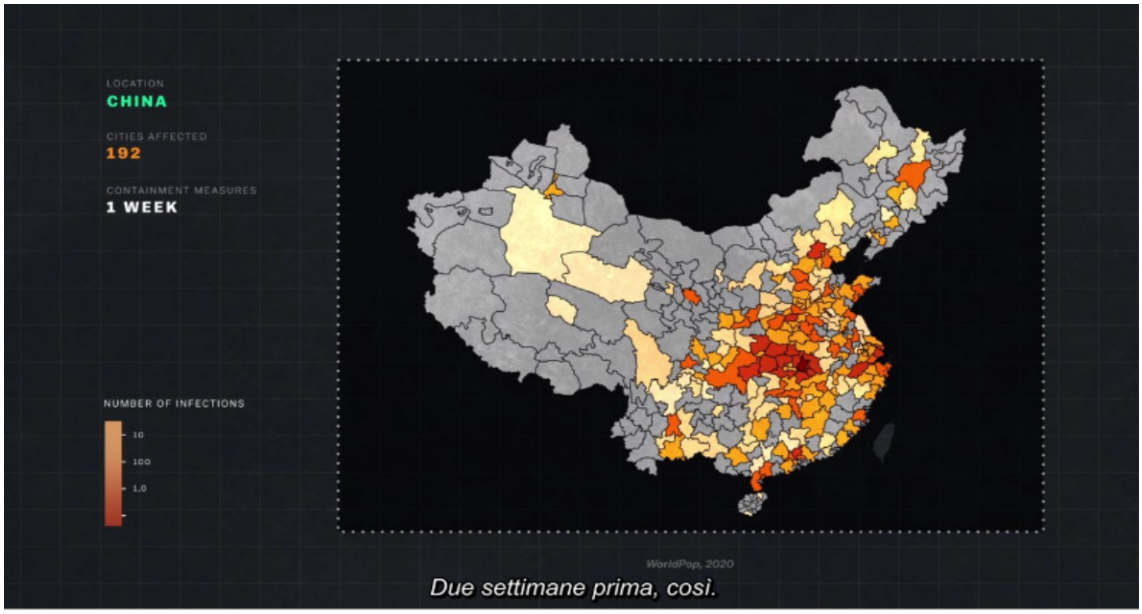


Figure 4.13: Subtitle event matching the images displayed on the screen.

Another example can be found in the second episode, where visual metaphors are used to describe how viruses work, e.g. viruses as *vehicles* or, in Italian, *veicoli* (Figure 4.14) and the *cellular machinery* (*macchina cellulare*) represented as a factory line (Figure 4.15).

Figure 4.14: Subtitle event matching the visual metaphor on the screen.

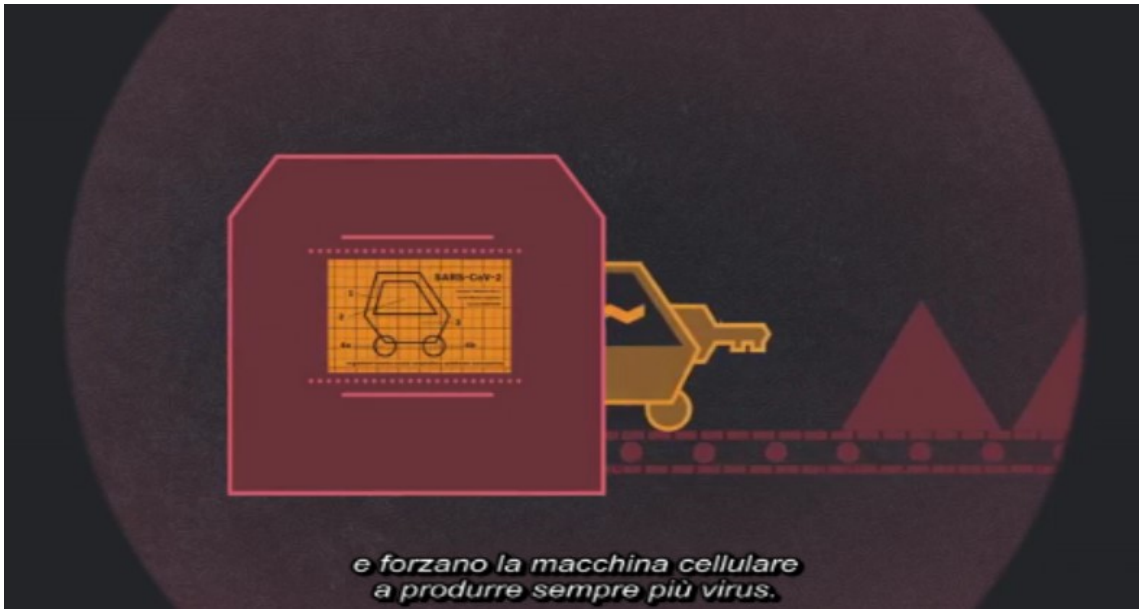


Figure 4.15: Subtitle event matching the visual metaphor on the screen.

4.3.1.4. *Text movements*

Sometimes, translators will change the order of the elements in a sentence for any of the reasons illustrated in paragraph 2.4.4. My translation is not an exception and, as shown in the examples in Table 4.5, I decided to anticipate or postpone some elements in order to create better-planned Italian sentences. My solutions and Netflix's can be compared:

instead of changing the sentences' order, Netflix's official version tends to follow more closely the English original ST order.

Episode	Version	Start-End	
1	English ST	0:04:35.14 0:04:37.31	*so people can pick it up on their hands*
		0:04:37.40 0:04:39.90	*and infect themselves* *if they touch their face,*
	My translation	0:04:35.14 0:04:37.31	*le persone possono entrarci in contatto*
		0:04:37.40 0:04:39.90	*e infettarsi,* *se si toccano la faccia con le mani,*
	Netflix Italian	0:04:35.15 0:04:37.32	*perciò è possibile infettare le mani*
		0:04:37.40 0:04:40.07	*ed essere contagiati toccandosi il volto,*
1	English ST	0:08:23.87 0:08:27.96	and then the survivors probably have some immunity and can't be reinfected.
		0:08:28.63 0:08:31.63	And eventually, the only people the virus can find
		0:08:31.71 0:08:33.59	are people who have immunity to it.
	My translation	0:08:23.87 0:08:27.96	*e i sopravvissuti probabilmente* *sviluppano una qualche immunità.*
		0:08:28.63 0:08:31.63	*E alla fine,* *il virus troverà solo persone immuni*
		0:08:31.71 0:08:33.59	*che non possono essere reinfettate.*
	Netflix Italian	0:08:23.88 0:08:27.97	e l'immunità sviluppata dai sopravvissuti impedisce nuove reinfezioni.
		0:08:28.63 0:08:31.64	Alla fine, le uniche persone che il virus può trovare
		0:08:31.72 0:08:33.85	sono quelle già immuni.
1	English ST	0:10:59.78 0:11:02.11	[narrator] *For a disease* *to become a pandemic,*
		0:11:02.20 0:11:07.29	*spreading around the world in months,* *leading to potentially millions of deaths,*
		0:11:07.37 0:11:10.37	*it has to find an extraordinary balance...*
	My translation	0:10:59.78 0:11:02.11	[narratore] *Per diventare* *una pandemia*
		0:11:02.20 0:11:07.29	*e diffondersi nel mondo nel giro di mesi* *causando potenzialmente milioni di morti,*
		0:11:07.37 0:11:10.37	*una malattia deve trovare* *un equilibrio straordinario*

	Netflix Italian	0:10:59.91 0:11:02.12	*Perché una malattia diventi pandemia*
		0:11:02.20 0:11:07.29	*e si diffonda nel mondo in mesi,* *minacciando di morte milioni di persone,*
		0:11:07.38 0:11:10.63	*è necessario un equilibrio straordinario*

Table 4.5: Comparison of original English, my translation and Netflix's official Italian version.

4.3.1.5. *Verb tenses*

Translating verbs presents challenges, as languages have different ways of describing and conceptualising time through verb modes, tenses, aspects etc. Particularly relevant to the translation of these two episodes was the fact that Italian has a wider range of past tenses compared to English. In the English original text, sentences were mainly formulated in the past simple but when translating them into Italian, there is the possibility to choose from at least two or three tenses, namely *passato prossimo*, *passato remoto*, or *imperfetto*. Passato prossimo and passato remoto are used to describe "unitary" actions, while imperfetto describes actions that extend over time. Even though in written standard Italian, passato prossimo should be used for events that happened in the near past or for actions that still have consequences and impacts on the present, while passato remoto refers to events farther in the past that have no longer any connection to the present, the actual choice between passato prossimo or remoto in spoken Italian depends much more on the diatopic variety of the user. Speakers from Northern regions tend to use passato prossimo even for ancient events and people from Southern areas use passato remoto for more recent events, too. Thus, it might be difficult to determine precisely when an event is to be considered "recent" or "ancient", especially when considering that potential viewers will watch a documentary that narrates events that will become older and older as time passes. This is why I decided to use mainly passato remoto instead of passato prossimo, even though it sometimes felt "unnatural" to me, as I speak a Northern variety of Italian. Another reason behind the decision of using passato remoto is that it allows to "save" characters, as it is a synthetic form and therefore shorter than the analytical form of passato prossimo, e.g. *fu [it was]* (2 characters) vs. *è stato [it was]* (6 characters) (as shown in the comparison in Figure 4.16).

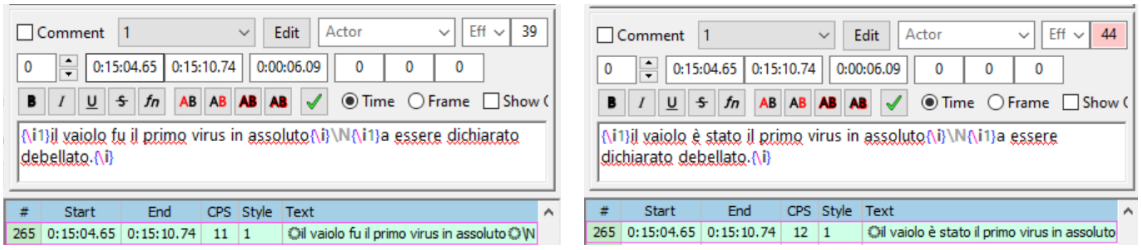


Figure 4.16: Comparison of reading speed and number of characters per line when using passato prossimo and passato remoto.

4.3.1.6. *Vocabulary and idiomatic expressions*

Finally, one of the main problems faced when translating any kind of text is to find a fitting rendition of words and idiomatic expressions that do not have a perfect equivalent in the target language and recreate phrasings and formulations that cannot always be transferred in the exact way of the source text. In Table 4.6 below, I listed some of the subtitle events that I found most challenging to translate, my solutions, and Netflix's official Italian versions. Most of the time, the issue was finding an equivalent for typical English idiomatic expressions, such as *the ultimate (bioterrorist),* which I translated with an Italian idiomatic phrase that has a similar meaning, i.e. *(la bioterrorista) per eccellenza*, or *it's got a long way still to go*, which I translated with the common Italian expression *è ancora da vedere [is yet to be seen]*. Another example is the sentence *It was unlike anything else in history* that I, at first, tried to translate using the Italian phrase *come mai prima d'ora/nella storia [like never before/in history]*. However, all the solutions I found did not fit in the context, so I chose to translate it with *Non era mai successo nulla di simile [Nothing like this had ever happened]*, using only the adverb *mai [never]* and omitting *nella storia*, as I considered it redundant.

Other times, the problem was not in idiomatic expressions per se, but in space or time constraints. For example, I changed the class of words of the English sentence *those investments are billions to save trillions* into *sono miliardi investiti per risparmiare milioni di miliardi [they are billions invested to save trillions]* to save characters and reduce the necessary reading speed, as Italian does not have a single (short) word to translate *trillions*.

Finally, I want to highlight that, while in some cases I completely aligned with Netflix's solutions, in others, I did not: for example, they decided to translate the English *makeshift masks* with *mascherine rimediate* instead of *mascherine improvvisate*, which is the usual translation, as proven also by the fact that in the Italian Web 2016 corpus on Sketch Engine, there are no concordances found for Netflix's translation, whereas my solution has 10 hits (14, if the 4 hits of the singular form *mascherina improvvisata* are counted).

Episode	Version	Start-End	
1	English ST	0:10:54.65 0:10:57.36	It was unlike anything else in history.
	My translation	0:10:54.65 0:10:57.36	Non era mai successo nulla di simile.
	Netflix Italian	0:10:54.65 0:10:57.37	Fu un avvenimento senza precedenti storici.
1	English ST	0:18:39.28 0:18:41.74	Mother Nature is the ultimate bioterrorist.
	My translation	0:18:39.28 0:18:41.74	Madre Natura è la bioterrorista per eccellenza.
	Netflix Italian	0:18:39.45 0:18:41.75	Madre Natura è la bioterrorista più pericolosa.
1	English ST	0:20:23.47 0:20:27.76	*Doctors and nurses around the world* *have been forced to use makeshift masks.*
	My translation	0:20:23.47 0:20:27.76	*Dottori e infermieri si sono trovati a* *dover usare mascherine improvvisate.*
	Netflix Italian	0:20:23.47 0:20:28.10	Medici e infermieri di tutto il mondo hanno dovuto usare mascherine rimediate.
2	English ST	0:00:58.18 0:01:00.60	*If it's going to end* *this pandemic, though,*
		0:01:00.68 0:01:03.10	*it's got a long way still to go.*
	My translation	0:00:58.18 0:01:00.60	*Se riuscirà a fermare* *questa pandemia, però,*
		0:01:00.68 0:01:03.10	*è ancora da vedere.*
	Netflix Italian	0:00:58.18 0:01:00.69	*Tuttavia, per sconfiggere questa pandemia,*
		0:01:00.77 0:01:02.90	*dovrà fare ancora molta strada.*
2	English ST	0:19:25.28 0:19:30.29	After all, those investments are, at most, billions to save trillions.
	My translation	0:19:25.28 0:19:30.29	Alla fine, sono miliardi investiti per risparmiare milioni di miliardi.

	Netflix Italian	0:19:25.29 0:19:30.29	Dopotutto, si tratta di investire miliardi per risparmiare milioni di miliardi.

Table 4.6: Comparison of original English, my translation and Netflix's official Italian version.

4.3.2. Popularisation strategies in subtitling

In this final paragraph, I will focus on the main terminological issues and challenges related to medical popularisation that I encountered while translating both episodes and I will describe and justify the solution I eventually opted for when there were more options. Finally, I will focus on an element typical of popularisation documentaries, i.e. the medium and code switch noticeable especially in the subtitling of oral interviews.

4.3.2.1. *Terminology*

In Table 4.7 below, I listed the most important terminological units I translated with the support of the reference corpus (Chapter 3). I will then focus on the most problematic and challenging.

Episode	English	Italian
1	jump	salto di specie
1	zoonotic virus	virus zoonotico
1	outbreaks	focolai
1	live animal market	mercato di animali vivi
1	droplets	goccioline
1	Bat coronavirus RaTG13	Bat-CoV-RaTG13
1	airborne	trasmesso per via aerea
1	lifelong immunity	immunità permanente
1	smoldering outbreaks	focolai attivi
2	hijack	infettare
2	cellular machinery	macchina cellulare
2	marker	marker

2	tagging and subduing	neutralizzare
2	vaccine platform	piattaforma vaccinale

Table 4.7: Translation of medical terminology.

When translating *droplets*, there were two options, i.e. using the loan word *droplet* or using the Italian word *goccioline*. *Droplet* is the medical term used by experts in the field but it became well-known also to the lay audience, as it has been widely used by journalists and public figures over the last two years. *Goccioline*, instead, is the general language translation and thus is immediately recognised and understood by the target audience. I also searched in my Italian lay sub-corpus, and the results showed that *goccioline* is more used (23 concordances) than *droplet* (11 hits) in the articles I considered. Considering all this, I opted, in the end, for *goccioline*, to comply with the documentary's popularising approach and this choice is supported by its equally widespread use in popularising articles and discourse. Regarding the name of the virus *bat coronavirus RaTG13*, I decided to use the exact name of the virus, i.e. *Bat-CoV-RaTG13*, as in the references I read, it was called in this way. Netflix's official version chose instead to translate it as *coronavirus dei pipistrelli RaTG13*, but as the previous and following sentences explain that the virus was found in bats, I think that using the virus' name might be considered a good solution as well. The expression *smoldering outbreaks* is a metaphor that, unfortunately, I could not render in Italian, as the adjective that usually collocates is *attivi*. However, the image of fire and smoke was not completely lost, as the noun *focolai* already provides that and belongs also to the semantic field of fire and flames. Another verb that presented particular challenges was *hijack*. Its translation is *dirottare*, which commonly refers to the hijacking of a vehicle or a plane and it did not collocate well in the contexts where it should have appeared. I decided then to translate it using the medical term *infettare*, referring to what the virus actually do the cells. Thus, in the first episode, I translated the sentence *They need to hijack other living cells to reproduce* into *Devono infettare altre cellule viventi per riprodursi*, while in the second episode, the sentence *They spread through the body and hijack more cells* was translated into *Si diffondono nel corpo e infettano sempre più cellule*.

Finally, I had to translate the diseases' names mentioned in the episodes, e.g. *smallpox*, *chickenpox*, *measles* (respectively, *vaiolo*, *varicella*, *morbillo*). As they are (or

were) known and widespread diseases, their translation did not present any particular challenge. On the contrary, the translation of the new COVID-19 was more problematic, as in Italian it can be translated either as a masculine noun, *il COVID-19*, or a feminine one, *la COVID-19*. Even though for consistency reasons the feminine variant might appear more correct, as both *malattia [disease]* and *infezione [infection]* are feminine nouns and other coronavirus diseases like SARS and MERS and flu diseases like the bird flu are feminine nouns in Italian, i.e. *la SARS*, *la MERS*, *l'aviaria*, the masculine alternative referring to the virus and not the disease became more widespread and used in the media and among the general, lay public. This is confirmed also by the results that emerged from running a concordance search in my Italian sub-corpora: in the expert sub-corpus, the articles use both variants with the same frequency, i.e. both the masculine and the feminine variants have 10 hits, whereas the articles that compose the lay sub-corpus use the masculine variant significantly more than the feminine, i.e. 42 and 16 times, respectively. As the target audience of this show is precisely the general public, I chose to use the most frequently used masculine variant.

4.3.2.2. *Writing speech*

Another distinctive feature of science popularisation documentaries' language is its orality: as already mentioned, documentaries "rely heavily on the spoken word" (Nichols 2001: 30-1), be it through off-screen narration, interviews, re-enacting actors or archival footage (see paragraphs 2.3, 2.3.1, and 2.3.2). In the episodes translated here, off-screen narration and interviews were the most used ways, with some rare archival footage. As already highlighted, these kinds of "voices" present different translation challenges. In this paragraph, I will focus in particular on the differences between off-screen narration and interviews.

Off-screen narration is a particular type of text that presents many of the characteristics of writing, such as its carefully structured sentences and texts and the relative high formality of its register. At the same time, it is meant to be conveyed orally, which implies that it has to be easily followed and quickly understood by the hearers. The challenge of translating this type of subtitles was reproducing this special type of text, its register and structure because, even though subtitles are written, they should be in any

case easy to follow and quick to understand, as they appear on screen for a limited amount of time and the viewers need to have time to both read them and see the images.

As shown by the examples in Table 4.8 below, some passages were hard to translate due to the length of their sentences and the use of several anaphoric elements, such as *some, others* and *none of these treatments* as parts of the anaphoric chain starting with *treatment* at the beginning of the extract (and the corresponding chain in Italian, starting with *cura* and including *altre terapie, altre*, *nessuna di queste cure*). In the Italian version, I also used the pronominal particles *ci* and *ne* to refer to previous nouns or entire sentences. These features are typical of written texts, as authors there have the time to think through and plan their work, whereas speech is usually characterised by nouns and repetitions, to help both the speaker and the listener. Anaphors in subtitles might be a source of difficulty for viewers because, even though they are reading a text and they should be able to follow anaphoric chains, subtitles disappear quickly from the screen, meaning that viewers need to remember without the possibility of going back to read. For this reason, I tried to make my subtitles as easier as possible and I tried to include a reprise noun or synonym every time I considered the antecedent to be too far, to help the viewer understand.

Episode	Version	Start-End	
2	English ST	0:05:22.40 0:05:25.41	[narrator] *This is where having a treatment would help.*
		0:05:26.36 0:05:30.58	*Some inject antibodies, those molecules that subdue the virus,*
		0:05:30.66 0:05:33.45	*either synthetic antibodies made in a lab,*
		0:05:33.54 0:05:35.83	*or from the blood of people who've recovered.*
		0:05:36.50 0:05:40.09	*Others rein in our immune systems if they're getting out of control.*
		0:05:40.63 0:05:42.88	*And some, like Remdesivir,*
		0:05:42.96 0:05:47.01	*actually enter our cells to block the virus from copying itself.*
	My translation	0:05:22.40 0:05:25.41	[narratrice] *In questi casi, avere una cura aiuterebbe.*
		0:05:26.36 0:05:30.58	*Ad esempio iniettare le molecole che bloccano il virus,*
		0:05:30.66	*ovvero gli anticorpi, sia coltivati in laboratorio,*

		0:05:33.45	
		0:05:33.54 0:05:35.83	*che estratti dal sangue* *delle persone guarite.*
		0:05:36.50 0:05:40.09	*Altre terapie ripristinano* *il sistema immunitario se fuori controllo.*
		0:05:40.63 0:05:42.88	*E altre, come il remdesivir,*
		0:05:42.96 0:05:47.01	*entrano nelle nostre cellule* *per impedire al virus di replicarsi.*
2	English ST	0:06:00.52 0:06:01.91	[narrator] *But as of May,*
		0:06:01.98 0:06:05.19	*none of these treatments* *can stop a person from getting sick,*
		0:06:05.28 0:06:07.65	*or spreading this coronavirus to others.*
		0:06:08.20 0:06:09.95	*A vaccine would,*
		0:06:10.53 0:06:12.66	*and it does it by taking advantage* *of something*
		0:06:12.74 0:06:15.83	*our bodies have evolved* *over millions of years:*
		0:06:15.91 0:06:16.91	*memory.*
		0:06:17.62 0:06:21.88	*After it deals with a virus,* *our immune system remembers the antigens,*
		0:06:22.09 0:06:23.59	*sometimes forever,*
		0:06:23.92 0:06:26.05	*other times just for a while.*
	My translation	0:06:00.05 0:06:01.91	[narratrice] *Ma fino ad oggi, a maggio*,
		0:06:01.98 0:06:05.19	*ancora nessuna di queste cure* *impedisce alle persone di ammalarsi,*
		0:06:05.28 0:06:07.65	*né di contagiare gli altri.*
		0:06:08.20 0:06:09.95	*Un vaccino potrebbe,*
		0:06:10.53 0:06:12.66	*e ci riuscirebbe sfruttando qualcosa*
		0:06:12.74 0:06:15.83	*che i nostri corpi hanno sviluppato* *in milioni di anni:*
		0:06:15.91 0:06:16.91	*la memoria.*
		0:06:17.62 0:06:21.88	*Dopo aver affrontato un virus,* *il nostro corpo ne ricorda gli antigeni,*
		0:06:22.09 0:06:23.59	*a volte per sempre,*

		0:06:23.92 0:06:26.05	*a volte solo per un po'.*

Table 4.8: Examples of carefully planned spoken text.

On the other hand, interviews were "pure" speeches that needed to be transcribed into writing. This meant polishing and refining most of the features typical of oral communication, such as hesitations, self-corrections, or false starts, to make the written subtitle more readable and to save up characters, thus lowering the reading speed. As shown in the examples in Table 4.9, I left out hesitations such as *uh* and I reformulated the sentence *What CEPI is, is it aggregates funding* to have a linear, correct Italian sentence, i.e. *La CEPI raccoglie finanziamenti [CEPI aggregates funding]*.

Episode	Version	Start-End	
1	English ST	0:06:54.83 0:06:57.29	Wash your hands as often as you possibly can,
		0:06:57.37 0:07:01.08	and I know you're not always in a position to be able to wash your hands,
		0:07:01.46 0:07:03.50	uh, but wash them as much as you can.
	My translation	0:06:54.83 0:06:57.29	Lavatevi le mani più spesso possibile,
		0:06:57.37 0:07:01.08	e so che non sarete sempre nelle condizioni di farlo,
		0:07:01.46 0:07:03.50	ma lavatevele ogni volta che potete.
2	English ST	0:17:23.91 0:17:25.58	[Hatchett] What CEPI is,
		0:17:25.67 0:17:28.83	is it aggregates funding and creates a pool of funds
		0:17:28.92 0:17:31.05	to support vaccine development.
	My translation	0:17:23.91 0:17:25.58	[Hatchett] La CEPI
		0:17:25.67 0:17:28.83	raccoglie finanziamenti e crea una sorta di fondo comune
		0:17:28.92 0:17:31.05	per sostenere lo sviluppo di vaccini.

Table 4.9: Examples of more spontaneous speech refined.

However, I tried to keep some elements of "spoken" text also in the writing, especially through lexical means, as shown in the example in Table 4.10 below. In this case, I translated the rhetorical question *and that's not insignificant, right?* with another

rhetorical question *e non è per niente poco, no?* where I kept the interrogative element *no? [right?]* often used in speech to ask the interlocutor for agreement and I added *per niente [at all]*, a phrase typical of spoken informal language. Another lexical mean I used was the informal expression *È un peccato [It's a shame]*.

Episode	Version	Start-End	
2	English ST	0:16:49.50 0:16:51.38	and that's not insignificant, right?
		0:16:51.46 0:16:55.68	So that's too bad that we lost that opportunity.
	My translation	0:16:49.50 0:16:51.38	e non è per niente poco, no?
		0:16:51.46 0:16:55.68	È un peccato aver perso quell'occasione

Table 4.10: Examples of "spoken" lexical features in writing.

On a final note, it should also be mentioned that some of the people interviewed were Italian, given the fact that our country was among the countries that suffered the most in the early phases, in March 2020. As shown in Table 4.11, in these cases, speeches were more faithfully transcribed into writing, even when the English translation did not match fully. In the English translations, the Italian single sentences were frequently separated into smaller sentences, e.g. the sentence *Una sofferenza così concentrate e così intensa non credo di averla mai vista [I don't think I've ever seen such concentrated and intense suffering]* was translated into two English sentences *Such concentrated and intense suffering. I've never seen this much of it in my life*. Other times, it was necessary to refine the most prominent features of spontaneous, such as the omission of *Le dico che [I tell you that]* and of the redundant *in sé* in the expression *nel vero senso della parola [literally]*.

