Dissemination of academic medical research through translation throughout history and in the contemporary world

Carmen Quijada Diez

1 Introduction

The definition of translation as ‘the great pollinator of Science’ (Fischbach 1993: 100) is a very accurate one, as it has walked hand in hand with medicine from its very beginnings. The history of medical discourse and that of translation move in parallel ways, for the transmission of knowledge (both scientific and humanistic) from civilisation to civilisation has been the common thread all throughout history, and that transmission took place through the figure of the linguistic mediator or translator (Delisle and Woodsworth 2012; Jacquart and Micheau 1996; Gutas 1998; Vickery 2000; Montgomery 2000; García Bravo 2004; Santoyo 2004 and 2009; Jacquart 2005; Burnett 2007; Daiber 2007; Saliba 2007; Pormann and Savage-Smith 2007; Valls 2007; Olohan 2009 and 2016; Gutiérrez Rodilla 1998, 2003 and 2008; Gordin 2015; Moller 2019; among many others).

This chapter aims to answer the following question: what motivates the translator’s interest in medicine and its related disciplines through the ages? The answer – to transfer medical information that would otherwise remain inaccessible to other scientists around the world – will lead us through the discovery of how academic medical research was carried out, published and disseminated throughout the past all the way to the present day. This chapter will start with a historical overview, providing an examination of how medical research travelled from the ancient times until the invention of the printing press, and then describe the scientific boom that took place during the modern age and its consequences, both for medicine and for translation. The chapter then turns to the present-day dissemination of medical knowledge through a study of scientific journalism and specialised medical journals, which will inevitably lead to the current preponderance of English as the language of medicine. The chapter closes with a brief discussion on the future of medical academic research in today’s interconnected world, and on the expected role of translation within these connections.
2 Historical perspectives

Finding a starting point from which to map when and how medical research started to spread prior to the invention of the printing press is not an easy task. However, it is clear that medicine itself is one of the oldest fields of recorded scientific activity due to the universality of the subject, since the human body and its diseases remain the same all over the world, unlike literature or religion. Medicine has also attracted more attention from translators than other scientific fields (Fischbach 1993: 92). Another issue that needs to be addressed before delving into the historical overview is to clarify the notions of ‘science/scientific’ and ‘medicine/medical’, and how these are used throughout this chapter. As Mumford correctly stated, ‘at the beginning, chief, medicine man, magician, prophet, astronomer, priest were not separated functionaries’ (Mumford in Vickery 2000: xvii). When mentioning the terms ‘science’ or ‘scientific’ we will always be including medicine herein, at least until we reach the specialisation and hypersonalisation of more recent times.

Although, in line with many other Western scholars, our investigation of medical history begins with ancient Greece, we should not forget the important advancements carried out by physicians (or any other term we choose to assign to these first medical professionals) in other parts of the world. Delisle and Woodsworth (2012: 95) offer insights into some of the earliest translation activities, ranging from the Persian translator An Shigao, who is known for a translation of Sanskrit precepts into Chinese, to the Chinese Han Dynasty (206 BCE–226 CE) and later Song Dynasty (960–1280), during which some 20 Indian books on pharmacology and medicine were translated. We find an intense translation activity in India in the sixth century BCE, when the country had already established cultural ties with the Mediterranean region. The strength of this influence can be highlighted by the fact that ‘the medical theories found in Plato’s Timaeus, in works by Roman physicians and encyclopaedists, and in the writings of the Greek physicians Dioscorides and Galen are in fact of Indian origin’ (Delisle and Woodsworth 1995: 108). These brief mentions highlight the obvious fact that, although it is traditional to start narratives of this kind with Greece, medicine has always been practised all over the world, particularly in the East.

Another aspect which will become relevant in the following section is that translators not only contributed to the spreading and dissemination of already existing medical research and knowledge, but that they also regarded translations as incentives for the production of their own medical texts (Jacquart and Micheau 1996: 45–54). For instance, Hunayn ibn Ishâq (ninth century, also known by his Latin name, Johannitius), the most celebrated translator of the renowned Baghdad-based House of Wisdom (see section 2.2.), wrote Ten Treatises on the Eye as well as the handbook Questions on Medicine. The latter was then translated into Latin by Constantine the African (11th century) and was referred to as the Isagoge of Johannitius (meaning ‘Introduction’ in Latin), becoming a reference book in medieval European universities (Lain Entralgo 1982: 159; Jacquart 1986; Vickery 2000: 27; Pormann and Savage-Smith 2007: 164). The Salernitan2 commentaries written on various medical texts translated into Latin by the aforementioned monk Constantine and other translators rapidly spread to Naples and Paris and became a source of medical teaching and research for centuries to come (Vickery 2000: 38). Another well-known example is the Spanish translation of Dioscorides’ Materia Medica by the physician Andrés Laguna published in 1555 with his own comments that doubled the size of the original work (Gutiérrez Rodilla 2009: 19–22). These are just a few examples from
ancient and more recent times, but the mutual influence of translation on medicine is still strong, as will be shown below.

