The Role of Translation in Language Change: A Corpus-based Study on English Influence on the Arabic Passive

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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Abstract

Studies conducted around the world have shown that the structures of various languages have shifted over time towards that of English. This phenomenon could be attributed to the use of English as a lingua franca or to these languages’ contact with English via translation. This thesis investigates this shift towards English-language structure in translated and original Arabic scientific texts. To this end, I developed a diachronic corpus for scientific articles dating between 1997-2000 and 2016-2018 to generate findings for this genre. The study used both parallel and comparable corpora, allowing an investigation of the influence of English not only on translated texts but also on original scientific texts written within the same time frame. The results reveal that the English language has affected the Arabic passive voice structure in translated scientific texts, and that the English passive voice structure seems also to have affected original modern Arabic scientific texts. As for the agentive passive, English does not seem to have increased its influence between 1997-2000 and 2016-18 in the translated texts as most agentive English passives are translated into active Arabic sentences in both the 1997-2000 and 2016-18 corpora. There also does not seem to be a significant increase in the agentive passive in original texts between 1997-2000 and 2016-2018.

Keywords: language change, corpus-based translation studies, language contact in translation, translation and language change, scientific texts, scientific article translation, passive voice, agentive passive, Arabic language.
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1.1 Introduction

Globalised communication in numerous areas of modern life is leading to an increased demand for English texts to reach different linguistic and cultural communities. This emphasis on English has led to a significant increase in English-into-Arabic translations, and vice versa (Al-Dabbagh, 2005). The extant literature shows that translations can leave their trace on translated texts (Baker, 1998) and the linguistic development of native languages (Dingwaney and Maier, 1996; Dickins et al., 2016) Furthermore, researchers have highlighted the ongoing debates around the use of English as a global language and the associated impact of translation on Arabic (Sabbah, 2015; Reddawi and Meslam, 2015). Bernacka (2012) contends that translation cannot be considered a simple inter-linguistic process, as cultural and language-specific elements must also be considered. In addition, studies show the significant changes that English has brought to the Arabic language, including in its morphology and syntax (Hanania and Gradman, 1977). This research explores the influence of English texts on the Arabic translated passive structure in scientific texts. In Arabic, it is said the passive occurs much less frequently than in English, partly because Arabic grammar traditionally only marginally allows mentioning the agent in passive constructions (Al-Raba’a, 2013).

This thesis also explores whether the syntactic changes addressed occur in non-translated Arabic texts. To this researcher’s knowledge, no study has previously been conducted on this subject. Thus, this research is anticipated to contribute to existing knowledge, being particularly beneficial in the context of the fast-paced technological, cultural, and social changes currently taking place. This study uses the following system of transliteration as a system for typesetting Arabic examples.

| Arabic letter | ًا | ً | ًأ | ًب | ًت | ًث | ًج | ًح | ًخ | ًد | ًث | ًر | ًز | ًس | ًش | ًص | ًض | ًظ | ًع |
| Transliteration | ʾ | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o |
| Arabic letter | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ | ٍ |
| Transliteration | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ | َ |

Table 1.1. Transliteration System for Standard Arabic
1.2 The research questions

The questions that underpin this research are as follows:

1.2.1 In what ways has English affected the structure of the passive voice in scientific texts translated from English to Arabic?

1.2.2 In what ways has English translation encouraged the employment of English passive voice structures in non-translated (original) Arabic scientific texts?

1.3 Summary of chapters

To answer these questions, two corpora, a parallel corpus and a comparable corpus (with four sub-corpora) were built. The parallel corpus was used to answer the first question, and the comparable corpus the second. The parallel corpus consists of English scientific texts and their Arabic translations, each written in the periods of 1997-2000 (parallel sub-corpus 1) and 2016-2018 (sub-corpus 2). The comparable corpus consists of original Arabic scientific texts written during the same periods.

In the parallel corpus, the passive structures in the 1997-2000 English texts were compared with their Arabic translations (parallel sub-corpus 1). In the next stage, the passive structures in the 2016-2018 English texts were compared with their Arabic translations (parallel sub-corpus 2). Turning then to passive voice frequency, the 1997-2000 English texts were compared with the 1997-2000 Arabic original texts, and the 2016-2018 English texts with the 2016-2018 Arabic original texts.

In the comparable corpus, the 1997-2000 original texts were compared with the 1997-2000 translated texts (comparable sub-corpus 1), the 2016-2018 original texts with the 2016-2018 translated texts (comparable sub-corpus 2), the 1997-2000 original texts with the 2016-2018 original texts, and the 1997-2000 translated texts with the 2016-2018 translated texts.

All the English scientific texts were published in reputable international journals, including *Nature* and *Scientific American*. The translations were done by professional translators and published as official online versions, including on *Majallat Al-oom* and *Lilelm*, while the original Arabic texts were retrieved from published books or official online journals. The
corpora were not computer corpora in the usual sense. The analysis was primarily conducted manually.

Chapter 2 of this study provides a general background to syntactic change and the influence of global English on other languages. There is an investigation of the situations that have facilitated structural change in languages, as well as the European and non-European languages that have experienced English translation-induced language change. This chapter also presents a summary account of the Arabic and English languages and explains how these languages came into contact. The use of the passive voice in English and Arabic is analysed in-depth, and the differences between the English and Arabic passive voice are detailed, covering structure, use, passivisation process, medio-passive, transitivity, and agentive passive. The translation of the passive voice is then discussed. The chapter examines the methods used to translate the passive voice from English into Arabic, as identified in the existing academic literature. This is followed by consideration of passivisation in the Holy Quran, how the passive voice is translated from Arabic into English, and, for comparison, how the passive voice is translated from English into a selection of other languages (namely, Indonesian, Czech, German, Persian, Greek, Chinese, Catalan, Japanese, and Italian).

Chapter 3 comprises two main parts: the theoretical framework and the methodology. It begins by introducing the notion of a corpus: definition; the reasons for employing corpora; and their uses, advantages and disadvantages. The study then focuses on the types of corpora used in translation studies (i.e., parallel, comparable, and multilingual). Parallel and comparable corpora are discussed in detail, including their uses, advantages, and disadvantages.

The methodology section of Chapter 3 discusses the design and development of the corpora for this study; the selection criteria for the texts in the corpora; the genre of these texts (and why this genre was chosen); the source of the texts (Nature Magazine, Scientific American, Lilelm, Majallat Al-ooloom, and published scientific books); the data size; and how the corpora were processed. This is followed by a consideration of the available options for marking-up a corpus. There is then a step-by-step description of how the 1997-2000 and 2016-2018 parallel corpora were built, including the software used, and a detailed discussion of the results. The use of the passive voice in scientific writing is revisited, and historical trends in the use of the passive voice in writing are considered. This chapter concludes with a section discussing copyright issues and the software used to build the parallel corpus.
Chapter 4 deals with the analysis and discussion of the findings. This includes reference to the translation procedures used to translate the passive voice from English into Arabic, the structure of Arabic passive structures, the treatment of the English agentive passive, the passive verb form, and the measures of the passive verb in both the 1997–2000 and 2016–2018 parallel corpora. Next, the 1997–2000 and 2016–2018 comparable corpora are analysed. There is a preview of the texts used and analyses of the structure of the Arabic passives, treatment of the Arabic passive, the passive form context, and the measures of the passive verb.

The final part of this chapter compares the 1997–2000 and 2016–2018 parallel and comparable corpora results. The comparison includes the similarities and differences between the procedures used by the translators of the 1997–2000 and 2016–2018 translated corpora, as well as the structure of the Arabic passive, the treatment of the agentive passive, the frequency of use of the passive verb, the passive form context, and the measures of passive verbs in all corpora.

Chapter Two

Literature Review

This chapter presents a broad background, which is aimed towards helping specialist and non-specialist readers understand the wider impact of translation on language change. It also aids non-Arabic speakers in understanding the structure of the Arabic language. Moreover, it provides evidence that the influence of the English language is not limited to the Arabic language but carries over to other languages as well.

2.1 Syntactic change and the influence of global English and English translation on other languages

The phenomenon of globalisation accompanied by the use of global English is spreading continuously. The spread of the English language today has never been achieved by any other language in recorded history (Johnson, 2009:143). Geographical-historical factors explain how English reached this position of dominance, and socio-cultural factors explain how it has maintained its status (Crystal, 1997:29).

The geo-historical factor began with the voyages of exploration and colonisation that took place in the Americas and the rest of the world. The spread of English (initially in the form of Old English) in fact started much earlier, in the fifth century, after its arrival in England from northern Europe. During that time, the English language mostly spread locally, and its global influence did not begin for another 1,200 years. Following English expeditions to America, the country now known as the United States became the largest recipient of migrants in the world. The first permanent English settlement began in 1607. By 1640, the number of English immigrants had reached 25,000. By 1720, when the Irish immigration increased, the number of Irish and Scottish immigrants had reached 50,000; and by 1790, the total population had reached 4 million (ibid, 31-33). In the 100 years following that, migration extended to the western parts of the country and the population came to exceed 50 million.

Despite the presence of other European languages – such as Spanish, French, Dutch, and German – and a number of African languages in what is now the United States, English was used to maintain American colonial unity. It bought people together and ensured a common ground during that time. English also spread to Canada and the Caribbean, as well as Australia, New Zealand, South Africa, West Africa (including Sierra Leone, Ghana, Gambia, Nigeria,
Cameroon and Liberia), East Africa (including Botswana, Kenya, Lesotho, Malawi, Namibia, Tanzania, Uganda, Zambia and Zimbabwe), South Asia, South-East Asia (including Hong Kong, Papua New Guinea, Singapore, and Malaysia) and the South Pacific (ibid).

The spread of English was also helped by the unprecedented expansion of access to knowledge through advances in technology, especially transportation, which enabled greater distribution of English books and brought people closer together. In the past 20 years in particular, the internet has pushed people towards using English as the primary means of expression, as well as giving them easy access to English language-based material in the comfort of their homes. The dominance of English in the media has played a major role in the spread of the language, especially following the invention of new printing technology, advertising, broadcasting, cinemas, and music, which have mostly been in English (ibid, 100). It has been suggested that the simple nature of English grammar and vocabulary makes it more suitable for advertising, writing, and music than other languages, which has helped in raising its popularity (Johnson, 2009:136). However, the popularity of a language has less to do with its nature and more to do with the power of the states in which its core speakers live, and the English language is not simple and easy for all learners. Germans might find English relatively easy to learn because the two languages share many similarities. However, the native speakers of languages belonging to different language families – such as Japanese – find English more challenging.

Due to different historical and other circumstances, people often identify English as the international language of business, science, medicine, and even journals and research reports (Sano, 2002). Johnson (2009:133) conducted an interview-based study when she was teaching at an international programme on ‘Globalisation in Perspective’. Her subjects were students – young adult English language learners from Beijing, China, as well as adult English language learners from Maastricht in the Netherlands. All the interviewees reported economic reasons as their motivations for learning English. That acknowledged, there are different reasons for learning a language, English in this case, including personal and cultural factors: to communicate with English-speaking relatives or friends; to play games online; to watch media and read literature in English; to take online courses in art, cooking, music, and so on; and/or to travel around the world, etc.

Businesses looking to grow multi-nationally must find cost-effective ways to interact. In attempting to streamline their communication, many businesses have adopted the use of
English throughout their organisations. Germans use English to communicate with Malaysians, and Saudis use it to communicate with Japanese. In fact, it is estimated that approximately 85% of international organisations use the English language. In addition, in Europe, numerous business fields favour those who speak English along with their native language, paying them 25–35% more than their non-English-speaking counterparts (ibid).

English, however, does not dominate all fields of science. According to Berghammer (2008:217), regarding the use of English, there are three categories of sciences: (i) those such as physics, which use English as their lingua franca; (ii) those such as economics, which are influenced by English; and (iii) those such as law, which use the native language of their country. It is reported, in non-English speaking countries, English-language publications jumped from 31% of the total in 1970 to 58% in 2000, while research by French scientists published in English went from 16% of the total to 93% between 1970 and 2000 (ibid). This unification of the language of science is said to affect researchers’ use of their native language, put users of other languages at a disadvantage, and put pressure on researchers to learn and use English (or pay for their papers to be translated into English). Its use is even seen as a danger to standard English. However, it benefits both readers and authors, as it ensures greater accessibility and distribution of knowledge and limits the duplication of work.

It has been suggested that between the 13th and 18th centuries, the term ‘nomen proprium’ referred to a vernacular adopted as an auxiliary language by merchants, soldiers, and pirates who spoke different languages across the Mediterranean coast (Fiedler, 2011:81). UNESCO broadly defines a lingua franca, as used today, as a language used to facilitate communication between people who do not share the same native language. While traditionally, a lingua franca is not the native language of its speakers, this is only partially the case with English, which is considered a universal lingua franca while being the native language of a considerable number of its users (Fiedler, 2011). According to Kachru (1985, cited in Fiedler, 2011: 80), the English language around the world is divided into three circles:

- **Inner circle:** this is when it is used as the official language of a country and the native language of its speakers, for example, the UK.

- **Outer circle:** this is when it plays a large role in a country as a second language and is used in administration, media and education, for example, Singapore.
• Expanding circle: this is when it is used as a foreign language and does not have an official status but is learnt for international communication purposes, for example, Saudi Arabia.

It is difficult to know the number of people who speak English in every country because a calculation is affected by many factors, including the lack of data from some countries and the difficulty of measuring a person’s command of a language and assessing whether it is good enough for them to be considered fluent. However, in the early 2000s, a modest estimate of the number of people who speak English as a first language (the inner circle) was 329 million, with some estimating closer to 400 million. Second language speakers of English (the outer circle) were estimated to amount to 430 million people (ibid, 67). The size of the expanding circle (i.e., speakers of English as a foreign language) is the most difficult to estimate, primarily because there are so many levels – from beginner to advanced – and it is difficult to measure a level of language competence. The British Council, as well as market intelligence, have reported that approximately a billion people are learning English (attending courses or taking exams) (ibid, 68). Interestingly, Graddol (1999, cited in Fiedler, 2011: 71) suggested that the number of speakers of English as a first language would decline from 1950 to 2050, with the rise of other countries – such as China – with larger populations (ibid, 71). However, 20 years after Graddol’s prediction, the number of speakers is still increasing.

According to Crystal (1997:9), a language does not become global simply because of its structural properties, the size of its vocabulary, its history, its culture or religion. It becomes global for one reason: the power of its speakers – specifically their political and military power. Arabic, French, German and Spanish have each been able to develop an official international status, but only five languages in recorded history have been able to have an overpowering impact as culture carriers. These are Arabic, Classical Chinese, Greek, Latin, and Sanskrit (Thawabteh, 2011). Johnson (2009: 141) reports that the dominance of the English language may be a passing phase as history shows that many languages have risen and fallen in line with the powers of the people who spoke them. It is claimed that the glory of the English language will not last much longer with other languages earning more recognition as the countries that speak them gain more economic power and more dominant global roles. Although English is dominant, it is spoken as a first language by only a minority of the world’s population and not all of those who speak it as a second language have full command of it. Other languages like
Spanish, Arabic and Chinese are still very effective in reaching large audiences. There is bound to be another competitor to the status of English language eventually.

The second reason why a language becomes global is that human beings naturally tend to dislike and fight against domination. There are many people who refuse to learn English even when they migrate to English-speaking countries. For example, a large proportion of South Asian (Indian, Pakistani and Bangladeshi), Chinese and other first-generation migrants who came to the UK never learnt English or make any efforts to do so. Instead, they stay connected to their own people, watched television in their native language, and stay closely tied to their community’s sense of identity and culture, even while living in a new country and despite the country’s efforts to include them and teach them their language.

Thompson and Begum (2005: 15) conducted a study interviewing 30 people of a similar number of men and women from India, Pakistan and Bangladesh communities living in the UK. The interviewees’ ages ranged between 49 and 86, and all participants had arrived in Britain between 1956 and 1972. All had made return visits to their countries of origin, and most had close relatives there. The data were collected by analysing the pre-interview questionnaires and the interview transcripts.

More than a third of the interviewees described themselves as fairly or fully fluent in English, although the majority had a limited command of English and a minority did not speak any at all. Almost all spoke their native tongue at home, and English was kept as the language for the outside world. Some had no or limited interaction outside of their own communities.

A significant number of Chinese people who come to the UK in search of opportunities can only speak their own language. This is especially true for those who run their own businesses, including shops and restaurants. It has been reported only 50% of the Chinese living in the UK and aged 45-64 years can speak fluent English. In addition, they are less likely than other groups to register as unemployed or seek help from the government, and it has also been shown that language can form a barrier to public services (Chan, et al. 2004: 3). While it is true that education is obligatory for all UK citizens, not everyone has access to it, and part of the population is not legally registered with the government. Chinese-majority and Pakistani-majority neighbourhoods exist in many English cities. It is, however, limiting to describe an
ethnicity using one word (e.g., ‘Pakistani’), as most ethnicities involve sub-groups with ‘sub-
languages’ and different cultures.

Zuccotti and Platt (2016) conducted a study on the impact of neighbourhood racial
composition, focusing on five ethnic minority groups: Indian, Pakistani, Bangladeshi,
Caribbean and African. The study revealed that Pakistani and Bangladeshi women had lower
participation in the labour market and lower occupational accomplishment, and they were more
likely than other groups to have little to no contact with others outside their community
(Thompson and Begum, 2015: 19). There are some cities in the UK where ethnic minority
groups have a very large presence. For example, Leicester – where Indians make up 25.7% of
the population – has the largest geographical concentration of Asian citizens in Britain. In
Bradford, Pakistanis make up 14.5% of the population; and in Tower Hamlets, Bangladeshis
form 33.4% of the population (ibid: 11).

Chan, et al. (2004: 5-22). conducted a study on the unmet needs of Chinese people in the UK,
collecting samples from Chinese-concentrated areas and from other, more thinly spread areas.
The authors report that 39% of the Chinese population live in London and Manchester. In terms
of education, the respondents in Cardiff and Lincoln said they sent their children to Chinese
schools. However, due to a lack of funding, these schools experienced teacher shortages and
inadequate teaching materials. Crawley (2009: v) points to evidence that places are not always
available in compulsory education for immigrant children. Different ethnic groups are known
to have different educational outcomes, but the literature provides no clear explanation for the
disparities in educational performance among ethnic minority and immigrant children. This
situation may have improved in recent years.

For those living in countries where English does not have official status, students’ attitudes
towards learning the language are generally positive, and such students are generally highly
motivated, as confirmed by a number of studies in Malaysia, Bangladesh, Persia, Japan,
Turkey, Spain, Jordan, and Saudi Arabia (Ahmed, 2015: 9). However, it is common to see non-
English speakers who have graduated from English-medium universities unable to hold full
conversations in English. There are individuals who study English only to ‘pass’. Some will
memorise phrases, structures and sentences without understanding what they truly mean. Many
Chinese and non-English students in the UK rely on native speakers for academic and
commercial services. Some Chinese students choose international universities only because
they are seen as good alternatives given the limited capacity of Chinese universities, with status
and prestige attributed to those accepted into recognised Western and international universities (Edwards and Ran, 2009:1).

The attitude of English learners is one topic that has received its fair share of research attention. Various factors contribute to attitudes towards learning English, and it would be wrong to assume that all are positive – or indeed, all the same. For example, in India, English remains the language of prestige and economic power. However, people who learn English in their own countries might feel resentment towards the dominance of the language and view it as a threat to their culture or diminishing the status of their own language. Ahmed (2015: 8) reports that, when external pressure is the only reason for learning a second language, internal motivation can be poor and attitudes toward learning less positive. Power relations between languages can also affect the motivation to learn a language – for example, when individuals from a minority group are obligated to learn the language of a majority group. The attitude towards English could also be related to the variety. For example, in Ghana and Nigeria, educated people view speaking English to be acceptable, but the use of British pronunciation would be distasteful, as the aim is not to speak English like a native speaker (ibid).

The issue of the English language is complex in many ways. As explained previously, English initially rose to dominance because of the power of its speakers, as other languages had done previously. However, it has since reached peaks never reached before in recorded history by any language; and the more it rises in global status, the more other languages become obsolete. Johnson (2009: 143) reports that, by the end of the century, 50-90% of the world’s languages may have gone extinct. (i.e. following the deaths – and non-replacement – of their native speakers). For example, around the world – in the United States, Canada, Australia, and the UK – many of the offspring of migrants do not speak their parents’ native language, either because their parents spoke only English to them and did not teach them their native language, or because they learnt English from a young age at school and never attempted to learn their parents’ language. Some migrants do teach their children their native language; and as a result, their children become either ‘receptive bilinguals’ (receptive bilingualism is when someone understands but does not speak a language) or bilinguals who can speak the language only informally and cannot read or write it. This results in a new generation without a good command of that language, who may or may not teach it to their own children (second and third-generation immigrants), and that language may then begin its slow death. Alonso, et al. (2014: 3) confirm that this has been the case for the majority of the languages that have
migrated to the United States (with the exception of Spanish), including German, Yiddish, Italian, Chinese, Polish, Tagalog, Yoruba, Twi, Igbo and other Western African languages, Amharic, Somali, and other Afro-Asiatic languages, Haitian, Russian, French, and Arabic. In all these language communities, the native language remained for a period of time, only to be overshadowed then buried by English. For this reason, the United States has often been referred to as a ‘language graveyard’.

Bennett (2013: 172) defines ‘lingua franca English’ as a unique variety of the language, different from that spoken by native speakers or other culturally embedded forms. English did not exist as a lingua franca before the 17th century (Mauranen and Ranta, 2009: 1; Bennett, 2013: 172). It initially emerged as such due to British colonisation and retained this status after America became the dominant world power, following the end of the Second World War in 1945, as the official language of the United States (Berghammer, 2008: 216). The Bologna Declaration of 1999, which required the universities of 29 European countries to follow the British system, played a major role in increasing the influence of the English language, resulting in greater demand for translation. Academics from all around the world strive to get their work acknowledged globally, which has created increasing demands on translation from different languages into English. Interestingly, it has been noted that while academic works translated from English tend to adhere closely to the source language, those translated into English tend to be ‘domesticated’ to ensure their acceptability (Bennett, 2013: 172).

The increasing emphasis on English has led to a significant increase in English translations (Al-Dabbagh, 2005). The extant literature shows that the nature and process of translation leave their trace on translated texts (Baker, 1998) and on the linguistic development of native languages (Dingwaney and Maier, 1996; Dickins et al. 2016). Thus, researchers point out that there are consistent debates concerning the use of English as a global language and the associated impact of translation on other languages (Sabbah, 2015; Reddawi and Meslam, 2015).

As mentioned, some may view the English lingua franca as a threat to their own native languages, believing it to be erasing their culture and identity; but this concern is debatable. Hüllen (1992, cited in Fiedler, 2011:82) observes that English as a global language is used as a language of communication and not as a language of self-identification: thus, the lingua franca is used for communication purposes, with non-native speakers not identifying with it as
a cultural symbol. It is a question for the individual whether they want to use the language to communicate in a specific situation or as a bearer of their identity (ibid). Although the English language is spreading around the globe, it is not British, Australian, or Canadian cultures that are primarily being promoted, but rather that of the United States. A considerable number of people, particularly the young, are influenced by American culture, lifestyle, Hollywood films, pop culture, and the ‘American dream’. In recent years, with the emergence of the internet, American culture has become ever more popular and desired by people globally, slowly erasing local traditions and national identities, despite not being of superior value in any way. This is not a black-and-white matter: there is no right or wrong answer on the role of English as a global language. Furthermore, it is not possible to predict the future of English across the world.

Ironically, in the United States, the Spanish language – that came along partly with the immigrants from the Spanish colonies during the second part of the 19th century, but primarily with the 50 million migrants who have arrived from Latin America in recent decades – has become widespread. Statistics show that the United States comes second only to Mexico for number of Spanish speakers. The Spanish language is not only used in many homes and in daily informal communication in cities across the United States; it is also used in professional fields and public life (Alonso, et al. 2014: XIV). This dominance can be attributed to various factors, including the existence of large extended families and strong family ties; strong associations with – and trips to – the home country; a strong Spanish media presence in the United States, especially in cinema and pop culture; the global expansion of Spanish; and most importantly, the continuous flow of Latin American immigrants into the United States over the last 50 years, maintaining a continuous pool of first-generation speakers.

2.1.1 Language change
When a language becomes global, the clearest current example of this being English, it will inevitably affect the other languages with which it comes into contact. For example, it is argued that the influence of English on the Italian language is pervasive and noticeable even to the ordinary person, with impacts observed in various fields – ranging from the formal registers of science and medicine, and the media and journalism, to the informal registers of everyday conversation (Demata, 2015). French and Italian exercised similar effects on other European languages in the past; but the current economic, technological, cultural role that English plays in the world has given it greater power in various fields and linguistic disciplines, such as
semantics, lexicology, phonology, morphology, syntax, sociolinguistic, etc. (Varga, et al. 2011).

During Italy’s fascist era (1922–1945), the replacement of Italian words with foreign ones was punishable by fines and even imprisonment. Nonetheless, the beginning of the 20th century saw the emergence of English loanwords in the Italian language, even though it was a time when any sort of foreign word was stigmatised and forbidden. Following the end of that era and up to the early 21st century, English has been seen as a liberating language, associated with cosmopolitanism and the modern world. Italian speakers use English words instead of their available Italian counterparts because they find the English alternatives more fashionable, prestigious, and authoritative. It is estimated that at least 2% of Italian vocabulary consists of English words. By contrast, the English language is not perceived the same in all the languages it came in contact with. For example, the war against the incursion of English loanwords that try to enter the French language is well organised and is managed by coordinated institutions that aim to protect and maintain the French language’s qualities (Varga, et al. 2011; Demata, 2015).