Episode	Version	Start-End	
1	English ST	0:16:30.94 0:16:34.03	[in Italian] I'm living in the hospital, literally.
		0:16:34.11 0:16:38.45	I sleep in the office and I live here.
	My translation	0:16:30.94 0:16:34.03	[in italiano] Praticamente vivo in ospedale,
		0:16:34.11 0:16:38.45	nel vero senso della parola: dormo in ufficio e vivo in ospedale.

	Italian audio	0:16:30.94 0:16:38.45	Le dico che praticamente vivo in ospedale, ma nel vero senso della parola in sé: dormo in ufficio e vivo in ospedale
	English ST	0:16:38.53 0:16:42.29	[woman speaking Italian] Such concentrated and intense suffering.
		0:16:43.12 0:16:44.92	I've never seen this much of it in my life.
	My translation	0:16:38.53 0:16:42.29	[donna in italiano] Una sofferenza così concentrata e così intensa
		0:16:43.12 0:16:44.92	non credo di averla mai vista.

Table 4.11: Examples of Italian speeches.

4.4. Concluding remarks

Translating subtitles proved to be more challenging than one might initially assume. Even though I had, at times, difficulties and doubts concerning vocabulary, grammar, or idioms, most issues were related to the subtitle constraints (see paragraphs 2.2.1-4). It was the first time in which I needed to pay attention to every character in every line, including spaces and punctuation marks, which was sometimes problematic for me, as I initially tended to produce slightly longer translations. Furthermore, respecting the reading speed limit of 20 characters per second was even more demanding than respecting the characters per line one. Often, I found no other solution than increasing the screen time of the subtitle events (see paragraph 4.3.1.1), which made me realise how much a few hundredths of seconds can impact the whole project. All things considered and despite the difficulties – or, maybe, because of them, however, translating these subtitles was a rewarding and fascinating task that enabled me to learn more about popularisation techniques and subtitling and to test my skills. It challenged me to be creative and not settle, but keep searching for better, more suitable solutions.

Conclusions

The main purpose of this work was to explore the realms of medicine popularisation and audiovisual texts through the translation of the subtitles of a Netflix documentary series, i.e. the first two episodes of "Coronavirus, explained". Translating this series allowed me to combine my interest in medical language and my curiosity about subtitling practices. Medicine popularisation is an important topic in translation discourse because it enables lay people to access information valuable to their everyday life and the past two years showed just how essential this is. Subtitling has become an increasingly significant part of the translation market due especially to the success of streaming platforms and services such as Netflix and it presents unique, fascinating features.

The first two chapters tried to offer, as thoroughly and completely as possible in the limits of this work, a theoretical description of these two main fields. The proposed theoretical frameworks rely on the work and research of various experienced scholars and they allowed a better comprehension and understanding of the following practical tasks, which were described in the last two chapters. These consisted of the building and analysis of four comparable sub-corpora and the proposal of a subtitle translation, whose main challenges and difficulties were highlighted, as well as the solutions and strategies to overcome them.

From this work emerged that both science popularisation and AVT are not simple activities, as they present issues and particularities that are not easy to solve and cannot be avoided, as it might happen when translating texts of different genres or in other modalities. In particular, as interlingual subtitling is one of the most active and flourishing branches of third-millennium translation this work focused on difficulties posed by both general language and popularising language usages in subtitling. This was decided because subtitling appeared to offer the most interesting insights, thanks to its multimodal, hybrid nature. Although sometimes subtitling heavily affects and limits translation options, it can however allow translators to get creative in the process of finding the most fitting and suitable equivalent, expression, or idiom, which cannot be always taken for granted when translating popularising texts in more conventional modalities.

Some of these peculiarities of subtitling were analysed, commented upon, and solved – or, at least, one possible solution was provided – in the final chapter. As it was shown, they relate not only to every aspect of language such as grammar and idiomatic expressions, and, in the case of this documentary, terminology of the medical language, but also to the interplay and constant connection between the images, the voices, and the sound effects. The solutions and strategies implemented to recreate the same effect in the target language may vary, as seen in the comparison between my proposal and Netflix's version. In the end, using Nord's words "the type of translation that is to be chosen depends on each translation task"[4] (2014: 82, my translation), and translators can only support and justify as best as they can the decisions they make.

[4] "Welcher der beiden Typen jeweils zu wählen ist, hängt, wie gesagt, vom Übersetzungsauftrag ab" (Nord 2014:82)

Riassunto

In questa tesi ho cercato di creare una sintesi tra due ambiti della traduzione che, almeno di primo impatto, non sembrano essere collegati: la divulgazione scientifica, e medica in particolare, e la traduzione audiovisiva, nello specifico la sottotitolazione. Ho quindi deciso di proporre una mia traduzione dei primi due episodi della docu-serie di Netflix *Coronavirus, explained*, ovvero *Questa Pandemia* e *La Corsa al Vaccino*. Questo lavoro mi ha permesso di approfondire il mio interesse per la traduzione e la divulgazione in ambito medico e di soddisfare la mia curiosità per le pratiche di traduzione di sottotitoli. L'interesse per la divulgazione e la traduzione di materiale medico è nato grazie ad alcuni corsi e alcune esperienze vissute durante il mio semestre di mobilità Erasmus che mi hanno portato a riflettere sul ruolo fondamentale giocato da questo ambito nel discorso traduttivo. L'accessibilità da parte dei cosiddetti "non esperti" a informazioni riguardanti la loro salute e la loro quotidianità è essenziale, come mostrato, purtroppo, dagli ultimi due anni. Il fascino per il mondo del doppiaggio e dei sottotitoli è dovuto in gran parte al successo che le piattaforme di streaming hanno avuto in questi anni anche nel mio tempo libero. Grazie alla diffusione e all'espansione di piattaforme e servizi di streaming multilingue, una parte sempre più consistente del mercato della traduzione è dedicata ai sottotitoli, la cui traduzione presenta sfide e problematiche uniche e stimolanti per ogni traduttore.

Per poter affrontare queste tematiche ho diviso il mio lavoro in quattro fasi e, di conseguenza, la mia tesi in altrettanti capitoli. Nei primi due capitoli presento una panoramica per quanto possibile completa delle cornici teoriche su cui ho basato la successiva parte più pratica: la divulgazione delle lingue speciali e di quella medica in particolare e le caratteristiche della traduzione audiovisiva. Nei restanti due capitoli invece mi occupo proprio degli esercizi pratici, ovvero la costruzione di quattro sotto-corpora comparabili e la proposta di traduzione, ponendo particolare attenzione su specifici problemi e difficoltà. Le traduzioni complete e la composizione del corpus sono disponibili nelle Appendici.

Nel primo capitolo mi soffermo sulla divulgazione del linguaggio medico, ovvero sul processo che permette di rendere accessibile al pubblico di non esperti quanto gli

specialisti comunicano. La lingua della medicina è una delle cosiddette lingue speciali, in inglese LSP, Languages for Special Purposes, definite come varietà di lingue naturali usate da gruppi ristretti di parlanti. Solitamente sono caratterizzate da termini spesso sconosciuti ai non esperti, da costruzioni sintattiche e fraseologiche note solamente agli esperti del settore e, a volte, dall'uso di parole comuni in modo speciale, con una connotazione o un significato diverso. La loro divulgazione è un processo complicato, ma necessario, in particolare per il linguaggio medico, a causa dell'impatto che ha sulla vita delle persone. Nel corso del capitolo descrivo quindi le strategie maggiormente usate in questo processo, con riferimento alle due lingue in esame, l'inglese e l'italiano, e alle difficoltà maggiori riscontrate nella traduzione dall'una all'altra di testi in ambito medico.

Partendo dalla definizione di lingue speciali provo a delinearne i tratti principali. Le lingue speciali, usate dagli esperti del settore, devono soddisfare criteri di precisione e trasparenza, oggettività e brevità e per raggiungere questi obiettivi si avvalgono di diverse strategie. Dal punto di vista lessicale, usano termini e espressioni specifiche di ogni ambito, evitano parole con connotazioni troppo marcate, inventano acronimi e si avvalgono di simboli. A livello sintattico e testuale l'uso di connettori e la divisione del testo in diverse sezioni e sottosezioni aiuta a rendere più chiari i rapporti tra i vari elementi, così come immagini e grafici possono essere utili per spiegare alcuni concetti. Nominalizzazioni e costruzioni passive sono utili per soddisfare i requisiti di oggettività e brevità. Al contrario, usare un linguaggio divulgativo implica una variazione diafasica e diastratica e risponde a esigenze differenti e mira a raggiungere obiettivi diversi. Per questo gli autori di testi divulgativi devono impiegare strategie quasi opposte a quelle tipiche dei testi scientifici, come invertire l'ordine di presentazione delle informazioni nel testo per mantenere vivo l'interesse del pubblico, ridurre le forme passive e altre costruzioni sintattiche complesse o sostituire le nominalizzazioni con strutture verbali.

In generale, la lingua della medicina non differisce dalle altre lingue speciali e risponde agli stessi requisiti, anche se ogni tipologia di testo ha caratteristiche proprie. I testi medici, infatti, spaziano da articoli scientifici a manuali per studenti, da relazioni cliniche a foglietti illustrativi e le loro diverse funzioni comportano, ovviamente, diverse esigenze e diverse strategie. Rilevanti per un lavoro divulgativo vanno sottolineati, a livello lessicale, il processo di creazione di nuovi termini che andranno spiegati al pubblico generale (in ottica traduttiva, si deve tenere presente soprattutto il fenomeno dei

prestiti dall'inglese alle altre lingue, compreso l'italiano) e, specialmente nelle lingue germaniche, l'esistenza di doppi termini per indicare lo stesso concetto (di solito uno "alto" di etimologia latina o greca e uno "basso" di origine germanica). A livello sintattico e testuale, un testo divulgativo si avvale di strategie come la riformulazione di termini e concetti in parole più semplici, spesso prese dalla lingua comune, la scomposizione di strutture nominali negli elementi che le compongono, la sostituzione delle forme passive in attive e l'ampio uso di metafore. Con metafora non si intende la semplice figura retorica, ma la facoltà del pensiero umano di concettualizzare campi del sapere sconosciuti attraverso formule più familiari. Si parla, ad esempio, di *lotta al virus* e di *sconfiggere una malattia*.

La traduzione in ambito medico e divulgativo presenta particolari difficoltà. Innanzitutto richiede accurate conoscenze sia a livello contenutistico che delle convenzioni linguistiche della lingua di partenza e di quella di arrivo. La trasposizione di strutture sintattiche da una lingua all'altra deve essere effettuata con attenzione, per evitare che una traduzione poco naturale o idiomatica impedisca una chiara comprensione del contenuto. Alcuni dei maggiori problemi traduttivi identificati nella traduzione dei linguaggi scientifici che possono essere ricondotti anche a quello medico sono la presenza di catene di definizioni che rimandano ad altre definizioni e possono causare problemi di interpretazione, l'uso di tecnicismi collaterali e collocazioni semantiche e sintattiche potenzialmente ambigue, i riferimenti (mancati) a conoscenze implicite dell'autore non necessariamente condivise dai traduttori che si trovano a dover colmare queste lacune. In particolare, nel passaggio dall'inglese all'italiano, il traduttore deve, come già accennato, prestare attenzione ai prestiti, agli eponimi, alle relazioni di significato tra gli elementi dei composti nominali e alle diverse tendenze stilistiche delle due lingue: l'italiano preferisce frasi più lunghe, esplicite e ricche, ma non necessariamente più chiare, rendendo potenzialmente meno comprensibile il testo.

Nel secondo capitolo invece mi concentro sulla traduzione audiovisiva e in particolare sulla sottotitolazione. I testi audiovisivi sono particolarmente complessi, in quanto uniscono e fanno affidamento su caratteri sia del canale sonoro che di quello visivo. Da questo derivano sfide e difficoltà uniche per i traduttori che devono gestire contemporaneamente due canali comunicativi e implementare e combinare tecniche e strategie diverse per l'uno e per l'altro. In particolare nel corso del capitolo tratto le

difficoltà principali della sottotitolazione, legate soprattutto allo spazio disponibile, al tempo e alla leggibilità. Descrivo anche gli standard richiesti da Netflix ai suoi traduttori per garantire prodotti sottotitolati di qualità, standard a cui mi attengo anche nelle mie proposte di traduzione. Dopo aver introdotto il tema della traduzione dei documentari, le caratteristiche e le criticità, dedico l'ultima parte del capitolo ad alcune tra le diverse strategie più usate nella traduzione dei sottotitoli.

I testi audiovisivi e le attività di traduzione audiovisiva sono molto più vari e complessi di quanto si possa immaginare. Questo ambito di applicazione dell'attività traduttiva gioca un ruolo molto importante nel nostro tempo, data le sempre maggiore disponibilità (e domanda) di prodotti audiovisivi e multimediali. Per studiare questo ramo in sempre più veloce evoluzione, sono stati proposti diversi modelli, tutti accomunati dalla presenza di due o più codici o canali in cui iscrivere le diverse modalità che interagiscono nella produzione di testi audiovisivi, in particolare i codici verbali e non verbali e i canali visivi e uditivi e le molteplici interazioni tra questi. Alcuni modelli sono stati elaborati in un'ottica specificamente traduttiva e prendono quindi in considerazione anche i fattori linguistici e culturali che vanno a incrementare la complessità del sistema. Questa complessità, soprattutto in prospettiva traduttiva, è data principalmente dalla simultanea presenza di più modalità di trasmissione delle informazioni in un unico testo. Anche se la multi-modalità che caratterizza i testi audiovisivi è considerata spesso un problema per i traduttori, a volte si rivela una risorsa, se sfruttata nella giusta maniera. Oltre al doppiaggio e ai sottotitoli, le attività di traduzione e produzione audiovisiva comprendono le video e le audio descrizioni per persone non udenti o non vedenti, la narrazione fuori campo tipica dei documentari e i surtitling, i sottotitoli utilizzati a teatro e all'opera.

Questa tesi si occupa, nello specifico, dell'interazione tra l'attività di sottotitolazione e il genere del documentario. La produzione di sottotitoli è influenzata principalmente da una serie di limiti da rispettare e requisiti da soddisfare. Innanzitutto, lo spazio e il posizionamento dei sottotitoli gioca un ruolo importante nell'esperienza dello spettatore, in quanto ha ripercussioni sia sulla lettura degli stessi che nella fruizione delle immagini. Di solito i sottotitoli sono posizionati in basso al centro dello schermo e occasionalmente vengono spostati in alto al centro nel caso in cui coprano informazioni importanti. È preferibile che non superino le due righe di testo e ogni singola riga

dovrebbe avere al massimo 37-42 caratteri a seconda del mezzo e dello schermo su cui vengono proiettati per garantire una migliore lettura. Un altro fattore molto importante è il tempo: i sottotitoli devono essere sia sincronizzati con i dialoghi e le voci del testo sia essere letti dagli spettatori. La sincronizzazione deve rispettare la prosodia e le pause del testo parlato, anche se in alcuni casi non è possibile ed è garantita un po' di flessibilità. Come regola generale, i sottotitoli non dovrebbero apparire per meno di un secondo o per più di sei. Il problema della leggibilità è inestricabilmente collegato al tempo e allo spazio. Misurare la velocità e il tempo di lettura non è facile, perché sono estremamente soggettivi, ma esistono delle linee guida generali e degli standard interni specifici per ogni compagnia o servizio. Oltre a limitare il numero di caratteri per sottotitolo e aumentare il tempo di apparizione sullo schermo, la leggibilità può essere migliorata con mezzi linguistici, come la riduzione di costruzioni complesse e l'eliminazione di parole dal significato troppo oscuro. Nelle traduzioni proposte in questa tesi, sono stati rispettati i parametri ufficiali di Netflix per i sottotitoli in italiano per non udenti, ovvero il limite di 42 caratteri per linea, un massimo di due linee per sottotitolo e una velocità di lettura non superiore ai 20 caratteri al secondo.

Per tradurre efficacemente un documentario si deve conoscere e rispettare le convenzioni del genere. I documentari generalmente si occupano di descrivere e rappresentare la realtà e il mondo circostante e, indipendentemente dall'argomento, presentano caratteristiche comuni. Innanzitutto, i documentari tendono a organizzare il testo secondo una struttura logica, per poter meglio supportare il ragionamento e la posizione dell'autore. Questo implica anche che le informazioni non sono necessariamente presentate come parte di una narrazione, ma piuttosto come prova a sostegno della visione dell'autore. Da ultimo, i documentari si affidano all'uso della parola e del parlato, in diverse modalità, dalla narrazione fuori campo alle interviste. I problemi dal punto di vista traduttivo derivano in primo luogo dalla vasta gamma di argomenti di cui i documentari trattano che richiede ai traduttori la capacità di reperire informazioni sui temi più vari. Altre difficoltà sono dovute alla polifonia che li caratterizza, in quanto ogni modalità presuppone tecniche traduttive diverse, e al registro linguistico, tendenzialmente formale ma di stampo solitamente divulgativo. In particolare, sottotitolare le diverse voci e le diverse "tipologie di parlato" dei documentari può rivelarsi piuttosto complicato. I traduttori però possono avvalersi di strategie e

soluzioni per affrontare queste problematicità. Ad esempio l'interazione con le immagini può essere in alcuni casi un aiuto per meglio comprendere il testo di partenza, cosa non sempre possibile in un testo scritto. In caso di problemi legati alla terminologia, in mancanza di un equivalente nella lingua di arrivo, i traduttori possono implementare strategie come la riformulazione o la parafrasi. Nel caso invece in cui esistano più possibili traduzioni, il traduttore dovrà scegliere quello più adatto in base al pubblico target e al registro del documentario.

La traduzione di sottotitoli è un'attività complessa che comprende almeno tre operazioni: la traduzione del testo nella lingua di arrivo, l'adattamento della traduzione ai limiti di spazio e tempo dei sottotitoli e il cambio di modalità, dal canale orale a quello scritto. I traduttori devono trovare un equilibrio tra tutti i fattori che influenzano la sottotitolazione, tra cui la velocità di lettura, l'accuratezza della traduzione, la sincronizzazione con le immagini e le esigenze del programma e del pubblico. Sono state individuate varie strategie che possono essere implementate, ma in questa tesi mi concentro solo sulle principali. Nello specifico, descrivo

- la riduzione, ovvero l'omissione o la semplificazione di elementi superflui;
- l'esplicitazione culturale, che permette di "costruire ponti tra le culture" qualora esprimano concetti con strumenti linguistici non perfettamente coincidenti o facciano riferimenti a conoscenze non condivise da parlanti di altre lingue;
- la riformulazione e la parafrasi, riscritture più o meno radicali dal punto di vista semantico che permettono di esplicitare il contenuto dei sottotitoli
- i movimenti testuali per riorganizzare le informazioni, dovuti a necessità di ridurre il testo di partenza o per motivi pragmatici e stilistici.

Nel terzo capitolo descrivo il corpus costruito usando la piattaforma Sketch Engine per poter procedere, in seguito, alla traduzione. Il corpus è composto da quattro sotto-corpora, due contenenti testi scritti da e per esperti in inglese e in italiano, due invece con testi di tipo divulgativo, sempre in inglese e in italiano. La parte di analisi comparativa si concentra soprattutto sulla terminologia e nello specifico nell'estrazione di termini da questi sotto-corpora, ponendo in luce le criticità e i pregi delle diverse funzioni di Sketch

Engine utilizzate. L'analisi della composizione del corpus e il contenuto sono disponibili nell'Appendice a.

I quattro sotto-corpora sono costruiti in modo che siano a due a due comparabili, ovvero contenenti testi della stessa tipologia scritti originariamente nelle due lingue di studio. Per questo i due sotto-corpora con i testi "per esperti" contengono prevalentemente articoli pubblicati in riviste scientifiche, come *Nature* o il *Giornale Italiano di Cardiologia*. Nei due sotto-corpora divulgativi, invece i testi e gli articoli provengono da giornali e riviste per un pubblico più ampio, da quotidiani e da siti istituzionali come quello dell'OMS o del Governo italiano.

Dall'analisi dei quattro sotto-corpora e degli strumenti di Sketch Engine emerge che la funzione che dà i migliori risultati considerando l'estrazione di termini è la cosiddetta "keyness analysis", metodo che identifica possibili termini attraverso il confronto tra la frequenza relativa nel corpus di riferimento e nel corpus specialistico. I risultati dell'analisi mostrano che i termini estratti in tutti e quattro i sotto-corpora sono simili, fenomeno dovuto probabilmente all'ampia diffusione del tema coronavirus anche nelle comunicazioni rivolte a un ampio pubblico. Si possono notare tuttavia delle differenze nell'uso della lingua in linea con i tratti evidenziati nel primo capitolo: le lingue speciali tendono a usare più frequentemente costruzioni nominali a scapito di costruzioni verbali preferite invece dal linguaggio divulgativo e utilizzare termini di registro più formale e specifici del settore che non vengono trovati nei sotto-corpora divulgativi. Sebbene questo corpus non possa essere considerato uno strumento sufficiente in fase di traduzione, è utile per poter compiere decisioni di tipo terminologico.

Nel quarto e ultimo capitolo, infine, fornisco per contesto un breve riassunto della docu-serie "Coronavirus, explained" di Netflix e poi mi concentro sull'analisi delle difficoltà incontrate e le soluzioni adottate durante la traduzione dei due episodi "This Pandemic" e "The Race for a Vaccine". L'analisi verte sulle criticità emerse sia nella traduzione dei sottotitoli "in sé", ovvero come testo audiovisivo, sia nella traduzione del documentario come testo medico divulgativo. Per farlo, commento esempi e estratti presi dalle mie proposte di traduzione e li confronto con l'originale testo inglese e, quando necessario, con la traduzione italiana distribuita da Netflix. Le proposte di traduzione sono disponibili nelle Appendici b. e c.

La serie oggetto di questa tesi, “Coronavirus, explained”, è una serie di Netflix distribuita nella primavera del 2020, in concomitanza con l’inizio della pandemia di COVID-19 ed è composta da tre episodi, “This Pandemic”, “The Race for a Vaccine” e “How to Cope”. I primi due episodi sono tradotti con il software AegiSub, un software open source sviluppato nel 2005 e disponibile gratuitamente. Le mie proposte di traduzione si rivolgono allo stesso pubblico del testo di partenza (sottotitoli in inglese per non udenti), ovvero un pubblico generale di non esperti parlanti italiani e includono gli indicatori e i descrittori necessari per renderlo accessibile anche ai non udenti. Le scelte traduttive si basano su dati e indicazioni forniti da fonti autorevoli, come l’enciclopedia e il vocabolario Treccani per la lingua italiana, e dal corpus costruito. Le caratteristiche dei sottotitoli sono dettate dagli standard di Netflix.

Le problematiche incontrate si riferiscono a entrambe le traduzioni e sono principalmente legate (ma non limitate) alla sottotitolazione piuttosto che al linguaggio divulgativo. Per quanto riguarda le difficoltà nella traduzione dei sottotitoli in generale, il rispetto del numero di caratteri per linea e della velocità di lettura si rivela essere il più problematico, perché le parole e le frasi in italiano sono più lunghe di quelle in inglese. Si deve ricorrere, quindi, sia a soluzioni linguistiche come la riformulazione o l’uso di metonimie o a stratagemmi tecnici, come prolungare il tempo di permanenza dei sottotitoli sullo schermo. Tradurre per i non udenti permette di aumentare la velocità di lettura a 20 caratteri al secondo, ma implica anche la traduzione dei descrittori, con conseguente aumento dei caratteri. La traduzione di sottotitoli comporta anche la considerazione dell’interazione tra le parole e le immagini presenti sullo schermo, quindi è necessario calcolare con precisione i tempi di apparizione e scomparsa dei sottotitoli in corrispondenza delle immagini a cui si riferiscono. Un’altra potenziale criticità riguarda le metafore visive utilizzate per spiegare i concetti (come l’uso della parola *veicoli* per riferirsi ai virus e la comparsa di ruote e fari alla rappresentazione grafica del virus sullo schermo), ma per fortuna le metafore usate funzionano sia in italiano che in inglese. Come spiegato nel secondo capitolo, a volte è necessario implementare la strategia dei movimenti testuali per produrre frasi che risultassero più naturali e idiomatiche in italiano. Le soluzioni distribuite da Netflix, invece, tendono a seguire più letteralmente l’originale inglese. Una scelta grammaticale dettata principalmente dalla necessità di risparmiare caratteri è l’uso del verbo, dove possibile, del passato remoto al posto del

passato prossimo, che, in quando forma analitica, è sempre più lungo. Infine, come in ogni lavoro traduttivo, la ricerca di equivalenti per espressioni idiomatiche presenta sempre qualche difficoltà, anche se in alcuni casi il problema non è la mancanza di tale equivalente, quanto il significativo incremento di caratteri che questo comporta (ad esempio *trillions* si traduce in italiano con *milioni di miliardi*).

Le criticità legate alla traduzione del linguaggio divulgativo in un documentario, invece, riguardano la terminologia e la resa del linguaggio parlato in forma scritta. Tra i più interessanti dei diversi termini problematici analizzati, il termine inglese *droplets* presenta due possibilità di traduzione, ma il corpus costruito per questo lavoro mostra che in ambito divulgativo, la parola della lingua comune *goccioline* è da preferire al prestito *droplet*. Il corpus è utile anche nella scelta affatto scontata riguardo il genere grammaticale delle parole *COVID-19* e *covid*: mentre nel sotto-corpus per esperti le due versioni sono usate con la stessa frequenza, il quello divulgativo la versione maschile è usata quasi il triplo di quella femminile. Dato lo stampo divulgativo delle traduzioni, viene usata la versione maschile *il COVID-19*. Per quanto riguarda il cambio di mezzo, dalla forma parlata a quella scritta, i problemi sono legati sia alla narrazione fuori campo che alle interviste. La narrazione fuori campo è un tipo di testo particolare, perché presenta caratteristiche sia dello scritto che del parlato: è ben strutturata e pianificata e, di solito, di registro alto, ma allo stesso tempo deve essere possibile capirla rapidamente. La sua resa in sottotitoli implica la riproduzione di questa particolare interazione: nonostante siano interamente scritti, anche i sottotitoli sono letti molto rapidamente e non possono presentare strutture troppo complesse o contorte. Per questo alcuni elementi anaforici sono stati sostituiti o associati a ripetizioni dell'antecedente o di sinonimi. Le interviste, invece, sono discorsi non pianificati che quindi, quando trasposti in forma scritta, possono necessitare di rifiniture, come l'eliminazione delle esitazioni (anche per risparmiare caratteri) o la riformulazione di frasi per renderle più lineari. Allo stesso tempo, si cerca di mantenere alcune caratteristiche del parlato, attraverso mezzi lessicali o retorici, come l'uso della particella interrogativa *no?* a fine frase. Infine, in questo documentario alcune delle persone intervistate parlano in italiano: in questo caso il lavoro di sottotitolazione non è legato alla traduzione dal sottotitolo originale inglese, ma all'audio originale italiano, che è stato solamente rifinito dagli elementi del parlato più evidenti.