2.1 Greek medicine

Before referring to Greek medicine, it is important to remember that medical practice had traditionally been tied to magical and religious beliefs throughout Europe, and therefore the rational approach taken by the Greeks really was a turning point in the development of medicine. In fact, Greek was not just the language in which all kinds of medical interactions took place throughout classical antiquity, but also the etymological basis for most of our current medical terminology (both in Romance and in Germanic languages), mainly thanks to the Hippocratic Collection. This collection is composed of almost 70 books that have been traditionally ascribed to the Greek physician Hippocrates (5th and 4th centuries BCE), but which are in fact the works of different Greek schools of the 6th and 5th centuries BCE, like Knidos and Kos (López Férez 2000; Panourias et al. 2011). The most probable hypothesis for this attribution is that the Alexandrians who became interested in ancient medicine found numerous manuscripts written by multiple authors, and simply ascribed them all to Hippocrates (López Férez 2000; Panourias et al. 2011).

From the beginning of the 3rd century BCE onwards, the core of the cultural, scientific and medical world moved to Alexandria, where copyists working in its Museion and Library compiled all the knowledge of the Middle East, the Mediterranean shores and even India into rolls and codices translated into Greek (García Bravo 2004: 28). By the end of that century, the Hellenisation of Rome had also affected the world of medicine, which began to be practised by Greek physicians, first as slaves and later as free citizens. This is one of the reasons why Greek has always predominated over Latin as the language of medicine and science. In fact, Latin never succeeded in becoming the language of medicine, neither in Greece nor in the other provinces of the Eastern Roman Empire (Gutiérrez Rodilla 1998: 43).

One of the most prominent figures of Greek medicine is Galen of Pergamon (2nd century CE), who remained the highest medical authority throughout the Middle Ages and whose teachings dominated medical discourse not only in Europe, but also in the Islamic world. He is often said to have a Hippocratic doctrine but an Aristotelian form (Babini 2000: 41), meaning that his work was based in the medical Hippocratic tradition, but he also relied on Platonic and Aristotelian ethical principles. Others, like Pormann and Savage-Smith, even say that ‘he reshaped Hippocrates […] in his own image’ and ‘succeeded in establishing himself as the “new Hippocrates”’ (2007: 10). Galenism, understood as the medical theory that considers the equilibrium of four elemental humours (blood, phlegm, yellow and black bile) to be at the core of a healthy body, remained the predominant medical source until the 17th century, when the discovery of blood circulation caused its collapse. Galen’s work can be considered the final synthesis of Greek medicine and its influence had a considerable impact on medical terminology due to its lasting prominence. The words used by Galen are still present in medical terminology of many languages (like asphyxiation/Asphyxielasfixialasfissia, diastole/Diastole/diástole/diástole/diástole [English/German/Spanish/Italian], etc. [see, for instance, López Piñero and Terrada Ferrandis 1990; Panourias et al. 2011; Berghammer 2006]). What is interesting however, is that Galenism became the main medical source in Europe thanks to translations of his work carried out in Baghdad, as the following section describes.
2.2 Islamic medicine

The Middle Ages experienced a rupture in science in general and in medicine in particular, roughly divided by the borders of the former Western and Eastern Roman Empire. In the West, medicine took refuge in monasteries from the 8th century onwards, where it was archived rather than practised or disseminated, causing it to fall into a lethargy from which it would take centuries to escape (Lain Entralgo 1982: 182; Moller 2019: 1–16). In contrast, the East experienced a period of rapid medical developments, both in the form of originally written works as well as through numerous translations. The Islamic world assimilated Hellenistic medical knowledge through extensive translations of medical works from Greek into Arabic (on this issue, see extensively Jacquart and Micheau 1996; Gutas 1998; Pormann and Savage-Smith 2007; Saliba 2007; and also the historiographically critical comments on this Greco-Arabic transmission of knowledge by Montgomery 2000: 89–93). These texts were usually first rendered into Semitic languages (mainly Syriac, which often served as an intermediary language, but also Pahlavi and Hebrew to a lesser extent [Taylor 2007]), and from these intermediary languages into Arabic (Lain Entralgo 1982: 158; Gutiérrez Rodilla 1998: 48; Gutas 1998: 20–24; García Bravo 2004: 30–31; Delisle and Woodsworth 2012: 106–109; Jacquart and Micheau 1996: 32–45; Montgomery 2000: 89–137; Jacquat 2005; Daiber 2007; Saliba 2007: 73; Pormann and Savage-Smith 2007: 6–79). This activity reached its peak in the 9th and 10th centuries in Baghdad with the support of the caliphs, who attracted translators and scientists of all kinds to their court (Gutas 1998). Scholars in the so-called House of Wisdom, founded in the year 830, produced translations of Byzantine texts, numerous Hippocratic writings, more than a hundred works by Galen, as well as other works by Greek scientists and several Indian physicians, all under the direction of Hunayn ibn Ishāq, a ‘tireless translator’ (Lain Entralgo 1982: 159) and ‘the master of all Islamic translators’ (Delisle and Woodsworth 2012: 237). The translation of the Indian collection of Sushruta carried out during this time would later introduce Indian precepts in surgery into European medicine, and the translation of Galen’s works established his practices in European and Islamic medicine for centuries to come (Jacquart and Micheau 1996: 43; Gutas 1998: 119; Pormann and Savage-Smith 2007: 43ff.; Saliba 2007: 73–129). These texts came primarily from Greek but also Sanskrit, Syriac and occasionally Egyptian, and the Arabic versions were later translated into Latin (see section 2.3.) and so travelled back to medieval Europe (Taylor 2007: 1190). This means that although Galen’s scholarship dates back to the second century CE, it did not become the predominant medical practice in Europe until the 13th century, and that this Latin version of his texts was predominantly based on previous translations into Arabic.