Where languages come into contact, it is natural for one to influence the other. This occurs especially when people view one of the languages as having a higher status than the other. Minority languages are generally influenced by dominant languages spoken during the same period. Moreover, linguists acknowledge that language contact leads directly to language change (Thomason, 2001). This is a gradual process and may involve several generations of speakers; it may even extend over centuries. For example, it is well documented that Modern Standard Arabic (henceforth MSA), the modern variety of Classical Arabic (henceforth CA) which developed over the last 200 years, has been influenced by European languages due to Western cultural influence (Al-Khawaldeh, et al. 2014). Language change is not usually an intentional process. Over a historical period, language changes at every level of structure: vocabulary, phonology, morphology, and syntax (Kroch, cited in Baltin and Collins, 2000). It is not possible to predict language change, either internal or external (Božović, 2014). Tsai (2007:10) breaks down the possible outcomes of language contact into three types: language creation, language maintenance, and language shift.
Many Arab scholars reject the notion of simple language change, regarding any change as language decay and calling for protection of the ‘purity’ of the Arabic language. Hickey (2010) reports two reasons for this attitude:

- the general human yearning for immutability
- the association of a particular change with a social group of which the commentators disapprove (e.g., adults versus teenagers)

Nevertheless, Arabic was never a ‘pure’ or even homogenous language, in the ordinary sense in recorded history. On the contrary, even the earliest texts – including the Holy Quran – show evidence of syntactic and morphological variability (Holes, 2004:310).

When investigating language change, several scholars have examined different situations of language contact which impact languages. Languages can come into contact in different ways, direct and indirect (Hickey, 2010). In direct contact, speakers of one language come face to face with speakers of another language, mainly as a result of emigration, invasion, conquest, etc. In indirect contact, contact takes place through literature, the internet, television, radio, etc. Language contact through other media platforms can also be called ‘distant contact’. It is seen as one of the primary means for promoting the dissemination of vocabulary denoting ‘universal’ notions (in particular English vocabulary) to other languages (Tsai, 2007:10).

2.1.2 The influence of global English and English translation on the syntax of other languages

Most previous studies have focused on two major social processes that give rise to contact situations: conquest and immigration (Sankoff, 2005). Some scholars add a third process: bilingualism (Thomason, 2006). These factors are, however, not the only ones that trigger language change. McLaughlin (2011a: 22) suggests that translation is a mechanism that allows languages to influence one another, much like code-switching by bilinguals. Translation, hence, can result in language change. Translation is a form of language contact (Bisiada, 2011). McLaughlin (2011a: 22) argues that linguistic change induced by translation has influenced the evolution of most languages around the world.

The first traces of translated texts were found on stones and animal skins in Egypt, dating back to 3000 BC; but official translation may have started when Livius Andricus translated Homer’s Odyssey from Greek into Latin in 240 BC. Translation has always been a significant factor in the growth of societies and cultures and in the development of languages and bodies of
literature worldwide. For example, for many African languages such as Yoruba and Xhosa, writing systems were only introduced because missionaries and churchmen wanted to translate the Bible into the local languages. For this reason, these languages developed and consequently influenced the development of African literature (Sadiq, 2010: 2).

The history of translation can be divided into two periods: before and after the 19th century. Before the 19th century, most translated texts were concerned with religion, philosophy and literature. Between the 9th and 10th centuries, the House of Wisdom was established in Baghdad, where ancient works, such as those of Greek philosophy, were translated into Arabic. In the 19th century, translation gained more general importance in different fields as the method of communicating between scientists all over the globe. The 20th century is sometimes considered the ‘Translation Era’ (Mohammadian, et al. 2017: 23). Translation between languages generates contact settings in which lexical or structural changes may occur. The way in which one language reacts to another – whether by accepting, translating, or rejecting its elements – reveals its innate formal tendencies and the psychology of its speakers (Hoffer, 2002:4). The outcome of language contact through translation, as Božović (2014) reports, may be lexical, morphological, syntactic, and/or pragmatic/stylistic. Languages can influence one another via structural borrowing through translation, though lexical borrowing is more prominent than structural borrowing (Hoffer, 2002:3; Božović, 2014), and the latter is typically limited to syntactic borrowing (Božović, 2014).

Interestingly, with lexical borrowing, the level of contact dictates the extent of the linguistic features being borrowed – thus, the borrowing may vary from casual to extreme in degree and from strictly lexical to strong structural borrowing. Lexical borrowings may be subject to semantic alteration and incorporated into the phonological, morphological and syntactic patterns of the recipient language (Tsai, 2007:11). Božović reports that the translation of the Bible from Latin into English significantly influenced the lexicon of English, as can be seen in the English language today. A number of Biblical phrases are commonly used today in many genres such as politics, sport reporting, etc (2014, 521).

In a corpus-based study which uses the Lancaster Corpus of Mandarin Chinese and its translational counterpart, the ZJU Corpus of Translational Chinese (each totalling one million words), Xiao and Dai (2014, 7) compared original Chinese texts with texts translated into Chinese from English, looking at their lexical density, high frequency words, and lexical and
grammatical properties. The texts are taken from materials published in China, and – for 99% of the translated texts – the source language was English. The authors revealed that, compared with the translated texts, native-Chinese texts have higher lexical density and greater information load, while translated Chinese texts have a higher percentage of function words. Interestingly, they report little difference in lexical variability between the original and translated texts. The study also revealed that translations had not necessarily simplified the original texts, as the average word length was longer. In addition, the translated Chinese texts made greater use of auxiliaries, pronouns, prepositions, numerals, and conjunctions. In most languages, translations use a higher frequency of function words, and auxiliaries were predictably more common in the Chinese translations than in the original texts. Thus, the authors conclude that Chinese translations are highly influenced by their English source texts.

Some studies claim that structural change can only occur when the source and receiving systems are very similar (Meillet, 1921:87, cited in Thomason, 2006). This is true to a certain degree: when the source and receiving language belong to the same language family and are very closely related, with no significant typological differences between them, and when they share key structural and lexical features, structural diffusion from one language into another is more common (Thomason, 2006). On the other hand, it is argued that it is quite possible for languages that do not belong to the same family and which have different structural and lexical features to influence one another. For example, although large groups of Japanese speakers have no significant cultural contact with English speakers, and the two languages belong to different families, the Japanese language has borrowed significantly from English (Hoffer, 2002:13).

There is growing academic interest in translation-induced language change; and such changes can be traced in many European and non-European languages that are fundamentally different from one another. For example, mainland Chinese has also seen translation-induced syntactic changes. Cao and Yu (cited in Wang and Sun, 2015: 209-210) published a study on Chinese that confirms contact-induced grammatical features have been identified in the documents between the Han and Tang Dynasties, a period which saw the translation of Buddhist sutras from Sanskrit into Chinese. The influence of Sanskrit resulted in new grammatical forms in Chinese, resulting from Sanskrit or Pali translations and language contact between people of various ethnic groups. English translation-induced language change is observed in many
languages, including Taiwanese Mandarin, mainland Chinese, Japanese, Hebrew, Punjabi, German, Greek, French, Czech, Italian, Swedish and Arabic.

Several studies have identified English-derived syntactic feature changes in Taiwanese Mandarin (Wang, 1945; Kubler, 1985; Hsu, 1994; Tsai, 2007). Kubler (1985) examined the influence of English on Taiwanese Mandarin at the phonological, syntactic and lexical levels, and Kachru (1994) confirms the existence of various translation-initiated changes in Taiwanese Mandarin. One characteristic that reflects the impact of English on the syntactic level of Taiwanese Mandarin is alteration in word category, order, or function within a sentence (Tsai, 2007:59). Similarly, Gao (2006) presents a study on the Englishisation of the Chinese language in syntax, arguing that many language characteristics reflect the impact of English on the structure of Mandarin Chinese. Furthermore, Xie and Wang, (2002, cited in Xia, 2014) contend that translation has resulted in a tendency towards Europeanisation at the syntactic level in modern Chinese. Xie (2001, cited in Xia, 2014) confirms that translation from English into Chinese has resulted in changes in parts of speech, frequency of specific sentence structures, formalisation of syntax, and position of subordinate clauses within complex sentences. Wang (2002, cited in Xia, 2014) reports that translation into Chinese from English has resulted in an increase in the use of the passive voice, as well as greater complexity and variation within sentence structures.

Japanese has also been influenced by translation, incorporating many thousands of English words. Many English nouns are now used as Japanese verbs: for example, shoppingu suru ‘to do some shopping’, adding Japanese suru, meaning ‘to do’, to the noun ‘shopping’ to create a verb. In some cases, whole phrases are borrowed into Japanese: for example, redl fusuto ‘ladies first’ and man tsli man ‘man-to-man’. Moreover, numerous English adjective and adverb loanwords take Japanese adjectival and adverbial endings (Kay, 1995).

Verma (2015) investigated the impact of English and English translations on the Punjabi language. The author argues that changes have been seen at both the lexical and syntactic levels, with clear changes in word structure and stress shift.

In a remarkable study, House (2006:43) examined the influence of English translation on other European languages, including German, French and Spanish. House took a case study approach, with a detailed contrastive analysis comparing English source texts, German
translations and German original texts. Her results reveal that the German texts underwent changes in terms of text function and register-specific variation of the use of certain linguistic means. Furthermore, she demonstrates that the changes in the German language are not realised by a new repertoire of linguistic means, but rather the changed employment of existing linguistic means. She adds that the German language system seems to change when it comes into contact with English. German translations thus tend to be closer to their English source texts than to corresponding German original texts. In addition, German linguistic means belonging to the functional categories of conjunction, pronouns and particles adapt to English conventions of textuality. In a more recent study using a diachronic comparable corpus and a diachronic parallel corpus, Bisiada (2016) observes a shift from hypotactic, hierarchical structures towards paratactic, incremental structures in the German language, which the author attributes to contact with English through translation.

Plecháčková (2007) suggests in a study investigating the effects of English translation an increase in the use of the passive voice in Czech original texts, though it remains less common than in the English translations.

English translation has left its mark on Italian syntax as well. McLaughlin (2013) conducted a case study that combined fieldwork with the linguistic analysis of a corpus of translated texts and found that news translation was a source of syntactic borrowing in the Italian language. Musacchio (2003) conducted a corpus-based study comparing English-Italian translations of popular physics articles with a corpus of original Italian articles on the same topic, concluding that the translations tended to use English-type information structure. However, she noted that certain syntactic constructions that exist in Italian are often more frequently used when in contact with English. Megec (2015) also reports some syntactic-level changes in Italian, especially in economics articles, marketing and youth jargon.

Both professional linguists and observers of the French language have observed that French syntax is in the process of changing as a result of contact with English. In a corpus-based study, McLaughlin (2011b) investigates the influence of English on French syntax. Her results reveal that the increased use of passive and of verbal ‘-ant’ forms is due to English influence. Likewise, Monnier (2015), reflecting on French and English translations, concludes that translation has caused some changes in structures. Similar observations have been made about Swedish fiction translated from English (Gellerstam, 2005).
Thawabteh (2011) and Rouchdy (2013) note that Arabic has borrowed from English – most commonly, nouns (Thomason, 2006; Rouchdy, 2013). Some have argued that Arabic structure has not been influenced, and the language has only borrowed words from other languages (Khrisat and Mohamad, 2014:134). In a detailed study, however, Asfoor (2007) discussed the impact of translation from English into Arabic. While this included benefits – such as enriching the Arabic language with countless lexical items from different fields – these newly coined and combined words have affected the structure of the Arabic. The English language has influenced many of Arabic's linguistic features, including lexicon, phonology and phonetics, morphology, syntax and abbreviations. With respect to the lexicon, Asfoor reviewed the prefixes, suffixes, and affixes that are problematic when added to the Arabic language. While borrowing words from one language into another is very common, borrowing affixes that do not belong to the same language family is rare. For example, while Arabic and Turkish belong to different language families, many colloquial dialects have have borrowed -ji from Turkish, as in قهوجي gahwaji ‘tea-shop/coffee-shop, owner/worker’. However, the use of English affixes in the Arabic language is worrying in terms of the desire to maintain the historical continuity of Standard Arabic, because it imposes a linguistic element in a language where that element is not part of the traditional resources of the Arabic language. An example is using the suffix -ik in حامض الكبريتيك ḥāmiḍ al-kibrītik to translate the chemical component ‘sulfuric acid’ into Arabic. In phonology and phonetics, two new sounds have at least marginally entered the Arabic language from English (though they are also found in some Arabic dialects): the arrivals of ‘v’ and ‘p’ have required publishing houses to add new letters to the Arabic language represent these sounds. These are called ‘the triangle v’ and ‘the triangle p’, and can be written as ڤ, پ, respectively. This conflicts with the conclusions of Rouchdy (2013) and Khrisat and Mohamad (2014), who argue that Arabic is more likely to adopt English words by using the closest Arabic equivalents to the original sounds. In morphology, a number of free Arabic morphemes may be combined to produce compound words that are different in nature from standard-form Arabic words. For example, the English word ‘Indo-European’ is translated and used in Arabic as هندو أوروبية hindūrūbī. There is a tendency to use English syntactic structures in Arabic sentences. For example, in English, ‘more’ is often followed by an adjective or an adverb to express the comparative. This usage is increasing in the Arabic language at the expense of original structures. For instance, أكثر دقة ‘aḵṭaru diqqah ‘more exact’ is used instead of أدق ‘adaqq ‘more exact’. Similarly, while abbreviations are used in Arabic, they only occur
in certain contexts and specific fields, such as the Quran and the Hadith. For example, ﺍٰ ﻦ‘ ﻲh’ is used to refer to quoted words. In English, however, abbreviations are very common and found in all fields, even in spoken conversations. However, abbreviations are now used more frequently in Arabic than they once were. For example, ﺍٰ h’ and ﻦ‘ m’ are used to refer to the Hijri and Gregorian calendars, respectively. Khrisat and Mohamad (2014), though very beneficial and insightful, is general in scope and provides only an overview of the linguistic features of the Arabic language that have changed as a result of translation. All the studies which I have considered in this section highlight partial links between the process of language contact and change and translation.

2.2 Background: origins of the Arabic and English languages

2.2.1 Origins of the Arabic language

A brief summary of the history of the Arabic language is necessary to provide a context for the linguistic concerns at hand. It would be wrong to assume the history of the Arabic language began with the spread of Islam. As a matter of fact, the earliest mention of the term 'Arab' dates back to the reign of the Assyrian King, Salmanassar III (858-824 BCE) (Al-Natheema, 2012). Some early first-millennium BCE epigraphic records mention Arabic; but evidence of Old Arabic is scarce, and little is known about the structure of the language. According to Yushmanov (1961), literary Arabic first arose from the ancient poetic language of the Arabs. Though every tribe had its own dialect, a unified language was used for poetry, which preserved it from disintegration. There is also some evidence of interaction between Arabic and a number of other Semitic languages and Greek (see Al-Jallad, 2020 for more information about Old Arabic). The Quran followed soon after and remains the model for the classical language to this day, being only slightly modernised to meet contemporary requirements. As a result, ‘Arabic is the only living language in the world whose books continue to make sense to its readers, linguistically, 1400 years after’ (Othman, et al. 2014). Moreover, Arabic has one of the few systems of grammar that was developed with little foreign influence (Lipiński, 2012).

Arabic is one of the most widely spoken languages in the world. It is spoken by more than 200 million people across the Middle East and North Africa, as well as being the ‘liturgical language’ (a language that is used mainly for religious reasons by people who speak another primary language) for over one billion Muslims across the world (Ryding, 2005; Shah, 2008). Arabic belongs to the ‘Semitic’ language family, a term coined in the late 18th century CE (ibid). The study of Semitic grammar (Arabic, Syriac or Hebrew) began with a desire to
establish correct readings and proper interpretations of the Holy Scriptures, the Quran, and the Bible, both in their formal and semantic aspects (Lipiński, 2012). The need to study and fix the rules of CA led to a rise in native Arab philology – i.e., the branch of knowledge concerned with the structure, historical development, and relationships of a language. By the end of the 8th century, Al-Khalil ibn Ahmad’s كتاب العين Kītāb al-ʕayn, literally meaning ‘The Book of The Eye’, and Sibawayhi’s الكتاب al-Kītāb, literally meaning ‘The Book’, set the foundations of CA grammar and lexicography (Ryding, 2014).

The influence of Arabic on other languages throughout history

The period of the 7th century and the beginning of Islam shaped the destiny of the Arabic language. The Quran plays a major role, not only as the word of God, but as an example of Arabic in its purist form. After the death of the Prophet Mohammad (peace be upon him), and during the spread of Islam, his followers identified the need to put the Quran into a written form. It was feared that, if they did not, it would be lost with the death of the Prophet’s followers, as there was an increasing number of Muslims from outside of the Arabian Peninsula who did not know how to read the Quran correctly. The Quran is believed to have been the first effort to standardise the Arabic spelling system (Aboelezz, 2015: 13-14).

With the huge expansion of Islam, Arabic began to exercise a strong influence on other languages and peoples, including non-Arab Muslims (Persians, Turkish, Indians) and on non-Arab groups that did not embrace Islam (the Mediterranean island of Pantelleria, the Balearic Islands) (Yushmanov, 1961), but used their own scripts to write Arabic (for example, Aramaic Christians used the Karshuni Syriac script; ibid). Arabic influence on other languages was most widespread between the 8th and 12th centuries (Othman, et al. 2014). Arabic linguistic influence extended to Europe, Africa and East Asia. Islam formed an empire that extended from Persia to Spain. Classical Arabic was not only used as a written language, it became the spoken language of the elite in formal situations (Aboelezz, 2015: 15). Arabic then became the primary language for scientific and cultural output throughout the Islamic empire. It was used by Arabs and non-Arabs, Muslims, and non-Muslims. Soon after the rise of Islam, scholars began analysing the linguistic properties of the Quran and focusing on the language of the text and the way it was written rather than merely the content and what it implied.

The following languages – and many others – have adopted words of Arabic origin (ibid).

- Bahasa – Indonesia
Arabic has left a particularly strong mark on Turkish and Persian. Turkish is a Turkic language sometimes regarded as belonging to the wider Altaic family, along with Japanese, Korean and Mongolian, Turkic being a sub-branch of the Ural-Altaic language family. It is spoken by approximately 74 million people in Turkey, and 3-5 million in some parts of Greece and the former Republic of Macedonia (NMELRC and AATT, 2011; García and Yapici, 2014). Turkish borrowed countless terms from Arabic during the Ottoman era, which lasted more than 600 years, from the 11th to the 19th century (Moya, 2008: 1). The language was even named ‘Ottoman Turkish’, after the founder of the dynasty ‘Osman’, whose name derives from the Arabic personal name عثمان ʿuṯmān. The influence of Arabic resulted from direct rule and religious ties. The loaned Arabic terms used in Turkish are not limited to certain fields, such as agriculture, as is the case in some languages, but rather are found in numerous fields – including literature and politics (Maalouf, 2009). The borrowing was not necessarily driven by any absence in the Turkish language, but rather by the prestige and status associated with Arabic (Moya, 2008). Before 1930, words of Arabic origin made up around 51% of the terms used in Turkish newspapers. However, in the late 1920s and early 1930s, Mustafa Kemal Atatürk promoted the de-Arabization of Turkish. This continued throughout the republican era, spearheaded by the Society for Turkish Language Research; and as a result, the percentage of Arabic words had fallen to just 26% by 1965 (Versteegh, 2001). Despite the loss of the rich Ottoman linguistic heritage and the systematic campaign waged against all traces of Arabic, Turkish today includes at least 6,463 words of Arabic origin.

Another language which has been profoundly influenced is Persian. The Persian language belongs to the Indo-Iranian, or ‘Indo-Aryan’, language family, which is a branch of the Indo-European language, a family that include some of the most widely spoken languages in the
world (e.g., Romance, Slavic, Germanic, Celtic, and Greek). It is the official language of Iran and spoken by approximately 67 million people. Persian has undergone multiple changes over the past 200 centuries, but the influence of Arabic has, without doubt, been the most significant. Arabic was the scientific, religious and official language of Iran until the beginning of the 11th century AD (6th Hijri century) (Tabasi, 2014). While some Persian terms were adopted into the day-to-day vernacular of the Arabs and arabicised after the Arab conquest of Iran between the 7th and 12th century AD (1st to 7th Hijri century) (Shakib, 2011), Arabic exercised a profound impact on Persian. This was not limited to the Arabic vocabulary incorporated into Persian, but also included the writing system, phonology, grammatical elements, semantics, and so on (Perry, 2002). Arabic began influencing Persian with the Islamic conquest of Iran in 650 AD, despite having a phonological and syntactic system very different to that of Persian – and despite Arabic and Persian belonging to different language families (Semitic and Indo-European, respectively). Over the following years, Persian has borrowed up to half of its vocabulary from Arabic. The Persian alphabet even changed from Pahlavi to a modified form of the Arabic alphabet, which includes all the 28 letters of Arabic plus additional four letters (Khansir and Mozafari, 2014). Tabasi (2014) states that Arabic has influenced the phonetic, phonological, and grammatical systems of Persian. Arab writers and poets have influenced Persian writers and poets, who began writing poems in both languages. Approximately 8,000 Arabic loanwords are currently in use in Persian – comprising 40% of an everyday literary vocabulary of 20,000 words (Perry, 2002).

2.2.2 Origins of the English language

English is the most widespread language in the world. Interestingly, it began life as a migrant language, arriving in England with the invading Anglo-Saxons in the 5th century. Together with German, Dutch and the Scandinavian languages (with the exception of Finnish), English is classed as a Germanic language. These all developed from an original language, sometimes called ‘Proto-Indo-European’. The Indo-European language family includes most European and some West Asian and Indian languages (Algeo, 2005:49).

It is reported that approximately 84 languages (Bielenia-Grajewska, 2009) – or more than 120, according to Darwish (2015) – have contributed to the English language lexicon. Languages that have influenced English throughout history include (ibid):

- French
• Latin: Wycliffe’s (John Wycliffe, c. 1330-84) first translation of the Bible from Latin into English resulted in a growth in Latinate lexical content and not only enriched the English lexicon, but also introduced at least 1,000 lexical items not previously found in the language (Božović, 2014: 516).

• Celtic languages: during the Germanic period, a number of Celtic words entered Old English, before settling in Britain. Examples include ‘rīce’ which means ‘kingdom’. Interestingly, some Latin loanwords entered English through the Celts. During the early years of English settlement, a small number of Celtic loanwords were acquired. For example, ‘cloak’, ‘badger’, ‘combe’, and ‘peak’ entered English during the Germanic period (Algeo, 2005: 252).

• Italian

• Greek

• Non-European languages, including Arabic

• Other Germanic languages (e.g., ‘noodle’, ‘angst’, ‘hamster’).

• Scandinavian languages: many old English words with ‘sk’ (sometimes written as ‘sc’) are of Scandinavian origin. These include ‘score’ and ‘scrub’. Examples of Scandinavian words that have entered Modern English include ‘rug’ and ‘ski’. Most loanwords are related to daily habits, suggesting that the Scandinavians were not socially superior to the natives (Campano, 2016).

• Spanish and Portuguese: lexical items entered English from Spanish between the 16th and 20th century. Examples include ‘alligator’, ‘avocado’, ‘chocolate’ and ‘tango’ (some of these having been previously borrowed into Spanish or Portuguese from native American languages). Portuguese has only influenced English during the modern period, with examples including ‘albino’.

• Indian languages (e.g., ‘avatar’ and ‘karma’ from Sanskrit).

• African languages: these entered English through Spanish and Portuguese (e.g., ‘banana’ and ‘yam’).

• Japanese (Bielenia-Grajewska, 2009) (e.g., ‘karate’, ‘kimono’, ‘origami’, and ‘karaoke’).

Algeo (2005:247) investigated the foreign contribution to the English language resulting from the Roman, Anglo-Saxon and Norman-French invasions. It has been argued that the mongrelised, pluralistic, inclusive and diverse characteristics of the English language have allowed it to succeed because it made use of the diversity of its speakers. Latin, French and
Greek are the three primary foreign sources of Modern English vocabulary. The Latin loanwords in the English language are clear. Latin influenced the English language during the Germanic, Old English, Middle English, and Modern English periods, and was learnt and used across Europe in both written and spoken forms. Latin was the language of religion, science, and literature. Without doubt, it is one of the largest sources of loanwords in English. The words ‘area’, ‘medium’, ‘orbit’, ‘urban’ and ‘urge’ all came from Latin. Latin first came to England through the Roman conquest in 50 AD, and the Roman period came to an end in 476 AD. Approximately 500 words of Latin origin were used in Old English before the Norman conquest, and the borrowing continued throughout the Middle English period following the Norman conquest. In some cases, it is impossible to tell whether a word has a Latin or French origin. However, an interesting difference between Latin and French loanwords is that Latin was introduced primarily as a written language, while French was spoken by the higher class and court in England following the Norman conquest. In the Modern English period, Latin became important again during the Renaissance (1530-1660), when there was a growing desire for knowledge. The desire to replace Latin with English resulted in a deeper understanding of old Latin and more loanwords, including ‘strict’, ‘alienate’, and ‘eradicate’ (Rita, 2012:6).

A large number of French terms entered Middle English during the late Anglo-Saxon period, when England had a close relationship with France, and entered Modern English following the Norman conquest by William the Conqueror in the 11th century that made French the language of the ruling class in England for about 300 years. As a result, many English words related to court, administration, and government have a French origin. These include ‘attorney’, ‘chancellor’, ‘country’ and ‘crime’. The influence extended to vocabulary, pronunciation, spelling, and grammar. Loanwords came from two key French sources: the Norman French spoken in England and central French, which later became standard French. French and Latin together had the most substantial influence on the English language. Somewhere between 25% and 70% (Thomason, 2001: 10) of the words that English has borrowed from other languages came from French. Some aspects of English syntax have been influenced by French. For example, while attributive adjectives in French normally occur after the noun, in English they typically come before it. However, adjectives borrowed from French retain their position, at least in specific phrases – for example, ‘secretary general’ and ‘princess royal’ (Thomason, 2001; Bielenia-Grajewska, 2009; Roth, 2010; Campano, 2016). Greek loanwords that entered English came through Latin and French. Examples include ‘mystery’, ‘comedy’, ‘dragon’, and ‘fantasy’.
2.2.3 Historical overview of Arabic-English language contact

During the Middle Ages, the Arabic and Islamic world came into contact with Europe. It is estimated that around 8,000 words from Arabic have been borrowed into European languages (Khrisat and Mohamad, 2014). Smith (2007) reports that Arabic words first entered the English language through French in medieval times. Hundreds of Arabic words entered English directly, while most came disguised as French, Spanish, or Latin words. Many of the great advances made by Arab scholars and scientists were passed onto Western Europe via the Islamic universities in Spain. Arabic spread across medieval England between the 11th and 13th century. However, the 16th century marks one of the darkest periods in the linguistic history of the Arabic language, especially in Egypt, Syria, and Lebanon. This was the period of the Ottoman occupation, when the language of the ruling class was Turkish, and the Arabic used officially showed a great amount of borrowing from Turkish (Aziz, 1967).