Questo lavoro mostra, non per la prima volta, come sia la divulgazione scientifica e medica che la traduzione audiovisiva siano attività molto complesse e delicate, in quanto presentano difficoltà e criticità non facilmente risolvibili o eliminabili, come spesso accade quando si traducono testi di generi diversi in altri modalità. Nello specifico, questo lavoro si è concentrato principalmente sulle problematiche legate alla sottotitolazione, dato il ruolo sempre più importante giocato da questa attività nel mercato della traduzione del terzo millennio e considerati i numerosi e interessanti stimoli che offre grazie alla sua natura intrinsecamente ibrida e multimodale. Nonostante spesso limiti le possibilità di traduzione, la sottotitolazione spinge i traduttori a diventare creativi e li sfida a cercare l'espressione più adatta ai modi, ai tempi e agli spazi in questione, spinta che a volte può mancare quando si traducono testi divulgativi in modalità più convenzionali.

Gli esempi presenti nell'ultimo capitolo sono scelti in quanto ritenuti particolarmente stimolanti nella loro problematicità e sono analizzati, commentanti e risolti – o almeno, viene proposta una possibile soluzione. Le criticità non riguardano solo aspetti legati alla traduzione dall'inglese all'italiano e la ricerca della giusta formula grammaticale o espressione idiomatica, né solo problemi nel recupero della corretta terminologia medica. Quelle più interessanti e utili ai fini di questa tesi sono quelle connesse all'interazione e all'inscindibile legame tra le immagini, la voce e gli effetti sonori. Le soluzioni e le strategie adottate per ricreare effetti simili nella lingua di arrivo possono variare, come appare dal confronto con la versione italiana distribuita da Netflix. Alla fine, citando Nord (2014: 82), si può dire che la soluzione traduttiva dipende dal singolo, specifico compito e che i traduttori quindi possano solo argomentare e giustificare le loro decisioni al meglio delle loro capacità.

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Appendices

a. Corpus composition and content

Corpus	Source	Text type	N. texts	Words (approx.)
English expert [117,755 tokens 86,934 words]	Articles in scientific journals (Nature, university/clinic magazines,…)	Specialised papers and publications	14	85,092 words
	EMA communication on vaccine		1	1,842 words
Italian expert [112,346 tokens 86,832 words]	Articles in scientific journals (E&P, preventionandresearch.com)	Specialised papers and publications	19	84,792 words
	EMA communication on vaccine		1	2,040 words
English lay [121,440 tokens 105,845 words]	Institutional websites (gov.uk, who.int, nhs.uk, weforum)	webpages	26	29,626 words
	Newspapers (The Times, Independent, New York Times, AP, The Conversation,…) + TV News websites (CNBC, CNN, BBC)	Newspaper articles + web articles	31	30,242 words
	Articles in science/medicine magazines and websites (National Geographic, Health Line, Medical News Today…)	Magazine articles	23	31,520 words
	General public magazines (online version) (Euronews, Usa Today, CNET)	Magazine web articles	14	14,457 words
Italian lay [124,327 tokens 106,132 words]	Institutional websites (gov.it, ISS, hospital websites, AIFA, university websites)	webpages	24	29,906 words
	Newspapers (Il Corriere della Sera, La Repubblica, Il Post,…)	Newspaper articles	24	30,376 words
	Articles in science/medicine magazines and websites (LeScienze, Focus, National Geographic, Nurse24.it, Fondazione Umberto Veronesi)	Magazine articles	18	31,727 words
	General public magazines (online version) (Euronews, Wired, Open,…)	Magazine web articles	12	14,123 words

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b. Subtitles episode 1x01 “This Pandemic”

Script generated by Aegisub 3.2.2 available at http://www.aegisub.org/

Subtitle file available at https://drive.google.com/file/d/1FhbEXKDjS1EGdD6WjqJQBliO28DkiF_U/view?usp=sharing

Start	End	English	Start	End	Italian
0:00:07.04	0:00:09.05	[siren wailing]	0:00:07.04	0:00:09.05	[suono di sirena]
0:00:13.72	0:00:16.51	[birds chirping]	0:00:13.72	0:00:16.51	[cinguettio di uccelli]
0:00:17.76	0:00:19.72	[narrator] *Before closing their borders...*	0:00:17.76	0:00:19.72	[narratore] *Prima di chiudere i confini*
0:00:20.85	0:00:22.89	*and locking down their citizens...*	0:00:20.85	0:00:22.89	*e isolare i loro cittadini in lockdown...*
0:00:24.60	0:00:28.73	*many world leaders downplayed the new virus that was sweeping the globe*.	0:00:24.60	0:00:28.73	*molti leader minimizzavano il nuovo virus che stava infestando il mondo.*
0:00:29.07	0:00:31.65	[in Italian] The situation is absolutely under control.	0:00:28.79	0:00:31.70	[in italiano] La situazione è assolutamente sotto controllo.
0:00:31.74	0:00:37.03	[in Persian] This is one of our enemies’ plots,	0:00:31.74	0:00:37.03	[in persiano] Questo è un complotto dei nostri nemici,
0:00:37.12	0:00:39.16	dragging the country to a shutdown.	0:00:37.12	0:00:39.16	per obbligare il paese a chiudere.
0:00:39.24	0:00:42.29	[in English] We should be going about our business as usual.	0:00:39.24	0:00:42.29	[in inglese] Dovremmo continuare la nostra vita come al solito.
0:00:42.79	0:00:46.33	[in Portuguese] A lot of that is fantasy when it comes to the coronavirus.	0:00:42.79	0:00:46.33	[in portoghese] Quando si tratta di coronavirus, molto è solo fantasia.
0:00:46.42	0:00:48.29	[in English] Nobody knew there'd be a pandemic	0:00:46.42	0:00:48.29	[in inglese] Non potevamo prevedere
0:00:48.38	0:00:49.96	or an epidemic of this proportion.	0:00:48.38	0:00:49.96	una pandemia di questa entità.
0:00:51.92	0:00:54.34	[narrator] *But many who work in infectious disease*	0:00:51.92	0:00:54.34	[narratore] *Ma chi conosce le malattie infettive*
0:00:54.42	0:00:56.72	*knew a pandemic like this was coming.*	0:00:54.42	0:00:56.72	*sapeva che una pandemia simile stava arrivando.*
0:00:57.55	0:01:00.01	*In fact, in the spring of 2019,*	0:00:57.55	0:01:00.01	*Anzi, proprio nella primavera 2019,*
0:01:00.10	0:01:02.68	*months before the first case of COVID-19,*	0:01:00.10	0:01:02.68	*mesi prima del primo caso di COVID-19,*
0:01:03.10	0:01:05.52	*we interviewed several of them for this show.*	0:01:03.00	0:01:05.62	*avevamo intervistato alcuni esperti per questa serie.*

0:01:05.85	0:01:08.44	Well, if you think of anything that could come along	0:01:05.85	0:01:08.44	Se pensate alla possibilità che arrivi qualcosa
0:01:08.52	0:01:11.15	that would kill millions of people,	0:01:08.52	0:01:11.15	che uccida milioni di persone,
0:01:11.23	0:01:13.90	the pandemic is our greatest risk.	0:01:11.23	0:01:13.90	una pandemia è il nostro rischio maggiore.
0:01:14.99	0:01:16.61	In terms of the death toll,	0:01:14.99	0:01:16.61	In termini di numero di morti,
0:01:16.70	0:01:21.99	a pandemic would rival even the gigantic wars of the past.	0:01:16.70	0:01:21.99	una pandemia eguaglierebbe pure le grandi guerre del passato.
0:01:22.62	0:01:27.17	The economy will shut down, the cost to humanity will be unbelievable,	0:01:22.62	0:01:27.17	L'economia si bloccherà, il costo per l'umanità sarà incredibile,
0:01:27.25	0:01:31.71	and no country will be immune from the problem this will create.	0:01:27.25	0:01:31.71	e nessun paese sarà immune dai problemi che creerà.
0:01:32.34	0:01:35.47	[Maryn McKenna] It really takes an extraordinary act of political will	0:01:32.34	0:01:35.47	Serve una volontà politica davvero straordinaria
0:01:35.55	0:01:40.14	"to say, ""Yes, right now, things don't look that bad,"	0:01:35.55	0:01:40.14	per dire "Sì, per adesso la situazione è stabile,
0:01:40.22	0:01:42.64	but we're going to send funding to public health anyway,	0:01:40.22	0:01:42.64	ma investiremo comunque nella sanità pubblica,
0:01:42.72	0:01:45.56	"because we know that someday it will be bad.""""	0:01:42.72	0:01:45.56	perché sappiamo che un giorno potrebbe peggiorare."
0:01:46.06	0:01:49.65	We estimate there are around 1.5 million viruses in wildlife	0:01:46.06	0:01:49.65	Stimiamo che ci siano ancora circa 1,5 milioni di virus in natura
0:01:49.73	0:01:51.27	that we don't yet know about.	0:01:49.73	0:01:51.27	di cui non sappiamo nulla.
0:01:51.36	0:01:54.94	Any one of those could be spilling over into human population right now.	0:01:51.36	0:01:54.94	Uno qualunque potrebbe trasmettersi all'uomo proprio adesso.
0:01:55.78	0:01:58.66	[narrator] *When a virus jumps* *from an animal to a human,*	0:01:55.78	0:01:58.66	[narratore] *Quando un virus* *salta dagli animali all'uomo,*
0:01:58.74	0:02:00.66	*it's called a zoonotic virus,*	0:01:58.74	0:02:00.66	*viene chiamato virus zoonotico*
0:02:01.32	0:02:02.74	*and for decades,*	0:02:01.32	0:02:02.74	*e negli ultimi decenni*
0:02:02.83	0:02:07.04	*these kinds of new viruses have been* *causing more and more outbreaks.*	0:02:02.83	0:02:07.04	*questi tipi di nuovi virus* *hanno causato sempre più focolai.*
0:02:07.54	0:02:09.00	We know some pretty lethal ones,	0:02:07.54	0:02:09.00	Ne conosciamo alcuni mortali,
0:02:09.08	0:02:11.84	but we expect that there are others out there that are more lethal,	0:02:09.08	0:02:11.84	ma crediamo ce ne siano altri di ancora più letali,
0:02:11.92	0:02:13.71	that are better at being transmitted,	0:02:11.92	0:02:13.71	che si trasmettono più facilmente,

0:02:13.80	0:02:17.13	where we've got no drugs and no vaccines. They're the big risk.	0:02:13.80	0:02:17.63	per cui non abbiamo cure né vaccini. Questi rappresentano il rischio maggiore.
0:02:17.72	0:02:20.30	[narrator] *That's what happened with SARS* *in 2002,*	0:02:17.70	0:02:20.42	[narratore] *È quello che è successo* *nel 2002 con la SARS,*
0:02:20.39	0:02:25.01	*which was a new coronavirus that spread* *around the world, killing hundreds.*	0:02:20.45	0:02:25.01	*un nuovo coronavirus* *che uccise centinaia di persone nel mondo.*
0:02:25.93	0:02:28.69	*And it happened again with MERS in 2012,*	0:02:25.93	0:02:28.69	*E di nuovo nel 2012 con la MERS,*
0:02:28.77	0:02:32.44	*which was also a new coronavirus* *that killed hundreds.*	0:02:28.77	0:02:32.44	*un altro nuovo coronavirus* *che uccise centinaia di persone.*
0:02:33.27	0:02:36.53	*These outbreaks caused panic* *around the world,*	0:02:33.27	0:02:36.53	*Questi focolai mandarono* *il mondo nel panico,*
0:02:36.61	0:02:37.78	*for a brief moment.*	0:02:36.61	0:02:37.78	*per un momento.*
0:02:38.11	0:02:40.86	*But experts, they stayed worried.*	0:02:38.11	0:02:40.86	*Gli esperti, invece,* *non smisero di preoccuparsi.*
0:02:41.82	0:02:45.37	There's a risk with something like SARS or MERS,	0:02:41.82	0:02:45.37	C'è il rischio che arrivi qualcosa come la SARS o la MERS,
0:02:45.45	0:02:48.08	that it'll be something we're not ready for.	0:02:45.45	0:02:48.08	per cui non siamo preparati.
0:02:48.16	0:02:50.37	Could it be a coronavirus again? Certainly.	0:02:48.16	0:02:50.37	Potrebbe essere un altro coronavirus? Certo.
0:02:50.46	0:02:52.33	[narrator] And of course, it was.	0:02:50.46	0:02:52.33	[narratore] E, ovviamente, lo è stato.
0:02:53.50	0:02:54.46	[indistinct talking]	0:02:53.50	0:02:54.46	[parole indistinte]
0:02:54.54	0:02:55.67	[patient coughing]	0:02:54.54	0:02:55.67	[paziente tossisce]
0:02:56.00	0:02:59.38	[narrator] *So, of all the viruses* *out there, why did this one*	0:02:56.00	0:02:59.38	[narratore] *Quindi, di tutti i virus* *là fuori, perché proprio questo*
0:02:59.47	0:03:03.68	*end up becoming the kind of pandemic* *we haven't seen in more than a century?*	0:02:59.47	0:03:03.68	*è diventato il tipo di pandemia* *che non avevamo visto in più di un secolo?*
0:03:04.80	0:03:07.72	*And how does a pandemic like this end?*	0:03:04.80	0:03:07.72	*E come si ferma una pandemia del genere?*
0:03:08.85	0:03:11.60	[man] *A virus can be just as destructive* *as a bomb or a missile.*	0:03:08.75	0:03:11.80	[uomo] *I virus possono distruggere* *quanto le bombe o i missili.*
0:03:11.69	0:03:12.52	[sneezes]	0:03:11.82	0:03:12.52	[starnutisce]
0:03:12.98	0:03:14.98	[Tedros Ghebreyesus] We're deeply concerned	0:03:12.98	0:03:15.15	[Tedros Ghebreyesus] Siamo molto preoccupati

0:03:15.06	0:03:18.53	by the alarming levels of spread and inaction.	0:03:15.20	0:03:18.53	dai livelli allarmanti di contagio e mancanza di iniziativa.
0:03:19.03	0:03:21.86	COVID-19 is a pandemic.	0:03:19.03	0:03:21.86	Il COVID-19 è una pandemia.
0:03:21.95	0:03:25.20	[Anthony Fauci] The cases continue to increase globally.	0:03:21.95	0:03:25.20	[Anthony Fauci] I casi globali continuano ad aumentare.
0:03:25.28	0:03:27.49	What we need to do is flatten that down.	0:03:25.28	0:03:27.49	Dobbiamo appiattire quella curva.
0:03:28.62	0:03:31.16	[Daszak] We're going to have outbreaks in developing countries	0:03:28.62	0:03:31.16	[Daszak] *Scoppieranno numerosi* *nuovi focolai*
0:03:31.25	0:03:33.08	that are just going to be raging.	0:03:31.25	0:03:33.08	*nei Paesi in via di sviluppo.*
0:03:34.13	0:03:37.25	[man] *The campaign against* *infectious disease can succeed*	0:03:34.13	0:03:37.25	[uomo] *La campagna contro* *l'infezione può avere successo*
0:03:37.34	0:03:39.13	*only if the public cooperates.*	0:03:37.34	0:03:39.13	*solo se la gente collabora.*
			0:03:39.13	0:03:45.13	QUESTA PANDEMIA
0:03:46.43	0:03:49.68	[narrator] *Viruses were one of the first* *living things on Earth...*	0:03:46.43	0:03:49.68	[narratore] *I virus furono* *tra le prime forme di vita sulla Terra,*
0:03:49.97	0:03:52.39	*but they're not alive like we are.*	0:03:49.97	0:03:52.39	*ma non sono vivi come lo siamo noi.*
0:03:53.02	0:03:56.15	*They need to hijack other living cells* *to reproduce,*	0:03:53.02	0:03:56.15	*Devono infettare* *altre cellule viventi per riprodursi*
0:03:56.23	0:03:58.23	*and that's their only goal,*	0:03:56.23	0:03:58.23	*e questo è il loro unico obiettivo:*
0:03:58.32	0:04:00.99	*to survive and replicate themselves.*	0:03:58.32	0:04:00.99	*sopravvivere e moltiplicarsi.*
0:04:01.99	0:04:06.07	*The official name of this virus* *is SARS-CoV-2.*	0:04:01.99	0:04:06.07	*Il nome ufficiale di questo virus* *è SARS-CoV-2.*
0:04:07.20	0:04:10.70	*""COVID-19"" is the name of the disease* *it causes,"*	0:04:07.20	0:04:10.70	*"COVID-19" è il nome della malattia* *che causa,*
0:04:11.20	0:04:14.87	*"which stands for* *""Coronavirus disease 2019."""*	0:04:11.20	0:04:14.87	*e sta per* *"Coronavirus disease 2019".*
0:04:16.00	0:04:18.25	*"Corona, as in ""crown."""*	0:04:16.00	0:04:18.25	*Corona, come quella dei monarchi.*
0:04:18.34	0:04:21.59	*The virus is named* *for its crown-like spikes.*	0:04:18.34	0:04:21.59	*Il virus prende il nome dalle sue punte* *a forma di corona.*
0:04:22.72	0:04:26.22	*It spreads through droplets* *when we sneeze, cough, or speak,*	0:04:22.72	0:04:26.22	*Si diffonde tramite goccioline* *emesse starnutendo, tossendo o parlando*
0:04:26.84	0:04:30.52	*and can enter us directly* *through our eyes, nose, or mouth.*	0:04:26.84	0:04:30.52	*e può entrare nell'organismo* *attraverso gli occhi, il naso o la bocca.*

0:04:31.14	0:04:34.73	*The virus can also live on a lot of surfaces for hours,*	0:04:31.14	0:04:34.73	*Visto che il virus può sopravvivere su varie superfici per molte ore,*
0:04:35.14	0:04:37.31	*so people can pick it up on their hands*	0:04:35.14	0:04:37.31	*le persone possono entrarci in contatto*
0:04:37.40	0:04:39.90	*and infect themselves if they touch their face,*	0:04:37.40	0:04:39.90	*e infettarsi, se si toccano la faccia con le mani,*
0:04:40.73	0:04:45.28	*something the average person does 20 times an hour.*	0:04:40.73	0:04:45.28	*cosa che avviene in media 20 volte all'ora.*
0:04:47.20	0:04:50.45	*Once inside the body, those spikes act as a key,*	0:04:47.20	0:04:50.45	*Entrato nell'organismo, le punte si comportano come chiavi,*
0:04:50.54	0:04:54.66	*locking onto the proteins found on the outside of many human cells.*	0:04:50.54	0:04:54.66	*inserendosi nelle proteine all'esterno di molte cellule umane.*
0:04:55.54	0:04:56.83	*Once it's broken in,*	0:04:55.54	0:04:56.83	*Una volta all'interno,*
0:04:56.92	0:05:01.17	*the virus gives the cell instructions to produce more copies of itself,*	0:04:56.92	0:05:01.17	*il virus dà istruzioni alla cellula perché lo replichi,*
0:05:01.25	0:05:04.01	*potentially invading more and more cells,*	0:05:01.25	0:05:04.01	*così da invadere sempre più cellule,*
0:05:04.92	0:05:08.47	*which can lead to a fever, a cough, and fatigue,*	0:05:04.92	0:05:08.47	*provocando febbre, tosse e affaticamento,*
0:05:08.93	0:05:10.26	*but not always.*	0:05:08.93	0:05:10.26	*ma non sempre.*
0:05:10.35	0:05:13.77	*And it potentially leads to any of these symptoms, too.*	0:05:10.35	0:05:13.77	*Potenzialmente può provocare anche molti altri sintomi.*
			0:05:10.91	0:05:13.77	FIATO CORTO, MAL DI GOLA, DIARREA PERDITA DI APPETITO, GUSTO E OLFATTO
0:05:14.06	0:05:15.77	*Research is ongoing.*	0:05:14.06	0:05:15.77	*Gli studi sono ancora in corso.*
0:05:16.94	0:05:21.15	*And you can be infected and spread it without any symptoms,*	0:05:16.94	0:05:21.15	*È possibile anche infettarsi e diffondere il virus senza avere sintomi,*
0:05:21.23	0:05:23.44	*or they can be mistaken for the flu.*	0:05:21.23	0:05:23.44	*o scambiare i sintomi per l'influenza.*
0:05:24.65	0:05:27.82	*That's what makes this coronavirus so devious.*	0:05:24.65	0:05:27.82	*Ecco perché questo coronavirus è così subdolo.*
0:05:30.24	0:05:34.00	So the most significant diseases are often caused by viruses that	0:05:30.24	0:05:34.00	Le malattie più importanti sono spesso causate da virus
0:05:34.08	0:05:37.25	are silent and slow, like HIV,	0:05:34.08	0:05:37.25	silenziosi e lenti, come l'HIV,
0:05:37.33	0:05:41.67	or move very rapidly and cause symptoms like coughing and fever	0:05:37.33	0:05:41.67	o che si muovono rapidamente e causano sintomi come tosse e febbre

0:05:41.75	0:05:44.21	that could be confused with other diseases.	0:05:41.75	0:05:44.21	che possono essere confusi con altre malattie.
0:05:44.30	0:05:47.51	[narrator] *Going about their life,* *a person with this coronavirus*	0:05:44.30	0:05:47.51	[*narratore] È probabile che* *una persona con questo coronavirus*
0:05:47.59	0:05:49.64	*likely infects a couple other people,*	0:05:47.59	0:05:49.64	*infetti altre due persone,*
0:05:49.93	0:05:52.76	*and each of those people* *infects a couple more,*	0:05:49.93	0:05:52.76	*e che ognuna di queste* *ne infetti altre due,*
0:05:52.85	0:05:54.85	*and so on, and so on,*	0:05:52.85	0:05:54.85	*e così via.*
0:05:55.52	0:05:59.52	*which is why the number of cases* *increases on an exponential curve,*	0:05:55.52	0:05:59.52	*Per questo il numero* *di casi aumenta esponenzialmente,*
0:05:59.90	0:06:01.90	*doubling every several days.*	0:05:59.90	0:06:01.90	*raddoppiando a intervalli regolari.*
0:06:03.02	0:06:06.36	*Then some of those people will end up* *with a severe lung infection,*	0:06:03.02	0:06:06.36	*Alcuni avranno* *una grave infezione polmonare*
0:06:06.90	0:06:09.70	*and certain groups are especially at risk.*	0:06:06.90	0:06:09.70	*e alcuni gruppi sono* *particolarmente a rischio.*
0:06:11.20	0:06:15.16	*In one US sample, around three-quarters* *of people who were hospitalized*	0:06:11.20	0:06:15.16	*Secondo una statistica, negli USA circa* *tre quarti delle persone ospedalizzate*
0:06:15.24	0:06:17.62	*had at least one* *underlying health condition,*	0:06:15.24	0:06:17.62	*avevano almeno una* *patologia preesistente,*
0:06:18.12	0:06:21.33	*like lung disease, heart disease,* *or diabetes.*	0:06:18.12	0:06:21.33	*come una malattia polmonare* *o cardiaca o il diabete.*
0:06:22.34	0:06:24.96	*And while the exact numbers vary* *by country,*	0:06:22.34	0:06:24.96	*E anche se le cifre cambiano* *da paese a paese,*
0:06:25.38	0:06:28.97	*the risk of dying is clearly greater* *the older you get,*	0:06:25.38	0:06:28.97	*il rischio di morire aumenta* *chiaramente con l'età,*
0:06:29.05	0:06:32.60	*as you can see in this data* *that Hubei, China reported*	0:06:29.05	0:06:32.60	*come si può vedere in questi dati* *riportati dalla città cinese di Hubei*
0:06:32.68	0:06:34.76	*two months after their outbreak began.*	0:06:32.68	0:06:34.76	*due mesi dopo lo scoppio del focolaio.*
0:06:35.56	0:06:38.64	*And for reasons* *scientists don't fully understand,*	0:06:35.56	0:06:38.64	*E per ragioni* *non ancora del tutto chiare,*
0:06:38.73	0:06:41.23	*the risk is also higher for men,*	0:06:38.73	0:06:41.23	*il rischio è maggiore per gli uomini,*
0:06:41.60	0:06:44.44	*possibly because of some* *biological factors,*	0:06:41.60	0:06:44.44	*forse a causa di alcuni* *fattori biologici,*
0:06:44.52	0:06:46.65	*or because they're more likely to smoke,*	0:06:44.52	0:06:46.65	*o perché è più probabile che fumino,*