Translation was just one of many activities that these scholars and scientists performed: they acquired Greek manuscripts (sometimes by travelling large distances), established their authenticity, compiled compendia and were also the authors of original texts (Delisle and Woodsworth 2012: 108; Jacquart and Micheau 1996: 45–54; Gutas 1998: 133–140; Gutiérrez Rodilla 1998: 52; Saliba 2007: 66–67; Pormann and Savage-Smith 2007: 13). The scholars who worked along these lines include Rhazes as well as Avicenna (Latinised name of Ibn Sina), whose Canon of Medicine was an important medical source until the 18th century (Sánchez Granjel 1968; Lain Entralgo 1982; Jacquart and Micheau 1996; Pormann and Savage-Smith 2007). The Canon was a compilation of all ancient and Arab medical knowledge that combined Greek medical experience
Medical research through translation

with Aristotelian philosophy in a way that challenged the authority of their precursors, and contained critical commentaries on ancient sources (Pormann and Savage-Smith 2007: 47–50). These translators and scholars also played a didactic role through their explanations and commentaries, such as in the original works of the renowned translator Hunayn ibn Ishâq, which are frequently written in the form of questions and answers (Delisle and Woodworth 2012: 108–109; Pormann and Savage-Smith 2007: 68). Some translators went beyond these additional commentaries and made transformations in the original texts that were supposed to ‘cleanse the mistakes of the Greek tradition’ (Saliba 2007: 129), which were a frequent possibility, given that dissections had not been practised in Galen’s times. Many translators confronted the teachings with their own practical findings, such as al-Baghḍādi’s observation of just one human jawbone, where Galen had described two.

2.3 Medical research prior to the printing press: the ‘forgotten ones’

Antoine Berman coined the expression ‘the forgotten ones’ (1989: 677), referring to the translators of the so-called School of Toledo, which played a big role in spreading (not just) medical knowledge in Europe by translating scientific achievements of the Greek and Arab world from Arabic to Latin and later to vernacular Spanish (Valls 2007). These translations were fundamental to the transmission of science in medieval Europe and those ‘forgotten’ translators ‘radically altered the state of knowledge in the West’ (Delisle and Woodworth 2012: 110). There is some doubt regarding the existence of the School: some argue, like in the case of the House of Wisdom in Baghdad (see note 4), that it was rather a circle of translators who worked individually or in small groups under the supervision of a patron (Gutiérrez Rodilla 1998: 53; Santoyo 2004: 3 and 2009; Delisle and Woodsworth 2012:109–110). In any case, we can speak of a systematic translation movement of Arabic works and ‘an organisation or “professionalism” of translation in Toledo’ (Burnett 2007: 1232). Wright (2007) points out that there was little need for interlinguistic translations between Latin and the first Romance languages. Instead ‘the spoken version needed merely to be “polished” rather than translated to become an acceptable text’, after which ‘a literate Christian originally from outside Al-Andalus would […] elaborate a written text in the necessary formal register’ (Wright 2007: 1267). This also confirms that the translation process was mainly oral.