During the Renaissance, English contact with Portuguese and the French increased, which enriched English with Arabic terms. For example, sukkar ‘sugar’ and qutn ‘cotton’ are Arabic words that entered English through Spanish and Italian. English speakers came into contact with the prestigious intellectual centres of the Arab world, and it was largely through this contact that Arabic words entered the English language. From the 18th to the 20th century, Britain was in direct contact with arabophone areas in Africa and the Middle East. In Africa, Britain colonised Sudan and Egypt. In the Middle East, it colonised Aden, Oman, the Emirates, Qatar, Bahrain, Kuwait, Palestine, Jordan, and Iraq (Othman, et al. 2014). English has borrowed words from Arabic in the fields of medicine, music, religion, philosophy, mathematics, warfare, literature, astronomy, optics, physics, botany, trade, architecture, government, sovereignty, and geography, with the majority coming from fields of science (Daher, 2013, cited in Darwish, 2015). The 18th century also witnessed a great interest in translation, and missions were sent to Europe to bring ideas and inventions to the Arab world.

Alongside this, conscious efforts were being made to save the Arabic language, ridding it of loose style, weak structure, foreign words and expressions, and colloquialisms. A reform movement began in Syria at the end of the 19th century and had a remarkable effect on the development of modern literary Arabic (Aziz, 1967:13).
2.2.4. The influence of English on Arabic grammar

Arabic grammar has also been influenced by English in various ways:

**Parts of speech:** verbs of all categories (imperfect, transitive, intransitive, forced passive, etc.), nouns, pronouns, adverbs, and particles (including propositions and conjunctions).

**Verbs (Aziz, 1967: 79):**

- The imperfect: many modern writers underestimate the ability of the imperfect verb to indicate the future, overusing future particles such as سوف sawfa and السا sa-, which mean ‘will’, when they are not required because the future signification of the verb is indicated by the context. For example, ستبدأ الأم العمل غداً sa-tabda’u al-’umm al-ʕamal ġadan ‘The mother will start work tomorrow’. In this case, it would be acceptable to write the sentence without the sa- – namely, تبدأ الأم العمل غداً tabda’u a-l’umm al-ʕamal ġadan ‘The mother starts work tomorrow’. The usage with sa- seems to imitate the English ‘will’.

- The transitive: certain verbs that normally take direct objects began to be used with propositions governing the object. The proposition مع maʕa ‘with’, for example, which was not traditionally used with Form VI, began to be seen with this, reflecting the influence of the English ‘with’. For example, تبادل الحدايا مع اخته tabādal al-hadāyā maʕa uxtih ‘He exchanged presents with his sister’. This is more properly expressed by a Form III verb in Arabic, namely باذل اخته الحدايا bādal uxtah al-hadāyā ‘He exchanged with his sister the presents’. The ظادل مع tabādal maʕa ‘exchange with’ usage comes from the English phrase ‘exchanged with’.

- The intransitive: certain verbs in Standard Arabic traditionally have two objects. What these objects refer to has changed in more recent years. For example, the verb انتقد intaqad ‘criticise’ traditionally uses two objects: a ‘prepositional object’ that refers to a person, with the prepositional phrase على ʕalā, and a direct object that refers to a thing. For example, the sentence انتقد الكاتب على كاتبه intaqad al-kitāb ʕalā kātib-ih ‘He criticised the writer for his book’ (more literally ‘He criticised the book over its writer’), the direct object is the thing الكتاب ‘the book’, and the ‘prepositional object’ is a person الكاتب على ʕalā kātib-ih. In Modern Standard Arabic, we find instead انتقد الكاتب في كتابه intaqad al-kātib fī kitāb-ih ‘He criticised the writer for his book’, with the person as the direct object and the thing as a ‘prepositional object’. The modern usage of intaqad has thus been influenced by the English ‘criticise’ (ibid: 85).
- The passive: the ‘forced passive’ refers to situations in which the agent is expressed in the Arabic passive, in contrast to the traditional usage in Arabic which chooses not to mention it. This modern usage did not exist in the classical period. This topic is discussed in detail at various points later in this study.

Nouns and adjectives:
Examples of the changes that have occurred with nouns and adjectives include the acceptance of لا lā as a prefix in modern Arabic. The words لا أخلاقي lā'axlāqi ‘unethical’ and لاسلكي lāsilkī ‘wireless’ are examples of this (Abderrahman, 1995: 229). Another is the use of the complex suffix -iyyāt (comprised of the nisba suffix -i and the feminine plural suffix -āt) instead of simple singular nouns or genitive forms to describe scholarly disciplines, such as لسانيات lisāniyyāt ‘linguistics’, compared with the more traditional نحو naḥw ‘grammar, syntax’, and صوتيات ṣawṭiyyāt ‘phonetics’, compared علم الصروتية ʿilm al-ṣawṭiyāt ‘phonetics’ (ibid).

Pronouns:
First-person pronouns traditionally always came first in Arabic, followed by the second- and then third-person; for example، أنا وانت anā waʿant ‘I and you’. However, in English, the first person is, at least in polite usage, placed after the second- and third-person pronouns; for example، ‘you and I’. Second-person followed by first-person word-order وصلنا هنا، انت وانا wasalnā hunā، ʾanta waʾaʾnā ‘We arrived here, you and me’ can also be found in MSA. In addition, there is a new structure in modern writing، where the noun is mentioned explicitly instead of the third-person personal pronoun، and the pronoun of the first person comes at the end: نتمشى ثلاثتنا ليلى، ﻭسالي، ﻭأنا یوم السبت natamaššā ṯalāṯatnā، laylā، wa-sālī، wa-ʾanā، yawm al-sabt ‘Let’s go for a walk the three of us، Layla، Sally، and I، on Saturday’.

Adverbs:
The adverb of place حول hawl، which means ‘around’، was used in traditional Arabic as a preposition (or، more technically، an adverbial accusative annexion-head). The sense of the word has changed in MSA and is now used as a prepositional equivalent of في fī، which means ‘in’، and عن ʿan، which means ‘about’. This use has become common in modern journalistic Arabic. The influence of English here is clear. This has come about through the connection of the English ‘about’ to the Arabic حول hawl. For example، ‘I’ve changed my mind about studying’ is translated into Arabic as غيرت رأيي حول الدراسة ɡayyart raʿyī hawl al-dirāsah.
Particles:
As an example, the Arabic particle لَّi has not only been prefixed to some adverbs of time without the need for this (for example, زَارَتُ لْيَلَّاَلْمَرْحَّةٌ ‘She visited for the third time’), it has also been used as the Arabic equivalent of the English ‘for’: for example, وَجَدَتْ نَفسَهَا لْأَوْلِيْمَرْحَّةَ وَاحِدَةً wajadat nafsaha li’awwal marrah waḥidah ‘For the first time, she found herself alone’.

Sentences: including exclamative sentences, negative sentences, interrogative sentences, relative sentences, concessive sentences, and adversative sentences.

- Exclamative sentences:
For example, modern writers have begun using كَمْ kam ‘how much’ as an exclamation, in addition to the assertory kam and the predicator kam. In modern usage, kam is followed by a nominal sentence, e.g. كَمْ هِيّ ذَكِىّةٌ! kam hiya ḏakiyyah ‘How intelligent she is!’, whereas traditionally it was followed by a singular or plural in the genitive, such as كَمْ سَاعَةۚ تَمَلُّك؟ kam sāʕah tamlik ‘How many watches do you own?’.

- Negative sentences:
To express a strong negative, Arabic traditionally repeats the negative particle لَا lā ‘no’ after a preceding negative: for example، لَا تَغْنَى عَنْهُم أَموَالُهُمْ وَلَا أَوْلَادُهُمْ (سُورَةُ ٱلْإِسرَأَلِ، آyat ۱۰) lan tuġnī ʿanhum amwālhum walā awlādhum ‘Never will their wealth or their children avail them’ (translated by Sahih International). Modern writers have begun following and proceeding the negative particle لَا lā with حَتَّى ḥattā ‘even’ to express a strong negative, for example، لَا غَيْمٍ فِي ٱلسَّمَاعِ حَتَّى وَلَاغَيْمَةٌ وَاحِدَةٍ la ġaym fi al-samāʾ, ḥattā walā ġaymah wāḥidah ‘No clouds in the sky, not even one cloud’.

- Interrogative sentences:
For example, Arabic traditionally uses the interrogative particles اَيْ a and مَهْ hal when forming indirect questions. In modern writing, however, the particles are replaced by إِذَا iḏā and إِنْ in. i.e. وَسَلَّهُ إِذَا كَانَ يَعْرِفُهُ ‘And he asked him if he knew him’. The direct influence of translation can be seen here, as the particle ‘دَا’ appears to be a translation of the English ‘if’ or ‘whether’.

- Relative sentences:
In the modern use of the conjunctive clause, a conjunctive noun `allaḏī` connects a definite antecedent to the conjunctive clause and announces a fact known or admitted. The modern use of the conjunctive clause is based on the English pattern. For example, ‘I saw my friend, who gave me the book’: the Arabic version of this is `Ra’ayt ṣadīqī allaḏī ‘ʕaṭānī al-kitāb ‘I saw my friend who gave me the book’. The traditional form is `Ra’ayt ṣadīqī fa’aʕṭānī al-kitāb ‘I saw my friend then he gave me the book’.

- Conditional sentences:
Arabic traditionally uses particles, such as إن 'in or لو law to form conditional clauses. The particle إن ‘in traditionally denotes the possibility that an action will either take place or is likely to happen. It is reported that the particle إن ‘in was considered the main and basic conditional particle by Arabic grammarians such as Sībawayhi (Alfraidi, 2017:49). The particle لو law indicates a hypothetical situation, implying that what is described will not happen or is not likely to happen. For example, لو كنت أعلم الغيب لاستكثرت من الخير (surah al-aʿrāf, ayah 188) law kuntu ‘aʃlam al-ġayb la'stakṯart min al-xayr ‘And if I knew the unseen, I could have acquired much wealth’ (translated by Sahih International). Modern writers use لو law to denote likely conditions with سوف sawfa, often due to the identification of law with the English ‘if’ used in open conditions. Many writers also use the particles لو law, إن ‘in, and إذا ‘idā interchangeably, as correspondents to the English particle ‘if’, which is different from their traditional usage; for example, لو عملت بجد سوف تنجح law ‘amīlt bijidd sawfa tanjaḥ ‘If you work hard, you will succeed’. Sartori (2011:12) notes that, in MSA, law means only potential and has begun to lose its counterfactual characteristic.

Both English and Arabic conditional sentences may involve tense shift in a conditional sentence, so the verb in a conditional sentence does not necessarily refer to the time reference to which a non-conditional sentence usually refers. For example, in English, ‘had’ normally has a past time reference (e.g., ‘I had a car two years ago’), but in a conditional sentence it can refer to a future action (e.g., ‘If I had a house, I would not need to rent’). Similarly, in Arabic, جاءت جودي ‘came’ normally has a past time reference: for example، جاءت جودي ‘Judy came’. However, in a conditional sentence, it can refer to the future. For example، جاءت جودي.
Sa’akūn sa‘īdah ‘If Judy comes, I will be happy’ Alfraidi, 2017:27).

Concessive sentences:
Traditionally, concession in Arabic is expressed by using the particle و wa followed by ان ‘in (e.g., أنا معه وإن لم يعرفني ‘I’m with him even if he doesn’t know me’). This use, however, has been replaced by حتى ولو hattā wa-law: for example, لم يكن يستطيع حتي ولو أراد lam yakin yastaṭīʕ hattā wa-law arād ‘He couldn’t even if wanted to’. Traditionally hattā wa-law is normally used to mean ‘so that if’.

Adversative sentences:
Some modern writers use بالأحرى bil’aḥrā, often preceded by أو ‘aw to express greater precision. This use was influenced by the English ‘rather’: for example, لم تعجبها الحفلة، أو بالأحرى كريحتها lam taʕjibhā al-ḥaflh, ‘aw bil-‘ahrā kirihathā ‘She did not like this party, rather she hated it’.

Subordinate clauses: including subordinate clauses of reason, purpose, direct speech, and time. Influenced by the English language, modern writers often attempt to introduce variations to the fixed word-order of Arabic. A number of scholars claim that Arabic word-order is free of restrictions, but this is not the case.

Subordinate clause of reason:
Traditionally in Arabic, the main clause precedes the subordinate clause or clause of reason, but this rule is sometimes inverted by modern writers copying the English patterns: for example, لأن الكتاب طويل شعر بالممل li’ann al-kitāb ṭawīl šaʕar bil-malal ‘Because the book was long, he felt bored’. The main clause here, شعر بالممل šaʕar bil-malal, should have preceded the subordinate clause traditionally.

Subordinate clause of purpose:
As with subordinate clauses of reason, the main clause normally precedes the subordinate clause of purpose, but this rule is inverted by some modern writers copying English patterns: for example, إذا أكملت بعد أن نجح في الاختبار ġa̱karat bijadd ‘To pass the test, she studied hard’. The main clause, ġa̱karat bijadd, thus follows the subordinate clause.
- Direct speech:
In the example, 
ماذا هو الغداء؟ سأل بسرعة māḏā huwa al-ḡaadāʾ? sa’al bisurʕah ‘What is for lunch? 
he asked quickly’, the words of the speaker precede the main or reporting verb, which is a 
replication on the English patterns and has come through the direct influence of English 
translation.

- Subordinate clause of time:
Modern writers often position the subordinate clause to make use of the adverbial accusative 
genitive head or ‘annexion head’ بعد baʕd before the main clause. However, the idea of the 
priority of time is traditionally conveyed by using the temporal لما  lammā to express that the 
clause depending upon it happened before the main clause.

Idiomatic phrases: including verbal, nominal, and propositional phrases (ibid). This refers to 
all English phrases that have found their way into modern Arabic writing.

- Verbal phrases, such as ‘think twice’ فکر مرتين fakkir marratayn and ‘to bite the dust’ عضّ 
التراب ʿadd al-turāb.
- Nominal phrases, such as ‘turning-point’ نقطة تحول  nuqaṭṭ tahlawwul and ‘white lies’ كذبه بيضاء  kiḏbah bayḍā’.
- Prepositional phrases, such as ‘in spite of’ على الرغم  ašlā al-ruḡm and ‘at least’ على الأقل  ʿalā al-ʿaqall.

Al Sayadi (2016) argues that the influence of English is more prominent in colloquial speech 
than in writing or official speech because it is normal for speakers to shift between varieties of 
Arabic, Arabicised forms, and English forms, without doing so intentionally. In written 
language, however, writers are more careful, and particularly in translation where written work 
usually undergoes copy editing and proofreading. Examples of recently borrowed English 
words that Arab speakers use in everyday life include  كنسل kansal ‘cancel’, تشيك tišīk ‘check’, 
بريك brayk ‘break’, and يوئرن yūturn ‘u-turn’.

Word formation: this area has been influenced by the English language and will continue to 
be so for as long as Arab culture remains unproductive. It has been reported that the modern 
Arabic mind is becoming increasingly similar to the modern Western mind (Abderrahman,
resulting in less frequent use of classical idiomatic models, structural peculiarities, and Semitic thought-habits.

The impact of English on Arabic word formation involves many areas, including the following:

- The adoption of hybrid patterns, such as where the English suffix -co is added to a native base. This happens when a foreign element is adopted and used with a native Arabic base – for example, some Arabic companies have added the suffix to their names to produce هادكو ‘Hadco’ and ساكو ‘SACO’.
- The addition of the prefix lā to nouns and adjectives.
- The use of the suffix -iyyāt to produce names of scholarly disciplines, rather than using simple nouns or genitive phrases, which was previously almost always the practice in Arabic.
- The extensive use of adverbs expressing point of view formed by adding the suffix –an, particularly to adjectives ending in -iyy. The influence of English translation on Arabic has enriched the use of adverbial derivations, which Arabic traditionally made little use of.
- The addition of hundreds of neologisms in the Arabic lexicon in recent decades. Blending, in particular, has become increasingly common in Arabic, especially in religious and scientific terminology. The majority of blends do not conform to Arabic morphology because they exceed the maximum number of radicals permitted in a word (i.e., five).
- Changes in uses of verbal forms, such as the decreasing use of the verbal form istaffala to express a resultative action.
- Decreasing use of the noun of place (derived from triliteral verbs). As this has no equivalent in English, its use has decreased significantly when English is the source language.

Abderrahman stresses that Arabic translators play a large role in the impact of the English language on the structure of Arabic, as most are more qualified in the source language than in the target language (1995: 228). As a result, they unintentionally use English structures in Arabic sentences, gradually naturalising the use of these structures in Arabic until they become the norm. The category of voice is of particular interest in this research. The English passive structure has had a strong influence on similar registers in Arabic and other languages through translation, primarily because of its widespread use in technical and scientific English (Baker 1992:102).
2.3 Passive voice in English and Arabic

Words and their semantic equivalents in other languages do not always have identical meanings; rather, there are almost always subtle differences. Similarly, constructions such as the passive voice can have different meanings cross-linguistically. This makes the passive a difficult notion to define cross-linguistically, and passives in different languages may have different definitions. However, to make the discussion more tangible and comprehensible, a general definition of the passive in the English language is provided here.

According to Nida (1964: 200), voice is a linguistic category that ‘defines the relationship between the participants and the event indicated in the verb’, while Hartmann and Stork, (1976: 252) say that ‘voice’ refers to a verb form or particular syntactic construction indicating a certain relationship between the subject and object of the verb. ‘Voice’ also refers to the relationship between the verb and its subject (Al-Hamash, 1976: 312).

Arabic and English both have two voices: active and passive. Crystal defines the passive as ‘a grammatical analysis of voice, referring to a sentence, clause and verb form where the grammatical subject is typically the recipient or goal of the action denoted by the verb’ (1980: 259). Foley (2007: 418, cited in Neshcheret, 2016: 14) gives a comprehensive definition of the passive: ‘a lexical process of verbal derivation that affects the linking between the levels of argument structure and grammatical functions’. In his opinion, the passive does not change the argument structure of the active: rather, the only difference between the active and passive is the linking between the arguments and the function they fulfil in the clauses.

Interestingly, some linguists believe that, in relation to the evolution of language, the passive construction is more primitive than the active (Fillmore, 1968). For example, Māori, which is a split-ergative language (see immediately below), has an extraordinarily high frequency of passive constructions (Allan, 2009: 63). When a language exhibits certain patterns for dealing with the arguments of the verb, this is called ‘ergativity’. Some 25% of the world’s languages show ergative tendencies, though no language is fully ergative. Ergative languages are languages with ergativity, in effect:

a system of marking grammatical relations in which intransitive subjects pattern together with transitive objects (“absolutive”), and differently from transitive subjects (“ergatives”). This ergative alignment pattern may be manifest, for
example, in terms of morphological case marking on nominals, or patterns of agreement on the predicate. This contrasts with the more commonly discussed nominative-accusative–type alignment, in which both transitive and intransitive subjects pattern alike (“nominative”), and differently from transitive objects (Coon and Adar, 2013).

Split-ergative languages are languages that ‘show ergative in some portion of the grammar but nominative-accusative patterning in another’ (Coon and Adar, 2013). It has been claimed that languages with the passive voice exceed in number those without (Neshcheret, 2016: 1). However, research confirms that the passive structure is not found in all languages (Plecháčková, 2007), and – in contrast to the above – it is actually more common for languages to not have a passive voice. There are arguments that certain languages – especially those belonging to the Austronesian language family and Amerindian languages, as well as Hungarian – do not have passives.

Siewierska (2005) found that 44% of her sample of 373 languages had a passive construction. In addition, Haspelmath (1990) found that 31 languages out of a more representative sample of 80 had passive constructions, with the main function of the passive differing between the languages. It is difficult to extend the passive concept to languages other than English, particularly when their general structure differs markedly (Allan, 2009: 62). Though the linguistic category of voice exists in many languages, there are many structural differences between individual languages that result in different rules for the use of the active and passive voice.

Halliday (1970) identifies three meta-functions of language in his ‘systematic functional linguistic’: the ideational, the interpersonal, and textual. He argues that the choice to use the passive – rather than the active – in any language relates to the textual function of the language. The textual function is about the verbal world and the flow of information in a text. It is realised in information structure and cohesion; and through it, the ideational and interpersonal meanings are realised (Bilal, 2012). Passive markers can result in similarities between otherwise different structures because they can be used with sentences that do not necessarily have a passive construction and serve different purposes, such as indicating a reflexive, reciprocal, or spontaneous action or involving an impersonal or potential meaning (Neshcheret, 2016: 20).
Lyons (1968) reports two differences between the active and passive in English (and in a number of other languages): (1) in the active sentence, the object becomes the subject of the corresponding passive sentence; and (2) the subject of the active sentence is the affected participant and not necessarily expressed in the passive sentence (Baker, 1992; Bakir, 1994). In addition, Wright (1996: 50) believes that the subject of the active voice is always an agent (person or an object) whose actions may or may not affect the object, while the subject of the passive is either the object of the active (personal passive) or the abstract idea of the act (impersonal passive).

The differences between the Arabic and English systems concern not only the form of the passive, but also include its function and stylistic value. Accordingly, there are differences between the two languages in their respective frequency of use of the passive voice. It can be concluded that, while the passive voice exists in both Arabic and English, it has a different significance and fulfils different roles in the two languages. The following sections provide simple comparisons of the English and Arabic passive voice, showing the differences between the active and passive voice in the two languages, the structure of the English and Arabic passives, the uses of the passive, the passivisation process, the passivization ability of verbs, and the agent. Further important analyses of the passive which go beyond the issues discussed in this section include Chomsky (1957), Halliday (1970), Khafaji (1996) and Alhussain (2016).

2.3.1 Differences between passive and active in Arabic

The first difference to note is in the names of the active and passive forms in Arabic. The active structure is called – among many names – معروف mastruf ‘known’ because the subject is known. On the other hand, the passive is called مجهول majhūl ‘unknown’ because the subject is unknown (Ryding, 2005; Ahmed, 2008: 82).

Saad (1982) reports that many early Arab grammarians believed the passive structure to be syntactically derived from a corresponding active structure (Abu Absi, 1972; Wright, 1996: 63; Alhussain, 2016). However, the Kufan School believed that the passive form was not transformed from its active counterpart at all (Nofal, 2012: 43). Moreover, they did not explain why Arabic has some verbs with passive forms and no corresponding active forms, such as حَرَّم junna ‘He was possessed’ and حَمَّم humma ‘He sickened with fever’.
Morphologically, the differences between active and passive sentences in Arabic are evident in the vowels. Bakir (1994) and Schulz, et al. (2000) confirm that passivisation in Arabic is identified by changing the vowelling of the active sentence. For example, the Arabic verb ʾakalat ‘She ate’ has the corresponding passive ʾukilat ‘It was eaten’. Passive forms thus differ from the active by their different vocalisations. One characteristic that most passive forms share is the vowel dammah /u/ on the first radical (Abu-Chacra, 2007).

2.3.2 Differences between passive and active in English
Quirk, et al. (1972:654) outline five kinds of ‘voice constraints’ between the active and passive in English: verb, object, agent, meaning, and frequency of use.

2.3.2.1 Verb constraints
Verbs occurring in the passive have more restrictions than those in the active. For example, transitive verbs, intransitive verbs (to be discussed later), and prepositional verbs can all occur in the passive but not as freely as in the active. Additionally, with some verbs, only the passive is possible.

2.3.2.2 Object constraints
Both nominal and clausal objects follow verbs. Co-referentiality between subject and nominal object blocks the passive transformation (formation). For clausal objects, only those consisting of a finite clause have passive analogues.

2.3.2.3 Agent constraints
The agent phrase is optional in the passive, unlike in the active, where the agent is the subject. Biber, et al. (2002) note that unlike the active voice, the passive reduces the importance of the agent of the action and allows the receiver of the action to become the subject of the sentence.

2.3.2.4 Meaning constraints
A shift of voice may cause a shift of meaning, especially when the verb phrase includes auxiliaries that have more than one meaning, such as ‘will’, ‘shall’, and ‘can’. A passive sentence such as ‘Layla can’t be taught’ has a different meaning to the active ‘Judy can’t teach Layla’. In the first of these examples, Layla is ‘unable to learn’, while in the second ‘Judy is
unable to teach Layla’. The first example suggests a handicap or cognitive issue that prevents Layla from learning while the second example implies that Judy lacks the ability to teach Layla.

2.3.2.5 Frequency of use constraints
As mentioned, the active is more frequently used than the passive; and while the passive is less common overall, it has been found to be ten times more common in certain texts (i.e. scientific texts) than in others (i.e. literary texts). Quirk, et al. (1972) note that it is the difference between informative and imaginative prose – and not a difference in subject matter between spoken and written English – that is the key feature for determining passive voice frequency. Biber, et al. (2002) argue that the frequency of the passive in English varies across registers. Passive is more common in academic prose, where it accounts for approximately 25% of all finite verbs. The passive is also common in the news, where it accounts for some 15% of all finite verbs.

2.3.2.6 Other differences between active and passive in English
Scholars have also discussed various other differences. In broad terms, in the active structure, the subject is the agent responsible for the action and/or what people or things are doing; while in the passive structure, the focus is on the person or thing that is affected by the action. Thus, the subject is the affected entity and the agent may or may not be specified (Willis, 1991: 170; Baker 1992: 102; Eastwood, 1994: 132). In addition, the subject of the passive does not always correspond to the object of the verb in the active (Roberts, 1967: 246).

According to one study, there seems to be no significant difference in terms of cognitive recall between active and passive voice (Quirk, et al. 1972: 653). One study examined active and passive voice structures in text and also concluded that recall of meaning is equivalent for both active and passive structures (Rhodes, 1997). However, another study reported that compared with passive, that active sentences had a better recall (Blount and Johnson, 1973). Another study found that the verb voice affects reader performance (Isakson and Spyridakis, 2003). In isolated sentences and oral conditions, the active voice often better facilitates recall than the passive voice (Coleman, 1965).