0:06:47.15	0:06:50.15	*or because men, according to some studies,*	0:06:47.15	0:06:50.15	*o perché, secondo alcuni studi,*
0:06:50.24	0:06:52.87	*aren't as good about washing their hands.*	0:06:50.24	0:06:52.87	*non si lavano bene le mani.*
0:06:53.32	0:06:54.33	*On that note...*	0:06:53.32	0:06:54.33	*A tal proposito…*
0:06:54.83	0:06:57.29	Wash your hands as often as you possibly can,	0:06:54.83	0:06:57.29	Lavatevi le mani più spesso possibile,
0:06:57.37	0:07:01.08	and I know you're not always in a position to be able to wash your hands,	0:06:57.37	0:07:01.08	e so che non sarete sempre nelle condizioni di farlo,
0:07:01.46	0:07:03.50	uh, but wash them as much as you can.	0:07:01.46	0:07:03.50	ma lavatevele ogni volta che potete.
0:07:04.17	0:07:05.42	[narrator] *It's good advice.*	0:07:04.17	0:07:05.42	[narratore] *Ascoltatelo.*
0:07:05.88	0:07:11.43	*Now, this coronavirus is just the youngest* *in a whole family of seven coronaviruses*	0:07:05.88	0:07:11.43	*Questo coronavirus è solamente* *il più giovane di una famiglia di sette*
0:07:11.51	0:07:13.18	*known to infect humans.*	0:07:11.51	0:07:13.18	*che sappiamo infettano l'uomo.*
0:07:13.72	0:07:16.93	*It's now famous, as are SARS and MERS,*	0:07:13.72	0:07:16.93	*Adesso è famoso, come la SARS e la MERS,*
0:07:17.01	0:07:19.06	*because they've killed a lot of people.*	0:07:17.01	0:07:19.06	*perché sono morte molte persone.*
0:07:19.14	0:07:22.65	*But these four are actually* *more successful viruses.*	0:07:19.14	0:07:22.65	*Ma gli altri quattro, in realtà,* *hanno più successo come virus.*
0:07:23.02	0:07:25.77	*They cause up to a third of common colds.*	0:07:23.02	0:07:25.77	*Provocano un terzo dei comuni raffreddori.*
0:07:26.23	0:07:27.28	*They're everywhere.*	0:07:26.23	0:07:27.28	*Sono dappertutto.*
0:07:28.36	0:07:31.24	*Because viruses can actually* *be better at spreading*	0:07:28.36	0:07:31.24	*Perché i virus alla fine* *si diffondono meglio*
0:07:31.32	0:07:33.99	*if they don't make their host that sick.*	0:07:31.32	0:07:33.99	*se il loro ospite* *non si ammala gravemente.*
0:07:35.28	0:07:36.45	*Just look at bats.*	0:07:35.28	0:07:36.45	*Come i pipistrelli.*
0:07:36.53	0:07:40.87	*They're teeming with viruses* *because viruses don't really bother them.*	0:07:36.53	0:07:40.87	*Sono pieni di virus* *perché non danno loro troppo fastidio.*
0:07:41.83	0:07:42.83	*But...*	0:07:41.83	0:07:42.83	*Ma...*
0:07:42.92	0:07:46.71	They can transform into a new virus once they get into the human population.	0:07:42.92	0:07:46.71	Questi virus mutano quando passano all'uomo.
0:07:47.59	0:07:51.05	[narrator] *That's what scientists believe* *happened with SARS in 2002.*	0:07:47.49	0:07:51.25	[narratore] *Per gli scienziati, è quello* *che è successo con la SARS nel 2002.*
0:07:51.59	0:07:53.18	*Just like this coronavirus,*	0:07:51.59	0:07:53.18	*Proprio come questo coronavirus,*
0:07:53.26	0:07:56.47	*SARS emerged in a live animal market* *in China.*	0:07:53.26	0:07:56.47	*la SARS comparve* *in un mercato di animali vivi in Cina.*

0:07:57.14	0:07:59.43	*And since it was a new zoonotic virus,*	0:07:57.14	0:07:59.43	*E visto che era un nuovo virus zoonotico,*
0:07:59.52	0:08:02.14	*there were no treatments and no vaccine.*	0:07:59.52	0:08:02.14	*non c'era né una cura, né un vaccino.*
0:08:02.69	0:08:06.40	*But SARS was a lot less dangerous than this coronavirus.*	0:08:02.69	0:08:06.40	*Ma la SARS era molto meno pericolosa di questo coronavirus.*
0:08:06.86	0:08:09.40	*People could only spread it when they had symptoms,*	0:08:06.86	0:08:09.40	*Poteva essere trasmessa solo da chi aveva sintomi,*
0:08:09.48	0:08:14.03	*so it was easier to contain the virus by just quarantining people who were sick.*	0:08:09.48	0:08:14.03	*perciò per contenerla bastava isolare i malati.*
0:08:15.36	0:08:17.45	*SARS was also a lot more deadly,*	0:08:15.36	0:08:17.45	*La SARS aveva anche maggiore mortalità*
0:08:17.53	0:08:20.08	*which made it harder for the virus to spread.*	0:08:17.53	0:08:20.08	*cosa che rese la diffusione del virus più difficile.*
0:08:20.16	0:08:23.79	[Daszak] A disease like SARS, it kills 10% of people it infects,	0:08:20.16	0:08:23.79	[Daszak] *Una malattia come la SARS uccide il 10% di quelli che infetta,*
0:08:23.87	0:08:27.96	and then the survivors probably have some immunity and can't be reinfected.	0:08:23.87	0:08:27.96	*e i sopravvissuti probabilmente sviluppano una qualche immunità.*
0:08:28.63	0:08:31.63	And eventually, the only people the virus can find	0:08:28.63	0:08:31.63	*E alla fine, il virus troverà solo persone immuni*
0:08:31.71	0:08:33.59	are people who have immunity to it.	0:08:31.71	0:08:33.59	*che non possono essere reinfettate.*
0:08:34.47	0:08:37.51	[narrator] *In the end, SARS infected around 8,000 people*	0:08:34.47	0:08:37.51	[narratore] *In totale circa 8.000 persone presero la SARS*
0:08:37.60	0:08:39.47	*in at least 29 countries.*	0:08:37.60	0:08:39.47	*in almeno 29 paesi.*
0:08:39.72	0:08:42.35	*Seven hundred seventy-four of them died.*	0:08:39.72	0:08:42.35	*774 di queste morirono.*
0:08:44.60	0:08:47.06	*Since then, a group called EcoHealth Alliance*	0:08:44.60	0:08:47.06	*Da allora, un gruppo chiamato EcoHealth Alliance*
0:08:47.15	0:08:49.57	*has been coming to these caves in southern China,*	0:08:47.15	0:08:49.57	*va in queste grotte nel sud della Cina,*
0:08:50.11	0:08:51.19	*catching bats,*	0:08:50.11	0:08:51.19	*e cattura pipistrelli,*
0:08:51.28	0:08:53.11	*scanning them for viruses,*	0:08:51.28	0:08:53.11	*per scoprire se hanno virus,*
0:08:53.19	0:08:56.95	*and flagging the ones that could most easily make the leap to us.*	0:08:53.19	0:08:56.95	*e segnare quelli che potrebbero più facilmente fare il salto di specie.*
0:08:57.03	0:08:59.70	[Daszak] And when we find them, we raise the alert,	0:08:57.03	0:08:59.70	[Daszak] E quando li troviamo, diamo l'allarme,
0:08:59.78	0:09:01.66	and the government of China comes in	0:08:59.78	0:09:01.66	il governo cinese arriva

0:09:01.74	0:09:05.46	and tries to reduce the exposure of those populations to viruses.	0:09:01.74	0:09:05.46	e prova a ridurre l'esposizione della popolazione ai virus.
0:09:06.12	0:09:10.46	[narrator] *They've found a lot so far,* *including hundreds of coronaviruses.*	0:09:06.12	0:09:10.46	[narratore] *Per ora ne hanno trovati molti,* *tra cui centinaia di coronavirus.*
0:09:11.42	0:09:13.67	*And they label them* *as high risk or low risk,*	0:09:11.32	0:09:13.67	*Vengono etichettati* *come a rischio alto o basso,*
0:09:13.76	0:09:17.93	*depending on how similar they are* *to viruses that already infect humans.*	0:09:13.76	0:09:17.93	*in base alla loro somiglianza* *ad altri virus che hanno infettato l'uomo.*
0:09:18.59	0:09:21.01	*And a few years ago,* *they discovered one that they called*	0:09:18.59	0:09:21.01	*Alcuni anni fa, ne scoprirono uno*
0:09:21.10	0:09:25.14	*"""bat coronavirus RaTG13,"""*	0:09:21.10	0:09:25.14	*chiamato "Bat-CoV-RaTG13"*
0:09:25.23	0:09:27.73	*which met the criteria for low-risk.*	0:09:25.23	0:09:27.73	*corrispondente ai criteri* *del rischio basso.*
0:09:28.27	0:09:33.07	*When scientists sequenced the genome* *of the virus behind COVID-19,*	0:09:28.27	0:09:33.07	*Confrontando questo virus* *con quello che causa il COVID-19,*
0:09:33.15	0:09:38.49	*they found that 96% of it* *was identical to that bat virus.*	0:09:33.15	0:09:38.49	*gli scienziati si accorsero* *che condividevano il 96% del genoma.*
0:09:39.45	0:09:43.62	*Scientists believe the bat virus* *likely evolved into this new virus*	0:09:39.45	0:09:43.62	*Credono quindi che quel virus* *si sia probabilmente evoluto in questo*
0:09:43.70	0:09:45.37	*that could infect humans.*	0:09:43.70	0:09:45.37	*che può infettare l'uomo.*
0:09:47.25	0:09:49.79	*So we had to go back to Dr. Daszak.*	0:09:47.25	0:09:49.79	*Quindi siamo tornati dal dr. Daszak.*
0:09:49.88	0:09:54.05	At the time, our goal was to find SARS-related viruses.	0:09:49.88	0:09:54.05	Al tempo il nostro obiettivo era identificare virus legati alla SARS.
0:09:54.13	0:09:55.46	This one looked too distant.	0:09:54.13	0:09:55.46	Questo sembrava distante.
0:09:55.55	0:09:57.80	We didn't think it would be able to get into people.	0:09:55.55	0:09:57.80	Non pensavamo riuscisse a infettare l'uomo.
0:09:57.88	0:10:00.26	It didn't look like it was a clear and present danger.	0:09:57.88	0:10:00.26	Non sembrava un pericolo imminente.
0:10:00.34	0:10:01.26	Unfortunate.	0:10:00.34	0:10:01.26	Purtroppo.
0:10:02.51	0:10:06.39	[narrator] *It's impossible to predict* *all the ways a virus might evolve.*	0:10:02.51	0:10:06.39	[narratore] *È impossibile prevedere* *i modi in cui un virus si può evolvere.*
0:10:07.14	0:10:10.31	*Scientists believe this one* *may have mutated in another bat...*	0:10:07.14	0:10:10.31	*Per gli scienziati, questo virus* *è mutato in un altro pipistrello*
0:10:11.44	0:10:15.03	*or it may have jumped to another species* *before jumping to us,*	0:10:11.44	0:10:15.03	*o è saltato ad un'altra specie* *prima di arrivare a noi,*

0:10:15.11	0:10:17.49	*like a pangolin or a snake...*	0:10:15.11	0:10:17.49	*ad esempio un pangolino,* *o un serpente,*
0:10:18.53	0:10:19.57	*or a fish.*	0:10:18.53	0:10:19.57	*o un pesce.*
0:10:21.82	0:10:26.66	*That same kind of fluke happened* *on a farm in Kansas over a century ago.*	0:10:21.82	0:10:26.66	*Una cosa simile successe in una fattoria* *in Kansas più di un secolo fa.*
0:10:27.25	0:10:28.71	*Experts aren't certain,*	0:10:27.25	0:10:28.71	*Gli esperti non sono sicuri,*
0:10:28.79	0:10:32.25	*but they believe the 1918 flu pandemic* *could have started*	0:10:28.79	0:10:32.25	*ma credono che la spagnola del 1918* *possa essere iniziata quando*
0:10:32.34	0:10:36.84	*when a bird with the flu and* *a human with the flu met the same pig.*	0:10:32.34	0:10:36.84	*un uccello e un uomo con l'influenza* *incontrarono lo stesso maiale.*
0:10:37.42	0:10:39.76	*The bird flu couldn't infect humans,*	0:10:37.42	0:10:39.76	*L'influenza aviaria* *non infettava l'uomo,*
0:10:39.84	0:10:42.43	*and the human flu couldn't infect birds,*	0:10:39.84	0:10:42.43	*e quella umana* *non infettava gli uccelli,*
0:10:42.51	0:10:46.22	*but in one of the pig's cells,* *those two viruses combined,*	0:10:42.51	0:10:46.22	*ma in una cellula del maiale,* *questi due virus si fusero,*
0:10:46.31	0:10:48.60	*creating a new zoonotic virus,*	0:10:46.31	0:10:48.60	*creando un nuovo virus zoonotico,*
0:10:48.73	0:10:50.56	*H1N1,*	0:10:48.73	0:10:50.56	*H1N1,*
0:10:50.65	0:10:53.98	*and that new virus* *definitely could infect humans.*	0:10:50.65	0:10:53.98	*e questo nuovo virus* *poteva di certo infettare l'uomo.*
0:10:54.65	0:10:57.36	It was unlike anything else in history.	0:10:54.65	0:10:57.36	Non era mai successo nulla di simile.
0:10:59.78	0:11:02.11	[narrator] *For a disease* *to become a pandemic,*	0:10:59.78	0:11:02.11	[narratore] *Per diventare* *una pandemia*
0:11:02.20	0:11:07.29	*spreading around the world in months,* *leading to potentially millions of deaths,*	0:11:02.20	0:11:07.29	*e diffondersi nel mondo nel giro di mesi* *causando potenzialmente milioni di morti,*
0:11:07.37	0:11:10.37	*it has to find an extraordinary balance...*	0:11:07.37	0:11:10.37	*una malattia deve trovare* *un equilibrio straordinario*
0:11:11.21	0:11:13.83	*of contagiousness and deadliness.*	0:11:11.21	0:11:13.83	*di contagiosità e mortalità.*
0:11:14.25	0:11:17.17	*You can think of a disease* *on those two scales.*	0:11:14.25	0:11:17.17	*Si può pensare alle malattie* *su questi due assi.*
0:11:17.84	0:11:20.09	*And these are* *some of the infectious diseases*	0:11:17.84	0:11:20.09	*Ed ecco alcune delle malattie infettive*
0:11:20.17	0:11:22.39	*that have been humanity's greatest foes.*	0:11:20.17	0:11:22.39	*più problematiche per l'uomo.*
0:11:23.22	0:11:25.22	*Here's the seasonal human flu,*	0:11:23.22	0:11:25.22	*Qui c'è l'influenza stagionale,*

0:11:25.85	0:11:27.60	*while this is the bird flu.*	0:11:25.85	0:11:27.60	*mentre qui c'è l'aviaria.*
0:11:28.43	0:11:32.77	*And somewhere in this range was the 1918 combination.*	0:11:28.43	0:11:32.77	*E qui in questo intervallo la combinazione del 1918.*
0:11:34.31	0:11:35.56	*It was airborne,*	0:11:34.31	0:11:35.56	*Trasmesso per via aerea,*
0:11:36.15	0:11:40.07	*meaning the virus could hang in the air, infecting anyone who inhaled it.*	0:11:36.15	0:11:40.07	*il virus poteva sopravvivere nell'aria e infettare chiunque lo respirasse.*
0:11:41.53	0:11:46.53	*And it's estimated that it infected one in every three people on Earth,*	0:11:41.53	0:11:46.53	*Si stima che abbia infettato un terzo della popolazione mondiale,*
0:11:46.95	0:11:51.96	*and then it killed anywhere from three to 20% of those infected.*	0:11:46.95	0:11:51.96	*e che uccise dal 3 al 20% degli infetti.*
0:11:52.37	0:11:55.08	*Medical record-keeping was not great at that time.*	0:11:52.37	0:11:55.08	*Allora, i dati medici non erano archiviati molto bene.*
0:11:56.04	0:11:58.63	*But that was nothing compared to smallpox,*	0:11:56.04	0:11:58.63	*Ma non è nulla se paragonata al vaiolo,*
0:11:59.05	0:12:02.17	*which killed 30% of the people who got it,*	0:11:59.05	0:12:02.17	*che uccideva il 30% di chi lo prendeva,*
0:12:02.55	0:12:04.47	*and was also more contagious.*	0:12:02.55	0:12:04.47	*ed era anche più contagioso.*
0:12:05.64	0:12:09.18	*That virus terrorized humanity for thousands of years.*	0:12:05.64	0:12:09.18	*Questo virus terrorizzò l'umanità per migliaia di anni.*
0:12:09.72	0:12:11.31	*In the 20th century alone,*	0:12:09.72	0:12:11.31	*Solo nel XX secolo,*
0:12:11.39	0:12:14.44	*it killed hundreds of millions of people.*	0:12:11.39	0:12:14.44	*uccise centinaia di milioni di persone.*
0:12:15.23	0:12:17.90	*And then there's Ebola, which is even deadlier.*	0:12:15.23	0:12:17.90	*E poi c'è l'ebola, che è ancora più letale.*
0:12:18.44	0:12:20.74	*But far fewer people have died from it,*	0:12:18.44	0:12:20.74	*Ma ha ucciso molte meno persone,*
0:12:20.82	0:12:23.03	*in part because it's so deadly,*	0:12:20.82	0:12:23.03	*in parte proprio perché è così mortale:*
0:12:23.11	0:12:26.78	*people who have it don't infect too many others because they get so sick,*	0:12:23.11	0:12:26.78	*le persone contagiate non ne infettano tante altre perché stanno così male*
0:12:27.16	0:12:28.16	*they stay home,*	0:12:27.16	0:12:28.16	*che stanno a casa*
0:12:28.62	0:12:30.58	*and then most don't survive.*	0:12:28.62	0:12:30.58	*e molte non sopravvivono.*
0:12:31.41	0:12:34.54	One of the unexpected things about viruses is that sometimes,	0:12:31.41	0:12:34.54	Una delle cose più inaspettate dei virus è che, a volte,
0:12:35.00	0:12:39.09	a virus that has really obvious symptoms, that kills people at a very high rate,	0:12:35.00	0:12:39.09	un virus che ha sintomi chiari o che uccide con una grande facilità,
0:12:39.17	0:12:41.92	doesn't become a pandemic. It can't do that.	0:12:39.17	0:12:41.92	non diventa pandemico. Non ci riesce.

0:12:42.38	0:12:46.30	[narrator] *While a disease like measles, which is far less deadly than Ebola,*	0:12:42.38	0:12:46.30	[narratore] *Invece il morbillo, molto meno pericoloso dell'ebola,*
0:12:46.64	0:12:48.68	*used to kill millions of people a year.*	0:12:46.64	0:12:48.68	*uccideva milioni di persone all'anno.*
0:12:49.51	0:12:51.89	*So where does this current pandemic fall?*	0:12:49.51	0:12:51.89	*E questa pandemia dove si colloca?*
0:12:52.27	0:12:53.52	*It's not clear yet,*	0:12:52.27	0:12:53.52	*Non è ancora chiaro,*
0:12:53.85	0:12:56.77	*but experts place it somewhere around here.*	0:12:53.85	0:12:56.77	*ma gli esperti la posizionano da qualche parte qui intorno.*
0:12:56.85	0:13:00.40	*Deadlier than the measles, but less contagious.*	0:12:56.85	0:13:00.40	*Più letale del morbillo, ma meno contagiosa.*
0:13:00.94	0:13:03.11	*Far less deadly than Ebola,*	0:13:00.94	0:13:03.11	*Molto meno mortale dell'ebola,*
0:13:03.44	0:13:05.99	*and nowhere near as bad as smallpox.*	0:13:03.44	0:13:05.99	*e neanche lontanamente grave come il vaiolo.*
0:13:06.53	0:13:10.03	*It's close to the lower estimates for the 1918 flu.*	0:13:06.53	0:13:10.03	*È vicino alle stime più basse della spagnola del 1918.*
0:13:10.58	0:13:12.37	*So, it could be worse.*	0:13:10.58	0:13:12.37	*Potreva andare peggio, insomma.*
0:13:13.04	0:13:16.92	*But its balance is just bad enough to be devastating.*	0:13:13.04	0:13:16.92	*Ma il suo equilibrio è al punto giusto da essere devastante.*
0:13:20.42	0:13:23.05	*But that doesn't mean we're doomed to repeat history.*	0:13:20.42	0:13:23.05	*Ciò non significa che la storia debba ripetersi.*
0:13:23.80	0:13:27.05	*We can end pandemics. We've done it before.*	0:13:23.80	0:13:27.05	*Possiamo sconfiggere le pandemie. L'abbiamo già fatto.*
0:13:28.01	0:13:31.14	*In the 20th century, we discovered antibiotics.*	0:13:28.01	0:13:31.14	*Nel XX secolo, abbiamo scoperto gli antibiotici,*
0:13:32.01	0:13:37.52	*So the Bubonic Plague and all these other bacterial diseases became far less deadly.*	0:13:32.01	0:13:37.52	*rendendo la peste bubbonica e altre malattie batteriche meno mortali.*
0:13:38.73	0:13:43.11	*But antibiotics don't work against this coronavirus, or any viruses.*	0:13:38.73	0:13:43.11	*Ma gli antibiotici non funzionano contro questo o altri virus.*
0:13:43.98	0:13:47.28	*We have effective drugs for some of them, like HIV...*	0:13:43.98	0:13:47.28	*Abbiamo delle medicine efficaci contro alcuni, come l'HIV...*
0:13:48.11	0:13:51.28	*which can now be far less contagious and deadly.*	0:13:48.11	0:13:51.28	*che adesso è molto meno contagioso e mortale.*
0:13:52.20	0:13:55.87	*But safe antiviral drugs are really hard to develop.*	0:13:52.20	0:13:55.87	*Ma è molto difficile sviluppare medicine antivirali sicure.*
0:13:55.96	0:13:59.79	*So the best way to defeat a virus is through immunity.*	0:13:55.96	0:13:59.79	*Quindi il miglior modo per sconfiggere un virus è attraverso l'immunità.*

0:14:00.54	0:14:03.25	*When certain viruses spread through a population,*	0:14:00.54	0:14:03.25	*Quando alcuni virus si diffondono in una popolazione,*
0:14:03.34	0:14:05.05	*some infected people die...*	0:14:03.34	0:14:05.05	*alcuni degli infettati muoiono...*
0:14:05.84	0:14:07.22	*but others survive.*	0:14:05.84	0:14:07.22	*ma altri sopravvivono.*
0:14:07.84	0:14:12.10	*Their immune systems have learned to recognize the virus and fight it off.*	0:14:07.84	0:14:12.10	*Il loro sistema immunitario ha imparato a riconoscere il virus e combatterlo.*
0:14:13.35	0:14:18.06	*When that happens in enough people, it's much harder for the virus to spread.*	0:14:13.35	0:14:18.06	*Quando ciò succede in abbastanza persone, per il virus è più difficile diffondersi.*
0:14:18.85	0:14:20.98	*This is called herd immunity.*	0:14:18.85	0:14:20.98	*Si chiama immunità di gregge.*
0:14:22.40	0:14:24.23	*The rate of infection slows.*	0:14:22.40	0:14:24.23	*Il tasso di infezione rallenta.*
0:14:24.98	0:14:26.61	[Daszak] And the virus dies out.	0:14:24.98	0:14:26.61	[Daszak] E il virus muore.
0:14:27.36	0:14:29.07	[narrator] *But with COVID-19,*	0:14:27.36	0:14:29.07	[narratore] *Ma con il COVID-19,*
0:14:29.15	0:14:32.87	*if the world just waited to achieve herd immunity naturally,*	0:14:29.15	0:14:32.87	*se il mondo semplicemente aspettasse la naturale immunità di gregge,*
0:14:33.53	0:14:34.95	*millions would die,*	0:14:33.53	0:14:35.01	*morirebbero milioni di persone.*
0:14:35.66	0:14:39.12	*and other coronaviruses don't even give lifelong immunity.*	0:14:35.66	0:14:39.12	*Altri coronavirus non danno neanche l'immunità permanente.*
0:14:39.21	0:14:41.71	*For this one, we just don't know yet.*	0:14:39.21	0:14:41.71	*Per quanto riguarda questo, ancora non sappiamo.*
0:14:44.75	0:14:48.63	*Which makes it even more crucial that we create a vaccine.*	0:14:44.75	0:14:48.63	*Cosa che rende ancor più necessario creare un vaccino.*
0:14:49.68	0:14:51.39	*If enough people get vaccinated,*	0:14:49.68	0:14:51.39	*Vaccinare abbastanza persone,*
0:14:51.47	0:14:55.51	*it's a safe and life-saving shortcut to herd immunity.*	0:14:51.47	0:14:55.51	*è una scorciatoia sicura ed efficace per l'immunità di gregge.*
0:14:56.18	0:14:59.06	*The first vaccine was created to fight smallpox.*	0:14:56.18	0:14:59.14	*Il primo vaccino è stato sviluppato per combattere il vaiolo.*
0:14:59.85	0:15:04.57	*And in 1980, after a massive global vaccination campaign,*	0:14:59.85	0:15:04.57	*E nel 1980, dopo un'enorme campagna vaccinale mondiale,*
0:15:04.65	0:15:10.74	*smallpox was the first virus ever declared eradicated from the world.*	0:15:04.65	0:15:10.74	*il vaiolo fu il primo virus in assoluto a essere dichiarato debellato.*
0:15:10.82	0:15:14.58	*And these diseases don't cause nearly the amount of deaths they used to.*	0:15:10.82	0:15:14.58	*E morbillo e polio non provocano più tutte le morti di un tempo.*
0:15:15.49	0:15:18.58	*But vaccines are also really hard to develop.*	0:15:15.49	0:15:18.58	*Ma anche i vaccini sono molto difficili da sviluppare.*