These translations opened the door to Greek and Arabic medical knowledge in Western Europe (Lain Entralgo 1982: 197; on this School, see in extenso Schipperges 1961; Sangrador Gil 1985; Jacquart 1992a; Samsó 1996; Vegas González 1998). The translators of this School, such as Domingo Gundisalvo, Juan Hispano, Andrés the Jew, Pedro Gallego, Mark of Toledo and Gerard of Cremona, amongst many others, translated and in many ways co-created classical works on medicine. These included Hippocratic and Galenic treatises as well as the works of principal Arabic authors, such as Avicenna, Rhazes, Abulcassis or Al-Kindi, among many others (about the transmission of Arabic medical knowledge to medieval Latin, see the classical works by Schipperges [1964, 2003: 25–42; see also the recollection of his works related to this matter edited in 2006]; Jacquart [1992b and 2005], as well as Jacquart and Micheau [1996]). These Castilian translations ensured that texts that had previously been auctoritate in various medical areas continued to be so until the Renaissance (Valls 2007: 1373).
Figure 3.1 shows the movement of scientific (and thus medical) knowledge and its journey from Greece to Rome, then to Byzantium, Alexandria, Persia, until it arrived in Europe, and from there expanded to the rest of the world. Table 3.1 (see next page) shows the common paths that medicine and translation followed in their historical journey.

This necessarily short overview on medical research and its transmission is not only tied to translations, but also to the history of paper and the dissemination of writing, which will be the subject of the next section.

2.4 The printing press and the scientific boom during the modern age

The way in which all the medical texts mentioned so far have reached us was through copyists and booksellers, i.e. thanks to a rudimentary book trade that evolved from the Egyptian papyrus to animal skins up to the more recent parchment. In Europe, the development of cities and the world of universities in the late Middle Ages brought with it a flourishing bookstore and publishing industry which supplied the copies needed for consultation and teaching. But the invention of the printing press in the mid-15th century meant a significant change in the dissemination of knowledge in general, and of medical knowledge in particular. Indeed, the printing press had the same impact on the circulation of translation in the Renaissance as the introduction of paper had previously had in the Arabic world (Delisle and Woodsworth 2012: 96). In the case of medicine, the printing press served to exhumate classical and medieval medical texts, rather than propagate works by new scholars, particularly in the last years of the 15th and throughout the 16th century.
Out of the 3,000 books printed during the 15th century in Europe, that is, in the earliest stages of printing, 30 per cent were either medical books or texts related to medicine in some way. This fact shows the important contribution that medicine had in the scientific and book publishing activity during the Renaissance (Riera Palmero 1989: 8). In fact, medicine constituted quantitatively the most important profession and publishing activity among scientific and technical knowledge at that time (Riera Palmero 1989: 8). The majority of data indicates that physicians were always the most avid buyers of scientific publications, and that they owned almost 70 per cent of the science books of the 16th century in Europe, and up to 85 per cent in the 17th (Riera Palmero 1989: 9).

The period from the 15th to the 17th century, denoted by some as the first globalisation era (Steger 2009; Lambert 2007), was marked by European colonial expansion, the creation of the Spanish Empire, a significant reorganisation of European monarchies and religious divisions, as well as by an expansion in the circulation of medical knowledge. Although Latin continued to be the language of medical communication among the international academic elite (Gordin 2015: 167), some books were printed in vernacular languages, like Spanish, Italian, German or French. These books were aimed at the non-professional, wider readership, and included volumes such as manuals of anatomy, books about childbirth, or descriptions of new diseases. As the 17th century progressed, the works written in vernacular languages showed an important increase compared to Latin (Gutiérrez Rodilla 2005: 302; Valls 2007: 1374; Barona 2017: 15), mainly due to two facts: first, apothecaries and other laypeople practising various forms of healing had not received any higher education and could not understand treatises written in Latin in their entirety; at the same time, a number of people tried to cure themselves as they lacked access to any medical care, especially in rural areas. Vernacular languages were also the tool used to spread information on infectious diseases or epidemics, such as the bubonic plague (see, for instance, the case of Luis Mercado, whose Opera omnia was written in Latin, but who wrote his Libro

<table>
<thead>
<tr>
<th>Approximate date</th>
<th>Direction of translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd century BCE onwards (Alexandria)</td>
<td>Sanskrit (all Eastern knowledge) → Greek</td>
</tr>
<tr>
<td>5th and 6th centuries CE (Byzantium)</td>
<td>Greek (original, fundamental works) → Syrian, Persian, Hindi, Syriac</td>
</tr>
<tr>
<td>8th and 9th centuries CE (East, mainly Baghdad)</td>
<td>Greek, Sanskrit, Syriac, Egyptian (original works) → Arabic</td>
</tr>
<tr>
<td>10th century (Córdoba)</td>
<td>Greek → Arabic</td>
</tr>
<tr>
<td>9th – 12th centuries (Montecasino, Salernitan School)</td>
<td>Arabic (Greek translated works and texts written originally in Arabic) → Latin</td>
</tr>
<tr>
<td>12th and 13th centuries (Translators’ School of Toledo)</td>
<td>Arabic (mainly classical Greek works) → Latin → Spanish, Catalan</td>
</tr>
<tr>
<td>12th and 13th centuries (Provence and Iberian Peninsula)</td>
<td>Arabic (classical Greek works and other Arabic works) → Hebrew</td>
</tr>
<tr>
<td>15th and 16th centuries (All Europe)</td>
<td>Greek → Ciceronian Latin</td>
</tr>
</tbody>
</table>

a It has been repeatedly claimed that translations from Arabic to Hebrew only took place in Provence, but it must be pointed out that many of these translations were carried out in the Iberian Peninsula. On this matter and on the works of medical translators into Hebrew, see Gutiérrez Rodilla (2007: 285–304), Pormann and Savage-Smith (2007: 164–165), Valls (2007: 1374) and Ferre (2012).
These publications targeted an educated audience without a medical background who had the resources to spread information about these preventive measures amongst the general public both in cities and rural areas (Gutiérrez Rodilla 2005: 303).