2.3.3 Structure of the passive in Arabic
Arabic has a basic verb-subject-object (VSO) word order. Agameya (2008: 558) defines the passive in Arabic as ‘a sentence structure in which the semantic subject or agent, i.e. the
performer of or person/thing responsible for an action, is suppressed and, in fact, cannot be mentioned’. Unlike other Semitic languages, Arabic has kept its morphologically based passive structure without change for centuries, primarily because of the Quran (Mohammad, 2006:25). The passive is highly productive (Horvath and Siloni 2005). The Arabic passive is generally agentless; and if the agent is known, Arabic prefers an active structure (Rosenhouse, 1988:101). To illustrate, the total number of verbs used in the Holy Quran is 18,181, only 957 of which are in the passive form (Khalil, 1989, cited in Nofal, 2011:149). Moreover, in colloquial Arabic, the passive is less common than it is in Standard Arabic (Mohammad, 2006; Al-Samarrai, 1986:97, cited in Alsuhaibani, 2012). Further studies on the structure of the passive in Arabic include Cantarino (1975), Rosenhouse (1988), Khalil (1993), and Wright (1996).

2.3.4 Structure of the passive in English

Though there is no consensus among grammarians as to what constitutes the English passive (Svartvik 1966:3), there is agreement on the basic patterns. Generally, the passive consists of a form of the verb ‘to be’ with the past participle form of another verb (Lewis, 1986: 131; Wardhaugh, 1995a; Azar, 2002). However, not all passive structures involve ‘to be’. It is also possible to use the auxiliary ‘to get’ (instead of ‘to be’) with the past participle, but this is rare, avoided in formal style, almost exclusively used in conversational English (Willis, 1991; Eastwood, 1994: 136; Biber, et al. 2002: 174) and restricted to constructions without an expressed animate agent (Quirk, et al. 1972:653). Other copular verbs that can be used in the passive include ‘become’, ‘stand’, ‘look’ and some passives – termed ‘bare passives’ – even involve no auxiliary verb at all (Huddleston and Pullum, 2002). Lexical verbs are also used in the passive voice. For example, ‘interested’ in English is technically a passive, but it is very often used more as a simple adjective than as a true passive form, such as ‘[is] shown’. Thus, it is possible grammatically to say, 'I am very interested in history' (where 'interested' is essentially an adjective), but not, *'I was very shown this by my friend'.

English makes abundant use of the passive form – especially in scientific texts (Rosenhouse, 1988: 92), where actions may be described impersonally without indicating who carried them out (Palmer, 1965). Other typical contexts for the passive include descriptions of social, scientific, industrial, historical processes and official rules and procedures (Eastwood, 1994: 133). In contrast, the passive form is rare in conversations, primarily because of its formal, planned, highly structured (Thanh, 2015), and impersonal nature (Palmer, 1965), and because...
conversations are generally concerned with the actions and experiences of people (Biber, et al. 2002). A study by Ghasemi and Jahromi (2014), exploring the differences between written and spoken language, found that the spoken data samples did not show a higher frequency of passive constructions compared to written language.

As per Bakir (1994), passivisation in English has a basic SVO word order and is a syntactic category, as English word order is governed by grammatical principles that define the relationship between the process (verb) and the participants in the process (including agent and patient). Many scholars believe that the passive construction derives from the active (Chomsky, 1957; Svartvik, 1966). Other scholars, however, take the view that active and passive structures are simply different (Palmer, 1965; Beedham, 1982; Lewis, 1986). Wardhaugh (1995b) notes that some active constructions do not have corresponding passive construction, and some passives do not have active counterparts (e.g. ‘I was born’).

2.3.5 Uses of the passive in Arabic

The passive in Arabic is often considered impersonal because it is used when the doer of the action is not specified (Thatcher, et al. 1942; Abu-Chacra, 2007). According to Cantarino (1975: 52), the passive is used in Arabic ‘to place a greater emphasis upon the action and its object’. Arab grammarians also talk about the rhetorical functions of the passive. These include brevity and concision (Nofal, 2013:894). There are traditionally said to be four situations in which passive is used in Arabic (Wright, 1996):

- when God is the author (agent) of the act – this is found in the Holy Quran
- when the author (agent) is not known for sure
- when the speaker or writer does not wish to name the author (agent)
- when attention is to be directed towards the person affected by the act (patient), rather than the doer (agent)

Catford, et al. (1974) also add another situation to the above list: when there is a need to emphasise the object.

2.3.6 Uses of the passive in English

The passive in English is generally used in the following situations (Eastwood, 1994: 133; Biber, et al. 2002; Azar, 2002):

- when the agent is unknown, unimportant, or obvious from the context
- when the agent is not relevant to the message
- when the action is more important than the agent
- when the writer/speaker wants to put emphasis on the patient
- when the writer/speaker wants to make a polite or formal statement
- to keep the focus on the same subject throughout several paragraphs
- when the subject of the active sentence is ‘somebody’, ‘people’, ‘they’, ‘you’, and so on

2.3.7 The passivisation process in Arabic

According to early Arab grammarians, the process of passivisation generally includes the elimination of the subject of the verb in an active construction, changing the verb into the passive form, and moving the object into a subject position (Saad, 1982). The following grammatical categories may become subjects of passive verbs (ibid):

- Objects – e.g., ضربت نور سالي darabat nūr sālī ‘Noor hit Sally’, which passivises as ضربت سالي duribat sālī ‘Sally was hit’.

- The first or second objects of some verbs that may take two accusative objects – e.g., أعطيت ليلى كتابًا ʾaʿṭayt laylā kitābān ‘I gave Layla a book’, which passivises as أعطيت كتابًا أُعطيت ليلى ʾuʿṭiyat kitābān ʾuʿṭiyat laylā ‘A book was given [to] Layla’.

- Under certain conditions, accusatives of time, place, duration or distance – e.g., سارت ليلى ميلين sārat laylā mīlayn ‘Layla walked two miles’, which passivises as سير ميلين نامت ليلى ʾuʿṭiy kitāb li laylā ‘A book was given [to] Layla’.

- Cognate accusative when modified or specified – e.g., غنيت ليلى اغنية ʾuŋniyat laylā ʾuŋniyatun ‘A song was sung’.

- Prepositional phrases – e.g., نامت ليلى في البيت ʾuŋniyat laylā fi al-bayṭi ‘It was slept in the house’.

Another thorny issue often brought up is the formation of the passive. Lyons (1968), Horvath and Siloni (2005), Laks (2013), Alexiadou (2013) and Alhussain (2016) all claim that the formation of passives is free of constraints and there are no morphophonological, syntactic or semantic constrains that block passivisation. Therefore, a passive can be formed from any transitive verb. However, there are in fact some constraints that may affect the formation of passives. Holes (2004) notes that Arabic word-order is flexible to a degree. However, Ramsay
and Mansour (2006: 452) explain that, although Arabic word-order is comparatively free, not all orders are possible, and some only occur in very restricted circumstances. Keenan (1985: 251) also confirms that the passive in Modern Standard Arabic is strictly morphologically constrained. In addition, if the subject of a sentence occurs before the verb, the agreement constraints are tighter than if the subject appears initially in the sentence. In general, the basic order of an Arabic sentence with a transitive main verb is, as already noted, VSO. While other orders are possible – such as SVO, SOV, and OVS – these only occur in specific contexts with specific marked communicative effects, orders such as SOV and OVS being particularly marked.

2.3.8 The passivisation process in English
When a sentence is transformed from the active to the passive, the object of the active voice becomes the subject of the passive voice sentence (Roberts, 1967); the main verb of the active voice changes into the passive voice, using a form of the auxiliary verb ‘to be’ (as noted in section 2.3.4), and is followed by the past participle of the main verb; and the subject of the active voice becomes the agent of the passive sentence, if retained (Willis, 1991:170; Biber, et al. 2002:166). Generally, the past participle is made by adding ‘-ed’ to the infinitive, while irregular verbs have other past participle forms. If the sentence is agentive, the subject is placed after the past participle and preceded by the preposition and agentive particle ‘by’ (Palmer, 1965; Saad, 1982; Lewis, 1986; Alsuhaibani, 2012). Generally, the preposition ‘by’ plus a noun(-phrase) or pronoun are used to refer to the agent. The agent refers to the doer of the action that is taking place (Saad, 1982). It is occasionally possible to use a passive in English when the agent deviates from prototypical agency (i.e. when the agent is not the doer of the action that is taking place) – for example, ‘tall willow-trees overhang the river’ which passivises as ‘The river is overhung by tall willow-trees’.

2.3.9 Passivisability of verbs in Arabic and transitivity
In Arabic, the passive can be formed of perfect and imperfect verbs. Every verb in Arabic has a lexical root that consists of a set of consonants in a specific order. The number of consonants in the root varies from two to five, with three being the most common. The number of roots in Arabic has been estimated at between 5,000 and 6,500. Most Arabic words consist of two morphemes: a root and a pattern, neither of which can be used in isolation (Ryding, 2005). While Schulz, et al. (2000) report 10 forms of the verb in common use (out of the 15 Arabic
verb forms), Holes (2004: 100) argues that only nine verbal forms are in common use and can theoretically be applied to any root. Each type changes during the passivisation process (Saad, 1982; Alsuhaibani, 2012).

<table>
<thead>
<tr>
<th>Form</th>
<th>Perfect Active</th>
<th>Perfect Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Fam(A/U/I) La</td>
<td>Fumila</td>
</tr>
<tr>
<td>II</td>
<td>FamMala</td>
<td>Fummila</td>
</tr>
<tr>
<td>III</td>
<td>FamaLa</td>
<td>Fumila</td>
</tr>
<tr>
<td>IV</td>
<td>ʾafMala</td>
<td>ʾufMila</td>
</tr>
<tr>
<td>V</td>
<td>TafaMala</td>
<td>Tufummila</td>
</tr>
<tr>
<td>VI</td>
<td>TufaMala</td>
<td>Tufumila</td>
</tr>
<tr>
<td>VII</td>
<td>(ʾi)NFaMala</td>
<td>(ʾu)NFumila</td>
</tr>
<tr>
<td>VIII</td>
<td>(ʾi)FTaMala</td>
<td>(ʾu)FTumila</td>
</tr>
<tr>
<td>IX</td>
<td>(ʾi)FMaLla</td>
<td>(ʾu)FMulla</td>
</tr>
<tr>
<td>X</td>
<td>(ʾi)STaMala</td>
<td>(ʾu)STufMila</td>
</tr>
</tbody>
</table>

Table 2.1 presents the top ten most-common perfective verb derivation forms along with their passive forms, according to Saad (1982: 7) and Schulz, et al. (2000: 248). The letters F, M and L refer to the first, middle or last root consonant, respectively. In the Arabic column the ‘dummy’ root letters for the فعل verb ‘to do’ are used, in accordance with traditional Arabic grammatical practice.

Simply put, in the passivisation process, we replace the active verb with the corresponding passive form of the verb. The perfect verb كَسْرَ takassar ‘to break’ from the Form II verb (FaMMaLa) passivises as كُسِّرَ kussira ‘be broken’ (FuMMiLa). For example, the sentence عَمَلت ليلى نوره باحترام ʕāmalat laylā nūrā biḥtirām ‘Layla treated Nora with respect’, passivises as عُمِلت نوره باحترام ʕūmilat nūrā biḥtirām ‘Nora was treated with respect’.

To take another example, in Form VIII ((ʾi)FtaMaLa), the verb اقتَرَحَ iqtarāḥa ‘to suggest’ passivises as اقتُرِحَ ʿūqtūrīḥa ‘be suggested’ ((ʾu)FtuMiLa). For example, the sentence اقتُرِحَ عَلَيْ ليلى عبور النهر ʿūqtūrīḥa ʿuẓūb al-nahr ‘Layla suggested crossing the river’ passivises as اقتَرَحَ عَلَيْ عبور النهر iqtarahat laylā ʿuẓūb al-nahr ‘Crossing the river was suggested’.
Table 2.2 presents the ten most common imperfective verb derivation forms along with their passive forms according to Saad (1982: 7) and Schulz, et al. (2000). To clarify, in Form III (yuFãMiLu) the verb خاصّرُ yuḥāṣiru ‘to surround’ passivises as خاصّرُ yuḥāṣāru (yuFãMaLu). For example, the sentence خاصّرُ ليلي عدوها tuḥāṣiru laylā ʕadūwahā ‘Layla surrounds her enemy’, passivises as خاصّرُ العدو yuḥāṣāru al-ʕadū ‘The enemy is surrounded’.

Form I is the base form. Morphologically, it is the simplest form and referred to in Arabic as the الفعل المجرد al-fiʕl al-mujarrad ‘stripped verb’. The remaining forms (II-X) are derived from Form I and are thus more complex and referred to as the الفعل المزد al-faʕāl al-mazīd the ‘augmented verb’ (Schulz, et al. 2000; Ryding, 2005: 434). Hypothetically, it is possible for each verb root to have all forms, meaning any given verb could have 10 different verb forms. In reality, however, a verb typically occurs only in 4-5 forms (Schulz, et al. 2000).

Some derived forms of the verb – particularly V, VII, VIII, and IX – may signify a passive or passive-like meaning, but this is not always the case. It is important to learn derivational verbs as separate lexical items to know whether their meaning is equivalent to the passive in English (ibid).

Wright (1996: 63) follows a simple approach for passive verbs. He divides verbs into their two tense categories: perfect and imperfect. For perfect verbs, the passive is traditionally understood to be formed by placing a ضمة damma or short /u/ (ք) on the first letter of the verb and a كسرة kasra or short /i/ (ֵ) on the letter before last (see Table 2.1). For example،

<table>
<thead>
<tr>
<th>Form</th>
<th>Imperfect Active</th>
<th>Imperfect Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>YAFM(A/U/I) LU</td>
<td>YUFMALU</td>
</tr>
<tr>
<td>II</td>
<td>YUFAMMILU</td>
<td>YUFAMMALU</td>
</tr>
<tr>
<td>III</td>
<td>YUFAMILU</td>
<td>YUFAMALU</td>
</tr>
<tr>
<td>IV</td>
<td>YUFAMILU</td>
<td>YUFMALU</td>
</tr>
<tr>
<td>V</td>
<td>YATAFAMMALU</td>
<td>YUTAFAMMALU</td>
</tr>
<tr>
<td>VI</td>
<td>YATAFAMLU</td>
<td>YUTAFAMLU</td>
</tr>
<tr>
<td>VII</td>
<td>YANFAMILU</td>
<td>YUNFAMLU</td>
</tr>
<tr>
<td>VIII</td>
<td>YAFTAMILU</td>
<td>YUFTAMLU</td>
</tr>
<tr>
<td>IX</td>
<td>YAFMALLU</td>
<td>YUFMALLU</td>
</tr>
<tr>
<td>X</td>
<td>YASTAFMILU</td>
<td>YUSTAFMALU</td>
</tr>
</tbody>
</table>
fataḥat laylā al-bāb 'Layla opened the door’ becomes futiḥa al-bāb 'The door was opened’.

For imperfect verbs, the passive is formed by placing a ضمة /damma/ or short /l/ (ً) on the first letter of the verb and a فتحة /fatḥa/ or short /al/ (ٌ) on the letter before last (see Table 2.2). For example, قرأ ليلى الكتب ‘Layla reads the book’ becomes يُقرأُ الكتب ‘The book is read’. His approach, however, does not account for derived verbs or the different forms of the Arabic verb. This method focuses only on the perfect and imperfect of Form I verbs and does not apply to the other verb forms II-X. Similarly, other scholars highlight that the verb becomes passive through either changes to the vowels in the stem and tense prefix (Haywood and Nahmad 1965) or the insertion of a prefix (Agameya, 2008), such as (i)n- (giving Form VII), though this is often referred to as a medio-passive.

Ryding’s (2005: 657) takes a more detailed approach. She divides passives into two categories: inflectional (or internal) and derivational. Each type includes both perfect and imperfect verbs. The inflectional type (this includes the basic form of the verb or Form I; see Tables 2.1-2.2) involves ‘a shift of vowel pattern within the verb’: for example، اكل ‘he ate’ passivises as أُكِّل ‘it was eaten’. The shift includes changing the vowel sequence of the verb. The inflectional passive can occur in the perfect tense where the vowel sequence is /u-i/. All vowels preceding the stem vowel are /u/, whereas the stem vowel itself is /i/. In the imperfect tense, the vowel sequence of the verb is /a/ on the subject marker, followed by /al/ within the verb stem. Her inflectional approach follows that of Wright (1996), mentioned above.

A derivational passive involves the use of a derived verb to convey a passive-type meaning. This may involve any verb form other than Form I, but is typically found in Forms V, VII and VIII (see Tables 2.1-2.2). In addition to the passive, derivational verbs of this type are also used to convey a reflexive or medio-passive sense of the action involved in the verb.

2.3.9.1 Medio-passive passive in Arabic

As noted above, Arabic also has a ‘middle voice’ or ‘medio-passive’ form that indicates ‘a passive or passive-like meaning’. This can be found in the verb Forms V, VII and VIII. For example، كسر takassara ‘to break’, may be reflexive. It can also be resultative, showing the result of the Form II verb – for example، كسرته فكسر kassartahu fa-takassara ‘I broke it, so it
broke’. Another example is the Form VII verb انفَتَح infataḥ ‘to open’, while the Form VIII اريةَعْ irtafaṣa ‘to rise’ (lexical root is رفع ruff), may be reflexive, or resultative; in the case of the latter, it expresses the consequences of a Form I verb (Ryding, 2005:530/555). One reason for the existence of the medio-passive in Form VIII, as Ryding (2005:669) reports, may be the phonological restriction that Form VII has with lexical roots starting with ḥamza, wāw, yā, rā, lām, and nūn. For those roots, Form VIII or Form V takes over the medio-passive role. A Form VII verb, (i)nfataha – in, for example, فَتَحتُ ﺍلَبَابَ فانفَتَحَ fataḥtu al-bāba fa-nfataḥa ‘I opened the door, so it opened’ – can also involve what is known in Arabic as مطَاوَعَة muṭāwaʕa ‘conformity’ because it reflects a resultative state of the object. The derived forms of the verb can occur in the perfect and imperfect tenses. However, Forms V, VI, VII, VIII, and IX occur less frequently in the inflectional passive in the imperfect tense because they are intransitive or have passive or medio-passive meaning.

2.3.9.2 Transitivity

Generally, there are two major classes of verbs in Arabic: transitive verbs, which take direct objects (the number of objects can vary from one to three) and may undergo passivisation, and intransitive verbs, which lack objects and cannot be passivised. Arab grammarians refer to transitive verbs as أفعال متعديه afʕāl mutaʕddiyyah ‘exceeding/extending verbs’ because the action of the verb extends beyond the agent through to the object and as أفعال غير متعديه afʕāl ḡayr mutaʕddiyyah ‘non-exceeding/non-extending verbs’ because the action of the verb does not extend beyond the agent (Ryding, 2005: 658). Almost all transitive verbal forms, both primitive and derivative (with the exception of the imperative verb because it cannot give a complete meaning without its actor [Alsuhaibani, 2012]), have two voices: the active and the passive (Wright, 1996). Some studies have even gone further, claiming that the passive can be formed from any transitive verb – and from transitive verbs only (Quirk, et al. 1972; Willis, 1991: 144; Wardhaugh, 1995a: 119; Azar, 2002; Ryding, 2005; Agameya, 2008; Alsuhaibani, 2012; Laks, 2013; Alhussain, 2016). This traditional approach to transitivity and passivisation is not recommended, however, as it fails to account for the following (Saad, 1982):

- The active and passive constructions are not synonymous. The passive transformation does not preserve meaning because the agent is explicitly specified in the active structure and omitted in the passive structure, as Arabic passives are, traditionally, agentless.
• Some transitive verbs that take direct objects do not passivise. For example, جاءني jā’ānī 'He came to me' cannot be passivised as جَنَثّ jūitu 'Was come to me'. The same applies to وُسَالُتِهَا الرِّسَالَةُ ‘A letter reached her’.

• Some intransitive verbs that do not take a direct object may passivise. These are called ‘impersonal passives’ and the passive forms take the third-person singular. For example, نَامَ nāma 'He slept' can be rendered as نِمَ nīma 'Was slept'. نَامَ نوْحَ فِي الْدَارِ nāma nūḥ fī al-dāri ‘Noah slept in the house’ thus passivises as نِمَ فِي الْدَارِ nīma fī al-dāri ‘Was slept in the house’. Moreover, it is reported that intransitive verbs can passivise when they are followed by a verbal noun مصدر masdar, accusative or preposition. For example, سُهِّرُ سَهَرٍ طويل suhir sahar ṭawīl 'A long night was spent’, and صِّيمَ الرَمَضَانُ ṣīmā ramaḍān ‘Ramadan was fasted’.

• Certain passive verbs do not have corresponding active verbs. For example, جَنُّ junna ‘He was possessed/became mad’ جَنُّ نوْحَ junna nūḥ ‘Noah was possessed’ and دُهْلُوا duhilū ‘They were surprised’.

Saad therefore proposes two verb classes: passivisable and nonpassivisable verbs (1982, 2).

2.3.9.2.1 Nonpassivizable verbs

Nonpassivizable verbs include the following:

- One-place verbs (ibid, 1982:39), which only require one noun or noun phrase to have a complete meaning; for example, جاءت ليلًا jā’at laylā ‘Layla came’. The verb جاءت ja’at ‘came’ here only requires one noun laylā (a subject) to have a complete meaning. The verb stands alone and gives a full meaning with the use of only one noun phrase and does not require another noun or noun phrase. Such verbs are nonpassivizable because in order for the verb to undergo the passivisation transformation, it typically needs two nouns or noun phrases. Two-place verbs are verbs which require two nouns or noun phrases (a subject and a direct object) to have a full meaning. Such verbs undergo the passivisation process.

- Defective verbs and the verb كان kān ‘to be’. Such verbs require more than one noun or noun phrase to produce a complete sentence. They are ‘two-place verbs’ (see above) and need a subject and a predicate. For example, كانت ليلي طفلة kānat laylā ūtiflah ‘Layla was a child’.
kallafat-type ‘to cost’ verbs, which include verbs such as kallaf, dām ‘keep’, wazan ‘weigh’, and ʕalā ‘get higher’. Such verbs are ‘two-place verbs’; for example, kallafā hāḏā al-qalamu al-kaṭīr ‘This pen cost a lot’.

tašbih-type ‘to resemble’ verbs. These include verbs such as ašbaha ‘to resemble’ and ʕādal ‘to be equal’, which are also ‘two-place verbs’. For example, tušbihu laylā sālī ‘Layla resembles Sally’. Though these verbs take a nominative subject and an accusative object, they do not passivise.

2.3.9.2.2 Passivizable verbs

Passivisable verbs include the following (ibid:49):

- Implemental verbs. These are divided into three types. The first is those that require an implement, which may be either alienable or inalienable depending on the individual verb. For example, darab ‘to hit’ in darabat sālī laylā bi yadīhā ‘Sally hit Layla with her hand’ or darabat sālī laylā bi al-bābi ‘Sally hit Layla with the door’. ‘Inalienable’ means something that is a standard part of a human being, whereas ‘alienable’ refers to an inanimate object, such as ‘a door’. The second type of implemental verb is one which requires inalienable implements. For example, the verb rafasa ‘to kick’ requires the inalienable implement qadam ‘foot’. The third type is those that require an alienable implement. Such verbs are derived from nouns that indicate the implement. For example, the verbs qaṭaʕa ‘to cut’ and ṭaʕana ‘to stab’ denote that the implement is a sharp instrument, as in qaṭaʕat laylā al-kaʕka’ ‘Layla cut the cake’.

- Physical perception verbs. These include the five commonly accepted human sensory modalities: sight, hearing, taste, smell and touch, all of which are ‘two-place verbs’ and can passivise: for example, laylā tasmaʕu ummahā ‘Layla hears her mother’.

- Reciprocal verbs.

- Resultative verbs. The activity of the verb in this type results in the creation of an entity that only exists after the completion of the verb activity. An example is banaw al-baita ‘They built the house’.

- Emotive and cognitive verbs.

- Verbs of transforming. These can be ‘three-place verbs’ or ‘two-place verbs’. They can take a subject and two objects, the most common verb being şayyara ‘to make’.
For examples, صَي ر ﺍلخلاﻁ ﺍلفاكهة عصيرًﺍ ṣayyara al-xallāṭu al-fākihata ʕasīran ‘The blender made the fruit into a juice’. This verb type is not very common in Modern Standard Arabic.

- Verbs of acquiring. For example, تَبَن ت ﻁفلاً tabannat ṭiflan ‘She adopted a child’. Such verbs indicate an action performed by the agent in their own interest.
- Causative verbs. They indicate causation, for example, أﺫﺍبت لَيا لَا ٓا ٓا ٓا ٓا aḏābat laylā al-šāmsaṭata ‘Layla melted the candle’.
- Verbs of certainty and doubt. Like verbs of transforming, these verbs take a subject and two accusatives.
- Miscellaneous other verbs.

More recent works do not acknowledge or agree with the analyses in this section. Rather, most recent studies focus on the transitive versus intransitive-based passive, which has proved problematic. For example, according to Agameya (2008) and Alhussain (2016: 22) passivisation is linked to transitive verbs. The latter claims that MSA does not have syntactic constraints and a passive verb can be formed by a vowel change from any transitive verb.

Various observations that address the passive construction of some verbal groups lack sufficient evidence for passivisation of intransitive verbs and, in particular, the evolving constraints upon this. Thus, there is a need for more literature on the passivisation of intransitive verbs.

2.3.10 Passivisability of verbs in English and transitivity

The passive is often described as involving two operations (Bhatt and Finch, 2001; Abdulkadir and Ahmed, 2013):

- Deletion/suppression of the agent/external argument – when the agent is removed from the prominent subject position and demoted to a less salient role in the syntactic structure.
- Promotion of the highest internal argument – when the patient is promoted from object position to subject.