0:15:18.83	0:15:23.25	It's gonna take a year to a year and a half to really know if it works.	0:15:18.83	0:15:23.25	Ci vorrà un anno o un anno e mezzo per sapere se funziona davvero.
0:15:23.33	0:15:27.96	[narrator] *And while we wait,* *the virus keeps spreading and killing.*	0:15:23.33	0:15:27.96	[narratore] *E mentre aspettiamo,* *il virus si diffonde e uccide.*
0:15:28.46	0:15:30.84	*So the best we can do is slow it down,*	0:15:28.46	0:15:30.84	*Il meglio che possiamo fare è rallentarlo,*
0:15:30.93	0:15:33.76	*using a method that's* *a lot more old school.*	0:15:30.93	0:15:33.76	*con un metodo* *molto più vecchia scuola.*
0:15:34.35	0:15:36.68	*In fact, it was invented* *seven centuries ago*	0:15:34.35	0:15:36.68	*Un metodo inventato* *700 anni fa*
0:15:36.76	0:15:38.39	*during the Black Death:*	0:15:36.76	0:15:38.39	*durante la Peste Nera:*
0:15:38.47	0:15:39.35	*quarantine.*	0:15:38.47	0:15:39.35	*la quarantena.*
0:15:40.52	0:15:43.77	*"Or its gentler cousin,* *""social distancing"":"*	0:15:40.52	0:15:43.77	*O la sua versione più gentile,* *il "distanziamento sociale":*
0:15:44.10	0:15:47.02	*avoiding crowds and* *close contact with other people*	0:15:44.10	0:15:47.02	*evitare affollamenti e* *contatti stretti con altre persone*
0:15:47.11	0:15:49.57	*so the virus has fewer chances to spread.*	0:15:47.11	0:15:49.57	*cosicché il virus si diffonda meno.*
0:15:50.44	0:15:53.49	*During the 1918 flu, one American city,*	0:15:50.44	0:15:53.49	*Durante la spagnola, una città americana,*
0:15:53.57	0:15:55.78	*St. Louis, took that approach quickly,*	0:15:53.57	0:15:55.78	*Saint Louis, attuò* *queste misure velocemente,*
0:15:55.87	0:15:58.12	*shutting its schools and public places,*	0:15:55.87	0:15:58.12	*chiudendo scuole e luoghi pubblici,*
0:15:58.58	0:16:00.87	*while Philadelphia didn't right away,*	0:15:58.58	0:16:00.87	*mentre Philadephia attese,*
0:16:00.96	0:16:03.37	*and allowed a big parade to go ahead.*	0:16:00.96	0:16:03.37	*e autorizzò una grande manifestazione.*
0:16:04.88	0:16:07.17	*This was the death rate in St. Louis.*	0:16:04.88	0:16:07.17	*Questo fu il tasso di morti a Saint Louis.*
0:16:08.34	0:16:10.17	*And this was Philadelphia's.*	0:16:08.34	0:16:10.17	*E questo quello di Philadephia.*
0:16:11.55	0:16:13.51	*St. Louis flattened their curve,*	0:16:11.55	0:16:13.51	*Saint Louis appiattì la curva,*
0:16:13.59	0:16:17.10	*which means the disease killed people* *for a longer period,*	0:16:13.59	0:16:17.10	*ovvero la malattia continuò a uccidere* *per un periodo più lungo,*
0:16:17.18	0:16:18.39	*but fewer died.*	0:16:17.18	0:16:18.39	*ma morirono meno persone.*
0:16:20.85	0:16:23.52	*Because, as Italy learned in March,*	0:16:20.85	0:16:23.52	*Perché, come l'Italia ha imparato a marzo,*
0:16:23.60	0:16:26.44	*it's much harder for hospitals* *to save lives*	0:16:23.60	0:16:26.44	*è più difficile* *per gli ospedali salvare vite*
0:16:26.52	0:16:29.11	*if too many people get infected at once.*	0:16:26.52	0:16:29.11	*se ci sono troppe persone infette* *tutte in una volta.*

0:16:30.94	0:16:34.03	[in Italian] I'm living in the hospital, literally.	0:16:30.94	0:16:34.03	[in italiano] Praticamente vivo in ospedale,
0:16:34.11	0:16:38.45	I sleep in the office and I live here.	0:16:34.11	0:16:38.45	nel vero senso della parola: dormo in ufficio e vivo in ospedale.
0:16:38.53	0:16:42.29	[woman speaking Italian] Such concentrated and intense suffering.	0:16:38.53	0:16:42.29	[donna in italiano] Una sofferenza così concentrata e così intensa
0:16:43.12	0:16:44.92	I've never seen this much of it in my life.	0:16:43.12	0:16:44.92	non credo di averla mai vista.
0:16:45.00	0:16:46.63	[in English] People are critical.	0:16:45.00	0:16:46.63	[in inglese] È un momento critico.
0:16:46.71	0:16:50.71	When you arrive at this point, you realize that you are not enough.	0:16:46.71	0:16:50.71	Quando arrivi a questo punto ti rendi conto di non essere abbastanza.
0:16:52.01	0:16:54.43	[narrator] *We obviously* *want to avoid that,*	0:16:52.01	0:16:54.43	[narratore] *È una situazione da evitare,*
0:16:54.51	0:16:57.76	*which is why many world leaders* *have made the same plea.*	0:16:54.51	0:16:57.76	*perciò i leader mondiali* *hanno rivolto lo stesso appello.*
0:16:58.22	0:17:01.14	Go home and stay home.	0:16:58.22	0:17:01.14	Andate a casa e restate a casa.
0:17:01.60	0:17:03.35	You must stay at home.	0:17:01.60	0:17:03.35	Dovete stare a casa.
0:17:03.43	0:17:05.44	[in Hindi] During this time,	0:17:03.43	0:17:05.44	[in hindi] In questo momento,
0:17:05.77	0:17:09.77	no Indian citizen should step out of their home.	0:17:05.77	0:17:09.77	nessun cittadino indiano dovrebbe uscire di casa.
0:17:11.03	0:17:13.61	[narrator in English] Hundreds of millions of people around the world	0:17:11.03	0:17:13.61	*[narratore in inglese] Milioni* *di persone nel mondo*
0:17:13.69	0:17:15.24	have been waiting this out...	0:17:13.69	0:17:15.24	*si sono armate di pazienza,*
0:17:15.78	0:17:17.36	finding ways to cope.	0:17:15.78	0:17:17.36	*cercando modi per resistere.*
0:17:18.82	0:17:20.28	[banging on pots]	0:17:18.82	0:17:20.28	[battono sulle pentole]
0:17:20.37	0:17:21.83	[music playing on speakers]	0:17:20.37	0:17:21.83	[musica dalle casse]
0:17:21.91	0:17:27.75	So countries really have to go on a hardcore national lockdown	0:17:21.91	0:17:27.75	I paesi devono imporre rigidi lockdown nazionali
0:17:27.83	0:17:29.88	to really suppress that curve,	0:17:27.83	0:17:29.88	per appiattire davvero quella curva
0:17:29.96	0:17:31.71	and then we have to, at some point,	0:17:29.96	0:17:31.71	e a un certo punto dovremo,
0:17:31.80	0:17:34.47	gradually and carefully come out of that lockdown.	0:17:31.80	0:17:34.47	gradualmente e con attenzione, uscire da quei lockdown

0:17:37.63	0:17:40.68	[narrator] *South Korea is one model.* *As of early April,*	0:17:37.63	0:17:40.68	[narratore] *La Corea del Sud è un modello.* *A inizio aprile*
0:17:40.76	0:17:43.72	*they've managed to rein in their outbreak* *without a lockdown*	0:17:40.76	0:17:43.72	*riuscirono a contenere il focolaio* *senza un lockdown*
0:17:44.18	0:17:48.98	*by testing widely and retracing the steps* *of people who came back positive.*	0:17:44.18	0:17:48.98	*grazie alla diffusione dei test e* *al tracciamento dei contatti dei positivi.*
0:17:49.69	0:17:51.69	*For other places to pull off* *something similar,*	0:17:49.69	0:17:51.69	*Per imitarla,* *è necessario che*
0:17:51.77	0:17:53.94	*they'd need to ramp up their testing.*	0:17:51.77	0:17:53.94	*gli altri paesi aumentino i tamponi.*
0:17:54.03	0:17:57.78	At what point on the other side of the curve do you go back to work?	0:17:54.03	0:17:57.78	In che punto dell'altro lato della curva si torna a lavoro?
0:17:57.86	0:18:01.53	There is no answer. I think the answer's gonna be in testing.	0:17:57.86	0:18:01.53	Non c'è risposta. Penso che la risposta sarà nei tamponi.
0:18:01.62	0:18:05.00	If you could test, today, millions of people,	0:18:01.62	0:18:05.00	Se oggi si potessero testare milioni di persone,
0:18:05.08	0:18:07.46	you could send them to work tomorrow, right?	0:18:05.08	0:18:07.46	domani potrebbero tornare a lavorare, no?
0:18:07.54	0:18:09.58	The problem is if we're not careful,	0:18:07.54	0:18:09.78	Il problema è che, se non facciamo attenzione,
0:18:09.92	0:18:12.63	that smoldering outbreak can last a long time.	0:18:09.92	0:18:12.63	questi focolai attivi possono durare a lungo.
0:18:13.55	0:18:15.05	[narrator] *Remember St. Louis?*	0:18:13.55	0:18:15.05	[narratore] *Come a Saint Louis.*
0:18:15.13	0:18:17.13	*Right there, in November,*	0:18:15.13	0:18:17.13	*Proprio qui, a novembre,*
0:18:17.22	0:18:21.35	*is when the city decided to end* *their social distancing policies.*	0:18:17.22	0:18:21.35	*è quando la città decise di togliere* *le misure di distanziamento sociale.*
0:18:21.43	0:18:25.10	*The death rate jumped,* *and the city quickly locked down again.*	0:18:21.43	0:18:25.10	*Il tasso di mortalità schizzò,* *e la città tornò velocemente in lockdown.*
0:18:26.56	0:18:28.44	*In a pandemic like this,*	0:18:26.56	0:18:28.44	*In una pandemia come questa,*
0:18:28.52	0:18:30.65	*until you have a vaccine,*	0:18:28.52	0:18:30.65	*fino a che non c'è un vaccino,*
0:18:30.73	0:18:32.36	*you have limited options,*	0:18:30.73	0:18:32.36	*le opzioni sono limitate,*
0:18:32.73	0:18:34.90	*because the virus had a head start.*	0:18:32.73	0:18:34.90	*perché il virus è partito in vantaggio.*
0:18:35.65	0:18:39.20	*And this is a situation* *that experts have always feared.*	0:18:35.65	0:18:39.20	*E questa è una situazione* *che gli esperti hanno sempre temuto.*

0:18:39.28	0:18:41.74	Mother Nature is the ultimate bioterrorist.	0:18:39.28	0:18:41.74	Madre Natura è la bioterrorista per eccellenza.
0:18:41.82	0:18:44.99	There are always going to be things that surprise us	0:18:41.82	0:18:44.99	Ci saranno sempre cose che ci sorprendono
0:18:45.08	0:18:47.25	and that take our detection by surprise.	0:18:45.08	0:18:47.25	e colgono di sorpresa le nostre rilevazioni.
0:18:47.33	0:18:52.79	[Gates] We could be far more ready for a pandemic like a flu or a SARS.	0:18:47.33	0:18:52.79	[Gates] Potremmo essere più preparati per una pandemia influenzale o tipo SARS.
0:18:52.88	0:18:58.30	However, if a really fast-moving respiratory pathogen came out,	0:18:52.88	0:18:58.30	Tuttavia, se spuntasse un patogeno respiratorio molto contagioso,
0:18:58.59	0:19:02.80	no, we wouldn't be able to hold those numbers down.	0:18:58.59	0:19:02.80	no, non riusciremmo a contenere il contagio.
0:19:03.51	0:19:07.06	[narrator] *The World Health Organization* *is meant to lead the global response*	0:19:03.51	0:19:07.06	[narratore] *L'OMS* *dovrebbe guidare la risposta globale*
0:19:07.14	0:19:09.52	*to a pandemic like this.*	0:19:07.14	0:19:09.52	*a una pandemia di questo tipo.*
0:19:09.60	0:19:12.10	But it's actually quite a small organization,	0:19:09.60	0:19:12.10	Ma in realtà è un'organizzazione piuttosto piccola
0:19:12.19	0:19:15.73	very dependent on voluntary contributions.	0:19:12.19	0:19:15.73	che dipende molto da contributi volontari.
0:19:15.82	0:19:19.24	So they don't have planes or teams standing by.	0:19:15.82	0:19:19.24	Non ha aerei né gruppi che la supportano,
0:19:19.32	0:19:22.20	They don't have a research and development budget	0:19:19.32	0:19:22.20	non ha fondi per la ricerca e lo sviluppo
0:19:22.28	0:19:23.32	to make these tools.	0:19:22.28	0:19:23.32	di questi strumenti.
0:19:24.20	0:19:28.29	[narrator] *In 2005, the WHO did draw up* *a huge blueprint*	0:19:24.20	0:19:28.29	[narratore] *Nel 2005, l'OMS* *scrisse una guida su come*
0:19:28.37	0:19:32.54	*for how the world should prepare* *and respond to a crisis like this.*	0:19:28.37	0:19:32.54	*il mondo avrebbe dovuto prepararsi* *per rispondere a una simile crisi.*
0:19:33.04	0:19:33.96	*Among other things,*	0:19:33.04	0:19:33.96	*Tra le altre cose,*
0:19:34.38	0:19:38.01	*countries had to develop* *the capacity to detect outbreaks*	0:19:34.38	0:19:38.01	*i paesi avrebbero dovuto sviluppare* *la capacità di rilevare focolai*
0:19:38.09	0:19:40.63	*and quickly notify WHO.*	0:19:38.09	0:19:40.63	*e informare tempestivamente l'OMS.*
0:19:41.05	0:19:44.30	*One hundred and ninety-six countries* *signed onto this,*	0:19:41.05	0:19:44.30	*196 paesi* *firmarono questa guida,*
0:19:44.47	0:19:46.43	*but most never complied.*	0:19:44.47	0:19:46.43	*ma molti non la misero mai in pratica.*

0:19:46.89	0:19:50.27	When a pandemic comes along of any size,	0:19:46.89	0:19:50.27	Quando scoppia una pandemia di qualsiasi dimensioni,
0:19:50.35	0:19:53.48	we always look back and wish we'd invested more.	0:19:50.35	0:19:53.48	guardiamo sempre indietro desiderando di aver investito di più.
0:19:53.56	0:19:57.07	However, very quickly our memory fades,	0:19:53.56	0:19:57.07	Tuttavia, i ricordi sbiadiscono in fretta
0:19:57.15	0:20:00.78	and other priorities are getting the resources.	0:19:57.15	0:20:00.78	e le risorse vengono investite in altre priorità.
0:20:01.28	0:20:04.20	[narrator] *A recent WHO report* *even acknowledged,*	0:20:01.28	0:20:04.20	[narratore] *Un recente report dell'OMS* *ha riconosciuto che*
0:20:04.28	0:20:06.41	*"""There is a very real threat"*	0:20:04.28	0:20:06.41	*"C'è il serio rischio*
0:20:06.49	0:20:11.58	*of a rapidly moving, highly lethal* *pandemic of a respiratory pathogen.*	0:20:06.49	0:20:11.58	*di una pandemia causata da un* *patogeno respiratorio contagioso e letale.*
0:20:11.66	0:20:13.92	*"The world is not prepared."""*	0:20:11.66	0:20:13.92	*Il mondo non è pronto."*
0:20:14.54	0:20:18.30	*That was three months* *before the first case of COVID-19.*	0:20:14.54	0:20:18.30	*Questo tre mesi prima* *del primo caso di COVID-19.*
0:20:19.59	0:20:22.67	*And our healthcare systems* *obviously weren't prepared.*	0:20:19.59	0:20:22.67	*E i nostri sistemi sanitari* *non erano, ovviamente, pronti.*
0:20:23.47	0:20:27.76	*Doctors and nurses around the world* *have been forced to use makeshift masks.*	0:20:23.47	0:20:27.76	*Dottori e infermieri si sono trovati a* *dover usare mascherine improvvisate.*
0:20:28.10	0:20:30.97	[in Spanish] In the last two days, eight nurses have fallen ill.	0:20:28.10	0:20:30.97	[in spagnolo] In soli due giorni, otto infermieri ammalati.
0:20:31.06	0:20:32.85	[in English] Healthcare professionals are sick.	0:20:31.06	0:20:32.85	[in inglese] Il personale si ammala.
0:20:32.94	0:20:36.10	We need to be protected first so that we'll be able to help.	0:20:32.94	0:20:36.10	Dobbiamo prima essere protetti per poter aiutare gli altri.
0:20:36.65	0:20:39.78	[narrator] *And in China,* *many of the first people with COVID-19*	0:20:36.65	0:20:39.78	[narratore] *In Cina,* *molti dei primi casi di COVID-19*
0:20:39.86	0:20:42.53	*appear to have caught the disease* *at a hospital.*	0:20:39.86	0:20:42.53	*sembra si siano infettati in ospedale.*
0:20:42.95	0:20:46.66	Well, the world spends a lot of money preparing for war.	0:20:42.95	0:20:46.66	Gli stati spendono molto per prepararsi alla guerra.
0:20:46.74	0:20:50.62	Military budgets are large, and the new weapons get created.	0:20:46.74	0:20:50.62	Le spese militari sono ingenti e vengono create nuove armi.
0:20:50.70	0:20:53.66	This belongs right there with war,	0:20:50.70	0:20:53.66	Ma questo sta

					sullo stesso piano della guerra
0:20:54.12	0:20:56.33	as something that we plan for.	0:20:54.12	0:20:56.33	e dobbiamo pianificare come gestirlo.
0:20:57.46	0:21:00.25	[narrator] *We also need to do more to prevent outbreaks*	0:20:57.38	0:21:00.30	[narratore] *Serve anche far di più per impedire innanzitutto*
0:21:00.34	0:21:02.38	*from happening in the first place.*	0:21:00.34	0:21:02.38	*che scoppino nuovi focolai.*
0:21:02.84	0:21:04.76	*Live animal markets like this*	0:21:02.84	0:21:04.76	*Mercati di animali vivi come questo*
0:21:04.84	0:21:08.22	*have remained popular in parts of China and other countries,*	0:21:04.84	0:21:08.22	*sono ancora diffusi in parti della Cina e altri paesi,*
0:21:08.80	0:21:13.89	*giving animal viruses all kinds of opportunities to mix and mutate*	0:21:08.80	0:21:13.89	*dando ai virus animali molte opportunità di mescolarsi, mutare*
0:21:13.98	0:21:15.31	*and jump to humans.*	0:21:13.98	0:21:15.31	*e trasmettersi all'uomo.*
0:21:16.77	0:21:20.73	*And when there is an outbreak, we need to respond faster.*	0:21:16.77	0:21:20.73	*Quando scoppia un focolaio serve una risposta più veloce.*
0:21:21.82	0:21:26.41	*Three weeks before China began any containment measures against COVID-19...*	0:21:21.82	0:21:26.41	*Tre settimane prima che in Cina si prendessero misure anti COVID-19,*
0:21:27.45	0:21:30.91	*a 33-year-old doctor at Wuhan Central Hospital,*	0:21:27.45	0:21:30.91	*un dottore di 33 anni del Wuhan Central Hospital,*
0:21:30.99	0:21:32.45	*Doctor Li Wenliang,*	0:21:30.99	0:21:32.45	*il dottor Li Wenliang,*
0:21:33.00	0:21:35.12	*sent a group chat to other doctors,*	0:21:33.00	0:21:35.12	*mandò un messaggio ai colleghi,*
0:21:35.21	0:21:37.29	*alerting them to the outbreak.*	0:21:35.21	0:21:37.29	*avvisandoli del focolaio.*
0:21:37.83	0:21:41.46	*A few days later, the Wuhan police made him sign a letter,*	0:21:37.83	0:21:41.46	*Qualche giorno dopo, la polizia di Wuhan gli fece firmare una lettera,*
0:21:41.55	0:21:45.30	*warning that he would receive the full sanction of the law*	0:21:41.55	0:21:45.30	*informandolo che avrebbe ricevuto pesanti sanzioni*
0:21:45.63	0:21:49.26	*"if he ""stubbornly persists"" in his opinions."*	0:21:45.63	0:21:49.26	*se "si fosse ostinato" a ripetere le sue opinioni.*
0:21:50.80	0:21:55.18	*By the time the WHO declared a public health emergency on January 30th,*	0:21:50.80	0:21:55.18	*Quando il 30 gennaio l'OMS dichiarò l'emergenza di salute pubblica,*
0:21:55.77	0:22:00.19	*Dr. Li Wenliang had likely already contracted COVID-19...*	0:21:55.77	0:22:00.19	*il dott. Li Wenliang aveva probabilmente già contratto il COVID-19*
0:22:01.27	0:22:03.36	*because he died of it a week later.*	0:22:01.27	0:22:03.36	*perché morì solo una settimana dopo.*
0:22:04.82	0:22:06.28	*And three weeks after that,*	0:22:04.82	0:22:06.28	*E tre settimane dopo,*
0:22:06.36	0:22:10.87	*it's estimated that 114,000 people in China were infected.*	0:22:06.36	0:22:10.87	*si stima che circa 114.000 persone in Cina erano infette.*

0:22:11.53	0:22:15.95	*If China had implemented its containment measures just one week earlier,*	0:22:11.53	0:22:15.95	*Se la Cina avesse adottato delle misure di contenimento solo una settimana prima,*
0:22:16.41	0:22:19.17	*researchers found it would have looked like this.*	0:22:16.41	0:22:19.17	*secondo i ricercatori la situazione sarebbe stata così.*
0:22:20.33	0:22:22.75	*Two weeks earlier, like this.*	0:22:20.33	0:22:22.75	*Due settimane prima, così.*
0:22:24.21	0:22:25.88	*And three weeks earlier,*	0:22:24.21	0:22:25.88	*E tre settimane prima,*
0:22:26.63	0:22:27.72	*like this.*	0:22:26.63	0:22:27.72	*così.*
0:22:28.68	0:22:33.60	*The number of cases could have been cut by as much as 95%.*	0:22:28.68	0:22:33.60	*Si sarebbe potuto ridurre il numero di casi fino al 95%.*
0:22:35.85	0:22:38.44	*And while China was locked down in February,*	0:22:35.85	0:22:38.44	*Mentre la Cina era in lockdown in febbraio,*
0:22:38.52	0:22:39.81	*Italy wasn't,*	0:22:38.52	0:22:39.81	*l'Italia non lo era,*
0:22:39.90	0:22:42.77	*and it became the next epicenter of the virus.*	0:22:39.90	0:22:42.77	*e divenne il nuovo epicentro del virus.*
0:22:43.69	0:22:45.98	*And when Italy locked down in March,*	0:22:43.69	0:22:45.98	*Quando l'Italia entrò in lockdown a marzo,*
0:22:46.07	0:22:47.49	*the United States didn't,*	0:22:46.07	0:22:47.49	*gli USA non lo fecero,*
0:22:48.20	0:22:50.11	*and became the next epicenter.*	0:22:48.20	0:22:50.11	*e diventarono il nuovo epicentro.*
0:22:51.24	0:22:53.95	*And then cases started to rise in poorer countries*	0:22:51.24	0:22:53.96	*Poi i casi iniziarono ad aumentare nei paesi più poveri,*
0:22:54.03	0:22:55.58	*where lockdowns are harder,*	0:22:54.03	0:22:55.65	*dove i lockdown sono più difficili*
0:22:55.99	0:22:58.46	*and healthcare systems, already fragile.*	0:22:55.99	0:22:58.46	*e i sistemi sanitari più fragili.*
0:22:59.75	0:23:02.50	*We need to get faster at containment.*	0:22:59.75	0:23:02.50	*Dobbiamo contenere i casi più rapidamente.*
0:23:04.00	0:23:07.38	*Ideally, we want to catch more viruses at the source.*	0:23:04.00	0:23:07.38	*Idealmente, vorremmo catturare più virus all'origine.*
0:23:07.84	0:23:09.63	*It isn't just China,*	0:23:07.84	0:23:09.63	*Non è solo la Cina,*
0:23:09.72	0:23:11.22	*and it isn't just bats.*	0:23:09.72	0:23:11.22	*e non sono solo i pipistrelli.*
0:23:12.18	0:23:16.77	*These are the places where a new virus is most likely to make the leap to humans.*	0:23:12.18	0:23:16.77	*In questi posti un nuovo virus ha più probabilità di fare il salto di specie.*
0:23:17.64	0:23:21.81	The frontline for disease emergence are places like	0:23:17.64	0:23:21.81	Il fronte per la comparsa di nuove malattie sono posti come
0:23:21.90	0:23:24.52	the end of the road in a tropical forest	0:23:21.90	0:23:24.52	la fine di una strada in una foresta tropicale

0:23:24.61	0:23:27.57	where someone's just built a new mining concession.	0:23:24.61	0:23:27.57	dove è stata appena istituita una concessione mineraria.
0:23:27.65	0:23:28.78	People have moved in,	0:23:27.65	0:23:28.78	Ci sono molte persone,
0:23:28.86	0:23:31.45	there's no food supply, so they go out and hunt wildlife.	0:23:28.86	0:23:31.45	non ci sono scorte di cibo, perciò si deve cacciare.
0:23:31.78	0:23:36.12	Or it's a farm in Southeast Asia that's been expanding and intensifying,	0:23:31.78	0:23:36.12	O una fattoria nel Sud-Est Asiatico che cresce e diventa intensiva
0:23:36.62	0:23:40.58	that has bats nearby that spread viruses into the pigs in the farm.	0:23:36.62	0:23:40.58	vicino a cui ci sono pipistrelli che trasmettono virus ai maiali.
0:23:41.42	0:23:44.17	[narrator] *The truth is, human behavior* *all over the world*	0:23:41.42	0:23:44.17	[narratore] *In tutto il mondo,* *il comportamento umano*
0:23:44.25	0:23:46.63	*has made pandemics* *like this one inevitable.*	0:23:44.25	0:23:46.63	*ha reso inevitabili* *pandemie come questa.*
0:23:47.42	0:23:51.55	*Deforestation is bringing more wild* *animals into contact with more people,*	0:23:47.42	0:23:51.55	*La deforestazione sta spingendo* *sempre più animali in contatto con l'uomo,*
0:23:51.63	0:23:55.39	*and factory farming is pushing animals* *closer together,*	0:23:51.63	0:23:55.39	*e l'allevamento industriale sta mettendo* *gli animali sempre più vicini,*
0:23:55.89	0:24:00.52	*giving their viruses more opportunities* *to combine into one that could infect us.*	0:23:55.89	0:24:00.52	*dando ai loro virus sempre più possibilità* *di crearne uno che infetti anche noi.*
0:24:01.52	0:24:04.52	*Then we give them more ways than ever* *to spread.*	0:24:01.52	0:24:04.52	*Poi diamo loro più modi* *che mai di diffondersi.*
0:24:05.02	0:24:08.02	[Daszak] I think one of the big lessons about pandemics is,	0:24:05.02	0:24:08.02	[Daszak] *Credo che una delle lezioni* *sulle pandemie sia*
0:24:08.11	0:24:11.19	we think that it's something happening over there.	0:24:08.11	0:24:11.19	*che crediamo che accadano lontano da noi.*
0:24:11.28	0:24:12.70	Well, we know from COVID-19	0:24:11.28	0:24:12.70	*Il COVID-19 ci ha insegnato*
0:24:12.78	0:24:15.45	that what happens over there can very easily get here.	0:24:12.78	0:24:15.45	*che ciò che è lontano* *può velocemente arrivare fin qui.*
0:24:18.33	0:24:20.95	[narrator] *But if viruses* *were capable of thinking,*	0:24:18.33	0:24:20.95	[narratore] *Ma se i virus* *fossero capaci di pensare,*
0:24:21.41	0:24:23.58	*they should have also* *learned their lesson.*	0:24:21.41	0:24:23.58	*avrebbero anche dovuto* *imparare la lezione.*
0:24:24.21	0:24:26.13	*If their goal is to replicate,*	0:24:24.21	0:24:26.13	*Se l'obiettivo è moltiplicarsi,*
0:24:26.59	0:24:28.25	*they shouldn't start killing us.*	0:24:26.59	0:24:28.25	*non dovrebbero ucciderci.*
0:24:29.05	0:24:31.59	*Because once a virus becomes a pandemic,*	0:24:29.05	0:24:31.59	*Perché quando un virus diventa pandemico,*