For a long time, vernacular languages had little reason to compete against one another in medical publications, as they were more focused on fighting the overwhelming presence of Latin (Valls 2007: 1374). This changed in the 18th century as Latin gradually declined in its influence and a new confrontation started to emerge between the main languages of culture and wisdom, especially between French and German and, to a lesser extent and somewhat later, English. This particular fight was linked to the social, political and economic powers of the nations where those languages were spoken, rather than to the scientific advances achieved in each of them. As the Spanish humanist Antonio de Nebrija stated in his 1492 Grammar of the Castilian Language, language ‘was always the companion of empire, and followed it such that together they began, grew, and flourished – and, later, together they fell’.

Figure 3.2, illustrating the historically intense translating activities outlined in this section, shows that there has always been a dominating lingua franca in the history of medical transmission of knowledge. However, every lingua franca has co-lived with other languages, whether these belonged to other areas or were part of the emerging vulgar languages (see the aforementioned cases of Syriac, Arabic, Greek, Latin and the European vernacular languages). This echoes the current position of English as the language of leading medical research while sharing a (rather small) portion of it with other languages; a situation which, as some point out, will continue in the next years (Montgomery 2004, 2009 and 2013; Ammon 2012). One of the critical issues that will be addressed in the next section is precisely linked to this preponderance of one language over others in medical communication and the impact of this struggle on translation, especially in contemporary times.

3 Current critical issues

The origin and subsequent development of the scientific journal as the main means of communication between medical researchers is an aspect that must be studied in depth in order to know where transmission of medical research is heading, hand in hand with the interlinguistic
translation that it inevitably entails. As described in the previous section, advances in medical research were spread first through manuscripts, then books, and later through encyclopaedias and dictionaries. Today, that role has been taken over by specialised journals. These publications have experienced an exponential rise since they first appeared around the middle of the 17th century: from 300 journals published in the period between 1665–1730 (Vickery 2000: 94) to millions of publications in the present day. As far back as 1981, Berry described the evolution of scientific and medical journals with the following ironic statement:

In the beginning was the General Scientific Journal. And the General Scientific Journal begat the Specialty Journal, and the Specialty Journal begat the Subspecialty Journal. And the Subspecialty Journal begat the Single-Subject Journal, whether according to class of compound, specific disease, or methodology.

_Berry 1981: 400_

He then tries to answer the question on why there is such a proliferation of new journals and gives the following reasons, most of which are as valid today as they were 40 years ago: delay in publication in the established journals frequently causing the creation of new minor ones; the growth of new specialities not easily accommodated in the already existing journals; the growth of science in general; and, last but not least, academic pressures. These elements have led to ‘an epidemic of fragmentation of data’ (Berry 1981: 402) that can be partly associated with Garfield’s impact factor. Developed as early as 1955 (see Garfield 2006), the impact factor was originally established so that not just large journals were cited and read, but also smaller, less prominent ones; at the same time, however, the impact factor and the subsequent need of scholars to be read and cited worldwide has brought with it an unintended consequence – the requirement to publish almost exclusively in the current lingua franca. As a result, Garfield’s impact factor has had, ironically, an immeasurable influence on scientific and medical research, especially in its writing and transmission (Ammon 2012), and his well-known formula ‘publish or perish’ has now shifted to ‘publish in English or perish’.

Many scholars have already brought this issue to attention; a paper entitled ‘Is Impact Factor killing the German Language?’ speaks for itself (Haller, Hepp and Reinold 1999). Others have proposed local measures in order to solve the problem, such as the suggestion by the Association of the Scientific Medical Societies in Germany in 1999 to multiply the impact factor of research contributions published in German by two (Frömter _et al._ 1999: 912; Wiese 2006). Ammon (2012: 351) even proposed that Anglophones could ‘be persuaded to take on an extra share of costs, perhaps for publishing or for conferences’. While these measures might seem extreme, the suggestions are perhaps understandable if we take into account studies like the one carried out by a group of Scandinavian scientists (Nylenna, Riis and Karlsson 1994). In this study, two fictional but genuine-looking short manuscripts were sent to 180 Scandinavian referees, one in English and the other in the national language; unsurprisingly, the English version was accepted more easily than the national-language version of the very same manuscript. This trend has a direct impact on medical translation, as will be seen in the next section.