Thus, for the sentence to be passivised, it must have an agent or external argument that can be supressed. The verb must also have an internal argument that can be promoted to a subject position. This is why ‘laugh’ cannot be passivized: ‘Layla laughed’ cannot be rendered as ‘Was laughed by Layla’ (Bhatt and Finch, 2001).
2.3.10.1 Transitivity

Traditionally, transitivity divides verbs into two categories, depending on whether they occur with a nominal complement. They are ‘transitive’ if they have nominal complements and ‘intransitive’ if they do not. Some verbs can accept both, depending on the construction. The voice and transitivity systems are interlinked and have a strong relationship. They both belong to the verbal group system and to the clause system. Verbs in English can be divided into transitive or intransitive.

Eastwood (1994) argues that there are two kinds of verbs that cannot be passivised: intransitive verbs and some state verbs (e.g. ‘lack’, ‘resemble’, ‘belong’). Like their Arabic counterparts, it is generally believed that English transitive verbs passivise and intransitive verbs do not (Quirk, et al. 1972; Willis, 1991:144; Alsuhaibani, 2012). Dayley (1983: 112, cited in Neshcheret, 2016: 12) goes further, limiting passivization to transitive verbs. He defines ‘voice’ as a grammatical category that applies to transitive verbs. However, Quirk, et al. (1972:654) show that there are many exceptions to the general rule that transitive verbs can be either active or passive. Kerl (1861: 168) stresses that intransitive verbs passivise when their meaning is followed by a preposition or other words. He adds that such verbs may become compound passive verbs. An example is ‘She sat on the grass’, which passivises as ‘The grass was sat on’. Willis (1991: 144) adds that some intransitive verbs can be used with an object that is closely related to the verb: ‘die’, ‘laugh’, ‘live’, ‘smile’, and ‘dance’ (e.g. ‘She lived a good life’). On the other hand, Palmer (1965) explains that some transitive verbs never – or only rarely occur in the passive. Thus, although ‘resemble’, ‘lack’, and ‘have’ are transitive, their use in the passive is very restricted and only possible with specific uses of ‘have’, primarily because the verb does not involve an agent (Willis, 1991:144; Bhatt and Finch, 2001). (To note, however: it is possible to have an agent that does not refer to the doer of the action, as mentioned in section 2.3.8.) Thus, ‘Sally has two toys’ cannot be rendered as ‘Two toys were had by Sally’. It is, however, possible to say, ‘The same problem has been had by a number of people’. Similarly, Huddleston and Pullum (2002: 298) highlight that the verbs that may occur in both the transitive and the intransitive greatly outnumber those restricted to only one category. For example, ‘to fly’ may or may not take a direct object: it is intransitive in ‘Most birds can fly’, but transitive in ‘The pilot is flying the plane’ (Alsuhaibani, 2012).
Adejare (2015: 41-50) provides evidence for a syntactic relationship between transitivity and voice. She analysed a 17,600-word corpus comprising 2,187 finite verbal group clauses of transcribed spoken instructional texts belonging to the various categories (i.e., Christian religious knowledge, geography, physics, and chemistry), recorded in selected secondary schools in Nigeria. Her results show that active voice was dominant, accounting for 91% of verb uses, while the passive made up just 9%. As for Transitivity, 67% was transitive and 33% was intransitive. Their combined occurrence was 25% active intransitive, 65% active transitive, 8.1% passive intransitive, and 1% passive transitive.

The passivisation of transitive verbs differs slightly from that of intransitive verbs, and the data show that most Indo-European languages – as well as Uralic, East Sudanic, Oregon Coast, and Uto-Aztecan languages – permit passivisation of both intransitive and transitive verbs. Austronesian, Altaic, Afro-Asiatic, and Eskimo-Aleut languages, in contrast, display a divided pattern that only partially allows the passivisation of intransitive verbs (Neshcheret, 2016: 44). It can be concluded that, when a passive morphology is extended to express reflexive meaning, a language is twice as likely to embrace passives from intransitive verbs (ibid, 55). The study also revealed the restrictions on the intransitive verb passivisation process tend to be of a semantic nature (ibid, 69).

Transitivity is not a simple issue. To shed some light on the topic, Neshcheret (2016: 5) identified three approaches adopted by various scholars: syntactic-semantic, semantic, and syntactic. Each approach has been adopted in numerous studies. Hopper and Thompson (1980, cited in Neshcheret, 2016), for instance, adopt a syntactic-semantic approach. They argue that, if the clause indicates two participants and the action is shifted from one to the other, it is transitive. Van Valin (2005, cited in Neshcheret, 2016), and Van Valin and LaPolla (1997, cited in Neshcheret, 2016) adopted the semantic approach in their ‘role and reference grammar’ studies, suggesting two key semantic roles, ‘actor’ and ‘undergoer’, which roughly correspond to the more conventional terms, ‘agent’ and ‘patient’.

Dixon and Aikhenvald (2000, cited in Neshcheret, 2016) take a syntactic approach to determine transitivity. They suggest a practical definition that correlates passivisation with syntactic arguments including intransitive subject, transitive subject and transitive object. Similarly, Kalinina et al. (2006, cited in Neshcheret, 2016: 8) believe that transitivity is a syntactic feature of the verb. However, they add that it is not sufficient to consider the number of verbal
arguments to determine whether the verb is transitive: rather, it is also essential to examine the semantics of the arguments. They consider the verb to be transitive if the two arguments are agent and patient, arguing that the verb is either unergative or unaccusative if there is only one argument that is a patient or an agent. The difference between semantic and syntactic transitivity, according to Helbig (1978, cited in Neshcheret, 2016: 8), is that in a passive verb with an object, the action must be transferred from the subject, which is marked by the nominative case, to the object, which is marked by the accusative case. In the latter, by contrast, if the verb takes an object marked with an accusative case and, under the passivisation process, it can become the subject, it is syntactically transitive.

Furthermore, Mattia-Viviès (2009) believes that what makes passivisation possible is the notion of transfer from subject to the object through the verb, and not necessarily the presence of an object complement of the verb in the active. She argues that the main syntactic parameters on which the notion of transitivity is founded cover different situations and cannot serve as reliable tool to describe passivisation. To summarise, transitivity and passivisation are related according to the following (ibid):

• An active transitive sentence with a passive correspondent – for example, ‘The snow damaged the house’ passivises as ‘The house was damaged by the snow’.
• An active transitive sentence without a passive correspondent – for example, ‘She resembles her mother’ cannot passivise. Other examples which, in some senses cannot passivise, include ‘weigh’, ‘hold’, ‘number’, and ‘cost’.
• An active intransitive sentence without a passive correspondent – for example, ‘Roses bloom’.
• An active intransitive sentence with a passive correspondent – for example, the intransitive verb ‘laugh’ can be passivised when followed by a phrase beginning with ‘at’, such as, ‘If you have this hairstyle, you will be laughed at’.

2.3.11 Agent in the Arabic passive construction

There is a strong morphological, syntactic, and semantic relationship between a verb and an agent in an active verbal sentence. This is one reason why Arabic prefers an active construction unless there is an underlying reason for using the passive and deleting the agent (Alsuhaibani, 2012). As mentioned, the passive in Arabic is traditionally agentless (Cowan, 1964, 59; Khalil, 1993:169; Ryding, 2005). However, this does not mean that a passive implies no agent is
involved. The Arabic passive voice construction, in fact, indicates implicit or understood external agency: it is not semantically agentless (Saad, 1982: 34-35). While CA does not permit a true agent with a passive verb, Cowan (1964), Suleiman (1998: 164) and Ryding (2005: 668) note that, in MSA, an agentive phrase ‘by-phrase’ is sometimes used with a passive verb. These issues are discussed in the following section.

2.3.11.1 The influence of the English agentive phrase ‘by-phrase’ on Arabic passive

Although the CA passive is agentless on the surface (i.e. no agent can be explicitly expressed), MSA has many ‘agentive’ constructions equivalent to English agentive phrases (Saad, 1982: 36-37; Schulz, et al. 2000; Ryding, 2005: 668). Al-Raba’a (2013: 216) suggests that English language contact through translation has influenced the Arabic agentive phrase via a grammaticalisation process known as ‘pattern replication’. According to Khalil (1993: 172), MSA, as the language of the press, media and modern literary works, tolerates the occurrence of the agentive passive. Many studies confirm that the agentive passive is a contemporary innovation that can be seen in newspapers and translated works (Abdel-Hamid, 1972, cited in Saad, 1982) and many Arabs have even come to accept agentive passive sentences as a fully integrated part of the Arabic language (Khalil, 1993: 172; Abu-Chacra, 2007; Naseeb, 2011: 7; Bubeník, cited in Al-Raba’a, 2013: 210). It is very common for translators to translate an agentive English structure into Arabic using an agentive phrase. The agentive passive expands the grammatical possibilities of Arabic by introducing a new structure that was not permitted in CA.

It has also been argued, however, that the use of an agentive phrase with an Arabic passive structure limits the Arabic language. Instead of explicitly stating the agent, Arabic uses various methods to imply it, and the use of an agentive passive in Arabic prevents utilising the full potential of the agentless passive. To mention the agent is to destroy the rhetorical function of the passive. The agent in the Arabic construction is unspecified and its characteristics are determined by co-occurrence restrictions dictated by the semantic and pragmatic nature of the verb. The unspecified agent is a member of a set of noun phrases (including sentential complements) that may occur as the agent in the active (Saad, 1982:35). Such noun phrases imply to the reader or listener the nature of the unmentioned agent, which could be God, a person, animal, or a thing. Thus, in فُتِّحَ الباَبُ futiḥ al-bāb ‘The door was opened’, it is understood that the agent could be a person, an inanimate object, or an animal, whereas in the example
The water was drunk, it could only be a person or an animal. In the example, ʿufturis al-arnab ʿThe rabbit was devoured’, the agent could only be an animal, whereas ʿugṭīla al-rajul ʿThe man was assassinated’, the agent could only be human. In ʿurt dūra al-risalah ʿThe letter was read’, the agent could only be a literate human, while in ʿuğtīla ʿal-ṣafayhi ʿHe was sentenced’, the agent could only be a human judge. Finally, in ʿuwuffiya al-jadd ʿThe grandfather’s soul was taken’, the agent could only be God. (ibid).

In addition, while the English ‘by’ cannot occur in active constructions, its Arabic equivalents can. For example, the active form corresponding to ‘Layla was dressed by her auntie’ cannot be ‘Layla dressed by her auntie’. In contrast, the Arabic agentive phrase can occur in active constructions. For example, ʿal ʿlā l-rūt bi-rabbika ʿThe truth is from your Lord’ (translated by Sahih International) can be thought of as an active construction (though it does not contain a verb) in which the preposition من min ‘from’ occurs. Sentences that include such particles are not full passives and, more importantly, they do not semantically or syntactically correspond to the English passive that includes ‘by’ (Saad, 1982: 38).

### 2.3.11.2 Translators’ behaviour towards passive translation

Notably, Khalil found more experienced translators tended to render English agentive passive into Arabic agentive passive far less often than less experienced translators did (1993: 172). Since there is no agentive passive in CA, new agentive forms have been produced, extending the uses of existing Arabic phrases such as ʿan ṭarīqi ʿby way of’ and ʾbi-wasaṭi ʿby means of’. Some of these forms are very old and can be found in the Holy Quran and in CA more generally (for example, the phrase ʿaftūma fuṣṣilat min lādūn ḥakīmin xabīr ʿAnd then presented in detail from [one who is] Wise and Acquainted’ (translated by Sahih International)). However, they are not genuine agentive passive phrases and do not traditionally correspond to the English passive particle ‘by’. Rather, they should be called ‘pseudo-agentive particles’ (Saad, 1982: 36). Saad adds that that prepositions such as ʿan ʿregarding’, من min ‘from’ and ʾbi ‘by/with’ indicate the semantic function of the noun phrase that follows them. Accordingly, the case roles of the noun phrases that follow the preposition could be source, instrument, or possessed instrument. Similarly, the phrase ʾbi-wasaṭi ʿby means of’ was originally a means adverbial, the noun
phrases that follow the means adverbial being assigned the instrument case role in the framework adopted by Saad (1982: 38).

2.3.12 Agent in the English passive construction
In the passive form, the agent in English can have the following formats (Lyons, 1968:376):
- passive with a specific agent (e.g., ‘The cake was eaten by Layla’)
- passive with a non-specific agent (e.g., ‘The cake was eaten by someone’)
- passive without the mention of the agent (e.g., ‘The cake was eaten’)

Biber et al. (2002) note that the agentless passive gives a sense of objective detachment in expository prose. This sense of objectivity is often expected in scientific writing. According to Biber, agentless passives are six times more frequent than agentive passives, while Quirk, et al. (1972:656) report that, in their data, four out of five passive sentences are agentless. Biber et al. (2002:169) provide three interconnected motivations for using the agentive passive:
- To accord with the information-flow principle: when there is preference for presenting new information at the end of a clause; thus, given information is placed before new information.
- To accord with the end-weight principle: when the agent, which is considered a heavier and lengthier element of the clause, is placed at the end, where it does not hold up the processing of the rest of the clause.
- To place initial emphasis on an element of the clause, which can be the topic or theme of the current discourse.

2.3.13 Differences between passive in English and Arabic
English and Arabic belong to two different language families. Therefore, their surface forms are widely divergent, and they employ different sets of linguistic means to indicate passivation (Khafaji, 1996). The differences in the English and Arabic passive systems involves not only their respective forms, but also their functions and stylistic values, which results in a difference between the frequencies of use of the passive voice in the two languages (Baker, 1992). The primary differences are discussed in the following points subsections.
2.3.13.1 Agent
As mentioned in sections 2.3.9 and 2.3.10, when the agent is known, Arabic prefers an active structure (Rosenhouse, 1988:101), whereas English permits both agentive and agentless passives.

2.3.13.2 Form and style
As noted in Section 2.3.3/2.3.4, (cf. Bakir, 1994; Farghal and Al-Shorafat, 1996) English passivisation can be regarded as syntactic, with the use of verb ‘to be’. Other scholars also claim that Arabic passivisation is syntactic (Horvath and Siloni, 2005: 6; Laks, 2013), but the fact that passivisation involves changing the vowelling of the active sentence indicates that Arabic passivisation is in an obvious sense morphological. Finally, while the ‘by-phrase’ is heavily used in the passive structure in English, it does not tend to occur in Arabic passive sentences (Catford, et al. 1974:100).

2.3.13.3 Function
The primary function of the English passive is to express the action of the verb without naming the agent of the action. In Arabic, the passive is traditionally used when the speaker/writer does not want to mention the agent or chooses to keep it hidden for rhetorical purposes (see sections 2.3, 2.3.5).

2.3.13.4 Frequency
The passive structure in English is relatively rare, compared to the active, but it is used more commonly than in Arabic, which makes only restricted use of the passive (Di Pietro, 1971: 38). Al-Raba (2013: 210) adds that because Arabic is traditionally unable to indicate the agent in passive structures, the passive is used far less frequently in Arabic than it is in English.

2.3.14 Why does the passive appear less frequently in Arabic than in English? Does Arabic avoid passive?
Arabic is not a passive-avoiding language, as mentioned in section 2.3.11.1. Rather, the rich morphological system of the Arabic verb and the relatively free word order of Arabic sentences provide the language with various alternatives avenues, other than passivised verb forms, for the expression of ideas that English uses the passive to express (Khalil, 1993; Khafaji, 1996).
2.3.15 Scholarly views on translating the passive from English into Arabic

The subject of translating the English passive into Arabic is a thorny one, primarily because of the aforementioned differences concerning the form of the passive, the differences in frequency of use, and the purposes of it (Baker, 1992: 24). The following section presents the most common techniques used by translators over the years.

2.3.15.1 Translating passive with passive

Some earlier scholars provided a universal formula for translating the passive and insisted on following a literal approach. They advised that a passive structure in the source language should be translated into a passive in the target language, even if it seems clumsy and unnatural or results in the wrong sense (Beekman and Callow, 1974:27). According to this approach, the English sentence ‘The apple was eaten by Sally’ should be rendered by the literal al-tuffāḥah ʾukilat bi sālī, even though the use of bi 'by/with’ in Arabic here is anomalous. A similar, but less extreme, approach is to advocate for translation of English agentive passives into Arabic agentive passives (Khalil, 1993). This could involve using a form such as bi-wāṣṭati 'by means of’ to express the agent, which, as noted in section 2.3.11.1, is frequently found in MSA but is not a feature of the Classical language, as CA does not accept a true agent with the passive verb.

This approach has been rejected by more recent translation theorists, who have generally agreed that translation should not be a literal transformation from one language to another and that other aspects should be taken into account. Moreover, the translation process should be conscious, with the translator fully aware of the linguistic systems of both languages. Jiří Levý confirms that, ‘the language of the original text and the language of the translation are not straightforwardly symmetric. The linguistic devices of the two languages are not “equivalent” and thus they cannot be translated mechanically’ (1983: 67, cited in Plecháčková, 2007). The passive voice exists in both English and Arabic, but it might fulfil different roles and have different significance in the two languages. Baker (1992: 103) argues that, even if the translator chooses to translate the passive to a corresponding passive, this does not mean that the translation is correct or that the translator has accurately conveyed the meaning, because during the process of translation, differences in the grammatical structures of the source and target languages often cause changes in the information content. A basic difference, with implications for other functional aspects, is the frequency of use of the passive in the two languages. As
noted, the passive structure is known to occur more frequently in English than in Arabic texts. If all English passive sentences in a typical text were translated into Arabic passive sentences, the result would be an abnormal Arabic text in terms of frequency of its use of the passive (and probably also in other aspects) (Naseeb, 2011: 2).

2.3.15.2 Translating passive with active

One of the approaches to translating passive from English to Arabic, according to Thatcher, et al. (1942), Mouakket (1986), Rosenhouse (1988), Khalil (1993), El-Yasin (1996) and Qassim (N.D.), is to shift (or transpose) the English passive sentence into a corresponding active sentence in Arabic. For example, the English sentence ‘The apple was eaten by Sally’ might be rendered as ʾakalat al-tuffāḥah sālī (literally ‘Ate the-apple Sally’), thereby retaining the rough source text word order and probably also the information structure in the target text. Mouakket (1986: 140) insists that the agent in an Arabic passive sentence must be deleted and that, if it were to be mentioned, an active sentence must be used. Thus, if the English sentence, ‘The apple was eaten by Sally’, is to be translated as an Arabic passive, it must be rendered as ʾukilat al-tuffāḥah ‘The apple was eaten’ (literally ‘Wa-s-eaten the-apple’), with no equivalent of the English ‘Sally’. Similarly, El-Yasin (1996: 24) argues that it is very much preferable to translate an English passive into an active sentence in Arabic for two reasons: a general reluctance to use the passive and because it is preferable not to mention the agent in a passive structure. On the other hand, Matthews et al. (2000) argue that translating the English passive structure into Arabic alternatives, as some scholars suggest doing (Mouakket, 1986; El-Yasin, 1996), could pose a problem because alternative translation choices can affect the semantic roles and relations in the type of functional equivalence intended. To illustrate, translating a passive structure into an active could shift the author’s stance; for example, if authors want to distance themselves from the propositions stated in the texts or to show objectivity.

Though the case studies mentioned above are undoubtedly useful, they are deficient in two aspects. First, the case study of Khalil (1993) focuses on translating decontextualized individual passive sentences, overlooking the strong relationship between the passive voice and its rhetorical function. Existing studies also ignore the grammatical factors that constrain the translation equivalents of the English passive (Al-Ali and Alliheibi, 2015). Baker (1992: 102) adds that rendering a passive structure with an active structure, or vice versa, in a
translation can affect the amount of information given in the clause, the arrangement of the
semantic elements (such as the agent and the affected entity), and most importantly, the focus
of the message.

2.3.15.3 English agentive passive with Arabic agentive passive – other translation techniques
Other translation and contrastive-linguistics scholars argue that the English passive should not
be translated using one strategy alone. Rather, they encourage translators to employ other
replacements, depending on the context.

Farghal and Al-Shorafat (1996:106) investigated how translators in two groups (MA
translation students and translation professors) applied translation strategies to translate passive
sentences from English into Arabic. Their results identified five such strategies (arranged in
their study from the most to the least commonly used):

I. Nominalized verbal noun. This strategy, the authors claim, is the most useful. They
state that Arabic appears to have two types of pleonastic verbs (verbs often devoid of
semantic content): pleonastic verbs that always go with semantically based passives,
which are passive in meaning but not in form, and pleonastic verbs that always go with
semantically based actives. For example, the verb قامَت ليلي بزيارة المدرسة qāmat in qāmat
laylā bi ziyārati al-madrasati ‘Layla visited the school’ is a pleonastic active verb,
whereas the verb تعرَض البيت للحريق taʕʕaraḍ in taʕʕaraḍ al-baitu lil ḥariyq ‘The house
cought fire’ is a pleonastic passive verb. Their data reveal the positive employment of
pleonastic passive verbs in nominalisation for translating English passives into Arabic.
For example, the English passive sentence ‘Currently Chinese food is appreciated all
over the world’, can be translated as: في الوقت الحاضر يحظى الطعام الصيني بتقدير في جميع أنحاء
العالم fi al-waqtī al-ḥādir yahża al-ṭaṣṣāmu al-ṣīniyyu bi taqdīrin fi jamī:i anḥā:i al-ʕālam
‘Currently the Chinese food has the appreciation all over the world’. The passive
English ‘is appreciated’ can be translated into an Arabic nominalisation, involving a
verb plus a prepositional phrase with an abstract noun يحظى بتقدير yahže ... bi taqdīrin.

II. Passive. For example, ‘Gold is often used for decoration’ is translated as يَسَتَعمل الذهب
في التزيين yustaṣmalu al-ḏahab fi al-tazyīn ‘Is-used the-gold for decoration’.

III. Adjectival. If English passive verbs are subject to adjectivisation in Arabic, they are
mostly static or non-dynamic in nature (i.e. involving minimal to no action). For
example, ‘Chinese food is esteemed all over the world’ can be translated as
و للطعام
‘And for the Chinese food a value all over the world’. The authors recommend this strategy when confronting non-dynamic, non-action, English passive verbs.

IV. Active. The authors claim that the existing literature tends to overestimate how common this strategy is for translating English passives into Arabic. An example of this strategy is the sentence, ‘That study was conducted by scientists’, which is translated as قام العلماء بإجراء تلك الدراسة qama al-ʿulamāʾu biʾ ʿijrāʾ tilka al-dirāsah ‘The scientists conducted that study’.

V. Pseudo-active (or pseudo-passive). These verbs have an active form and a passive meaning. This strategy is the least common, according to the study results, but the authors argue that it is nonetheless very important, especially for translating certain English passive verbs (e.g., ‘be influenced’ and ‘be divided’). For example, ‘The region was divided into the two independent countries’ may be translated as ولم تنقسم المنطقتين إلى بلدين منفصلين إلا مؤخرًا wa lam tanqasim al-manṭiqatayn’ ilā baladayni mustaqillayni ‘illā mu’axxaran ‘And the region did not divide into two independent countries until recently’. The Form VII verb تنقسم tanqasim, which is active in form but passive in meaning, is used here to translate the passive verb ‘divided’. Al-Ali and Alliheibi (2015) identify two situations that give rise to the use of pseudo-passives: casual relations and presentation verbs. In casual relations, verbs such as ‘constrain’, ‘affect’, and ‘influence’ frequently give rise to pseudo-passives. For example, ‘Their cooking style was influenced by their surroundings’ is translated as تأثر أسلوبهم بما حولهم في الطبخ taʾaṯṯar uslūbuhum bimā ḥawlahum fī al-ṭabḳ ‘Was influenced by the surroundings the cooking’. In presentation relations, verbs such as ‘present’, ‘divide’, and ‘show’ also give rise to pseudo-passive forms. (An example of this is that mentioned above in relation to the verb ‘divide’.)

Khafaji (1996:104) proposes similar strategies for translating the English passive into Arabic:

- passive finite verb
- active finite verb
- nominalization using the infinitive
- past participle
A recent corpus-based study by Jamel and Khaled (2015:85) found three patterns in translations of the English passive in scientific articles:

- translation of the English passive sentence with an Arabic passive sentence
- translation of the English passive sentence with an Arabic active sentence
- translation of the English passive sentence with an Arabic nominal sentence, using either an infinitive or a passive participle

Another study by Al-Ali and Alliheibi (2015) found that, when faced with passive sentences, Arab translators typically resort to a number of techniques, such as exchanging the English passive for one of the following:

- مصدَر ‘a verbal noun’
- a pseudo-active verb structure
- an active sentence structure
- a standard ‘vowel melody’ passive
- omitting the passive structure in the TT

As noted in section 2.3.5, previous studies have suggested that the use of the passive in Arabic is more restricted than in English. Therefore, opting for alternatives is unavoidable if one wants to achieve an idiomatic Arabic TT. However, the choice should not be made randomly. The translator should replace the passive structure in English with a translation that they believe to be functionally and semantically acceptable. It can be concluded that the roles of the passive in Arabic and in English are by no means identical and various other factors, according to Baker (1992), should be taken into account: the form, function, stylistic value, and the frequency of use. As Nida and Taber (1982:4) note, true communication between languages occurs when the genius of each language is respected, thus the potentialities of the receptor language must be exploited to the greatest possible extent, rather than forcing the formal structure of one language at the expense of the other.

2.4 Passivisation in the Holy Quran

Due to the Islamic doctrine of the inimitability of the Holy Quran as the word of God, the linguistic features of the Quran, including the use of the passive, have been a topic of discussion among Arab grammarians since the Classical period. Among the 18,181 verbs in the Quran, only 957 are in the passive form (Nofal, 2011:149). According to Nofal (2011), Quranic passive
sentences are each either agentless or agentive. This contradicts the view of most traditional and contemporary Arab grammarians that the passive does not have an expressed agent, at least in its surface structure.

Nofal (ibid) confirms that the agentive passive exists in the Quran for purposes determined by God, which include three principles: to accord with the information flow in the sentence, to accord with the principle of end-weight, and to accord with end-focus (i.e., placing initial emphasis on the topic or theme of the clause). The Quran uses a variety of passive constructions, each serving a different purpose. Jamel and Khaled (2015:19) report five functions of the passive in the Quran:

- To express criticism, blame or disapproval of something – for example,

  
  أَيْحَسَبُ ٱلْإِّٰنسََٰ أَن يُتْرَكَ مَدْنَىٖ (surah al-qiyāmah, ayah 36) 'ayahsabu al-'insānu 'an yutraka sudan ‘Does man think that he will be left neglected?’ (translated by Sahih International).