0:24:32.26	0:24:35.89	*all of human ingenuity will be brought to bear to bring them down.*	0:24:32.26	0:24:35.89	*adopereremo tutto il nostro ingegno per cercare di abbatterlo.*
0:24:36.39	0:24:38.47	*We should have been more prepared,*	0:24:36.39	0:24:38.47	*Avremmo dovuto essere più preparati,*
0:24:39.14	0:24:43.31	*but when it comes to technology, science, and coordination,*	0:24:39.14	0:24:43.31	*ma per quanto riguarda tecnologia, scienza e coordinazione,*
0:24:43.64	0:24:46.10	*we've also never been more prepared.*	0:24:43.64	0:24:46.10	*non siamo mai stati più pronti.*
0:24:46.69	0:24:50.86	This new virus was identified within days. The sequence was shared a few days later,	0:24:46.69	0:24:50.86	Il virus è stato identificato nel giro di pochi giorni e sequenziato subito dopo.
0:24:50.94	0:24:53.61	and because of that, testing began,	0:24:50.94	0:24:53.61	Questo ha permesso che i test iniziassero
0:24:53.70	0:24:55.20	really, across the globe.	0:24:53.70	0:24:55.20	davvero in tutto il mondo.
0:24:55.28	0:25:00.12	Scientists around the world are committing entire labs to creating a vaccine.	0:24:55.28	0:25:00.12	Ovunque, gli scienziati dedicano i laboratori allo sviluppo di un vaccino.
0:25:00.20	0:25:04.79	The... the fastest vaccine ever created, um, in history.	0:25:00.20	0:25:04.79	Il vaccino sviluppato più velocemente in tutta la storia.
0:25:04.87	0:25:06.79	[reporter] *The world's fastest supercomputer*	0:25:04.87	0:25:06.79	[reporter] *Il supercomputer più veloce*
0:25:06.88	0:25:08.75	*has run thousands of simulations*	0:25:06.88	0:25:08.75	*ha condotto migliaia di simulazioni*
0:25:08.84	0:25:13.34	*and identified 77 drug compounds that might effectively stop the virus.*	0:25:08.84	0:25:13.34	*e identificato 77 composti medicinali che potrebbero fermare il virus.*
0:25:13.42	0:25:17.30	It's amazing the way the scientific community has gathered together.	0:25:13.42	0:25:17.30	È straordinario come la comunità scientifica si sia unita.
0:25:17.55	0:25:19.22	[narrator] *We know what it takes,*	0:25:17.55	0:25:19.22	[narratore] *Sappiamo cosa serve,*
0:25:19.30	0:25:22.60	*because we've been in this race since life on Earth began,*	0:25:19.30	0:25:22.60	*perché questa sfida esiste da quando c'è vita sulla Terra,*
0:25:22.89	0:25:25.19	*and a virus hasn't beaten us yet.*	0:25:22.89	0:25:25.19	*e un virus non ci ha ancora sconfitti.*
0:25:26.14	0:25:28.73	[inaudible]	0:25:26.14	0:25:28.73	[non udibile]
0:25:30.61	0:25:33.65	[banging on pots]	0:25:30.61	0:25:33.65	[battono sulle pentole]
0:25:33.74	0:25:35.86	[music playing on speakers]	0:25:33.74	0:25:35.86	[musica dalle casse]
0:25:38.74	0:25:40.91	[theme music playing]	0:25:38.74	0:25:40.91	[sigla]

c. Subtitles episode 1x02 “The Race for a Vaccine”

Script generated by Aegisub 3.2.2 available at http://www.aegisub.org/

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Start	End	English	Start	End	Italian
0:00:06.84	0:00:08.00	-[doctor] Hi. -Hi.	0:00:06.82	0:00:08.06	-[dottore] Salve. -Salve.
0:00:09.21	0:00:11.59	[narrator] *You're witnessing an historic moment.*	0:00:09.21	0:00:11.59	[narratrice] *Questo è a un momento storico.*
0:00:12.01	0:00:16.72	*Right now, there's a worldwide hunt for ways to fight this coronavirus.*	0:00:12.01	0:00:16.72	*Il mondo intero è alla ricerca di un modo per sconfiggere questo coronavirus.*
0:00:20.64	0:00:22.43	*Scientists are trying everything,*	0:00:20.64	0:00:22.43	*Gli scienziati tentano di tutto,*
0:00:22.52	0:00:25.10	*from existing medicines to new therapies.*	0:00:22.52	0:00:25.10	*da medicine esistenti a nuove terapie.*
0:00:25.19	0:00:27.81	*But the most likely way we'll end this pandemic*	0:00:25.19	0:00:27.81	*Ma probabilmente fermeremo questa pandemia*
0:00:28.32	0:00:29.53	*is a vaccine.*	0:00:28.32	0:00:29.53	*grazie a un vaccino.*
0:00:31.19	0:00:33.11	*On March 16th, 2020,*	0:00:31.19	0:00:33.11	*Il 16 marzo 2020*
0:00:33.20	0:00:34.99	*the first one was tested.*	0:00:33.20	0:00:34.99	*sono iniziati i primi test.*
0:00:35.07	0:00:36.24	I'm Jennifer Haller,	0:00:35.07	0:00:36.24	Sono Jennifer Haller
0:00:36.32	0:00:40.87	and I was the first person to receive an experimental COVID-19 vaccine.	0:00:36.32	0:00:40.87	e sono stata la prima persona a ricevere un vaccino anti-COVID-19 sperimentale.
0:00:41.52	0:00:44.58	[narrator] *We've made other test vaccines pretty quickly.*	0:00:41.52	0:00:44.58	[narratrice] *Ne abbiamo già sviluppati altri in poco tempo.*
0:00:44.62	0:00:46.75	*One for SARS took 20 months,*	0:00:44.62	0:00:46.75	*Uno per la SARS in 20 mesi,*
0:00:46.83	0:00:49.04	*one for Ebola, seven months,*	0:00:46.83	0:00:49.04	*uno per l’ebola in 7 mesi*
0:00:49.13	0:00:51.96	*and one for Zika, around six months.*	0:00:49.13	0:00:51.96	*e uno per la Zika in circa sei mesi.*
0:00:52.05	0:00:54.97	*But this vaccine candidate crushed those records.*	0:00:52.05	0:00:54.97	*Ma questo ha stracciato i record precedenti.*
0:00:55.05	0:00:57.64	*It was made in just 65 days.*	0:00:55.05	0:00:57.64	*È stato sviluppato in soli 65 giorni.*

0:00:58.18	0:01:00.60	*If it's going to end this pandemic, though,*	0:00:58.18	0:01:00.60	*Se riuscirà a fermare questa pandemia, però,*
0:01:00.68	0:01:03.10	*it's got a long way still to go.*	0:01:00.68	0:01:03.10	*è ancora da vedere.*
0:01:04.14	0:01:07.56	*See, any potential vaccine has a difficult path ahead,*	0:01:04.14	0:01:07.56	*Infatti, ogni vaccino ha davanti una strada difficile,*
0:01:07.65	0:01:11.23	*a long and twisting course full of challenges and trials.*	0:01:07.65	0:01:11.23	*un percorso lungo e tortuoso, pieno di sfide e ostacoli.*
0:01:11.53	0:01:12.57	*In the US,*	0:01:11.53	0:01:12.57	*Negli USA,*
0:01:12.65	0:01:15.86	*typically it takes a vaccine candidate a decade or so*	0:01:12.65	0:01:15.86	*un vaccino impiega circa 10 anni*
0:01:15.95	0:01:17.82	*to make it from start to finish,*	0:01:15.95	0:01:17.82	*a raggiungere il traguardo,*
0:01:18.16	0:01:21.37	*and around 90% fail to complete it.*	0:01:18.16	0:01:21.37	*e circa il 90% non ci arriva.*
0:01:22.33	0:01:24.54	*We don't have that kind of time.*	0:01:22.33	0:01:24.54	*Non abbiamo tutto questo tempo.*
0:01:24.62	0:01:26.75	*Every day, people are dying,*	0:01:24.62	0:01:26.75	*Ogni giorno muoiono persone*
0:01:27.25	0:01:29.92	*and the economic losses are mounting.*	0:01:27.25	0:01:29.92	*e le perdite economiche aumentano.*
0:01:30.88	0:01:35.67	*Experts are hoping a vaccine can be widely available in 2021.*	0:01:30.88	0:01:35.67	*Gli esperti sperano in un vaccino su larga scala nel 2021.*
0:01:35.76	0:01:37.01	*To pull that off,*	0:01:35.76	0:01:37.01	*Per riuscirci,*
0:01:37.09	0:01:40.93	*it will have to get through every stretch of this course in record time.*	0:01:37.09	0:01:40.93	*dovrà superare ogni parte di questo percorso in tempi da record.*
0:01:41.01	0:01:42.06	[car engines roaring]	0:01:41.01	0:01:42.06	[rombo di motori]
0:01:42.14	0:01:44.85	[announcer] *This is the supreme test of man and machine*.	0:01:42.08	0:01:44.91	[telecronista] *È la prova finale di uomo e macchina.*
0:01:44.93	0:01:47.31	*But while many are called to the starting line,*	0:01:44.93	0:01:47.31	*Molti vengono chiamati alla linea di partenza,*
0:01:47.39	0:01:50.27	*usually less than half finish the grueling drive.*	0:01:47.39	0:01:50.27	*ma spesso solo meno della metà finisce l'estenuante gara.*
0:01:51.65	0:01:56.07	[narrator] *Fortunately, more than 100 vaccine candidates are giving it a shot,*	0:01:51.65	0:01:56.07	[narratrice] *Fortunatamente, si stanno sperimentando più di 100 candidati,*
0:01:56.32	0:02:00.70	*made by scientists all over the world, from veterans at universities...*	0:01:56.32	0:02:00.70	*creati da scienziati di tutto il mondo, i migliori ricercatori nelle università…*
0:02:00.78	0:02:03.70	We have a dedicated group of extraordinary scientists	0:02:00.78	0:02:03.70	Abbiamo un gruppo di scienziati straordinari

0:02:03.79	0:02:06.16	that are in the lab day and night.	0:02:03.79	0:02:06.16	che sono nel laboratorio giorno e notte.
0:02:06.19	0:02:07.91	[narrator] *...to pharmaceutical giants...*	0:02:06.19	0:02:07.96	[narratrice] *…a giganti farmaceutici…*
0:02:08.00	0:02:11.00	We have the teams to do this, and everyone is excited.	0:02:08.00	0:02:11.00	Abbiamo le persone per farlo e l'entusiasmo.
0:02:11.02	0:02:12.75	[narrator] *...using proven techniques...*	0:02:11.02	0:02:12.75	[narratrice] *…con tecniche collaudate…*
0:02:12.79	0:02:15.21	And, of course, with the coronavirus vaccine,	0:02:12.79	0:02:15.21	E, certo, con il vaccino per il coronavirus
0:02:15.30	0:02:17.22	we have a particular head start.	0:02:15.30	0:02:17.22	abbiamo un importante vantaggio
0:02:17.47	0:02:20.22	[narrator] *...and approaches* *that have never been tested before.*	0:02:17.47	0:02:20.22	[narratrice] *…e approcci* *mai sperimentati prima d'ora*.
0:02:20.30	0:02:22.10	Everybody competes with each other,	0:02:20.30	0:02:22.10	Gareggiamo tutti contro tutti,
0:02:22.18	0:02:24.77	but eventually, only the very best survive.	0:02:22.18	0:02:24.77	ma alla fine solo il migliore sopravvive.
0:02:24.85	0:02:29.27	[narrator] *But getting a vaccine* *is also going to take a lot of money...*	0:02:24.85	0:02:29.27	[narratrice] *Ma creare un vaccino* *costa anche molto…*
0:02:29.35	0:02:32.56	Okay, here we are. You know, we can get money out really fast.	0:02:29.35	0:02:32.56	Ok. Possiamo ottenere dei fondi rapidamente.
0:02:32.65	0:02:34.48	We can do evaluations of these things.	0:02:32.65	0:02:34.48	Possiamo valutare queste cose.
0:02:34.57	0:02:36.44	Now we're all trying to step up	0:02:34.57	0:02:36.44	Adesso ci stiamo tutti muovendo
0:02:36.53	0:02:38.90	and look all over the world for the best ideas.	0:02:36.53	0:02:39.00	e guardando intorno per trovare le idee migliori.
0:02:39.22	0:02:40.61	[narrator] *...and collaboration*.	0:02:39.20	0:02:40.63	[narratrice] *…collaborazione…*
0:02:40.70	0:02:43.24	The entire global scientific community	0:02:40.70	0:02:43.24	La comunità scientifica mondiale
0:02:43.33	0:02:46.66	has come together in a truly unprecedented way.	0:02:43.33	0:02:46.66	si è unita come mai prima.
0:02:46.75	0:02:48.91	[narrator] *...and brave volunteers.*	0:02:46.75	0:02:48.91	[narratrice] *…e volontari coraggiosi.*
0:02:49.08	0:02:52.54	We're all feeling so helpless, and this was something that I saw	0:02:49.08	0:02:52.54	Ci sentiamo tutti così impotenti, e questo era un modo
0:02:52.63	0:02:56.55	that I could do that could potentially make a difference.	0:02:52.63	0:02:56.55	in cui sentivo che avrei potuto fare la differenza.
0:02:56.96	0:02:59.17	[narrator] *Together,* *they're in one of the most*	0:02:56.96	0:02:59.17	[narratrice] *Insieme gareggiano*
0:02:59.26	0:03:01.64	*high-stakes scientific races in history.*	0:02:59.20	0:03:01.64	*per uno degli obiettivi*

					più alti di sempre.
0:03:02.14	0:03:04.68	I compare this to a space race.	0:03:02.14	0:03:04.68	È come la corsa allo spazio.
0:03:04.76	0:03:08.64	We have so many contenders reaching for something that was previously unknown.	0:03:04.76	0:03:08.64	Ci sono tanti sfidanti che vogliono raggiungere qualcosa di ignoto.
0:03:08.73	0:03:09.98	"How do I get to Mars?"	0:03:08.73	0:03:09.98	“Come arrivo su Marte?”
0:03:10.06	0:03:11.10	"How do I get to Venus?"	0:03:10.06	0:03:11.10	“E su Venere?”
0:03:11.19	0:03:13.94	"How do we create the next COVID-19 vaccine?"	0:03:11.19	0:03:13.94	"Come possiamo creare il nuovo vaccino anti COVID-19?”
0:03:14.02	0:03:16.07	[narrator] *And the other big question:*	0:03:14.02	0:03:16.07	[narratrice] *E l’altra grande domanda:*
0:03:16.15	0:03:18.28	*how fast can we do it?*	0:03:16.15	0:03:18.28	*in quanto tempo?*
0:03:18.61	0:03:19.70	[theme music playing]	0:03:18.61	0:03:19.70	[sigla]
0:03:19.78	0:03:23.28	Given the fact that we now have the virus in our hands,	0:03:19.78	0:03:23.28	Visto che ora abbiamo il virus nelle nostre mani,
0:03:23.37	0:03:25.20	we will develop a vaccine.	0:03:23.37	0:03:25.20	svilupperemo un vaccino.
0:03:25.28	0:03:30.87	[man 1] *We can move very fast in ways that have not been previously achieved.*	0:03:25.28	0:03:30.87	[uomo 1] *Possiamo agire rapidamente come mai prima d’ora.*
0:03:30.96	0:03:34.71	[man 2] *It's only once that vaccine has been proven to be safe*	0:03:30.96	0:03:34.71	[uomo 2] *Solo una volta dimostrato che il vaccino è sicuro*
0:03:34.79	0:03:37.46	*that it'll be allowed out of confinement.*	0:03:34.79	0:03:37.46	*verrà messo in commercio.*
0:03:37.55	0:03:39.84	[man 3] *What they needed was a vaccine,*	0:03:37.55	0:03:39.84	[uomo 3] *Avevano bisogno di un vaccino*
0:03:39.92	0:03:42.55	*and the fight never stopped till it was found.*	0:03:39.92	0:03:42.55	*e la lotta non si fermò finché non venne trovato.*
0:03:44.85	0:03:48.60	[man 4] *There remain other viruses to be isolated, other vaccines to come,*	0:03:44.85	0:03:48.60	[uomo 4] *Rimangono altri virus da isolare, altri vaccini da sviluppare,*
0:03:48.68	0:03:49.68	*but they will.*	0:03:48.68	0:03:49.68	*ma lo si farà.*
			0:03:51.65	0:03:56.61	LA CORSA AL VACCINO,
0:03:58.02	0:04:01.90	[narrator] *This coronavirus, and all viruses, are so hard to fight,*	0:03:58.02	0:04:01.90	[narratrice] *I virus sono difficili da combattere*
0:04:01.99	0:04:05.07	*in part because they're so simple.*	0:04:01.99	0:04:05.07	*in parte perché sono molto semplici.*
0:04:05.62	0:04:08.08	*They're basically just little vehicles*	0:04:05.62	0:04:08.08	*Si tratta solo di piccoli veicoli*
0:04:08.16	0:04:11.41	*that carry instructions on how to make more of themselves.*	0:04:08.16	0:04:11.41	*che trasportano istruzioni su come moltiplicarsi.*

0:04:11.96	0:04:16.13	*To reproduce, they smuggle* *these instructions into our cells*	0:04:11.96	0:04:16.13	*Per riprodursi, introducono* *queste istruzioni nelle nostre cellule*
0:04:16.21	0:04:20.46	*and force our cellular machinery* *to make more and more viruses.*	0:04:16.21	0:04:20.46	*e forzano la macchina cellulare* *a produrre sempre più virus.*
0:04:20.55	0:04:23.80	*They spread through the body* *and hijack more cells,*	0:04:20.55	0:04:23.80	*Si diffondono nel corpo* *e infettano sempre più cellule*
0:04:24.13	0:04:25.93	*damaging them in the process,*	0:04:24.13	0:04:25.93	*danneggiandole,*
0:04:26.34	0:04:28.10	*which makes us feel sick.*	0:04:26.34	0:04:28.10	*e questo ci fa sentire male.*
0:04:29.18	0:04:31.10	*But we're not defenseless.*	0:04:29.18	0:04:31.10	*Ma non siamo indifesi.*
0:04:31.67	0:04:32.56	[alarm blares]	0:04:31.67	0:04:32.56	[suono di allarme]
0:04:32.56	0:04:34.69	-[narrator] *Cells in our immune system* -[siren wails]	0:04:32.56	0:04:34.69	[narratrice] *Il sistema immunitario…*
0:04:34.73	0:04:37.73	*can find the intruder* *and identify a marker,*	0:04:34.73	0:04:37.74	-[suono di sirena] *…trova l'intruso e identifica un marker,*
0:04:37.81	0:04:41.11	*a distinguishing feature* *which we call an antigen.*	0:04:37.81	0:04:41.11	*una molecola distintiva,* *che chiamiamo antigene.*
0:04:41.36	0:04:46.49	*Then they mobilize to seek out* *and destroy anything with that antigen.*	0:04:41.36	0:04:46.49	*Poi si mobilita per trovare e* *distruggere ogni cosa con quell'antigene.*
0:04:47.03	0:04:51.20	*Our immune system also produces* *little molecules called antibodies*	0:04:47.03	0:04:51.20	*Il nostro sistema immunitario produce* *anche delle molecole dette anticorpi,*
0:04:51.29	0:04:55.04	*that stick to that antigen,* *tagging and subduing the virus.*	0:04:51.29	0:04:55.04	*che si attaccano all'antigene* *e neutralizzano il virus.*
0:04:55.54	0:04:56.96	*But from the day we're infected,*	0:04:55.54	0:04:56.96	*Ma dal giorno dell'infezione,*
0:04:57.04	0:05:00.80	*it can take almost two weeks* *for this response to ramp up,*	0:04:57.04	0:05:00.80	*possono volerci quasi due settimane* *per generare questa risposta,*
0:05:01.88	0:05:05.26	*enough time for this coronavirus* *to swarm through the body,*	0:05:01.88	0:05:05.26	*tempo sufficiente a questo coronavirus* *per diffondersi nel corpo,*
0:05:05.80	0:05:07.25	*wreaking havoc.*	0:05:05.80	0:05:07.25	*scatenando il caos.*
0:05:07.97	0:05:11.47	*And sometimes our immune system* *ramps up too much*	0:05:07.97	0:05:11.47	*E a volte il sistema immunitario* *viene stimolato troppo*
0:05:11.56	0:05:13.52	*and causes even more harm.*	0:05:11.56	0:05:13.52	*e provoca ancora più danni.*
0:05:13.60	0:05:17.77	*In some people,* *all this damage becomes overwhelming,*	0:05:13.60	0:05:17.77	*In alcune persone* *questi danni diventano ingestibili*
0:05:18.31	0:05:19.40	*and they die.*	0:05:18.31	0:05:19.40	*e muoiono.*

0:05:19.48	0:05:22.28	In one shift, I pronounced six people dead.	0:05:19.48	0:05:22.28	In un turno ho dichiarato morte sei persone.
0:05:22.40	0:05:25.41	[narrator] *This is where* *having a treatment would help*.	0:05:22.40	0:05:25.41	[narratrice] *In questi casi,* *avere una cura aiuterebbe*.
0:05:26.36	0:05:30.58	*Some inject antibodies,* *those molecules that subdue the virus,*	0:05:26.36	0:05:30.58	*Ad esempio iniettare le molecole* *che bloccano il virus,*
0:05:30.66	0:05:33.45	*either synthetic antibodies made in a lab,*	0:05:30.66	0:05:33.45	*ovvero gli anticorpi,* *sia coltivati in laboratorio,*
0:05:33.54	0:05:35.83	*or from the blood of people* *who've recovered.*	0:05:33.54	0:05:35.83	*che estratti dal sangue* *delle persone guarite.*
0:05:36.50	0:05:40.09	*Others rein in our immune systems* *if they're getting out of control.*	0:05:36.50	0:05:40.09	*Altre terapie ripristinano* *il sistema immunitario se fuori controllo.*
0:05:40.63	0:05:42.88	*And some, like Remdesivir,*	0:05:40.63	0:05:42.88	*E altre, come il remdesivir,*
0:05:42.96	0:05:47.01	*actually enter our cells* *to block the virus from copying itself.*	0:05:42.96	0:05:47.01	*entrano nelle nostre cellule* *per impedire al virus di replicarsi.*
0:05:47.09	0:05:51.01	*Early results showed it could* *potentially make the virus less deadly.*	0:05:47.09	0:05:51.01	*I primi risultati mostrano* *che ridurrebbe la letalità del virus.*
0:05:51.56	0:05:54.43	It is a very important proof of concept,	0:05:51.56	0:05:54.43	È una dimostrazione importante,
0:05:54.52	0:05:59.69	because what it has proven is that a drug can block this virus.	0:05:54.52	0:05:59.69	perché ha provato che questo virus può essere fermato da un farmaco.
0:06:00.52	0:06:01.91	[narrator] *But as of May,*	0:06:00.05	0:06:01.91	[narratrice] *Ma fino ad oggi, a maggio*,
0:06:01.98	0:06:05.19	*none of these treatments* *can stop a person from getting sick,*	0:06:01.98	0:06:05.19	*ancora nessuna di queste cure* *impedisce alle persone di ammalarsi,*
0:06:05.28	0:06:07.65	*or spreading this coronavirus to others.*	0:06:05.28	0:06:07.65	*né di contagiare gli altri.*
0:06:08.20	0:06:09.95	*A vaccine would,*	0:06:08.20	0:06:09.95	*Un vaccino potrebbe,*
0:06:10.53	0:06:12.66	*and it does it by taking advantage* *of something*	0:06:10.53	0:06:12.66	*e ci riuscirebbe sfruttando qualcosa*
0:06:12.74	0:06:15.83	*our bodies have evolved* *over millions of years:*	0:06:12.74	0:06:15.83	*che i nostri corpi hanno sviluppato* *in milioni di anni:*
0:06:15.91	0:06:16.91	*memory.*	0:06:15.91	0:06:16.91	*la memoria.*
0:06:17.62	0:06:21.88	*After it deals with a virus,* *our immune system remembers the antigens,*	0:06:17.62	0:06:21.88	*Quando incontra un virus,* *il nostro corpo ne ricorda gli antigeni,*
0:06:22.09	0:06:23.59	*sometimes forever,*	0:06:22.09	0:06:23.59	*a volte per sempre,*
0:06:23.92	0:06:26.05	*other times just for a while.*	0:06:23.92	0:06:26.05	*a volte solo per un po'.*