### 3.1 Specialised journals and medical monolingualism

In 2007, Beecroft described the explosion of medical journals on the Internet as a radical change not only in the whole scientific publishing process, but also in the globalised access
to medical journals. The Internet has made possible the publication and dissemination of medical research theoretically from everywhere and for any audience. However, with English being the current lingua franca of science, this also has had an impact on the evolution of national medical languages. Researchers can either choose to publish in English or as good as cease to exist for the scientific community: ‘Only English-language journals achieve high impact factors, because journals in other languages are unlikely to be read and cited internationally’ (Baethge 2008: 39). Beecroft (2007: 204) poses the following question: ‘Is there any point in publishing in any other language than English?’ He proposes that the question has a twofold answer, depending on the target audience of the paper or journal: international journals should aim at every possible reader, and therefore publish in English; national journals, on the other hand, should continue to publish in their local languages. Beecroft’s ideas still obtain, more than 10 years after being proposed, as we shall see on the example of Spanish-written medical journals. Spanish is the third most spoken language in the world (around 7.8 per cent of the world’s population speaks Spanish; see Instituto Cervantes 2017), after English and Chinese. However, between 2005 and 2015, an overwhelming 99.44 per cent of total publications in the field of biomedicine collected in the Web of Science database were written in English. This was followed by French with 0.13 per cent, and Chinese with 0.11 per cent, with Spanish ranking fourth and representing a meagre 0.08 per cent (Plaza and García-Carpintero 2017).

Spanish provides an interesting comparison with German, which has a much smaller number of speakers but remains important given the social, economic and political weight of Germany. German-language journals make up almost one-fifth of all periodicals subscribed to by the German National Library of Medicine (Baethge 2008: 38). There is clearly a high demand for medical journals written in German, as 7 out of 10 German physicians consider it important or very important that the specialised articles they read are in German (Baethge 2008: 38; Wiese 2006). Gordin describes the dilemma of German researchers, who ‘have to make the difficult choice between identity and communication, between supporting journals and educational institutions in their native language or disseminating cutting-edge research to the broadest-possible readership’ (Gordin 2015: 312).

3.2 Translating medicine today

The aforementioned dilemma is directly related to translation and linked to the idea suggested by Beecroft (2007): medical journals should be written in the local languages in order to boost local research and to display geographical, socio-economic and/or national interests. In fact, taking again Spanish as an example, nearly all scientific journals aimed at Spanish-speaking researchers and physicians are related to scientific areas linked to local and geographical interests (García Delgado, Alonso and Jiménez 2013: 348). Others point out that medical research carried out in countries where English is not the official or vehicular language should not stay inside their borders or remain unknown to the international scientific community, as denounced in the paper ‘Lost Science in the Third World’ (Gibbs 1995; see also Horton 2000 or Ammon 2012). This brings us to the next issue. The fact that so many medical journals from non-English speaking countries are published in English brought new phenomena to the medical publishing sector, such as the so-called ‘medical writers’ (Daskalopoulou and Mikhailidis 2005) or ‘ghost-writers’ (Matias-Guiu and García Ramos 2011). These are understood as professional writers who are hired by scientists or pharmaceutical and medical companies to write medical articles on their behalf, and in which they do not appear as authors, thus questioning the
Medical research through translation

notion of intellectual authorship. Another recent phenomenon linked to publishing in English is the appearance of bilingual editions of journals, which is of particular interest for translators. This is the case of the Spanish journals Neurología or Revista Española de Cardiología, both of which publish all of their articles simultaneously in Spanish and in English, and where translations from Spanish to English are carried out by a group of specialised translators (Matías-Guiu, García Ramos and Porta-Etessam 2014). There are other examples across the globe: Deutsches Ärzteblatt is published both in German and English since 2008; the Revista Brasileira de Reumatologia has published bilingual articles in Portuguese and English since 2009; Arquivos Brasileiros de Cardiologia provides an English translation of any article submitted in another language with no cost to the author; Turkey’s Acta Orthopaedica et Traumatologica Turcica publishes in English but makes both English and Turkish versions of every paper available on its website (Olohan 2016: 143). Numerous journals published in Germany, Austria and Switzerland have gone a step further and changed their language of publication and in many cases even their names from German to English (Ammon 2012: 344). The role played by translators in this process has so far not been subject to any extensive studies (Olohan 2014; Olohan and Salama-Carr 2011) and further research is needed on how language-specialists are influencing not just the form, but also the content of the medical texts they are working on. Some argue that medical writers, translators and any other language or communication professionals in the medical field who are not subject experts could give advice to researchers to improve readability in their writing, but that they also ‘may miss deficiencies in the logic and argumentation because they do not grasp the scientific content’ (Shashok 2008). Others point to the contradictory position of some medical editors, who, on the one hand, condemn medical writers (understood as language professionals, see Laine and Mulrow [2005] or The Lancet’s Editorial in 1993) but, on the other, insist on having manuscripts from non-native English writers edited and proofread by an Anglophone native speaker prior to submitting it for the peer-review process (Matías-Guiu and García Ramos 2011: 258). This so-called scientific monolingualism (Vandenbroucke 1989; Gibbs 1995; Timo-Iaria 1998; Horton 2000; Ammon 2001, 2010 and 2012; Montgomery 2004, 2009 and 2013; Navarro 1998, 2001 and 2002; Gordin 2015) has as its direct consequence that most of the medical translations today have English either as their source or target language.