- To show that a large number of people are being addressed – for example,

  
  وَإِذَا قَلَّ لَهُمُ أَسْجُدُواْ لِلْرَّحْمَٰنِ قَالُوُاْ وَمَا لَدَى لاَمْنَٰ (surah al-furqān, ayah 60) wa-'idā qīla lahum 'usjudū lil-raḥmān qālū wa-mā la-ḥmilān ‘When it is said to them, Prostrate to (Allah) Most Gracious!, they say, And what is (Allah) Most Gracious?’ (translated by Yusuf Ali).

- To show constancy and stability – for example,

  
  فِي سَبِّيلِ ٱلْأَمْوَاتِ بَلْ أَحْيَاءٌ وَلَكِّيْنَ يُقْتَلُ وَلَنْ تَقُولُوُا لِمَنْ لاَ تَشْعُرُونَ (surah al-baqarah, ayah 154) wa-lā taqūlū liman yuqtulu fī sabīli Allāhi 'amwāta bal 'aḥyā'un wa-lakin lā tašurūn ‘And say not of those who are slain in the way of Allah: "They are dead." Nay, they are living, though ye perceive (it) not’ (translated by Abdullah Yusuf Ali).

- To show supplication – for example,

  
  غَلَتْ أَيْدِيهِمْ وَلُعِّنُوُا بِبِمَا قَالُوُا (surah al-mā‘idah, ayah 64) ġullat 'aydīhim wa-lū‘inū bimā qālū ‘Chained are their hands, and cursed are they for what they say’ (translated by Sahih International).

- To show sarcasm, irony, and mockery – for example,

  
  وَٰذَٰئِنَ كُذِّبُوا بِآيَاتِنَا وَلَقَاءَ الْخَتَامِ حَبِبتْ أَعْمَالُهُمْ هُلْ يُجْزَوْنَ إِلَّا مَا كَانَوُا يَعْمَلُونَ (surah al-‘aʿrāf, ayah 147) wā-alladīna kadībū bī-‘āyātinā wa-liqā‘i al-ʿākirati habitat 'aṣmālūhum hal yujzavna illā mā kānū yīmutūn ‘And those who denied Our Signs and (the) meeting (of) the Hereafter - worthless (are) their deeds. Will they be recompensed except (for) what they used to do?’ (translated by Sahih International).
The agent is generally introduced by من ل ذن or من ل ذن ladun. For example, مِنْ min or مِنْ ل دُنْ min ladun. For example, كِت ابٌ أُحْكِم تْ آي اتُهُ ثُمَّ فُص ِل تْ مِنْ ل دُنْ ح كِيمٍ خ بِ(surah Hūd, ayah 1) kitābun ʾuḥkimat ʿāyātuhu ṯumma fuṣṣilat min ladun ḥakīmin ḳabīrī is translated as, ‘This is a Book with verses fundamental (of established meaning), further explained in detail from One who is wise and well-acquainted (with all things)’ (translated by Abdullah Yusuf Ali). Nofal shows that in ‘the corpus of the Holy Quran’– or more accurately, ‘The Quranic Arabic corpus’, the only recognised Arabic corpus of the Holy Quran – there are semantic reasons why the passive voice is often preferred to the active voice (Nofal, 2013:894): namely, to express the prominence of the goal and agent, shifting attention from the agent, and to elaborate on the agent. The passive is also more appropriate for complex sentences, suspense-inducing effects, and the maintenance of the same grammatical subject over successive sentences. Al-Raba’a (2013: 211) also notes that the use of the particle من ل ذن min in agentive passives in Quran is prevalent when the agent is God and is seldom, if ever, employed in other Arabic sentences. For example, كِت ابٌ أُحْكِم تْ آي اتُهُ ثُمَّ فُص ِل تْ مِنْ ل دُنْ ح كِيمٍ خ بِ (surah Hūd, ayah 1) kitābun ʾuḥkimat ʿāyātuhu ṯumma fuṣṣilat min ladun ḥakīmin ḳabīrī which is translated as ‘This is a Book with verses fundamental (of established meaning), further explained in detail from One who is wise and well-acquainted (with all things)’ (translated by Abdullah Yusuf Ali), واتتبع ما يُوحى ﺍليك من ﺭبك (surah al-aḥzāb, ayah 2) wa-ttatbiʿ ʾīlay-k min rabb-ik ‘But follow that which comes to thee by inspiration from thy Lord’ (translated by Yusuf Ali), and ويقول ﺍلذين كفروا لولا أنُزﻝ عليه آيه من ﺭبه (surah al-raʿḍ, ayah 27) wayaqūlu allaḏīn kafarū lawlā ʾunzil ʿāyah min rabb-ih ‘And those who disbelieved say, “Why has a sign not been sent down to him from his Lord?”’ (translated by Sahih International). All these examples place God as the agent.

In other agentive passives, such as فَلَأَمَّا ﺛَمَودُ فَأُهْلَكُوا بِالطَّاغِيَةُ (surah al-ḥāqqah, ayah 5-6) faʾmā ṯamūdu faʾuḥlikū bilṭāġiyah waʾmā ṣāda faʾuḥlikū birīḥ ṣarṣar ṣātiyah ‘The Thamud, they were destroyed by a terrible storm of thunder and lightning! And the Ad, they were destroyed by a furious wind, exceedingly violent’ (translated by Yusuf Ali), there is an agent that is not God. However, it is interpreted as ‘The Almighty Allah destroyed the Thmud with a terrible storm of thunder and lightning, and ‘He destroyed the Ad with a furious wind, exceedingly violent’.

Al-Raba’a adds that an agentive passive structure is sometimes possible when two objects exist in the sentence along with the agent (one is a direct object and the other is an indirect object).
On the other hand, if the passive sentence has just one (direct) object, it is grammatically incorrect to mention the agent.

The agentive passive presence in the Quran can be explained in the following ways:

- Some passives are highly ambiguous; and depending on their interpretation, the ‘agentive’ phrase could be regarded as a standard non-agentive prepositional phrase.
- Some passives are pseudo-passives.

In addition, almost all traditional Arab grammarians agree that Arabic is traditionally agentless.

2.5 Translating the passive voice from Arabic into English

Translating the English passive into Arabic causes difficulties due to the disparities between the languages on the syntactic and other levels and translating the Arabic passive into English is no less complicated. The reasons for this given in the literature include the following: (i) the passive is statistically less frequent in Arabic than in English; (ii) the agent serves different syntactic and semantic purposes in the two languages; (iii) there are differences between the word orders of the two languages; (iv) translators attempt to achieve a natural equivalence with the target language, making structural adjustments — often because the agent is not to be mentioned in Arabic (Rhazi, et al. 2017). A study by Jamel and Khaled (2015:80) exploring the frequency of the passive in Arabic source texts versus their English translations found that the English translations had a higher percentage of passive verbs (7.5%) than the Arabic source texts (5.8%).

Translating an Arabic passive into an English passive can be problematic, particularly when the agent is accepted in the latter and avoided in the former. One example is the translation of the Arabic sentence استمتع الطعام استمتاع الطعام, which translates literally into English as, ‘The food was enjoyed’. However, a more standard English sentence would be with an agent, e.g. ‘The food was enjoyed by the girl’ (with the girl being the person doing the eating), as the agent is avoided when it is a personal pronoun and retained for anything else.

2.6 Translating the passive voice from English into other languages

Chomsky (1981, cited in Ishizuka, 2010: 16) notes that a good place to start when learning about the passive voice systems in other languages is understanding the English passive and its principles. When translating the passive voice from English into another language, issues are
to be expected. Generally, differences in grammatical features, as well as cultural differences between the languages, can create problems in translation. It has been observed that the translation of the English passive voice has left its fingerprint on a variety of languages, including those described in the following sections. This is to show the influence of the English passive voice is not limited to the Arabic passive.

2.6.1 English to Indonesian
The translation of the passive from English into Indonesian has been semantically and syntactically analysed by Widya and Ayu (2016). The data in their study were analysed using a qualitative descriptive approach. Semantically, the translation sounds natural and delivers the correct meaning where the source text is adapted to the cultural context of the target text. Syntactically, the translated text uses grammatical features of both the SL and TL (Widya and Ayu, 2016:130). There is a grammatical unit shift in the translation of the English passive voice into the Indonesian passive voice (129).

2.6.2 English to Czech
Plecháčková (2007) investigated the passive voice in both English and Czech. The author argues that the function and use of the passive voice are different in the two languages. They are somewhat similar, however, in that – in both languages – the passive is used to express verbal action, without specifying the agent; but unlike English, Czech has two types of passive: the periphrastic and the reflexive. The first has a similar structure to that of the English passive; hence, it is often translated into an English passive form. The second does not have a corresponding form in English and is typically translated into an English active form.

Czech makes no deliberate efforts to avoid the passive, but the structural differences – in addition to the availability of several active voice possibilities – make the passive less important than it is in English. Czech is similar to Arabic in that it prefers an active structure in the target text when the agent is expressed. Passive is used in translation when other active forms are not suitable to replace the agentless English passives (ibid).

2.6.3 English to German
Both English and German belong to the West Germanic language group; but unlike English, which has been significantly influenced by other languages, German has stayed relatively close to its roots (Treptow, 2012:1). There is an obvious contrast between the passive voice
participant roles of the two languages. A study by Bisiada (2018:5) found that English was more flexible and allowed any participant role to become a subject, while in German, the participant role must have a direct-object function in the active voice to become the subject of the passive structure. The study found that translators chose to use empty subjects and to keep sentences in the passive voice, even in scenarios where the subject of the active construction was an indirect object.

2.6.4 English to Persian

The passive in Persian emphasises the action, rather than the agent of the action, and it occurs less frequently than it does in English (Abbasi and Arjenanb, 2014:10). Translation has changed some grammatical elements of the Persian language. The passive, for instance, is expressed using two methods. The first appears in both speech and writing and includes quasi-passive verbs (Mohammadian, et al. 2017: 23). The other, more common method is used in writing and has emerged through translations from English and French, resulting in a new kind of passive verb in the form of a verbal group. This combines mored ‘a particular idea about something’, and gharar gereftan ‘be fixed on, upon, be placed, or become quiet’, or vaghe shodan ‘take place, happen, be located (at)’ with transitive verbs, such as morede khoshoonat gharar gereftan ‘to be violated’ (ibid, 2017: 32).

2.6.5 English to Greek

Malamatidou (2013) considered the influence of English structure on the use of the passive in modern Greek translated texts. She investigated whether texts translated from English into Greek were closer to their source language than the original Greek texts. Both English and modern Greek prefer active over passive voice, but the passive is more common in English. However, when original Greek articles were compared with their translated counterparts, the frequency of the passive did not differ significantly. In fact, the distribution of the passive in the original Greek texts appeared to be closer to that found in English than to that found in Greek texts translated from English. Malamatidou’s results indicate that modern Greek employs translation-specific features in target texts that are dependent on the source language. The results also point to a similarity between translated and more recent non-translated texts, as compared to older non-translated texts, suggesting that English translation encourages the use of particular linguistic features in non-translated texts. Malamatidou argues that this does not necessarily mean that English does not have an influence on Greek translated texts. On the
contrary, it means that the influence of English has extended to include original texts. Another explanation for this is that the passive is more commonly used in formal texts than in non-formal ones. Moreover, modern-Greek word-order is generally fairly flexible, with SV being the most common. However, Malamatidou shows that the frequency of this structure is much higher than suggested by earlier research, raising the possibility of external influence – in particular, the influence of English patterns. Even where the VS word order would be an easier option, Malamatidou found that SV was preferred.

2.6.6 English to Chinese

As mentioned previously, the passive is used in English when the agent is unknown or does not need to be mentioned; but in Chinese, traditionally, the agent must be included in the passive sentence, and when it is difficult to identify, expressions such as ‘person, someone, people’ can be used to refer to it (Xiao and Dai, 2014: 18). Passives that reveal the agent are usually referred to as ‘long passives’, whereas those that do not are classified as ‘short passives’. The passive in Chinese is marked by the syntactic passive markers bei, jiao, rang, and gei and the archaic structure wei ... suo. Only three of the five Chinese syntactic markers (wei ... suo, jiao, and rang) can appear in the long passives, while bei and gei appear in the short passives but in proportions lower than those found in English. Some passive markers, such as bei, can be used with long and short passives, while wei and suo are only found with the long passive. Xiao and Dai (2014: 18) compared original Chinese texts with English translations, using comparable corpora, and conclude that the proportion of short passives in the corpus of translational Chinese was considerably larger than that in the Lancaster corpus of Mandarin Chinese. Since the short passive is the statistical norm in the English passive, the greater use of the short passive in the translated Chinese texts points to the influence of the source language (i.e., English). It was also revealed that, in the translated Chinese, the passive was significantly more common than in the original Chinese texts. Since the passive is over ten times more frequent in the English texts than in the original Chinese, it is unsurprising that the passive occurs more frequently in translated Chinese texts (ibid).

2.6.7 English to Catalan

A study by Griera (2014) analysed 12 randomly chosen, 20th-century, English novels and their Catalan translations, written by different translators for greater objectivity. It has been reported that some Catalan registers have seen an increase in the use of the passive voice due to the
influence of the English language. Media, specifically dubbed English films and television, have encouraged this influence. When translating passive sentences into Catalan from English, many translators are influenced by the English passive form (Griera, 2014: 26).

2.6.8 English to Japanese

Ogawa (1967: 23) conducted a study on the passive form in Japanese and the influence of the West. He reports that contemporary Japanese grammar is a mixture of the traditional grammar and that introduced in the 19th century by the Dutch and the English. Many describe contemporary Japanese grammar as the traditional form, heavily influenced by Europe. Some of the first Japanese grammar books were written in Spanish and Latin and based on Latin grammar, written for the purpose of spreading Christianity in Japan. It has been reported that the transformation process of the transitive into the intransitive verb sentence in Japanese is the same as that of the English active into the passive voice (ibid, 65). In Japanese, as in English, the ordinary passive sentence is formed from the active sentence. The object in the active sentence is transformed into the subject of the passive sentence. The Japanese active verb is converted into the passive by adding the suffix -(r)areru, there being two forms of the Japanese passive suffix: -areru, when the stem ends with a consonant, and -rareru, when the stem of the verb ends in a vowel. Moreover, the subject of the active sentence in Japanese can take the agent role in the passive structure when followed by the particle -ni, similar to ‘by’ in English (ibid, 71). Ishizuka (2010: 15) also reports that the Japanese passive is very similar to the English passive. She adds that, in Japanese passives, the meaning of the dative ‘by’ is similar to that of the English ‘by’.

2.6.9 English to Italian

In one corpus-based study, popular physics articles translated from English into Italian were compared with a corpus of original Italian texts to investigate whether the structure of the Italian language had been retained during the translation process from English. The results revealed that the translations, to a certain degree, did use the English structure. However, the passive voice and impersonal constructions were frequently rephrased in the active voice (Musacchio, 2003: 93).

To summarise, this chapter explains how English changed and expanded over the years from being a migrant language from northern Europe, to be the most dominant language today in various fields, the factors that made that possible, and why it has maintained its status. This
chapter also discusses the different types of users of English, reasons for learning English, and attitudes towards it. Next, the influence of English translation on the syntax of other languages, namely, Taiwanese Mandarin, mainland Chinese, Japanese, Hebrew, Punjabi, German, Greek, French, Czech, Italian, Swedish, and Arabic is mentioned briefly. This is followed by background information on the origin of the Arabic and English languages, how they came into contact, and the influence of English on Arabic grammar, which is then narrowed to the passive voice. The next section discusses the passive voice, specifically its structure, uses, the passivisation process, medio-passive, transitivity, and the agent in Arabic and English. The chapter concludes by mentioning passivisation in the Holy Quran, how the passive is translated from English into Arabic and from English into other languages.
Chapter Three

Theoretical Framework and Methodology

3.1 Theoretical framework: introduction to corpus-based method in translation studies

The corpus-based approach has proven to be a valuable source of information when studying language in general – and translation and translation research specifically – especially in recent decades, with the wealth of data now emerging from studies using distinct types of corpora. This chapter examines the use of corpora in translation studies. It begins with the early development of the method and then provides definitions of the different types used in the current study.

3.1.1 Historical overview

Corpus methodology dates back to 1940, when it was used by field linguists. At that time, it was harshly criticised for its ‘skewedness’ and was marginalised as a result in the late 1950s. During that period, a corpus typically consisted of shoeboxes filled with paper slips, and the data used were simple collections of written and transcribed texts. It was virtually impossible to collate and analyse large bodies of data. Then, between 1957 and 1965, Chomsky shifted the direction of linguistics – from empiricism towards rationalism. During that period, a number of general linguists rejected corpus data (McEnery, et al. 2006). The birth of modern corpus linguistics dates back to the early 1960s, when the first generation of one-million-word computer-readable corpora were created at Brown University. The Brown corpus was the first corpus, and its stated aim was to represent contemporary written American English (Laviosa, 2006:5; Zanettin, 2012: 7). The rapid development of corpus linguistics in 1980s saw the marriage of corpora with computer technology, and both corpus-based studies and the number and size of corpora have all since increased dramatically (McEnery, et al. 2006; Baker, 2009: 238). Corpora can be used in many different disciplines, including lexicography and lexical studies, grammatical studies, diachronic studies, language variation, sociolinguistics, language education, literary and stylistic studies, critical discourse analysis, and contrastive and translation studies (McEnery, et al. 2006).

Corpus-based translation studies first appeared in the beginning of 1990s, pioneered by Mona Baker, who employed a corpus to explain translation phenomena (Guo-rong, 2010). The Translational English Corpus (TEC), a multilingual corpus at the former University of
Manchester Institute of Science and Technology (UMIST; now part of the University of Manchester), which is currently available online, was one of the very first in translation research to be created for research purposes under her direction (Zanettin, 2012: 13).

What distinguishes translation-driven corpora from other types of corpora is that the former usually involve the comparison of at least two key sets of data, which may be texts from two different languages or texts in different varieties in the same language (i.e., translated vs non-translated texts; ibid: 10).

Tymoczko (1998:653) rejects the use of a corpus-based approach in translation studies to establish universal laws of translation, arguing that all stages of corpus analysis – from the decision to conduct this type of research to the choice of research questions, from corpus design to the interpretation of results – are permeated by the subjective judgements and intuition of the researcher. However, with the development of electronic models for handling information, any discipline wishing to sustain itself in this fast-paced era must adapt its methods and contents accordingly. Moreover, corpus translation studies provide access to very large quantities of data – more than any single human being could ever manage to gather and investigate in a lifetime without the assistance of electronic tools (Grigaliūnienė, 2013: 74).

The word ‘corpus’ is derived from the Latin for ‘body’, and its plural is ‘corpora’ (McEnery, et al. 2006). Sin-wai (2004: 46) defines a corpus as ‘a body of written or verbal data collected for linguistic analysis or some specific purpose’ (Laviosa, 2006; Zanettin, 2012). Francis defines a corpus as ‘a collection of texts assumed to be representative of a given language, dialect or other subset of language, to be used for linguistic analysis’ (cited in Laviosa, 2006: 6). Zanettin (2012: 7) defines a corpus in the field of linguistics as ‘a collection of texts in electronic format which are processed and analysed using software specifically created for linguistic research’. The three essential qualities of every corpus are machine-readability, authenticity, and representativeness (McEnery, et al. 2006). A corpus differs from other large collections of machine-readable text (e.g., electronic text libraries) in that it is built according to explicit design criteria for a specific purpose (Atkins et al. cited in Baker, 1998: 50).
3.1.2 Reasons for using a corpus-based approach

As Beaugrande (1994, cited in Zanettin, 2012: 7) reports, since language is a social phenomenon and investigating it starts from actual data, corpus linguistics is the recommended methodology for the study of language. Jones and Walter (2015:9) add that a corpus allows us to analyse large quantities of language and discover patterns of usage that human beings may miss. This allows researchers to develop clearer and more accurate descriptions of language, which can inform practice and enhance our understanding of language in use.

In addition to providing a means of handling large amounts of language, a corpus also keeps track of many contextual factors at the same time. Corpora have opened the way to a multitude of new investigations of language use (Biber, et al. 1998).

The use of a corpus also successfully limits dependence on human intuition, whose use cannot be justified beyond personal testimony (Wynne, 2005). Unlike native and expert speakers of a language, corpora can be comprehensive and balanced, show what is common and typical, readily provide accurate statistics, recall all the stored information, deliver vast numbers of examples, offer objective evidence, be made permanently accessible to everyone, and encompass the actual language use of many expert speakers (McEnery, et al. 2006). Corpus linguists are careful not to deny the role of intuition in language research, but they note that results based on intuition differ greatly from those based on evidence from corpora (Grigaliūnienė, 2013:18).

3.1.3 Uses of corpora

Some of the important uses of corpora are as follows (Baker, 1995; Sin-wai, 2004):

- to extract cases of polysemy (i.e., the different meanings of a word) and to determine which are more frequent and which more peripheral
- to obtain lists of words relevant to dictionary compilation
- to calculate word frequencies when choosing entries in target-specific dictionaries
- to identify real-life examples and illustrations for inclusion in intended dictionaries
- to search for both grammatical and lexical collocations (covered later in this research)
- to improve translation quality and provide fruitful learning environments (Beeby et al., 2009:1)
- to generate and verify new linguistic hypotheses (McEnery, et al. 2006)
• to test existing theories and hypotheses (ibid)
• to construct statistical machine translation systems (Alkahtani, et al. 2015)

3.1.4 The disadvantages of corpora

However, Beeby et al. (2009:1) note that corpora have a number of disadvantages, including the following:

• Corpus data have to be interpreted and comparatively evaluated to reach conclusions, and this requires both technical skill and critical thought.
• It is difficult to deny that corpus use is anti-economic in the short-term.
• Corpus consultation and construction are notoriously time-consuming.
• For translators, corpora rarely provide immediate answers to a translation problem, unlike translation memory and machine translation.

Chomsky (cited in Olohan, 2004) has also argued the use of corpora in linguistic research has a fundamental shortcoming, in that linguistics is the study of language competence, while the data provided by the corpus are primarily concerned with language performance. What Chomsky means by ‘competence’ is the human mental ability to produce language, while ‘performance’ is the utterances that speakers actually produce. Malmkjaer (cited in Baker, 1998: 52) has also warned that the amount of data provided by corpora may lead scholars to marginalise problematic cases. However, the current situation is different from what it was even in the recent past, and nobody could deny the importance of employing corpora in research (Grigaliūnienė, 2013:24). The corpus methodology has opened up several new areas of research and enjoys widespread popularity.

In addition to its shortcomings observed by some theorists, the use of corpora has other limitations: there are certain things that corpora cannot include (e.g., negative evidence and explanations for the data or observations). Additionally, as the findings are usually based on one particular corpus, they can only tell us what is true about that corpus (McEnery, et al. 2006). The usefulness of corpora also depends upon the research questions at hand, as a corpus is only a method of answering research questions. Xiao (cited in McEnery, et al. 2006) compares the introduction of corpus methodology into language studies to the invention of telescopes in astronomy: one cannot criticise a telescope for not being a microscope; similarly, one cannot criticise the corpus-based approach for incorrect use of the method.
Nonetheless, a corpus will frequently fail to show features that are anticipated or will show features not typical of the language under study. A corpus, regardless of how detailed its design and how large its size, can never have the precise characteristics of the language it represents. This is because the evolutionary process within and outside of a language cause it to develop continuously – changing the size of its vocabulary, the structure, and the variety of its realisations. Thus, no limits can be placed upon a natural language (Wynne, 2005:6).

3.1.5 The advantages of corpora

The advantages of corpora in research outnumber the disadvantages. Biber, et al. (1998) argue that corpus-based analysis is empirical, analysing actual patterns of use. It utilises a large collection of natural texts, makes extensive use of computers for analysis, and depends on both quantitative and qualitative analytical techniques.

Grigaliūnienė, (2013:16) reports that the advantages of using corpora in language research include the following:

- Authenticity: this controversial term can mean different things to different people. In this context, it means natural and genuine spoken, written, or signed language that has occurred naturally for purposes other than linguistic research (i.e., it was not composed for the purpose of analysis) and without the intervention of a linguist. It is more reasonable to investigate language and linguistic problems by examining authentic texts than by inventing sentences and texts.

- Objectivity: since there is no prior selection of data when using a corpus, an objective outlook emerges.

- Verifiability: corpora provide verifiability. This is a standard requirement in scientific research and, more specifically, in the scientific study of language.

- Exposure to large amounts of language.

- New insights into language studies.

- Improvement in learner motivation.
McEnery, et al. (2006) add that corpus data is more reliable than data from other sources, occurs more naturally, is contextualised and quantitative, and can provide data that intuitions cannot perceive.

3.2 Corpora in translation studies
Numerous scholars have attempted to classify the types of corpora in translation studies. Biel (2010) proposes four types: monolingual corpora, monolingual comparable corpora, bilingual comparable corpora and parallel corpora. Olohan (2004:35) reports two types:

- corpora of comparable source texts in two or more languages ‘bilingual or multilingual comparable corpora’
- corpora of source texts and their translations into two or more languages ‘parallel corpora’, whether bilingual or multilingual

Baker (1993-1998) identified three types of corpora that are particularly relevant for translation studies: parallel, which she defines as ‘a type of corpus consisting of the same text in more than one language’, comparable, which she defines as two separate collections of texts in the same language, one consisting of original texts in one language (e.g. Arabic) and the other of translations into that same language from a given source language(s), and multilingual, which she defines as ‘sets of two or more monolingual corpora in different languages, built up either in the same or different institutions on the basis of similar design criteria’. For the purposes of this research, we will use Baker’s categorisation.

**Reasons for using Baker’s parallel and comparable corpora**
The aim of the present thesis is to investigate whether translation-specific features have influenced the Arabic language, which necessitated the use of a combined approach. A comparable corpus, in combination with a parallel corpus, is useful for revealing the linguistic features typical of translated texts. Of the three types of corpora (parallel, comparable, and multilingual), Baker suggests it is the comparable that reveals the most about the specific features of translated texts. Comparable corpora are a useful resource for contrastive studies and translation studies when used in combination with parallel corpora, as mentioned.