0:06:26.72	0:06:30.84	*We know our bodies can remember these other coronaviruses for a couple years.*	0:06:26.72	0:06:30.84	*Sappiamo che il nostro corpo ricorda altri coronavirus per un paio d'anni.*
0:06:31.14	0:06:33.22	*So if this coronavirus is similar*	0:06:31.14	0:06:33.22	*Quindi se questo coronavirus è simile*
0:06:33.31	0:06:36.56	*and it shows up in our bodies again in that time,*	0:06:33.31	0:06:36.56	*e ci infetta di nuovo entro un paio d'anni,*
0:06:36.64	0:06:40.60	*our immune system can ramp up much faster with overwhelming force,*	0:06:36.64	0:06:40.60	*genereremo una risposta immunitaria più veloce e più forte*
0:06:40.69	0:06:43.31	*wiping out the virus before it can make us sick*	0:06:40.69	0:06:43.31	*eliminando il virus prima che ci faccia star male*
0:06:43.40	0:06:44.86	*or spread to someone else.*	0:06:43.40	0:06:44.86	*o che contagiamo altri.*
0:06:45.23	0:06:48.74	*This is what it means to be immune to a virus.*	0:06:45.23	0:06:48.74	*Questo significa essere immuni a un virus.*
0:06:49.15	0:06:50.95	*A vaccine makes us immune*	0:06:49.15	0:06:50.95	*Un vaccino ci rende immuni*
0:06:51.03	0:06:54.49	*by safely showing the body what a virus looks like,*	0:06:51.03	0:06:54.49	*mostrandoci in tutta sicurezza com'è fatto un virus,*
0:06:54.58	0:06:59.00	*faking this first infection to teach your body how to respond,*	0:06:54.58	0:06:59.00	*simulando la prima infezione per insegnare al corpo come reagire,*
0:06:59.08	0:07:02.58	*so when it does encounter the real virus, it's ready.*	0:06:59.08	0:07:02.58	*affinché sia pronto quando incontra quello vero.*
0:07:03.13	0:07:05.46	*No vaccine is 100% effective,*	0:07:03.13	0:07:05.46	*Nessun vaccino è efficace al 100%,*
0:07:05.55	0:07:09.22	*meaning not everyone who receives one will be perfectly immune,*	0:07:05.55	0:07:09.22	*quindi non tutti i vaccinati saranno perfettamente immuni,*
0:07:09.30	0:07:12.89	*but vaccines don't need to be perfect to end epidemics.*	0:07:09.30	0:07:12.89	*ma non serve che i vaccini siano perfetti per fermare le epidemie.*
0:07:13.22	0:07:16.06	*Smallpox used to be a leading cause of death,*	0:07:13.22	0:07:16.06	*Il vaiolo era una delle cause di morte principali*
0:07:16.14	0:07:19.89	*and measles killed millions a year, most of them children.*	0:07:16.14	0:07:19.89	*e il morbillo causava milioni di morti all'anno, soprattutto bambini.*
0:07:19.98	0:07:23.81	*But thanks to vaccines that are around 95% effective,*	0:07:19.98	0:07:23.81	*Ma grazie a vaccini efficaci al 95% circa*
0:07:24.02	0:07:25.73	*we've wiped out smallpox*	0:07:24.02	0:07:25.73	*abbiamo eliminato il vaiolo*
0:07:25.82	0:07:28.94	*and made enormous progress against measles.*	0:07:25.82	0:07:28.94	*e fatto progressi enormi contro il morbillo.*
0:07:29.29	0:07:32.68	*Vaccine makers are hoping to make a vaccine that effective.*	0:07:29.20	0:07:32.68	*I produttori di vaccini sperano di svilupparne uno altrettanto efficace.*

0:07:32.70	0:07:38.29	If all we could make was a vaccine that, let's say, had 50% efficacy,	0:07:32.70	0:07:38.29	Se anche facessimo solo un vaccino efficace al, diciamo, 50%,
0:07:38.37	0:07:40.83	so it prevented about half of the infections,	0:07:38.37	0:07:40.83	che quindi prevenga circa metà delle infezioni,
0:07:40.91	0:07:43.96	if that translates into stopping half of the deaths,	0:07:40.91	0:07:43.96	in grado di dimezzare le morti,
0:07:44.04	0:07:45.38	that's really good news.	0:07:44.04	0:07:45.38	sarebbe un'ottima notizia.
0:07:45.46	0:07:46.59	[narrator] *The fact is,*	0:07:45.46	0:07:46.59	[narratrice] *I vaccini*
0:07:46.67	0:07:50.51	*vaccines are one of the most* *significant inventions in human history.*	0:07:46.67	0:07:50.51	*sono una delle invenzioni* *più importanti nella storia dell'uomo.*
0:07:50.97	0:07:52.72	*The world doesn't agree on much,*	0:07:50.85	0:07:52.76	*L'umanità non è d'accordo su molte cose,*
0:07:52.80	0:07:57.39	*but more than 90% of all people believe* *childhood vaccinations are important,*	0:07:52.80	0:07:57.39	*ma più del 90% delle persone crede che* *le vaccinazioni infantili siano essenziali*
0:07:57.47	0:08:01.10	*and that's crucial,* *because to wipe out an infectious disease,*	0:07:57.47	0:08:01.10	*e questo è fondamentale,* *perché per fermare una malattia contagiosa*
0:08:01.18	0:08:04.23	*you need most people in the world* *to be immune.*	0:08:01.18	0:08:04.23	*la maggioranza delle persone* *nel mondo deve essere immune.*
0:08:04.65	0:08:06.44	*It's called herd immunity.*	0:08:04.65	0:08:06.44	*Si chiama immunità di gregge.*
0:08:06.52	0:08:11.82	*The idea is that individuals become immune* *either by getting infected and surviving,*	0:08:06.52	0:08:11.82	*L'idea è che le persone diventino immuni* *o perché sopravvivono al contagio*
0:08:11.90	0:08:13.57	*or by getting vaccinated.*	0:08:11.90	0:08:13.57	*o perché vengono vaccinate.*
0:08:13.91	0:08:15.82	*When enough people are immune,*	0:08:13.91	0:08:15.82	*Quando abbastanza persone sono immuni,*
0:08:15.91	0:08:19.29	*the virus has trouble spreading,* *and slows down.*	0:08:15.91	0:08:19.29	*il virus ha problemi a diffondersi* *e rallenta.*
0:08:19.37	0:08:21.83	You know, you are also protecting by vaccinating yourself	0:08:19.37	0:08:21.83	Vaccinandosi non si protegge solamente se stessi,
0:08:21.91	0:08:25.50	not just yourself, but you are protecting weak members in the community	0:08:21.91	0:08:25.50	ma anche i membri più deboli della comunità che potrebbero
0:08:25.58	0:08:28.09	who may not be able to get the vaccine.	0:08:25.58	0:08:28.09	non avere accesso al vaccino.
0:08:28.17	0:08:32.13	[narrator] *Like newborns, the elderly,* *and people with weak immune systems*.	0:08:28.17	0:08:32.18	[narratrice] *Come i neonati, gli anziani* *e le persone con basse difese immunitarie.*
0:08:32.22	0:08:36.80	So it's both an act of protecting yourself and it's also an act of altruism.	0:08:32.22	0:08:36.80	Quindi è sia un modo per proteggersi che un atto di altruismo.

0:08:37.22	0:08:39.47	[narrator] *So defeating an infectious disease*	0:08:36.97	0:08:39.53	[narratrice] *Per sconfiggere una malattia infettiva*
0:08:39.56	0:08:41.93	*requires the whole world coming together,*	0:08:39.56	0:08:41.93	*serve che il mondo collabori*
0:08:42.02	0:08:46.15	*and in the COVID-19 race, the world has come together like never before.*	0:08:42.02	0:08:46.15	*e nella corsa contro il COVID-19, il mondo si è unito come mai prima.*
0:08:47.44	0:08:50.11	*Out of the over 100 candidates in the race in May,*	0:08:47.44	0:08:50.11	*Dei 100 e più candidati in gara a maggio,*
0:08:50.19	0:08:54.65	*almost half are in North America, and 17 are in China.*	0:08:50.19	0:08:54.65	*circa la metà vengono dal Nord America e 17 dalla Cina.*
0:08:54.74	0:08:56.78	*And they're funded in different ways,*	0:08:54.74	0:08:56.78	*Sono finanziati in modi diversi,*
0:08:56.87	0:08:58.70	*most by private industry.*	0:08:56.87	0:08:58.70	*per lo più dal settore privato.*
0:08:59.33	0:09:03.33	*But the main difference between them is their vaccine platform,*	0:08:59.33	0:09:03.33	*Ma la differenza principale è la loro piattaforma vaccinale,*
0:09:03.41	0:09:06.25	*how they're showing the body what the virus looks like.*	0:09:03.41	0:09:06.25	*cioè come mostrano al corpo com'è fatto il virus.*
0:09:07.33	0:09:11.25	*Some vaccines inject a weakened version of the virus into the body.*	0:09:07.33	0:09:11.25	*Alcuni vaccini iniettano nel corpo una versione indebolita del virus.*
0:09:11.34	0:09:15.55	*It can't reproduce or do damage but it still has that antigen,*	0:09:11.34	0:09:15.55	*Non può riprodursi o provocare danni, ma ha comunque l'antigene,*
0:09:15.63	0:09:18.93	*so our immune system can learn what to watch out for.*	0:09:15.63	0:09:18.93	*così che il sistema immunitario impari contro cosa stare all'erta.*
0:09:19.30	0:09:21.64	*That's how we vaccinate against polio,*	0:09:19.30	0:09:21.64	*Usiamo vaccini di questo tipo contro la polio,*
0:09:21.72	0:09:23.68	*the measles, mumps, and rubella,*	0:09:21.72	0:09:23.68	*il morbillo, gli orecchioni e la rosolia,*
0:09:23.77	0:09:25.56	*chicken pox, rotavirus,*	0:09:23.77	0:09:25.56	*la varicella, i rotavirus*
0:09:25.64	0:09:27.15	*and for the flu.*	0:09:25.64	0:09:27.15	*e l'influenza.*
0:09:27.23	0:09:30.73	*This is by far our most tried-and-true method,*	0:09:27.23	0:09:30.73	*Questo è di sicuro il metodo più testato,*
0:09:30.82	0:09:32.90	*but it's a slow way to do it.*	0:09:30.82	0:09:32.90	*ma è molto lento.*
0:09:32.98	0:09:37.11	*We have to grow the virus for months in other living cells, like chicken eggs,*	0:09:32.98	0:09:37.11	*Si fa crescere il virus per mesi in altre cellule viventi, come le uova di gallina,*
0:09:37.20	0:09:39.37	*a method we've been using for decades.*	0:09:37.20	0:09:39.37	*un metodo usato da decenni.*
0:09:39.78	0:09:42.70	*We'll call these the first-generation vaccines,*	0:09:39.78	0:09:42.70	*Li chiameremo vaccini di prima generazione,*

0:09:42.79	0:09:45.83	*and there are nine in the race as of early May.*	0:09:42.79	0:09:45.83	*e, a inizio maggio, ce ne sono nove in gara.*
0:09:46.71	0:09:49.04	*Other scientists are trying a newer approach.*	0:09:46.32	0:09:49.08	*Altri scienziati stanno provando un approccio più nuovo.*
0:09:49.13	0:09:51.04	*Instead of the whole coronavirus,*	0:09:49.13	0:09:51.04	*Invece dell'intero coronavirus,*
0:09:51.13	0:09:53.51	*they're giving the body just an antigen,*	0:09:51.13	0:09:53.51	*iniettano nel corpo solo l'antigene,*
0:09:53.59	0:09:56.38	*a piece they think will activate the immune response.*	0:09:53.59	0:09:56.38	*il pezzo che credono attivi la risposta immunitaria.*
0:09:56.63	0:10:00.72	*Those antigens also need to be grown, sometimes in yeast cells,*	0:09:56.63	0:10:00.72	*Questi antigeni devono comunque crescere, a volte in lieviti*
0:10:00.80	0:10:02.89	*or attached to another harmless virus.*	0:10:00.80	0:10:02.89	*o attaccati ad altri virus innocui.*
0:10:03.39	0:10:06.39	*This is how the vaccine for hepatitis B works,*	0:10:03.39	0:10:06.39	*Così funzionano i vaccini per l'epatite B,*
0:10:06.48	0:10:09.27	*and for whooping cough, and meningitis B.*	0:10:06.48	0:10:09.27	*la pertosse e la meningite B.*
0:10:09.90	0:10:12.94	*We'll call these second-generation vaccines,*	0:10:09.90	0:10:12.94	*Li chiameremo vaccini di seconda generazione*
0:10:13.02	0:10:17.99	*and they're the most popular kind in the COVID-19 race, with 72 candidates.*	0:10:13.02	0:10:17.99	*e rappresentano la maggioranza nella gara contro il COVID-19, con ben 72 candidati.*
0:10:19.11	0:10:21.41	*Finally, there's a brand new type of vaccine*	0:10:19.11	0:10:21.41	*Infine, c'è un tipo di vaccini del tutto nuovo*
0:10:21.49	0:10:24.49	*that doesn't use any part of the actual virus at all.*	0:10:21.49	0:10:24.49	*che non usa nessuna parte del virus.*
0:10:24.91	0:10:28.46	*Instead, it just gives our bodies the virus's instructions,*	0:10:24.91	0:10:28.46	*Fornisce al nostro corpo solo le istruzioni del virus,*
0:10:28.54	0:10:32.92	*tiny pieces of genetic code that tell our cells to produce the antigens,*	0:10:28.54	0:10:32.92	*pezzi di codice genetico che dicono alle cellule di produrre gli antigeni*
0:10:33.00	0:10:35.13	*which then activate the immune response.*	0:10:33.00	0:10:35.13	*che attiveranno la risposta immunitaria.*
0:10:35.63	0:10:40.18	*No vaccine using this approach has ever been approved for use in humans.*	0:10:35.63	0:10:40.18	*Ancora nessun vaccino di questo tipo è stato approvato per l'uso sull'uomo.*
0:10:40.26	0:10:43.22	*We'll call these the third-generation vaccines,*	0:10:40.26	0:10:43.22	*Li chiameremo vaccini di terza generazione*
0:10:43.30	0:10:46.06	*and there are 27 in the race.*	0:10:43.30	0:10:46.06	*e ce ne sono 27 in gara.*
0:10:46.14	0:10:49.19	*Because they don't involve growing any part of any virus,*	0:10:46.14	0:10:49.19	*Siccome non serve far crescere parti di virus,*

0:10:49.27 0:10:51.60	*they can be made extremely fast.*	0:10:49.27 0:10:51.60	*si possono svulippare velocemente.*
0:10:52.15 0:10:55.98	*This record-breaking vaccine was a third-generation candidate*	0:10:52.15 0:10:55.98	*Questo vaccino da record è un vaccino di terza generazione*
0:10:56.07 0:10:58.15	*from a US company called Moderna.*	0:10:56.07 0:10:58.15	*della casa americana Moderna.*
0:10:58.78 0:11:01.45	*But making a vaccine candidate isn't the hard part.*	0:10:58.78 0:11:01.45	*Ma trovare un candidato non è la parte difficile.*
0:11:01.87 0:11:03.53	*This next phase is.*	0:11:01.87 0:11:03.53	*Lo è la fase successiva.*
0:11:03.87 0:11:04.99	*Clinical trials.*	0:11:03.87 0:11:04.99	*Gli studi clinici.*
0:11:05.08 0:11:06.20	[engines rev]	0:11:05.08 0:11:06.20	[motori su di giri]
0:11:06.29 0:11:07.95	[announcer] *And they're up to speed.*	0:11:06.29 0:11:07.95	[telecronista] *E accelerano.*
0:11:09.41 0:11:11.88	[narrator] *Traditionally, there are three phases.*	0:11:09.41 0:11:11.88	[narratrice] *Di norma, ci sono tre fasi.*
0:11:12.96 0:11:16.30	*First, teams give their vaccines to a small group of people,*	0:11:12.90 0:11:16.35	*Nella prima, gli scienziati danno i vaccini a un gruppo di soggetti,*
0:11:16.38 0:11:20.13	*wait a few months, and see if any of them report dangerous side effects.*	0:11:16.38 0:11:20.13	*aspettano alcuni mesi e vedono se qualcuno riferisce effetti collaterali.*
0:11:20.84 0:11:22.09	*If everything looks good,*	0:11:20.84 0:11:22.09	*Se tutto sembra a posto,*
0:11:22.18 0:11:24.89	*the vaccine moves on and is given to a couple hundred people,*	0:11:22.18 0:11:24.89	*il vaccino viene dato ad alcune centinaia di persone,*
0:11:24.97 0:11:27.52	*again, to see if there are any dangerous side effects,*	0:11:24.97 0:11:27.52	*per vedere di nuovo se ci sono effetti collaterali,*
0:11:27.60 0:11:30.81	*but also to see if people's immune systems ramp up.*	0:11:27.60 0:11:30.81	*ma anche per capire se il loro sistema immunitario risponde.*
0:11:30.89 0:11:33.69	*That involves more waiting, usually months.*	0:11:30.89 0:11:33.69	*Questo significa aspettare ancora, di solito dei mesi.*
0:11:34.61 0:11:37.28	*Then the candidate moves on to the third test,*	0:11:34.61 0:11:37.28	*Poi il candidato entra nella terza fase di test,*
0:11:37.36 0:11:40.53	*where thousands are vaccinated to triple-check for side effects*	0:11:37.36 0:11:40.56	*in cui si vaccinano migliaia di persone per un terzo controllo*
0:11:40.61 0:11:42.24	*and see how well it works.*	0:11:40.61 0:11:42.24	*che ne testa l'efficacia.*
0:11:42.32 0:11:45.28	*That's another few months or years of waiting.*	0:11:42.32 0:11:45.28	*Qui bisogna aspettare ancora, qualche mese o anno.*
0:11:46.41 0:11:47.99	*This isn't like testing a drug*	0:11:46.41 0:11:47.99	*Non è come testare un farmaco*

0:11:48.08	0:11:50.25	*where you give it to people with a disease*	0:11:48.08	0:11:50.25	*che viene dato a persone malate*
0:11:50.62	0:11:52.21	*and see if it makes them better.*	0:11:50.62	0:11:52.21	*per vedere se le fa stare meglio.*
0:11:52.83	0:11:55.54	*You're giving it to people who don't have a disease,*	0:11:52.83	0:11:55.54	*Il vaccino viene dato a persone sane*
0:11:56.13	0:12:00.01	*and then checking later to see if they still don't have the disease.*	0:11:56.13	0:12:00.01	*e poi si controlla che siano ancora sane.*
0:12:00.97	0:12:04.68	*In normal times, this whole process can take around four years,*	0:12:00.97	0:12:04.68	*In tempi normali, questo processo può durare circa quattro anni,*
0:12:04.76	0:12:06.64	*testing around 5,000 people.*	0:12:04.76	0:12:06.64	*e vengono testate circa 5.000 persone.*
0:12:07.14	0:12:11.10	*But vaccine developers are hoping to do some of this testing simultaneously,*	0:12:07.14	0:12:11.10	*Ma i produttori di vaccini sperano di condurre i test contemporaneamente,*
0:12:11.52	0:12:15.69	*still testing the same number of people, but all in around 18 months.*	0:12:11.52	0:12:15.69	*testando sempre lo stesso numero di persone in circa 18 mesi.*
0:12:16.23	0:12:18.98	*It's how some candidates are moving so quickly.*	0:12:16.23	0:12:18.98	*Ecco perché alcuni candidati sono così veloci.*
0:12:19.07	0:12:22.78	The FDA has cleared the Moderna vaccine for phase two of its trial.	0:12:19.07	0:12:22.78	La FDA ha dato il via libera a Moderna per la fase due del suo studio.
0:12:22.86	0:12:24.53	[reporter 1] Moderna moving at record speed.	0:12:22.86	0:12:24.53	[reporter 1] *Moderna da record*
0:12:24.61	0:12:26.95	China's already given approval for another clinical trial.	0:12:24.61	0:12:26.95	La Cina ha approvato un altro studio.
0:12:27.03	0:12:28.20	It's now at the second phase.	0:12:27.03	0:12:28.20	Adesso è nella fase due.
0:12:28.28	0:12:31.37	The vaccine, uh, that is most promising right now	0:12:28.28	0:12:31.37	Al momento, il vaccino più promettente
0:12:31.45	0:12:33.71	is the one from Oxford University.	0:12:31.45	0:12:33.71	è quello dell'Università di Oxford.
0:12:33.79	0:12:37.29	-That has merged phase one and phase two. -...which is speedy.	0:12:33.79	0:12:37.29	-Che ha unito la prima e la seconda fase. -…una procedura rapida.
0:12:38.54	0:12:42.22	[narrator] *This stage of the race can't go any faster, for good reason.*	0:12:38.54	0:12:42.22	[narratrice] *Questa fase non può essere più veloce, e per buoni motivi.*
0:12:42.51	0:12:44.76	[Kirchhelle] Without running through all of these trials,	0:12:42.51	0:12:44.76	[Kirchhelle] Senza tutti questi studi,
0:12:44.84	0:12:46.55	it would be absolutely unethical	0:12:44.84	0:12:46.55	non sarebbe per niente etico
0:12:46.64	0:12:50.81	to roll out a vaccine potentially to the entire global population,	0:12:46.64	0:12:50.81	distribuire un vaccino potenzialmente a tutto il mondo.

0:12:51.60	0:12:53.81	because you could do some real harm there.	0:12:51.60	0:12:53.81	perché potrebbe causare gravi danni.
0:12:54.94	0:12:57.48	[news reel announcer] *Our men today are safe against yellow fever*.	0:12:54.80	0:12:57.54	[giornalista] *Da oggi al sicuro dalla febbre gialla*:
0:12:57.56	0:13:01.94	*A few drops of vaccine will give them dependable and lasting immunity.*	0:12:57.56	0:13:01.94	*il vaccino darà ai nostri uomini un'immunità durevole e affidabile.*
0:13:02.69	0:13:04.03	[narrator] *During World War II,*	0:13:02.08	0:13:04.42	[narratrice] *Durante la Seconda Guerra Mondiale,*
0:13:04.11	0:13:06.91	*Allied soldiers were vaccinated for yellow fever.*	0:13:04.48	0:13:07.44	*i soldati Alleati vennero vaccinati contro la febbre gialla.*
0:13:07.49	0:13:11.41	*Thousands developed jaundice and hepatitis, and some died.*	0:13:07.49	0:13:11.41	*Migliaia svilupparono ittero ed epatite e alcuni morirono.*
0:13:11.74	0:13:13.16	*That should never have happened.*	0:13:11.74	0:13:13.16	*Non sarebbe dovuto succedere.*
0:13:13.25	0:13:15.83	*If the vaccine makers had done their research,*	0:13:13.25	0:13:15.83	*Se i produttori di vaccini avessero svolto ricerche,*
0:13:15.92	0:13:20.00	*they would have discovered reports of these side effects dating back to 1885.*	0:13:15.92	0:13:20.00	*avrebbero scoperto report del 1855 sugli stessi effetti collaterali.*
0:13:21.00	0:13:22.71	*Then in the 1950s,*	0:13:21.00	0:13:22.71	*Negli anni ‘50,*
0:13:22.80	0:13:27.01	*some poorly made vaccines infected 40,000 people with polio,*	0:13:22.80	0:13:27.01	*alcuni vaccini difettosi infettarono 40.000 persone con la polio,*
0:13:27.09	0:13:28.89	*and killed around 200.*	0:13:27.09	0:13:28.89	*e ne uccisero circa 200.*
0:13:29.26	0:13:30.89	*Known as "the Cutter incident,"*	0:13:29.17	0:13:30.89	*Il cosiddetto "incidente di Cutter",*
0:13:30.97	0:13:35.14	*it led the US government to tighten requirements for vaccine manufacturers.*	0:13:30.97	0:13:35.14	*spinse gli USA a rendere più severi i requisiti per i produttori di vaccini.*
0:13:35.69	0:13:41.82	Nothing is licensed without undergoing extremely stringent safety considerations.	0:13:35.69	0:13:41.82	Non viene approvato nulla senza rigorose valutazioni sulla sicurezza
0:13:41.90	0:13:45.28	And even after it's licensed, the vaccine continues to be monitored.	0:13:41.90	0:13:45.28	e anche dopo l'approvazione, il vaccino viene controllato.
0:13:45.36	0:13:47.70	[narrator] *Today, according to the US government*,	0:13:45.36	0:13:47.70	[narratrice] *Oggi, secondo il governo USA*,
0:13:47.78	0:13:50.74	*for every million doses of vaccine that are distributed,*	0:13:47.78	0:13:50.74	*ogni milione di dosi di vaccino distribuite*
0:13:50.83	0:13:54.37	*only one person is compensated for serious side effects.*	0:13:50.83	0:13:54.37	*solo una persona viene risarcita per gravi effetti collaterali.*
0:13:54.91	0:14:00.08	*Vaccines need to pass an extra-high bar because they're given to healthy people.*	0:13:54.91	0:14:00.08	*Gli standard per i vaccini sono così alti perché vengono dati a persone sane.*

0:14:00.54	0:14:02.67	[Hatchett] What we can't do is take shortcuts	0:14:00.52	0:14:02.69	[Hatchett] Non possiamo prendere scorciatoie
0:14:02.75	0:14:04.80	where safety and effectiveness are concerned.	0:14:02.74	0:14:04.80	per quanto riguarda sicurezza e efficacia.
0:14:04.88	0:14:07.09	I think there are ways to streamline some things	0:14:04.83	0:14:07.17	Credo ci siano modi per snellire alcune procedure
0:14:07.18	0:14:08.51	and do more things in parallel,	0:14:07.18	0:14:08.51	e farne altre in parallelo,
0:14:08.59	0:14:10.05	but it's going to be tough,	0:14:08.59	0:14:10.05	ma sarà difficile
0:14:10.14	0:14:13.06	and it's going to be a carefully orchestrated dance.	0:14:10.14	0:14:13.06	ci si dovrà organizzare con attenzione.
0:14:13.14	0:14:15.73	Rather than running everything in series	0:14:13.14	0:14:15.73	Invece di gestire tutto in serie
0:14:15.81	0:14:19.15	and having just one person doing each of these steps along the way,	0:14:15.81	0:14:19.15	e far fare a solo una persona ogni fase del processo,
0:14:19.23	0:14:21.11	whole teams of people have been put there	0:14:19.23	0:14:21.11	interi team sono stati destinati
0:14:21.19	0:14:25.74	to ensure that we still maintain the same quality and safety.	0:14:21.19	0:14:25.74	ad assicurare che la stessa sicurezza e qualità vengano mantenute.
0:14:26.32	0:14:28.74	[narrator] *But some teams* *did have a head start here,*	0:14:26.32	0:14:28.74	[narratrice] *Ma alcuni team* *avevano un vantaggio,*
0:14:28.82	0:14:31.24	*because this isn't the first coronavirus,*	0:14:28.82	0:14:31.24	*perché questo non è il primo coronavirus,*
0:14:31.32	0:14:35.12	*or the first coronavirus* *to inspire a race for a vaccine.*	0:14:31.32	0:14:35.12	*né il primo coronavirus* *a stimolare la ricerca di un vaccino.*
0:14:36.00	0:14:37.75	*[reporter 2] The impact of SARS.*	0:14:36.00	0:14:37.75	*[reporter 2] L'impatto della SARS.*
0:14:38.16	0:14:41.92	*[reporter 3] The SARS disease* *has spread across the world.*	0:14:38.16	0:14:41.92	*[reporter 3] La SARS* *si è diffusa nel mondo.*
0:14:42.00	0:14:43.92	*[reporter 4] The battle against* *an outbreak*	0:14:42.00	0:14:43.92	*[reporter 4] La lotta contro un focolaio*
0:14:44.00	0:14:48.01	*of Middle East Respiratory Syndrome,* *or MERS, continues in South Korea.*	0:14:44.00	0:14:48.01	*di Sindrome Respiratoria Medioorientale,* *o MERS, continua in Sud Corea.*
0:14:48.09	0:14:51.14	[narrator] *When SARS and MERS viruses* *caused outbreaks,*	0:14:48.09	0:14:51.14	[narratrice] *Quando esplosero* *le epidemie di SARS e MERS,*
0:14:51.22	0:14:54.01	*many scientists got to work on vaccines,*	0:14:51.22	0:14:54.01	*molti scienziati iniziarono* *a lavorare a un vaccino,*
0:14:54.10	0:14:56.60	*including a team at Oxford University.*	0:14:54.10	0:14:56.60	*tra cui un team dell'Università di Oxford.*