Apart from the translation of academic journal articles, medical translation is today a growing market segment that covers a wide range of interlinguistic communicative needs – those of publishing houses, pharmaceutical laboratories, international organisations, government or state institutions, university research groups, medical equipment companies, hospitals and other health-related centres and organisations. Some of the typical medicine and health-related products that enjoy a greater volume of translation are summaries of product characteristics, patient information leaflets, press releases or medical products advertisements, as well as original research articles and patents (Montalt and González Davies 2007; Montalt and Shuttleworth 2012).

The hyperspecialisation that Berry criticised in his 1981 paper had a direct impact on translation, the field of translation studies and on current translators’ training programmes. As pointed out by Faya and Quijada (2019), Spanish universities have experienced not only growth in programmes on translation training, but specifically in courses focusing on scientific and medical subjects, both at undergraduate and postgraduate level. This increase is not accidental, but rather reflects the market’s needs for specialised medical translation, and this is also demonstrated by the studies regarding this type of translation and research published in recent years (Wright and Wright 1993; Navarro 1997; Fischbach
1998; Montalt and González Davies 2007; Montalt and Shuttleworth 2012; Byrne 2012; Varela Salinas and Meyer 2015; Olohan 2016, to name a few).

4 Future directions

The previous sections have briefly described the pathways of medical translations through history as well as medical academic research in today’s interconnected world. The aforementioned preponderance of the English language both in medical research and publishing has a very powerful effect on the role we expect translation to play these days. Most of the medical texts that undergo a translation process unsurprisingly have English either as their source or their target language (Montgomery 2009; Faya and Quijada 2019). These developments open questions about what our societies are losing with this linguistic reductionism from and to English. One of the consequences of this issue has already been addressed – the fact that English is a non-native language for most of its users within medical research means we can speak of an ‘asymmetric global language, whose advantages are unequally distributed’ (Ammon 2012: 342). Another effect of this anglicisation is that many of the leading scientists who work, research and live in languages other than English rarely or never write in their own mother tongues, which is a clear consequence of this language predominance (Montgomery 2013: 158) and in turn means that other languages lose their significance. It must also be considered that not all physicians in the world, not even in Western countries, are capable of reading and understanding medical literature in English (what Baethge [2008: 39] named ‘frictional loses’), and therefore new medical knowledge is spreading far more slowly than would be desirable (Graddol 2006).

An example of the issues caused by this imbalance is the disease brucellosis, which affects hundreds of thousands of people and animals worldwide and has been endemic in some European areas, but which occurs very rarely in the United States. A translation of a handbook on internal medicine originally written in the United States will be unlikely to include any reference to this illness and as such be of limited use in the training of European physicians, who would instead learn about diseases that are uncommon in Europe. Similarly, scientists might be working on issues which have already been researched by scientists in other countries, as was the case of the plant hormone gibberellin, which the Japanese had been working on for years, just not in English (Gordin 2015: 313). Again, this is all linked to the way research is disseminated and, most importantly, cited, as measured by the aforementioned impact factor. It all seems to constitute a vicious circle from which it is very difficult to escape.

Looking back at our history, we know now that the world tends to strive for some kind of common language to communicate innovation and research. Section 2 has shown that every era in which a massive translation activity was carried out required a lingua franca to translate from or into. We are witnessing the same phenomenon today as English expands and is simultaneously challenged by languages such as Spanish or Mandarin (Montgomery 2009 and 2013; Graddol 2006: 113). Similarly to a number of examples from specialised journals which also publish in English, we can look at the cases of Nature, which publishes Chinese, Korean and Japanese editions, or Science, Science Signaling and Science: Transnational Medicine, with English and Japanese versions (Olohan 2016: 143).

As mentioned, a number of voices from the scholarly community advocate the use of national languages together with English as a lingua franca, which eases communication but does not prevent native speakers of other languages from doing research, writing and
translating from and into their mother tongues (Montgomery 2000, 2004, 2009; Ammon 2001, 2010, 2012; Beecroft 2007; Gutiérrez Rodilla 2014). Medical research should be maintained in the mother tongue in order to enrich the language and, an utmost relevant factor too often forgotten, to keep research and medical knowledge available to native speakers in those countries where the research has been developed and financed. The disappearance of native languages from domestic research is a ‘true diminishment’ (Montgomery 2013: 116). English must be learnt, spoken and written in order to have better opportunities on the international scene and to participate in the international medical knowledge exchange, but by doing so, one is not obliged to abandon their mother tongue. Scientists and physicians must bear in mind they belong to an international community but also to a national one that they ought to defend and promote on the international stage. And for these purposes, translators will continue to play the role that historically rendered them the ‘pollinators of science’ and spread medical knowledge throughout the world.