To answer the research questions, the parallel and comparable corpora were divided into two sub-corpora each, one containing texts from 1997-2000 and the other containing texts from 2016-2018. The time span of 16 years that separates the two sample periods allowed a reliable comparison. A larger time gap would have been preferable had there been no availability
restrictions. Moreover, it proved impossible to find translated texts in the desired genre from before 1997. The Arabic texts translated from the English in the 1997–2000 texts were compared with those from 2016–2018 to determine diachronic changes. The comparable corpus was then investigated for changes in the non-translated texts.

Bisiada (2016) explains that a diachronic analysis conducted at two points in time will facilitate a comparison of the frequency of the features under investigation at both later and earlier stages. It also ensures that any linguistic differences between the texts are attributed to their status as translations versus non-translation, rather than to confounding variables (Laviosa, 1997:290, cited in Kruger, 2002:88).

Diachronic analysis is the study of linguistic development through time. In his study, Bisiada (2016) applied a diachronic analysis of a corpus at two points in time (1982 and 2008) to investigate concessive constructions. His corpus included English articles from 1982 along with their German translations, and he compared these with texts originally written in German from 2008. As the frequencies are consistent at each point in time, it was easier to describe the diachronic differences between the two sub-corpora. They were described by correlating the corresponding data from each point of time. The frequency ratio was then applied to show diachronic developments and to compare word frequencies between texts. Bisiada found that hypotactic structures were used more frequently in the translated texts from 1982 than in the original texts written in German in 2008.

3.2.1 Parallel corpora

Oakes and McEnery (2000:1) define a parallel corpus as ‘a corpus that contains the same text samples in each of two languages, in the sense that the samples are translations of one another’. Baker (1993/1998:51) defines a parallel bilingual corpus as ‘a type of corpus consisting of original source texts in one language and their translations in other language’. Parallel corpora can be bilingual or multilingual – and unidirectional (e.g. from English into Japanese or from Japanese into English alone) or bidirectional (e.g. including both English source texts with their Arabic translations, and Arabic source texts with their English translations) (Anderman and Rogers, 2008: 21). Texts used for comparison in parallel corpora should cover similar domains, time spans and lengths to guarantee that any linguistic differences discovered result from the texts’ different statuses as source and target texts (Laviosa, 1997:290, cited in Kruger, 2002:88).
3.2.1.1 The uses of parallel corpora
Parallel corpora can be used to provide information on language-pair-specific translational behaviour, to posit certain equivalent relationships between lexical items or structures in source and target languages, and to study the phenomenon of translationese (Baker, 1998:51).

3.2.1.2 The disadvantages of parallel corpora
Johnsson and Oksefjell (1998) do not recommend the use of a parallel corpus, arguing that translated texts are not properly representative of ordinary language use. They suggest that translated texts differ from original texts because of the source-text influence. This problem, however, can be reduced by using a comparable corpus alongside the parallel one. Malmkjaer (1998) adds that copyright permission is usually required for both the source and target texts, and alignment software is also needed to link the two texts.

3.2.1.3 The advantages of parallel corpora
Malamkaer (1998) states that a parallel corpus can reveal the characteristics of translated texts – such as the avoidance of repetition and tendencies towards explicitness. Mcenery and Xiao (cited in Anderman and Rogers 2008:18) list the advantages of parallel corpora as follows:

- They give insights into the languages being compared that are not likely to be gained via the study of monolingual corpora.
- They can be used for a range of comparative purposes and increase our knowledge of language-specific, typological, and cultural differences, as well as universal features.
- They illuminate differences between source texts and translations and between native and non-native texts.
- They can be used for a number of practical applications (e.g., language teaching and translation).

3.2.1.4 Parallel corpora in the Arab world
Unfortunately, there is a relative lack of interest in the use of corpora in Arabic language studies. While a number of corpora are available on the internet, many Arabic corpora have simply been extracted from online resources such as Twitter (Karima and Smaiïli, 2016) and other social networks (Hajjem, et al. 2013); online news websites (Abdul-Rauf and Schwenk, 2009; Smith, et al. 2010; Abdul-Rauf and Schwenk, 2011); and Wikipedia (Abdul-Rauf and
Schwenk, 2009; Smith, et al. 2010; Saad, et al. 2013; Aker, et al. 2013). Such corpora are problematic for reasons that will be discussed later in section 3.2.1.4.2.

3.2.1.4.1 Review of the available Arabic/English corpora

As the source language of the following corpora is Arabic, it was not possible to use them in this thesis.

- Arabic/English Parallel Corpus
- Open Parallel Corpus (OPUS)
- GALE Arabic Broadcast News Parallel Text.
- TRAD Arabic/English Newspaper parallel corpus
- Microtopia (a multilingual corpus extracted from Twitter and Sina Weibo)
- King Saud University Arabic/English Parallel Corpus
- Alkahtani et al. (2015) parallel corpus
- ISI Arabic-English Automatically Extracted Parallel Text
- TED Parallel Corpus
- Hadith corpus
- Quranic Arabic corpus

Properly computerised corpora of parallel texts for English/Arabic are few in number for many reasons (Al-Ajmi, 2011; Al-Thubaity, 2014). First, the practice of using a corpus in research in general – and in translation studies research in particular – is relatively new and many researchers do not even consider it. Second, there is a lack of the free and easy-to-access software needed to compile a corpus and a lack of training on how to use such software. There are also difficulties in handling the Arabic alphabet, due to its cursive nature and the direction of writing (right to left). Third, the search for official, good quality translations in different genres of Arabic is challenging, and the associated copyright issues are time-consuming. Finally, there is a lack of funding for corpus-building and many funding authorities doubt the effectiveness of corpora.

3.2.1.4.2 Review of the available English/Arabic corpora:

- EuroMatrix multilingual parallel corpus
- The English/Arabic Parallel Corpus of the United Nations Texts (EAPCOUNT)
- English/Arabic parallel texts corpus of Kuwait University
- MultiUN: A multilingual UN parallel corpus
- AMARA corpus by Qatar University

A detailed review of the existing English/Arabic and Arabic/English corpora can be found immediately below.

<table>
<thead>
<tr>
<th>Parallel corpus name</th>
<th>The research paper’s title</th>
<th>Access</th>
<th>Size</th>
<th>Genre of the texts</th>
<th>Language pair</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>English-Arabic parallel text corpus of Kuwait university</td>
<td>‘A new English-Arabic parallel text corpus for lexicographic applications’</td>
<td>Limited and requires a username and a password. Only available to the university’s staff and students</td>
<td>3 million words</td>
<td>Publications of the Kuwait National Council for Culture, Arts, and Letters (English translations of scientific, legal, political, and economic texts with similar stylistic levels)</td>
<td>English texts and with their Arabic translations</td>
<td>The search tool employed in this project was the al-Idrisi search program developed by Sakhr software. Its search abilities cover exact matches, root-based searches, as well as derivatives, synonyms, antonyms, and recognition of Arabic affixes. It also uses wildcard searches, employs relevancy ranking, and ignores common Arabic errors. An Arabic tree bank was also used.</td>
<td>Not available for public use (only available to Kuwait University staff and students). Not tagged with POS.</td>
</tr>
<tr>
<td>Arabic-English parallel corpus</td>
<td>Not available for public use</td>
<td>204,117 words, and 7,877 texts</td>
<td>General translated texts from al-Hayat newspaper and opus</td>
<td>Arabic to English</td>
<td>All translations done by linguistic data consortium.</td>
<td>Very small, limited, and not POS tagged. Corpus from Arabic&gt;English.</td>
<td></td>
</tr>
<tr>
<td>Gale phase 2 Arabic broadcast news parallel text</td>
<td>42,089 words of Arabic source text and their English translations</td>
<td>Arabic news and other news programmes and broadcasts</td>
<td>MSA source texts and correspondingly English translations</td>
<td>All translations done by linguistic data consortium.</td>
<td>Parallel corpus from Arabic&gt;English.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euromatrix 1996–2011</td>
<td>1.5 million Arabic words</td>
<td>The proceedings of the European Parliament translated</td>
<td>Multilingual parallel corpus</td>
<td>The project’s aims involve developing and promoting machine</td>
<td>Most translations are provided by a machine translation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 https://catalog.ldc.upenn.edu/LDC2004T02
2 http://aeparallelcorpus.net/index.php/content/search
<table>
<thead>
<tr>
<th>Source</th>
<th>Public</th>
<th>Size/Details</th>
<th>Translation Systems</th>
<th>Genre</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>English-Arabic parallel corpus of United Nations texts (EACOUNT)</td>
<td>Public</td>
<td>7,550,418 tokens (half English and half Arabic)</td>
<td>Resolutions and annual reports issued by different UN organisations and institutions</td>
<td>English texts and with their Arabic translations</td>
<td>Texts produced by these selected international bodies can be considered highly reliable translations</td>
</tr>
<tr>
<td>Multiun: a multilingual un parallel corpus</td>
<td>Free and available for public use</td>
<td>Texts extracted from UN website</td>
<td>English and Arabic texts</td>
<td>Texts not tagged, dated between 2000 and 2009, and the genre of the texts is not stated.</td>
<td></td>
</tr>
<tr>
<td>TED-parallel-corpus³</td>
<td></td>
<td>12 languages for bilingual parallel corpus, over 120 million aligned structures</td>
<td>Various</td>
<td>Arabic with no English counterpart</td>
<td>Links provided on the website do not work and the corpus material comprises spoken language (not written).</td>
</tr>
<tr>
<td>ISI Arabic-English automatically extracted parallel text ⁴</td>
<td></td>
<td>1,124,609 sentence pairs. Word count on the English side is approximately 31 million words.</td>
<td>Extracted automatically from two monolingual corpora: Arabic gigaword and English gigaword.</td>
<td>From Arabic &gt; English. Not tagged with POS. Very expensive to use (4000 USD).</td>
<td></td>
</tr>
<tr>
<td>Multilingual corpus at University of Manchester Institute of Science and Technology (UMIST)</td>
<td>Not available for public use, and copyright permission obtainable only for research investigation</td>
<td>Arabic (1 million tokens)</td>
<td>Involves information technology texts. Texts primarily consist of manuals and online help text for computer systems, hardware, and software, as well as material from multilingual it-specialised websites</td>
<td>From English to Arabic and Swedish</td>
<td>Not available for public use</td>
</tr>
<tr>
<td>The Open Parallel Corpus⁵ (OPUS)</td>
<td>Free, multilingual parallel corpus</td>
<td>Contains translated texts collected from the web.</td>
<td>From Arabic to English</td>
<td>Provides open-source tools for processing parallel and monolingual data as well as</td>
<td>According to its website, all pre-processing was done automatically, suggesting that</td>
</tr>
</tbody>
</table>

³ https://github.com/ajinkyakulkarni14/TED-Multilingual-Parallel-Corpus  
⁴ https://catalog.ldc.upenn.edu/LDC2007T08  
⁵ http://opus.nlpl.eu/
several interfaces for searching the data to help with various research activities. no manual corrections were made. Texts were collected from the internet, thus the sources of the translations are unknown.

<table>
<thead>
<tr>
<th><strong>AMARA (by Qatar University)</strong></th>
<th>The AMARA corpus: building parallel language resources for the educational domain</th>
<th>2.6 million Arabic words. 3.9 million English words</th>
<th>Extracted subtitles from educational videos (TED and Khan Academy), not hard-copy texts.</th>
<th>From English to Arabic</th>
<th>Translation wasn’t necessarily done by professional translators (but by volunteers), hence the quality of the translations is questionable.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>King Saud University Arabic-English parallel corpus</strong></td>
<td>Available for public use</td>
<td>Target figure for the corpus is upwards of 10 million words (and counting).</td>
<td>Covers a wide range of text types and rich metadata.</td>
<td>From Arabic to English</td>
<td>All translations by human translators. Project involves the design and implementatio n of Arabic-English concordance software.</td>
</tr>
<tr>
<td><strong>Trad Arabic-English newspaper parallel corpus</strong></td>
<td></td>
<td>10,000 words in Arabic and 2 reference translations in English</td>
<td>Articles collected in 2012 from the Arabic version of Le Monde Diplomatique</td>
<td>From Arabic to English</td>
<td>From Arabic to English</td>
</tr>
<tr>
<td><strong>Microtopia: a multilingual corpus extracted from Twitter and Sina Weibo</strong></td>
<td>Microblogs as parallel corpora</td>
<td>A free corpus</td>
<td>Texts extracted from microblogs such as Twitter and Sina Weibo</td>
<td>From Chinese to English and Arabic to English</td>
<td>Colloquial writing style, which poses considerable problems for traditional NLP tools. Also, from Arabic to English.</td>
</tr>
</tbody>
</table>

Table 3.1. Review of the available Arabic/English corpora

It was not possible to use any of the above corpora, for a number of reasons. First, none are ‘part of speech’ (POS) tagged. More specifically, none are syntactically marked. This could be due to the complexity of Arabic syntax or because the aim of these corpora differs from the aim of this study: this study focuses on English and Arabic syntax, while the other corpora focus on different issues. Second, the texts are primarily limited to online newspapers, videos, websites, and parliamentary proceedings. Newspapers and online websites were not used because it is often difficult to identify the source language. Some of the texts are translated, while others are written in very weak structures and using colloquial language. The videos were

not used because spoken language is different from written language, thus the results could not be generalised to include written language. Moreover, the passive form is rarely used in spoken language (even more rarely than in literary writing) and is more common in written texts (Biber, et al. 2002: 167). This is the case, for example, in the open parallel corpus (OPUS), where the texts are collected from the internet, and in the EAPCOUNT, where the source language is often unclassified. Third, some corpora were not available for public use. For example, access to the English-Arabic parallel text corpus of Kuwait University was limited, required a username and password to access, and was only available for the university’s staff and students. Fourth, some texts were translated by machine and not by human translators, which resulted in a lower quality. For example, the translations in the EuroMatrix corpus were performed by machine translation, and the translations in the AMARA corpus were completed by volunteers (rather than professional translators), which affected the quality. Finally, it was difficult to identify the dates of the texts in some of the corpora. The dates on which the texts were published was an essential factor in this study, and none of the corpora included texts written over a long period of time, with the exception of EAPCOUNT.

In addition, other studies done on the translated passive form were lacking (see section 2.3.15.3). In a study by Farghal and Al-Shorafat (1996:106), the results were extracted from ready-made passive sentences that translators were asked to translate. Moreover, some of the translators were not professional. This is problematic because the passive form did not occur naturally in a text. In two studies by Jamel and Khaled (2015:85) and Al-Ali and Alliheibi (2015), the translation techniques mentioned were very general and limited. None of the studies mentioned tracked the changes that occurred to the Arabic passive form over time. The obvious lack of literature, and the mentioned reasons in this section necessitated building raw, annotated and specialised parallel and comparable corpora for this research.

3.2.2 Comparable corpora

A comparable corpus contains components collected using the same sampling frame and similar balance and representativeness (McEnery, et al. 2006; Anderman and Rogers, 2008:20). As mentioned in (section 3.2), Baker (1993/1998:52) defines a comparable corpus as two separate collections of texts. Both collections of texts should cover a similar domain, variety of languages, time span, and length (Olohan, 2004:36).
A comparable corpus was used in this study to identify any consistent or recurrent differences in passive usage between Arabic translated and non-translated texts. The texts covered similar genres, lengths, and time spans, which ensured that any linguistic differences between the texts could be attributed to their different statuses as translations versus non-translations (Kruger, 2002). It has been reported that no other Arabic comparable corpora are currently available (Saad, et al. 2013). However, one successful study proposed a method of extracting comparable articles from Wikipedia and Euro News in multiple languages (Arabic, English, and French) to provide a useful resource for statistical machine translation (ibid). It also managed to extract a parallel corpus from the original comparable corpus and suggested two comparability measures for multilingual articles (binary and cosine). The study also used a bilingual dictionary (Open Multilingual WordNet) for word alignment. The comparability measures showed good scores and proved useful for both parallel and comparable corpora.

3.2.2.1 The uses of comparable corpora
Baker (1995: 235) reports two purposes of comparable corpora:

- Capturing patterns either restricted to translated text or which occur with a significantly higher or lower frequency in translated text.
- Investigating aspects of translators’ use of language that are not the result of deliberate, controlled processes and of which they may not be aware.

3.2.2.2 The disadvantages of comparable corpora
Kruger (2002) reports the following disadvantages:

- It can be difficult to identify some translations, especially when the researcher does not have access to the original texts.
- The methodology of this corpus is relatively new and under-developed.
- Comparable corpora can be a poor basis for contrastive studies if the sampling frames are not fully comparable (Anderman and Rogers, 2008:22).

3.2.2.3 The advantages of comparable corpora
Olohan (2004) encourages the use of comparable corpora due to their ability to provide insights into the translators’ use of language and, more specifically, into processes that translators may not be aware of and which are not, therefore, the result of a deliberate and controlled practice.
3.2.3 The similarities and differences between parallel and comparable corpora

- The two types of corpora are designed for different purposes. Parallel corpora focus more on translation studies, while comparable corpora are concerned with contrastive studies (Anderman and Rogers, 2008:20).

- They are designed with different focuses. The use of an appropriate sampling frame is essential for a comparable corpus. As a result, the components representing the languages involved must match with each other in terms of proportion, genre, domain, and sampling period.

- In parallel corpora, by contrast, the sampling frame is less relevant, as all the components in the corpus are exact translations of each other (Anderman and Rogers, 2008:20).

- Comparable corpora can be monolingual, bilingual or multilingual. They are, in addition, composed of texts that have no direct translational relationship (i.e., they are not translated from each other; Zanettin, 2012: 7).

- Parallel corpora, in contrast, have a translation relationship that can be either unidirectional or bidirectional (Zanettin, 2012: 7; see the definition of parallel corpora in section 3.2.1).

- What distinguishes comparable corpora (as non-translations) from parallel corpora (as translations) is that the latter imply a common source text (Kenning; cited in Grigaliūnienė, 2013: 74).

- Comparable corpora focus on the product of translation, while parallel corpora prioritise the process of translation (Stewart, 2000 cited in Olohan, 2004:39).

Put simply, the primary difference between parallel and comparable corpora, as these terms are understood in this study, is that a parallel corpus consists of two languages (in the current case, Arabic and English, as English source texts and Arabic target texts will be compared), whereas a comparable corpus consists of only one language: in this case, Arabic (original Arabic texts will be compared to other texts translated into Arabic).

Marking-up the corpus follows building and compiling the texts. There are different strategies for marking-up, depending on the type and purpose of the corpus, as described in the following sections.
3.2.4 Marking up methods

For marking-up a corpus, there are three possible methods: ‘machine’, where the marking is performed entirely by a machine; ‘part machine’, performed by a machine and then post-edited by a human being; and ‘manual’, when the marking is performed by a human being.

3.2.4.1 The advantages of marking up the corpus

This facilitates the recall and extracting of information depending on the type of marking, and benefits researchers in analysing a language they are not necessarily familiar with. Marking-up a text also supports the researcher in performing tasks depending on their needs (Al Dakr ori, 2018).

3.2.4.2 The disadvantages to marking up the corpus

- Marking-up corpora could result in mixing the marking with the plain text, which makes it difficult to read and analyse. This can be solved by placing the marking in the text margins in table form.
- Marking-up forces readers to see annotations of the texts that they do not necessarily want to see or are not necessarily looking for. To solve this, the text should have the option to show or hide the marking.
- Marking-up the text can quickly change from an added value to something that decreases the chances of updating, extending, and making the corpora available due to the effort, time, and expenses incurred.
- Marking-up can become imprecise and disorganised, leading to inadequate results, and it does not generally produce results that are 100% precise. However, this can be resolved by human post-editing after the machine marking-up (ibid).

3.2.4.3 Types of linguistic corpora marking

Linguistic corpora marking is important to keep in mind but was not used except where doing so would advance the research and help to answer the research questions. Annotating gives a corpus an added value. Wynne (2005) reports six types of annotation (aside from POS tagging). These are as follows: phonetic annotation, which provides information about how a certain word in a spoken corpus is pronounced; semantic annotation, concerning the semantic category of the word; pragmatic annotation, the kinds of speech act that occur in a spoken dialogue;
discourse annotation, concerning anaphoric links in texts; stylistic annotation, concerning speech and thought presentation; and finally lexical annotation, concerning the identity of the lemmas of words.

3.2.4.3.1 Part of speech (POS) tagging

Also called grammatical tagging or morpho-syntactic tagging, POS tagging is the process of assigning a morphosyntactic role to each word in a text and is hence considered a crucial step that significantly affects the subsequent natural language processing tasks (Algahtani, 2011:103). It is usually the first approach used to mark linguistic corpora and is the best known. This type of marking is necessary because it enables us to locate the passive in the English text and see how it was translated in the Arabic target text. Using an Arabic POS tagger at this stage was not necessary because once the English source text is aligned with the Arabic target text at the sentence level, the passive can be easily located manually (Al Dakrori, 2018:70). Moreover, POS tagging is easier in English, as Arabic is more morphologically challenging because of the absence of capitalisation of proper nouns and the phenomenon of clitic attachment. Clitics are unstressed words that occur only in combination with other words. Arabic has clitics attached to the beginning, end, or both sides of a word. They are segments that represent an independent syntactic role: primarily conjunctions, prepositions, and pronouns. Pronouns usually attach themselves to the end of the word, whereas prepositions and conjunctions are attached to the beginning (ibid).

Specialist software is not always necessary, and the corpus can be annotated using a general-purpose text editor or word processor (Wynne, 2005). That being said, there are some popular tools to speed up the annotation process:

- LancsBox software
- CLAWS tagger: recommended for the English language
- Buckwalter: recommended for the Arabic language
- Wordsmith, MonoConc
- SARA, Xaira
- Template tagger
- The BNC
- Oxford WordSmith Tools 4.0
3.2.4.3.2 Lemmatisation

Lemmatisation works by returning the word to its basic form by deleting suffixes, prefixes, and so on. Nouns return to their singular form and verbs return to the singular, past, and masculine form. The Arabic language is known to be heavily inflected, and the application of lemmatisation helps when processing the texts.

3.2.4.3.3 Parsing

Parsing can be done by separating sentences and words in a manner similar to a tree shape, the result being known as ‘phrase structure trees’. Such trees form the sentences and words of the corpus and are called ‘tree banks’. Tree banks can involve either skeleton or detailed parsing. Skeleton parsing provides a shallow analysis, limited to what constitutes a sentence, while detailed parsing provides more detailed results.

3.2.4.3.4 Semantic annotation

This is also called ‘word-sense tagging’. It is important for studies related to the analysis of content. This type of annotation is knowledge-based and considered the most difficult type, as it requires pre-organised ontologies and dictionaries to perform its tasks. It is of at least two types: the first is concerned with identifying semantic relationships between the basic components of sentences within texts, while the other – which is more common – is concerned with identifying the semantic properties of the words in the text.

3.2.4.3.5 Anaphoric/conference annotation

This is used by some researchers at the level of discourse. Few corpora use this type of annotation, despite its importance. Mitkov, Belguith, and Malgorzata developed the only tool used to process Arabic texts in this category. This type of annotation reveals the relationship between two components in a text: the anaphor, which refers back to an antecedent (an earlier word or phrase), and the cataphor, which refers to a postcedent (later) word or phrase. Anaphoric annotation includes the following:

- pronoun linguistic referral
- lexical referral
- comparative linguistic referral
3.2.4.3.6 Pragmatic annotation

Pragmatic annotation is concerned with discourse, specifically the analysis of references, speech acts, structural relationships, rhetorical interdependence, and so on. Samy and González-Ledesma (2008) conducted a very useful study on pragmatic annotation of discourse markers in a multilingual corpus comprising Arabic, English, and Spanish texts.

3.2.4.3.7 Stylistic annotation

Stylistic annotation is concerned with the stylistic characteristics of literary texts. This includes the representativeness of speech and thought, words length, words’ lexical characteristics, and so on. Texts are divided into categories: direct, free direct, indirect, and free indirect. Stylistic annotation is often performed manually as it is difficult for a machine to process.

3.2.4.3.8 Error tagging

Error tagging is used in corpus linguistics for English learners and for language teaching in general. It involves the use of special codes to note the types of linguistic errors in texts, revealing the most common mistakes made by language learners at different levels. The most common errors are usually deletion, addition, and poor formation. In Arabic, the most common errors are spoken, morphological, syntactic, and lexical errors, as well as spelling mistakes.

3.2.4.3.9 Problem-oriented annotation

Problem-oriented annotation is also called ‘research-specific annotation’. Users add their own annotations to annotated or unannotated corpora to answer their research questions. It differs from the other types of annotation in two aspects:

- It is easier and less time-consuming because it is not necessary to provide annotations for every word and sentence. Anything that is not related or will not help in answering the research questions can be ignored.
- Users are not obliged to apply a specific framework. They have the freedom to choose the appropriate framework for their own goals and aims.

3.2.4.3.10 Standalone - embedded annotation

Standalone annotation addresses one of the disadvantages of annotation – namely, that it can become mixed up with the original documents. This method allows annotation to be displayed in isolation from any distortion caused by the check. Its other advantages include the following:
• It is not subject to legal constraints because the annotation is separated from the original texts.
• It accepts more than one type of annotation at a time.
• It allows editing and adding different levels of annotation, without creating problems for existing mark-up.
3.3 Methodology

3.3.1 Creating a corpus


3.3.1.1 Corpus design and acquisition

The essential criteria for corpus texts concern the following (Wynne, 2005): the mode of the text, the type of text, the domain of the texts, the language varieties of the corpus, the location of the texts, and the date of the texts. The requirements for the corpus in this study include the following (Baker, 1998; Biber, 2003; Olohan, 2004):

- Quality: translations should be done by professional translators or official institutions and not by machine. English/Arabic texts should be aligned very carefully and post-edited.
- Availability: the corpus should be easy to use, and access should not be restricted.
- Size: a corpus should be of a reasonable size, but a bigger corpus is not necessarily more useful than a smaller one.
- Balance: texts should not be limited to specialised texts or certain authors.
- Representativeness: the corpus should include texts that represent different uses of language and should not exclude certain styles or geographical locations.