0:14:56.68	0:15:00.44	We've learnt a lot about coronaviruses and their biology,	0:14:56.68	0:15:00.44	Abbiamo imparato molto sui coronavirus e la loro biologia
0:15:00.52	0:15:02.81	actually, because of the last two big outbreaks.	0:15:00.52	0:15:02.81	a causa delle due ultime grandi epidemie.
0:15:03.27	0:15:07.32	[narrator] *In 2018, Oxford University* *got a promising MERS candidate*	0:15:03.27	0:15:07.32	[narratrice] Nel 2018 l'Università di Oxford portò un candidato anti-MERS
0:15:07.40	0:15:08.61	*into human trials,*	0:15:07.40	0:15:08.61	fino ai test sull'uomo,
0:15:08.69	0:15:12.07	*hoping to stop the next outbreak* *of this rare coronavirus.*	0:15:08.69	0:15:12.07	sperando fermasse la prossima epidemia di questo raro coronavirus.
0:15:12.16	0:15:16.20	*But then a year later,* *this latest coronavirus broke out.*	0:15:12.16	0:15:16.20	Ma un anno dopo, comparve questo nuovo coronavirus.
0:15:16.29	0:15:17.58	*Because it was similar,*	0:15:16.29	0:15:17.58	Dato che era simile,
0:15:17.66	0:15:22.58	*the team easily adapted their MERS vaccine* *into a COVID-19 one.*	0:15:17.66	0:15:22.58	il team trasformò facilmente il vaccino anti-MERS in uno anti-COVID-19.
0:15:22.67	0:15:26.42	And so that has really been a major shortcut that we've had,	0:15:22.67	0:15:26.42	In questo modo abbiamo preso un'importante scorciatoia
0:15:26.50	0:15:29.05	by not having to go back to the drawing board and start again.	0:15:26.50	0:15:29.05	perché non abbiamo dovuto iniziare da zero.
0:15:29.13	0:15:31.51	[narrator] *They sped through* *the first phase of trials,*	0:15:29.13	0:15:31.51	[narratrice] *Hanno superato* *la prima fase in volata*
0:15:31.59	0:15:34.68	*putting them on track to begin* *the next phases in the summer.*	0:15:31.59	0:15:34.68	*riuscendo a iniziare* *la successiva già in estate.*
0:15:34.76	0:15:37.60	We don't know for certain that that will all go to plan,	0:15:34.76	0:15:37.60	Non possiamo essere certi che tutto andrà secondo i piani,
0:15:37.68	0:15:40.02	but if it does, then it's certainly possible	0:15:37.68	0:15:40.02	ma se così fosse, ci sarebbe la possibilità
0:15:40.10	0:15:42.52	that there could be millions of doses available in the autumn.	0:15:40.10	0:15:42.52	di avere milioni di dosi disponibili in autunno.
0:15:43.02	0:15:46.02	[narrator] *Unfortunately,* *Oxford's story is uncommon.*	0:15:43.02	0:15:46.02	[narratrice] *Purtroppo,* *la storia di Oxford è rara.*
0:15:46.40	0:15:51.65	*Peter Hotez also made a promising* *coronavirus vaccine for SARS years ago.*	0:15:46.40	0:15:51.65	*Anche Peter Hotez anni fa creò* *un promettente candidato contro la SARS.*
0:15:51.74	0:15:55.20	It was all going well, and then the grant ended.	0:15:51.74	0:15:55.20	Stava andando tutto bene, ma poi finì il finanziamento

0:15:55.28	0:15:57.03	And we thought, "Well, we've gone this far.	0:15:55.28	0:15:57.03	E pensammo, "Siamo arrivati qui.
0:15:57.12	0:16:00.41	We'll just get funding to move it into clinical trials."	0:15:57.12	0:16:00.41	Troveremo i finanziamenti per passare agli studi clinici".
0:16:00.50	0:16:01.96	And unfortunately, we couldn't.	0:16:00.50	0:16:01.96	Ma purtroppo, non riuscimmo.
0:16:02.04	0:16:04.88	[narrator] *This happened to so many* *promising vaccines*	0:16:02.04	0:16:04.88	[narratrice] *È successo* *a così tanti vaccini promettenti,*
0:16:04.96	0:16:08.46	*that this stage is often called* *"the Vaccine Valley of Death."*	0:16:04.96	0:16:08.46	*che questa fase è chiamata spesso* *"la Valle della Morte dei Vaccini."*
0:16:08.92	0:16:10.47	*Of these vaccine candidates*	0:16:08.92	0:16:10.47	*Di questi candidati vaccini*
0:16:10.55	0:16:12.80	*that scientists race to make* *in record time,*	0:16:10.50	0:16:12.84	*che gli scienziati svilupparono* *in tempi record,*
0:16:12.88	0:16:15.05	*only Ebola reached the finish line.*	0:16:12.88	0:16:15.05	*solo l'anti-ebola arrivò al traguardo.*
0:16:15.14	0:16:18.68	*Because when these outbreaks ended,* *so did the funding.*	0:16:15.14	0:16:18.68	*Perché quando finirono le epidemie,* *finirono anche i soldi.*
0:16:18.76	0:16:22.23	After every catastrophic pandemic or epidemic,	0:16:18.76	0:16:22.23	Dopo ogni pandemia o epidemia catastrofica
0:16:22.31	0:16:24.81	I say, "Maybe this is the one that moves the needle	0:16:22.31	0:16:24.81	mi dico, "Forse questa è quella che sposta l'ago
0:16:24.90	0:16:27.40	and gets public funding in place."	0:16:24.90	0:16:27.40	dei finanziamenti pubblici".
0:16:27.48	0:16:29.82	And I said that after SARS in 2003,	0:16:27.48	0:16:29.82	L'ho detto dopo la SARS nel 2003,
0:16:29.90	0:16:33.24	I said it after H1N1 in 2009,	0:16:29.90	0:16:33.24	L'ho detto dopo l'H1N1 nel 2009,
0:16:33.32	0:16:35.53	I said it after MERS in 2012,	0:16:33.32	0:16:35.53	L'ho detto dopo la MERS nel 2012,
0:16:35.62	0:16:37.66	I said it after Ebola in 2014,	0:16:35.62	0:16:37.66	L'ho detto dopo l'ebola nel 2014,
0:16:37.74	0:16:39.95	after Zika in 2016, and I'll say it again.	0:16:37.74	0:16:39.95	dopo la Zika nel 2016, e lo dirò ancora.
0:16:40.50	0:16:44.08	[narrator] *Peter's COVID-19 candidate* *is based on his SARS candidate.*	0:16:40.50	0:16:44.08	[narratrice] *L'anti-COVID-19 di Peter* *si basa sul suo candidato anti-SARS.*
0:16:44.17	0:16:46.58	*But if he had been able* *to test it back then...*	0:16:44.17	0:16:46.58	*Ma se fosse riuscito* *a testarlo allora...*
0:16:47.04	0:16:49.42	We would have had the safety testing potentially finished,	0:16:46.86	0:16:49.48	Avremmo potenzialmente finito i test sulla sicurezza,
0:16:49.50	0:16:51.38	and that's not insignificant, right?	0:16:49.50	0:16:51.38	e non è per niente poco, no?

0:16:51.46	0:16:55.68	So that's too bad that we lost that opportunity.	0:16:51.46	0:16:55.68	È un peccato aver perso quell'occasione.
0:16:56.26	0:16:57.80	[narrator] *In 2017,*	0:16:56.26	0:16:57.80	[narratrice] *Nel 2017,*
0:16:57.89	0:17:00.18	*a group of people funded in part* *by the Gates Foundation*	0:16:57.81	0:17:00.26	*un gruppo finanziato anche* *dalla Gates Foundation*
0:17:00.26	0:17:02.35	*came together to fix this.*	0:17:00.27	0:17:02.35	*decise di risolvere il problema.*
0:17:02.43	0:17:06.02	Well, unfortunately, even though there's a substantial risk	0:17:02.43	0:17:06.02	Purtroppo, anche se c'è un alto rischio
0:17:06.10	0:17:07.90	of various types of epidemics,	0:17:06.10	0:17:07.90	di diversi tipi di epidemia,
0:17:07.98	0:17:12.19	there's not a natural incentive for people to build products that anticipate that.	0:17:07.98	0:17:12.19	non esistono incentivi naturali per lo sviluppo di strumenti preventivi.
0:17:12.28	0:17:16.24	You've got to bring governments and foundations together	0:17:12.28	0:17:16.24	Bisogna unire i grandi governi e le grandi fondazioni
0:17:16.32	0:17:18.41	to create the right incentive structure.	0:17:16.32	0:17:18.41	e creare la giusta struttura di incentivi.
0:17:18.49	0:17:20.58	[narrator] *They call themselves CEPI,*	0:17:18.49	0:17:20.58	[narratrice] *Si chiamarono CEPI,*
0:17:20.66	0:17:23.50	*The Coalition for Epidemic* *Preparedness Innovations.*	0:17:20.60	0:17:23.72	*Coalizione per le Innovazioni* *nella Preparazione alle Epidemie.*
0:17:23.91	0:17:25.58	[Hatchett] What CEPI is,	0:17:23.91	0:17:25.58	[Hatchett] La CEPI
0:17:25.67	0:17:28.83	is it aggregates funding and creates a pool of funds	0:17:25.67	0:17:28.83	raccoglie finanziamenti e crea una sorta di fondo comune
0:17:28.92	0:17:31.05	to support vaccine development.	0:17:28.92	0:17:31.05	per sostenere lo sviluppo di vaccini.
0:17:31.13	0:17:32.71	So we can play fair broker	0:17:31.13	0:17:32.71	Così siamo un intermediario equo:
0:17:32.80	0:17:36.18	and take those billions that are available for tools for the world	0:17:32.80	0:17:36.18	prendiamo i milioni che sono a disposizione per il mondo e
0:17:36.26	0:17:38.09	and make sure they go to the right place.	0:17:36.26	0:17:38.15	ci assicuriamo vadano nel posto giusto.
0:17:38.18	0:17:42.27	[narrator] *As of early May, CEPI is behind* *nine COVID-19 candidates,*	0:17:38.18	0:17:42.27	[narratrice] *A inizio maggio la CEPI* *finanzia nove candidati anti-COVID-19,*
0:17:42.35	0:17:44.31	*including two of the early front-runners:*	0:17:42.35	0:17:44.31	*tra cui due dei più promettenti:*
0:17:44.39	0:17:47.02	*Oxford's new candidate, and Moderna's.*	0:17:44.39	0:17:47.02	*il nuovo candidato di Oxford* *e quello di Moderna.*
0:17:47.10	0:17:49.36	*And it's the success* *of those two candidates,*	0:17:47.10	0:17:49.36	*E il successo* *di questi due candidati,*
0:17:49.44	0:17:50.61	*and one from China,*	0:17:49.44	0:17:50.61	*e di uno dalla Cina,*

0:17:50.69	0:17:55.11	*that give experts hope that we can have a vaccine approved in 18 months,*	0:17:50.69	0:17:55.11	*fa sperare agli esperti che avremo un vaccino approvato in 18 mesi,*
0:17:55.19	0:17:57.45	*but that isn't the end of the race.*	0:17:55.19	0:17:57.45	*ma non è questa la fine della gara.*
0:17:57.53	0:17:58.86	*Not even close.*	0:17:57.53	0:17:58.86	*Non siamo neanche vicini.*
0:17:59.53	0:18:00.70	[car engines roaring]	0:17:59.53	0:18:00.70	[ruggito di motori]
0:18:00.78	0:18:02.54	[announcer] *And around they go once more,*	0:18:00.78	0:18:02.54	[telecronista] *Ed eccoli di nuovo,*
0:18:02.62	0:18:05.71	*burning tires down to the fabric as they pour on the coal.*	0:18:02.62	0:18:05.71	*ancora un altro giro, bruciando le gomme mentre accelerano.*
0:18:06.91	0:18:10.92	[narrator] *Remember, to end this pandemic, we need to reach herd immunity.*	0:18:06.91	0:18:10.92	[narratrice] *Per sconfiggere una pandemia, serve l'immunità di gregge.*
0:18:11.46	0:18:14.05	*And for this coronavirus, experts estimate*	0:18:11.46	0:18:14.10	*Secondo le stime degli esperti, per questo coronavirus*
0:18:14.13	0:18:18.13	*that means at least 60% of the world needs to become immune.*	0:18:14.13	0:18:18.13	*serve che almeno il 60% della popolazione diventi immune.*
0:18:18.22	0:18:22.14	*That's 60% of almost eight billion people.*	0:18:18.22	0:18:22.14	*Ovvero il 60% di quasi 8 miliardi di persone.*
0:18:22.22	0:18:23.89	[interviewer] *Billions of vaccines need to be made?*	0:18:22.22	0:18:23.89	[giornalista] *Quante dosi servono?*
0:18:23.97	0:18:24.97	That's correct.	0:18:23.97	0:18:24.97	Miliardi.
0:18:25.06	0:18:29.77	We've never produced a billion doses of a vaccine in the history of the world.	0:18:25.06	0:18:29.77	Non abbiamo mai prodotto un miliardo di dosi di un vaccino.
0:18:29.85	0:18:33.36	[Gates] You're in a new regime when you talk about billions of a vaccine.	0:18:29.85	0:18:33.36	[Gates] Si è in un nuovo regime quando si parla di miliardi di vaccini.
0:18:33.44	0:18:35.40	We don't make billions of any vaccine.	0:18:33.44	0:18:35.40	Non facciamo miliardi di nessun vaccino.
0:18:35.48	0:18:36.65	We make hundreds of millions,	0:18:35.48	0:18:36.65	Centinaia di milioni, sì
0:18:36.74	0:18:40.11	but those we've had decades to work on. And even the bottles,	0:18:36.74	0:18:40.11	ma ci abbiamo lavorato per decenni. E anche per i contenitori
0:18:40.74	0:18:43.16	that's a special, pharmaceutical-grade glass,	0:18:40.74	0:18:43.16	serve un vetro speciale, di tipo farmaceutico,
0:18:43.24	0:18:45.04	the world doesn't have enough of that.	0:18:43.24	0:18:44.54	e non ce n'è abbastanza.
0:18:45.12	0:18:46.37	[narrator] *Just to start with,*	0:18:44.72	0:18:46.37	[narratrice] *Tanto per cominciare,*
0:18:46.45	0:18:49.54	*to make a billion doses, you need a lot of factories.*	0:18:46.45	0:18:49.54	*per fare un miliardo di dosi, servono molte fabbriche.*

0:18:49.62 0:18:53.42	*But each type of vaccine requires a different kind of factory,*	0:18:49.62 0:18:53.42	*Ma per ogni tipo di vaccino serve un diverso tipo di fabbrica*
0:18:53.50 0:18:57.17	*and ramping up production in enough factories can take years.*	0:18:53.50 0:18:57.17	*e per avviare la produzione in abbastanza fabbriche servono anni.*
0:18:57.26 0:18:59.26	*But a lot of the giants have a shortcut.*	0:18:57.26 0:18:59.28	*Ma molti giganti hanno una scorciatoia.*
0:18:59.34 0:19:02.09	*They have the factories to start production now.*	0:18:59.34 0:19:02.09	*Hanno già le fabbriche per iniziare ora la produzione.*
0:19:02.18 0:19:04.76	We have one big plant which is fully operational.	0:19:02.18 0:19:04.76	Abbiamo un grande impianto che è del tutto operativo
0:19:04.85 0:19:08.85	So that can spit out 300 million vaccines.	0:19:04.85 0:19:08.85	e può produrre 300 milioni di vaccini.
0:19:08.93 0:19:13.73	Now we are very quickly setting up additional plants in the world.	0:19:08.93 0:19:13.73	Adesso stiamo mettendo in funzione altri impianti in giro per il mondo.
0:19:14.27 0:19:18.28	[narrator] *But the newer types of vaccines don't have many, or any, factories yet,*	0:19:14.27 0:19:18.28	[narratrice] *Ma i nuovi tipi di vaccini hanno ancora poche, o zero, fabbriche,*
0:19:18.57 0:19:21.53	*so some are placing bets on candidates now,*	0:19:18.57 0:19:21.53	*perciò alcuni stanno scommettendo adesso sui candidati,*
0:19:21.61 0:19:25.20	*building factories for the ones they think might survive trials.*	0:19:21.61 0:19:25.20	*costruendo fabbriche per quelli che credono supereranno i test.*
0:19:25.28 0:19:30.29	After all, those investments are, at most, billions to save trillions.	0:19:25.28 0:19:30.29	Alla fine, sono miliardi investiti per risparmiare milioni di miliardi.
0:19:30.37 0:19:33.13	[narrator] *And even if we can make that many doses,*	0:19:30.37 0:19:33.13	[narratrice] *Anche riuscendo a fare tutte queste dosi,*
0:19:33.21 0:19:36.63	*we'll still need to get the vaccine to people all over the world,*	0:19:33.21 0:19:36.63	*dovremmo ancora far arrivare il vaccino in tutto il mondo,*
0:19:36.71 0:19:39.26	*and that's when politics can get in the way.*	0:19:36.71 0:19:39.26	*ed è dove la politica potrebbe mettersi in mezzo.*
0:19:40.68 0:19:43.01	[Andrew Cuthbertson] We have a specific vaccine that we believe	0:19:40.68 0:19:43.02	[Andrew Cuthbertson] Crediamo che questo vaccino
0:19:43.09 0:19:48.68	will be able to protect millions of people against this new H1N1 flu.	0:19:43.09 0:19:48.68	possa proteggere milioni di persone contro questa nuova influenza H1N1.
0:19:48.77 0:19:51.85	[narrator] *During the swine flu epidemic in 2009,*	0:19:48.77 0:19:51.85	[narratrice] *Durante l'influenza suina nel 2009,*
0:19:51.94 0:19:55.27	*an Australian company was among the first to make a vaccine,*	0:19:51.94 0:19:55.27	*una compagnia australiana fu tra le prime a sviluppare un vaccino,*

0:19:55.36	0:19:58.44	*and the government made them sell to Australians first.*	0:19:55.36	0:19:58.44	*e il governo li obbligò a venderlo prima agli australiani.*
0:19:59.11	0:20:01.07	*Canada made a similar move.*	0:19:59.11	0:20:01.07	*Il Canada fece una mossa simile.*
0:20:01.74	0:20:04.91	*And while the US promised to donate some of its supply,*	0:20:01.74	0:20:04.91	*E anche se gli USA promisero di donare parte delle loro scorte,*
0:20:04.99	0:20:07.37	*they waited until the epidemic was over.*	0:20:04.99	0:20:07.37	*aspettarono che l'epidemia finisse.*
0:20:08.04	0:20:11.00	*So it matters where a vaccine is made.*	0:20:08.04	0:20:11.00	*Quindi è importante dove verrà sviluppato il vaccino.*
0:20:11.46	0:20:14.17	Vaccine nationalism. That is real.	0:20:11.46	0:20:14.17	Nazionalismo vaccinale. È una realtà.
0:20:14.25	0:20:17.17	There are early signs that people are trying to buy by the biotech companies	0:20:14.20	0:20:17.24	C'è già qualcuno che cerca di comprare le compagnie di biotech
0:20:17.25	0:20:18.71	that have lead contenders.	0:20:17.25	0:20:18.76	dei candidati più promettenti.
0:20:18.80	0:20:20.92	There's a long tradition of narrowly putting	0:20:18.80	0:20:20.92	La lunga, egoista tradizione di mettere
0:20:21.01	0:20:22.68	national interest above others,	0:20:21.01	0:20:22.68	i propri interessi sopra gli altri
0:20:22.76	0:20:25.97	and that's obviously often correlated with people who have the money.	0:20:22.76	0:20:25.97	spesso appartiene alle persone che hanno i soldi.
0:20:26.05	0:20:27.93	[narrator] *World leaders have come together*	0:20:26.05	0:20:27.93	[narratrice] *Insieme, i leader mondiali*
0:20:28.01	0:20:29.56	*and called for cooperation.*	0:20:28.01	0:20:29.57	*hanno richiesto cooperazione.*
0:20:29.64	0:20:33.69	[in German] Science is never national. Science serves mankind.	0:20:29.64	0:20:33.69	[in tedesco] La scienza non è nazionale. La scienza serve l'umanità.
0:20:33.85	0:20:37.69	[in English] The commitment to ensuring equal access is the key.	0:20:33.85	0:20:37.69	[in inglese] L'impegno ad assicurare un'equa accessibilità è la chiave.
0:20:37.77	0:20:40.69	Victory against this virus cannot be declared	0:20:37.77	0:20:40.69	Non si potrà dichiarare vittoria contro il virus
0:20:40.78	0:20:44.41	before effective vaccines and therapeutics are made available	0:20:40.78	0:20:44.41	fino a che vaccini e cure non saranno disponibili
0:20:44.49	0:20:46.49	to all in need around the world.	0:20:44.49	0:20:46.49	per chiunque ne abbia bisogno nel mondo.
0:20:47.12	0:20:50.49	[narrator] *But as of May, the US hasn't been one of them.*	0:20:47.12	0:20:50.49	[narratrice] *Ma a maggio, gli USA non sono ancora tra questi.*
0:20:52.62	0:20:56.42	*Who can get a vaccine will also depend on its price.*	0:20:52.62	0:20:56.42	*L'accesso al vaccino dipende anche dal suo costo.*

0:20:56.50	0:20:58.88	How much should it cost? Should rich countries pay more?	0:20:56.50	0:20:58.88	Quanto deve costare? Più per le nazioni ricche?
0:20:58.96	0:21:00.96	Should, you know, poorer countries pay less?	0:20:58.96	0:21:01.00	Le nazioni povere dovrebbero pagar meno?
0:21:01.05	0:21:05.09	And also, if this vaccine is developed by a major pharmaceutical company,	0:21:01.05	0:21:05.09	E se questo vaccino venisse prodotto da una grande compagnia farmaceutica,
0:21:05.18	0:21:08.18	how much money is this company allowed to make off this vaccine?	0:21:05.18	0:21:08.18	quanto le sarebbe permesso di guadagnarci?
0:21:09.01	0:21:12.43	[narrator] *Remember, most of these vaccines are funded privately,*	0:21:09.01	0:21:12.43	[narratrice] *La maggior parte dei vaccini è finanziata da privati*
0:21:12.52	0:21:15.64	*and based on how some vaccine makers' stocks have risen,*	0:21:12.52	0:21:15.64	*e vista la crescita delle azioni di alcune società,*
0:21:15.73	0:21:18.86	*some people clearly see a potential windfall ahead.*	0:21:15.73	0:21:18.86	*alcuni vedono chiaramente un potenziale profitto.*
0:21:19.36	0:21:22.44	*But so far, some companies like Johnson & Johnson*	0:21:19.36	0:21:22.44	*Ma per ora, alcune compagnie, come Johnson & Johnson,*
0:21:22.53	0:21:25.20	*have promised to make their vaccine affordable,*	0:21:22.53	0:21:25.20	*hanno promesso di rendere il loro vaccino economico,*
0:21:25.28	0:21:27.16	*as little as $10 a dose.*	0:21:25.28	0:21:27.16	*solo 10$ a dose.*
0:21:27.62	0:21:33.66	*And that's critical, because a vaccine can only win if it gets to billions of people,*	0:21:27.62	0:21:33.66	*Il prezzo è cruciale, perché un vaccino vince solo se è accessibile a tutti,*
0:21:33.75	0:21:36.00	*including those who can't afford it.*	0:21:33.75	0:21:36.00	*anche a chi non se lo può permettere.*
0:21:36.08	0:21:38.04	*So to vaccinate enough of the world,*	0:21:36.08	0:21:38.04	*Quindi per vaccinare abbastanza persone,*
0:21:38.13	0:21:40.96	*we'll actually need more than one winner.*	0:21:38.13	0:21:40.96	*serve in realtà più di un vincitore.*
0:21:42.76	0:21:44.88	-[engines roaring] -[crowd cheering]	0:21:42.76	0:21:44.88	-[ruggito di motori] -[tifo della folla]
0:21:45.47	0:21:48.30	[narrator] *This race isn't really between the candidates.*	0:21:45.47	0:21:48.30	[narratrice] *Questa gara non è tra i candidati.*
0:21:48.39	0:21:51.51	*It's between humanity and this virus,*	0:21:48.39	0:21:51.51	*È tra l'umanità e il virus,*
0:21:51.60	0:21:55.31	*that simple little vehicle that's paralyzed economies*	0:21:51.60	0:21:55.31	*quel piccolo semplice veicolo che ha paralizzato economie*
0:21:55.39	0:21:59.02	*and ended hundreds of thousands of lives around the world.*	0:21:55.39	0:21:59.02	*e tolto la vita a centinaia di migliaia di persone nel mondo.*
0:21:59.44	0:22:02.86	*We can only beat it by doing what we've never done before:*	0:21:59.44	0:22:02.86	*Possiamo sconfiggerlo solo facendo una cosa mai fatta prima:*

0:22:03.23	0:22:06.49	*making a vaccine for everyone* *in record time.*	0:22:03.23	0:22:06.49	*sviluppare un vaccino per tutti* *in tempi da record.*
0:22:06.57	0:22:07.74	["Race For the Prize" playing]	0:22:06.55	0:22:07.74	["Race For the Prize"]
0:22:07.82	0:22:14.12	♪ Two scientists are racing For the good of all mankind ♪	0:22:07.82	0:22:14.12	♪ Two scientists are racing For the good of all mankind ♪
0:22:14.41	0:22:21.38	♪ Both of them side-by-side So determined ♪	0:22:14.41	0:22:21.38	♪ Both of them side-by-side So determined ♪
0:22:22.63	0:22:28.76	♪ Locked in heated battle For the cure that is their prize ♪	0:22:22.63	0:22:28.76	♪ Locked in heated battle For the cure that is their prize ♪
0:22:29.09	0:22:31.55	♪ But it's so dangerous ♪	0:22:29.09	0:22:31.55	♪ But it's so dangerous ♪
0:22:33.47	0:22:35.31	♪ But they're determined ♪	0:22:33.47	0:22:35.31	♪ But they're determined ♪