Notes
1 The author wishes to acknowledge her participation in the Research Project PID2019-109565 RB-I00/AEI/10.13039/501100011033, funded by the Spanish National Research Programme.
2 The town of Salerno (near Naples, Italy) was home to one of the most renowned schools of medicine in Europe since Roman times. From the tenth century onwards, its doctors were known for their practical skills. Both the monastery of Monte Cassino and the town of Salerno played an important role in the transmission of Arab and Greek science, mainly thanks to the monk Constantine, whose work consisted not just of translating, but also of paraphrasing and adding comments on the original Arab and Greek texts and who ‘formed one of the bases of medical teaching for several hundred years’ (Vickery 2000: 38).
3 In 280 BCE Ptolemy founded the Museion of Alexandria, an interdisciplinary institution for teaching and research purposes where scholars would have the best working conditions to develop and widen their knowledge (free meals, housing, no taxes, high salaries, etc.; see Nesselrath 2013: 73). This centre’s orientation remained Aristotelian. However, it was intended to counteract the influence of the Athenian schools of anti-monarchist ideology. Later the Library was founded, which came to have thousands of volumes and a large number of copyists, together with facilities for the dissection of corpses and for the study of plants and animals, thus becoming the most prestigious and important centre of its time. Its great rival was the Pergamon Library, founded in the 2nd century BCE (García Bravo 2004: 28).
4 Similarly to what has been written about Toledo’s School of Translators, it has been argued whether this so-called House of Wisdom ever existed as such:

Reliable evidence for this legend, however, is virtually non-existent. Dimitri Gutas, who has recently reviewed the available sources, concludes that if such a House of Wisdom ever existed, it is best explained as a library where translations from Persian into Arabic were stored. In any case, it was completely unrelated to the Graeco-Arabic translation movement of the ninth century.

Pormann and Savage-Smith 2007: 29

In fact, Gutas in his 1998 book Greek Thought, Arabic Culture does not mention the House of Wisdom as such (just the Imperial Library), but instead sets out an erudite and thoroughly well-documented list of the available sources of scientific knowledge for the historical study of that period, ranging from Greek manuscripts (both in the Islamic realm and in Byzantium) to their copies and their Arabic translations (Gutas 1998: see especially Chapter 7: 151–186 and the table on pages 182–183). He concedes that there was indeed a climate that facilitated the Graeco-Arabic translation movement (1998: 54–59).
5 Translation from Spanish by Armillas-Tiseyra (2016: 197).
6 With around 130 million native speakers or near-native speakers, German is the most spoken native language in the European Union, and the official language of seven countries. Data from Tatsachen über Deutschland, available at www.tatsachen-ueber-deutschland.de/de/rubriken/kultur-mediend/attraktive-sprache (accessed 20 July 2019) and the article ‘Man spricht Deutsch’, from the German Foreign Office (Auswärtiges Amt), available at www.deutschland.de/de/topic/kultur/deutsche-sprache-ueberraschende-zahlen-und-fakten (Accessed: 20 July 2019).

7 ‘Anglophone countries’ understood here in Ammon’s definition (2012: 334), i.e. the ‘inner-circle English-speaking countries’, which include the United States, the United Kingdom, the Republic of Ireland, Canada, Australia and New Zealand.

Further reading


This monograph introduces both students and researchers to the role of translation throughout human history, from the invention of the alphabets to the emergence of national languages together with the transmission of cultural and religious values, as well as the dissemination of knowledge addressed in Chapter 4 (pages 95–124).


Like the previous monograph, this seminal work gives an insight into what translation has meant to the dissemination of knowledge in ancient and medieval times. Although a third of the book focuses on astronomy, the translation movements that took place in the past, including works on medicine, are explained in great detail.


This book focuses on how science made its way through history. Although not specially focused on health nor translation, both aspects play an important role throughout the work. Particularly interesting is the overview of science spreading from beyond the West and of the development and organisation of science in past and present times.


Written in Spanish, it has not been translated into any other language. Although it was published more than 20 years ago, it still offers an outstanding overview of the development of medical language through history, in which translation plays a major role. This work could be a first reference point for these issues for undergraduate and postgraduate students who are new to the field.

Related topics

Medical Translations from Greek Into Arabic and Hebrew, Translations of Western Medical Texts in East Asia, Medical Humanities and Translation

References


Carmen Quijada Diez


Medical research through translation