Wynne (2005) reports that, for the corpus to be as representative as possible, the following steps should be taken:

- Pick and apply the structural criteria on which the corpus will be built.
- For each component, appoint a comprehensive inventory of text types.
- Arrange text types in priority order.
- For each text type, draw an estimate target size.
- Repeatedly/continually compare the original plan with the actual dimensions of the material.
- Record all the steps so that users have a reference point in case unexpected results are produced.

While both representativeness and balance may be ultimately undefinable and unattainable goals, they need to be borne in mind to direct the design of the corpus (ibid).
3.3.1.2 Text standards
Text samples from books were used rather than full texts, for two reasons (Olohan, 2004: 56):
- to facilitate the obtaining of copyright permissions
- to include a wider range of authors and translators
Texts in a corpus should be authentic and available in electronic form for research purposes (Zanettin, 2012: 41). It is also important to use texts that were translated by professional translators or official institutions in order to guarantee their quality, insofar as this is possible.

All texts used for the corpora in this study belong to two time periods (1997-2000 and 2016-2018). The original texts were all written by Arab authors and published either online or in a hard-copy, and the translated texts were all translated by professional Arab translators. As for the text samples extracted from the scientific books, they were taken from random sections of the books, avoiding introductions, conclusions, and tables. They varied in size between 2-3 pages to match the size of the English and translated scientific articles. As for the texts extracted from the scientific articles, after obtaining copy-right permission from the online journals, the whole articles were used in the corpora. The articles varied in size, and the 1997-2000 translated articles were significantly larger than the 2016-2018 translated articles (see Tables 3.2, 3.3, 3.4 and 3.5).

3.3.1.3 Text genres
Some corpora are limited to a specific text type (e.g. newspaper articles), while some are limited to a specific subject domain (e.g. literature), and some texts are produced by specific groups of text producers. Text type, along with other design criteria, varies according to the purpose of the corpus (Zanettin, 2012: 41). Selecting specialised texts can be tricky, as it is almost impossible to choose a few specialised texts and claim that they are representative of the language in question. Specialised texts such as those found in medical and IT magazines do not necessarily represent the whole variety of popular magazines. This study used a specialised corpus because it was assumed that this would have a greater concentration of certain features than a general corpus (Wynne, 2005). In addition, no similar specialised corpus where the passive form is analysed over two different periods exists. Scientific articles were chosen because, in English, the passive is very common in scientific writing because of the field’s impersonality. The passive gives an impression of objectivity and distances the writer from the statements made in the text (Baker 1992: 103). The selected samples represented
various forms of scientific text, and several differences in the employment of the passive were thus revealed.

3.3.1.3 The use of the passive voice in scientific writing

The use of the passive voice in writing has gone through periods of acceptance and use, followed by rejection and neglect. In one interesting paper written in 1981, Trammell (1981: 181-2) reports that many linguists in the 18th century opposed the introduction of the passive progressive. In addition, passive voice use has been described as ‘abnormal’ by some critics and purists. In fact, early scientific discourse prioritised the active voice, as Ding (cited in Alvin, 2014: 1) demonstrates in his corpora for the 18th century to the end of the 19th century.

Trammell (1981), however, advocates the use of the passive verb and describes it as essential and preferable to active voice, especially in technical writing. Decades later, a shift to the passive voice in the 20th century was prompted by growing expectations of objectivity in scientific discourse, with proponents arguing that writing should reflect the world itself, rather than the human beings involved in the world (Alvin, 2014: 1).

Back to the present, there is an ongoing shift in scientific writing, with calls for more author visibility. In a recent study, Inzunza (2020: 563) reports that many scientific disciplines in countries where English is the official language prefer the use of the active over the passive voice. Interestingly, in countries where English is the second language and in papers written by non-native English speakers, the passive remains very common. He notes that the use of passive voice in scientific writing limits clarity of communication and is old fashioned. However, there is of course no guarantee that the author of a paper is a native-speaking anglophone, even if they are living in an English-speaking country, so investigating this is challenging.

Similarly, in a corpus-based study, Banks (2017: 17) investigated the extent to which the passive voice was used in scientific articles published between 1985 and 2015. His corpus analysed 32 articles in the physical and biological sciences. The results show a reduction in the use of the passive voice, with first-person pronoun subjects, in the physical sciences, especially in articles written by more than one author. This has been accompanied by a corresponding rise in the use of the active voice. He notes that the increased use of the active voice, at the expense
of the passive voice, is intended to put greater emphasis on the author. According to Banks, this practice is likely to increase in the future.

Since this research uses both comparable and parallel corpora for two different periods, it was able to investigate this further using the data to identify whether the use of the English passive declined in the English scientific texts.

3.3.1.4 Sources of the texts
The following sections detail of the sources of the corpus texts.

3.3.1.4.1 Nature magazine
*Nature* is the leading weekly, international journal of the physical, chemical, applied sciences, and clinical medicine and was founded in 1869. The King Abdulaziz City for Science and Technology (KACST) signed an agreement of cooperation with the magazine publishers, and as a result, the magazine is translated into Arabic by a professional team. The Arabic version of the magazine is *Nature Middle East*\(^7\) and its articles are dated between 2010 and 2018. The content of the website is updated every other week, and the articles are free to access. See chapter three, Tables 2, 3, 4 and 5 for a detailed preview of the texts.

3.3.1.4.2 Scientific American
*Scientific American* is a science and technology magazine aimed at the general reader. It is the longest continuously published magazine in the United States. It was first published in 1845 and is available in 14 local languages, including Arabic, and is read in more than 30 countries. The article genres include science, cognition, health, technology, education, geography, and broadcasts.

*Scientific American* is translated into Arabic by two institutions. The first is *Lilelm*\(^8\) ‘for science’, which is published in Egypt and freely available online. The web content is updated on a daily basis, including both translated articles from *Scientific American* and original texts from Arab scientists and writers. However, it only includes articles translated after 2015.

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\(^7\) [https://www.natureasia.com/ar/nmiddleeast/about](https://www.natureasia.com/ar/nmiddleeast/about)
\(^8\) [https://www.scientificamerican.com/Arabic/](https://www.scientificamerican.com/Arabic/)
‘Sciences magazine’ is published by the Kuwait Foundation for the Advancement of Science in Kuwait. The website hosts only translated articles dated from 1995 to 2015, with no original Arabic pieces. To resolve this issue, articles from *Nature* were used alongside those from *Scientific American*.

The choice of these magazines was motivated by the fact that they represent the Arabic counterpart of *Scientific American*, and they publish translated articles in different scientific domains. The English and Arabic articles were collected electronically from the official websites of *Nature* and *Scientific American* (Lilelm and *Majallat Al-oolom*). The number of English articles retrieved was determined by the number of available translated Arabic counterparts. The following tables provide a detailed preview of the articles/books.

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<tr>
<th>Article title</th>
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<th>Author</th>
<th>Date of publication</th>
<th>Number of English words</th>
<th>Number of Arabic words</th>
<th>Source</th>
<th>Link to article in English</th>
<th>Link to article in Arabic</th>
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<th>Date of publication</th>
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<th>Number of Arabic words (target text)</th>
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<td>Name of author</td>
<td>Date of publication</td>
<td>Number of words</td>
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<td>Molecular Clue to the Mystery of Carbon’s Cosmic Origin Uncovered</td>
<td>Scientifically Proven</td>
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<td>1997</td>
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Table 3.3. Translated scientific texts (2016-2018)
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<th>Number of words</th>
<th>Source</th>
<th>Link to article</th>
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<td>السنة</td>
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<td>نديا درويش</td>
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<td>محسن مصري</td>
<td>2016</td>
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</tr>
<tr>
<td>11</td>
<td>صغير حجم الدماغ &quot;النياندرتال&quot; نسبو في اقراضهم</td>
<td>برلم محمد منصور</td>
<td>2018</td>
<td><a href="https://www.scientificamerican.co/m/Arabic/articles/news/neanderthals-brains-hold-clues-to-their-disappearance/">الرابط</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>الكشف عن جمعية كبيرة &quot;للبيكثير&quot; نسبو في اقراضهم</td>
<td>برلم محمد منصور</td>
<td>2018</td>
<td><a href="https://www.scientificamerican.co/m/Arabic/articles/news/neanderthals-brains-hold-clues-to-their-disappearance/">الرابط</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>أربعة حجمية قرية &quot;المجرة التي كَبَّرَت&quot; عام 50000.</td>
<td>برلم محمد منصور</td>
<td>2018</td>
<td><a href="https://www.scientificamerican.co/m/Arabic/articles/news/evidence-of-cranial-surgery-in-a-stone-age-cow/">الرابط</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>أربعة حجمية قرية &quot;المجرة التي كَبَّرَت&quot; عام 50000.</td>
<td>برلم محمد منصور</td>
<td>2018</td>
<td><a href="https://www.scientificamerican.co/m/Arabic/articles/news/evidence-of-cranial-surgery-in-a-stone-age-cow/">الرابط</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>Arabic Text</td>
<td>English Translation</td>
<td>Year</td>
<td>Lilelm - Scientific American</td>
<td>Link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>---------------------</td>
<td>------</td>
<td>-----------------------------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>البيئة تؤثر في الخلايا المناعية للإنسان</td>
<td>Key differences in Young Older People Immune Cells Attributed to Environment</td>
<td>2018</td>
<td>552</td>
<td><a href="https://www.sciencetrends.com/Arabic/articles/news/key-differences-in-young-older-people-immune-cells-attributed-to-environment/">https://www.sciencetrends.com/Arabic/articles/news/key-differences-in-young-older-people-immune-cells-attributed-to-environment/</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>الامومة قد تقصر من عمر المرأة 11 عامًا</td>
<td>Birthhood May Shorten Life of Women Eleven Years</td>
<td>2018</td>
<td>1189</td>
<td><a href="https://www.sciencetrends.com/Arabic/articles/news/birthhood-may-shorten-life-of-women-eleven-years/">https://www.sciencetrends.com/Arabic/articles/news/birthhood-may-shorten-life-of-women-eleven-years/</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.5. Original Arabic scientific texts (2016-2018)

<table>
<thead>
<tr>
<th>No.</th>
<th>Arabic Title</th>
<th>English Title</th>
<th>Author</th>
<th>Year</th>
<th>Link</th>
</tr>
</thead>
</table>
Table 3.6 details the structure and focus of the parallel corpora, which compared texts in two languages.

<table>
<thead>
<tr>
<th>Parallel corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 – 2018 English scientific articles → 2016 – 2018 Arabic translated scientific articles</td>
</tr>
</tbody>
</table>

Table 3.7 details the structure and focus of the comparable corpora, which compared texts in the same language.

<table>
<thead>
<tr>
<th>Comparable corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2018 Original texts → 2016-2018 Translated texts</td>
</tr>
<tr>
<td>1997-2000 Original texts → 2016-2018 Original texts</td>
</tr>
<tr>
<td>1997-2000 Translated texts → 2016-2018 Translated texts</td>
</tr>
</tbody>
</table>

3.3.1.5 Data size

The size of a corpus varies depending on the purpose for which it was designed (Zanettin, 2012: 41), the methodology used, and the kinds of user queries anticipated (Wynne, 2005). The sizes of translation-driven corpora can vary from 1,000 to 100,000 words (for specialised corpora), up to several hundred million words for very large parallel corpora (Zanettin, 2012: 43). It is often claimed that the size of the corpus is a decisive factor in the reliability of the corpus findings, primarily because statistical considerations play an important role when making generalisations about any particular aspect of language (Zanettin, 2012: 42). That being said, a smaller corpus can be suitable for the study of grammar (Olohan, 2004: 46). A larger corpus of complete texts would have been preferred, had there been no practical restrictions – such as the need for manual annotation and the availability of suitable texts. The following table details the numbers of words in each corpus.
<table>
<thead>
<tr>
<th></th>
<th>1997-2000</th>
<th>2016-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel corpus</td>
<td>31,019 words for the English ST</td>
<td>20,573 words for the English ST</td>
</tr>
<tr>
<td></td>
<td>26,990 words for the Arabic TT</td>
<td>19,517 words for the Arabic TT</td>
</tr>
<tr>
<td></td>
<td>For the ST and TT combined, there are 58,009 words</td>
<td>For the ST and TT combined, there are 40,090 words</td>
</tr>
<tr>
<td>Comparable corpus</td>
<td>16,686 Arabic words</td>
<td>20,939 Arabic words</td>
</tr>
<tr>
<td>Total number of words</td>
<td></td>
<td>135,724 words</td>
</tr>
</tbody>
</table>

Table 3.8 shows the number of words in each sub-corpus.

3.3.1.6 Processing the corpus

After compiling and gathering the texts to be used for the corpora, the next step was to extract the data to process and mark the texts. For technical and practical reasons, the parallel corpus was compiled and processed first, followed by the comparable corpus.

To process the texts, it was necessary to ensure that they were machine readable. As some were in hard copy, an optical character recognition (OCR) was chosen. The key issue here was that most software is limited to a certain style or specific language. Scans of handwritten texts can also prove difficult for the software to recognise. This, however, was resolved by post-editing of the texts. The paper-based texts in this research (i.e., the 1997–2000 original texts) were converted to an editable format using the Fine Reader (ABBYY) software.

The Fine Reader software is an award-winning technology that combines OCR with conversion techniques by converting paper-based texts to pdf files. Instead of necessitating the retyping of hard-copy texts, this software has a simple approach that allows for digitising and accessing information previously locked in paper documents. It recognises over 190 languages and claims to have over 99.8% accuracy and precise retention of formatting and layout. It enables users to edit and comment on pdfs, covert pdfs and scans, compare documents, and automate conversions.
Copyright

Copyright is a very sensitive subject, as fears about piracy and the exploitation of materials for profit puts additional strain on corpus builders. The need to obtain permissions and copyrights for corpus-building has been addressed by corpus linguists, but no solution has yet been found. This issue is particularly challenging because different countries have different copyright laws (Grigaliūnienė, 2013: 27). In the current study, to avoid copyright issues, no full texts of published books (in the 1997-2000 original corpus) were added to the corpora; instead, only samples were used. Each sample was approximately two pages (the number of words is in Tables 3.2, 3.3, 3.4, and 3.5). Full articles were used for the rest of the corpora (1997-2000 and 2016-2018 parallel corpora, and 2016-2018 original corpus). Moreover, the Scientific American and Nature websites were informed that their articles would be used for research purposes only.

Building a parallel corpus

To build a parallel corpus, the following steps were taken.

1. Texts in the required genre (i.e., scientific articles) were acquired online from well-established official websites, along with their professionally translated Arabic equivalents.
2. Initially, all texts were in pdf format. These were then converted to doc format online and converted to txt using the software Notepad ++.
3. The software TextMate was used to convert all Arabic articles into txt format, as Notepad ++ cannot convert Arabic texts (see table 3.9).
4. Notepad ++ was used with all texts to divide and split the lines and to remove empty lines.
5. All scientific articles dated 1997–2000 were aligned manually by placing the Arabic and English articles documents side-by-side, with the paragraphs then arranged to be in the same order. This was followed by the use of LF Aligner software.
6. The software LF Aligner was used to manually align all Arabic and English articles. These steps are discussed further in the section below.
Table 3.9 the software TextMate was used to convert Arabic articles into txt format.

It is important to mention that the number of scientific English articles dated 1997–2000 was significantly smaller (7 articles) than the number of English and Arabic scientific articles dated 2016–2018 (19 articles). This was because it proved difficult to locate the former, especially online and with the required standards. This was not a problem, however, as the 1997–2000 articles are noticeably longer (31,019 words) than the 2016–2018 articles (20,573 words).

Various issues arose when manually aligning the texts using LF Aligner software. These are detailed below, along with their solutions:

- The English and Arabic articles dated 1997–2000 were published in magazine format. This meant that they all included pictures and a number of columns on each page. In addition, the arrangement of the texts and photos in the English articles was very different to that in the Arabic texts. However, this was not the case for the articles published 2016–2018. Instead, these articles were similar in structure and format. To resolve this, the articles were aligned side-by-side by paragraph and then divided, the lines were split using Notepad ++, and then the aligner tool was used.
The translations did not entirely match the source texts. The English and Arabic articles occasionally had additional paragraphs or structures that had no equivalent in the corresponding text in the other language. These structures without counterparts were descriptions of the pictures in the English texts that did not appear at the exact location in the Arabic articles. In addition, some Arabic articles had additional paragraphs with more explanation (e.g., the article *The First Human Fossil Found in Arabia*). These lines/paragraphs were left with no equivalents during the aligning process, and passive verbs found in these paragraphs were not used or included in the total count.

3.3.2.1 Software used
The software used is discussed in the following sections.

3.3.2.1.1 LF Aligner software
LF Aligner was released free in 2011. The software helps users to create translation memories between source and target texts and to align texts in two or more languages. It was chosen for the current study because of its simplicity and because it can deal with Arabic texts. Other potential alignment software was disqualified due to its inability to deal with Arabic text. Upon completion of the alignment, the software also converts the file into TMX format and an Excel sheet, which makes it possible to build a corpus with the files. TMX is defined as follows:

A file created in the Translation Memory Exchange (TMX) format, an open XML standard used for exchanging translation memory (TM) data created by Computer-Aided Translation (CAT) and localisation applications. It may be used to save words or phrases that have been translated from one language to another. Programs that use this file format include Maxprograms Swordfish, OmegaT, SDL Trados Studio and AIT Visual Localize\(^{10}\).

When both English and Arabic articles are uploaded to the software, they appear side-by-side. The texts are not divided sentence-by-sentence or depending on the beginning and ending, but randomly. Each line in the software could start and end in the middle of the structure. To resolve this, the structures must be aligned manually by splitting or merging the structures. Dividing the Arabic structures was challenging because the software was not explicitly developed for Arabic texts. In addition, capitalisation does not exist in Arabic; hence, the

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software does not recognise when the structure starts. Splitting a sentence immediately after a full stop does not mean that it will be divided correctly. Sentence division is done almost at random. This problem does not arise in English texts. To resolve this, each Arabic sentence was divided using LF Aligner tools in a few different places to identify the best division that included a full meaning and then to align that with the English equivalent (see Table 3.10). (The use of the word ‘sentence’ is discussed in detail in the following chapter.)

The articles used for the corpora included additional information that did not serve the purpose of this research – such as descriptions of pictures, information about the author, bibliographies, references to other articles, advertisements, publishing information, and links to other articles and works. All of this was thus cleared from the aligned texts.

Table 3.10 shows LF Aligner tool used to align the English texts and their translations.

3.3.2.1.2 LancsBox

LancsBox is easy-to-use software developed at Lancaster University for analysing language data and developing corpora. Its features include the ability to build a corpus, easy to use by a different variety of people interested in language, the ability to analyse almost all languages, and provision data POS annotation.

LancsBox was used to generate reports about the English articles, identifying all the passive structures used in the scientific articles. The problem with this software, however, is that it could only reveal the passive structures used in the English texts. It did not have the ability to identify the passive in the Arabic articles. In addition, it could not indicate the number of the sentence (structures were previously divided using LF Aligner). Unfortunately, the software could not be used exclusively to build the parallel corpus.
Parts of two corpora were built using LancsBox. One was of the English scientific articles written between 1997–2000 and the other comprised those written between 2016–2018. The software looked for all passive structures in the texts and generated a report. As noted, the software could not identify the passive Arabic voice, but because all the English structures were aligned with their Arabic translations (the Arabic equivalents of the English passive), the Arabic passives could also be identified via manual search.

The 1997–2000 parallel corpus of scientific articles comprised 58,009 words. Some paragraphs in the English texts were not translated into Arabic. This resulted in passive structures that did not have an Arabic equivalent. These were deleted and removed from the verb count. The software retrieved 140 passive forms that were found in all seven texts. The software counted each passive sentence as one passive entry, even when a sentence included more than one passive verb. When counted manually, further passive verbs were identified, bringing the total to 148 (477 per 100k).
<table>
<thead>
<tr>
<th>Filename</th>
<th>Left</th>
<th>Node</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 - English - How to Go to Mars-2000 - Arabic - How to go to Mars.xls</td>
<td>way to get to Mars</td>
<td>is called</td>
<td>a Hohmann transfer. فيما يتعلق</td>
</tr>
<tr>
<td>1997 - English - SOHO Reveals the Secrets of the Sun-2-1997 - Arabic - SOHO Reveals the Secrets of the Sun.xls</td>
<td>the regions where the corona</td>
<td>is heated</td>
<td>and the solar wind accelerates.</td>
</tr>
<tr>
<td>1998 - Simon Newcomb- Astronomer with an Attitude</td>
<td>method. These contentions, of course,</td>
<td>were not universally accepted.</td>
<td>وكان يلمح إلى أن حججه</td>
</tr>
<tr>
<td>1999 Preserving Nefertari’s Legacy</td>
<td>mixed in; wheat straw had</td>
<td>been used</td>
<td>to reinforce it and to</td>
</tr>
<tr>
<td>1999 Preserving Nefertari’s Legacy</td>
<td>in 1904, it had already</td>
<td>been broken</td>
<td>into and looted. The treasures</td>
</tr>
<tr>
<td>1997 SOHO Reveals the Secrets of the Sun</td>
<td>Sun-2 Some of its instruments</td>
<td>are now poised</td>
<td>to resolve several other mysteries.</td>
</tr>
<tr>
<td>1998 Simon Newcomb- Astronomer with an Attitude</td>
<td>Although this 19th-century astronomer</td>
<td>is not well known</td>
<td>today, in the decades following</td>
</tr>
<tr>
<td>1999 Preserving Nefertari’s Legacy</td>
<td>start anew once the work was finished.</td>
<td></td>
<td>فلم يكن الأمر يتعلق فقط</td>
</tr>
<tr>
<td>2000 Global Climate Change on Venus</td>
<td>on how much of it is caused</td>
<td>by the burning of fossil</td>
<td></td>
</tr>
<tr>
<td>1999 - Lifes Far-Flung Raw Materials</td>
<td>a chunk of Earth that was blown</td>
<td>off in a collision with</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.11 provides a sample of the passive structures retrieved from the 1997–2000 parallel corpus using LancsBox. The Arabic text in the right-hand column reveals how the Arabic structures were connected with the English passive structures. Not all the structures, however, are shown, and manual work was required to analyse both the English and Arabic structures.
<table>
<thead>
<tr>
<th>Filename</th>
<th>Left</th>
<th>Node</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 - Cassini at Saturn- A Retrospective</td>
<td>pattern. In others, where moons are embedded in the rings, gravity has</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 - New hair colour genes identified</td>
<td>the building blocks of DNA, were found to be responsible for about</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECONTR~1.XLS</td>
<td>years ago—long before H. sapiens is known to have appeared on the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 - The UAE sees red</td>
<td>disclosed once the project has been completed. لا استكشاف المريخ بعمل في ظل</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017 - Cassini at Saturn- A Retrospective</td>
<td>Saturn- A Retrospective So we were thrilled to greet one such storm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016- Plumes Spotted on Europa Suggest Easy Access to Water</td>
<td>Georgia Institute of Technology and was not involved with the research.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 - New hair colour genes identified-2018 - Arabic - New hair colour genes identified.xls</td>
<td>Only 13 of these had been previously identified. جينوماتهم، حددوا 124 جينًا مرتبطًا</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 - Molecular Clue to the Mystery of Carbon_s Cosmic Origin Uncovered</td>
<td>Cosmic Origin Uncovered only occasionally being cracked open by extremely high–energy photons.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECONTR~1.XLS</td>
<td>notes Levallois-like stone tools have been found at sites in Africa dating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 - Molecular Clue to the Mystery of Carbon_s Cosmic Origin Uncovered</td>
<td>University in the Netherlands who was not involved in the research.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.12 provides a sample of the passive structures retrieved from the 2016–2018 parallel corpus using LancsBox. This parallel corpus comprised 40,090 words. The passive occurred 109 times, slightly more than in the 1997–2000 corpus. As with the first corpus, the software counted per passive structures as one passive entry, even when a structure included more than one passive verb. When counted manually, further passive forms were identified, bringing the total to 123 (597 per 100k) and in all 18 texts. The passive structure appeared more often in the 2016–2018 corpus (597 per 100,000) than in the 1997–2000 corpus (477 per 100,000). In addition, though the selected scientific articles were written on similar topics, the modern articles were noticeably shorter than their predecessors.
<table>
<thead>
<tr>
<th></th>
<th>Parallel Corpora</th>
<th>Comparable Corpora</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of words</td>
<td>31,019</td>
<td>26,990</td>
</tr>
<tr>
<td></td>
<td>20,573</td>
<td>19,517</td>
</tr>
<tr>
<td></td>
<td>16,686</td>
<td>20,939</td>
</tr>
<tr>
<td>Number of passive forms</td>
<td>148</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>123</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>119</td>
<td>124</td>
</tr>
<tr>
<td>Occurrence of passive forms</td>
<td>477.126922</td>
<td>226.009633</td>
</tr>
<tr>
<td>per 100,000 words</td>
<td>597.870996</td>
<td>266.434391</td>
</tr>
<tr>
<td></td>
<td>713.17272</td>
<td>592.19638</td>
</tr>
<tr>
<td>Percentage of passive forms</td>
<td>0.477%</td>
<td>0.226%</td>
</tr>
<tr>
<td></td>
<td>0.598%</td>
<td>0.266%</td>
</tr>
<tr>
<td></td>
<td>0.713%</td>
<td>0.592%</td>
</tr>
</tbody>
</table>

Table 3.13 details the total number of words in each corpus, the numbers of passive forms, the passive as a percentage of each corpus, and the number of times the passive occurred per 100,000 words.

### 3.3.2.1.3 Sketch Engine

Sketch Engine software facilitates the exploration of language and how it works. It makes it possible to identify what is typical and what is not in a language. It was developed for text-mining applications and text analysis and can be used by anyone interested in language. It provides a representative sample of language, including approximately 500 corpora in more than 90 languages. The software presents the results in different forms, including word sketches, concordances, and word lists.

Sketch Engine was selected to build a part of the corpus. It is Arabic-language friendly, but it has no feature for revealing the use of the passive voice in Arabic or English texts. It does, however, allow for the use of POS taggers. Moreover, it can reveal all structures in the articles containing a past participle. As Sketch Engine does not automatically identify passives, the
LancsBox reports were used to manually find the English passives, which were connected to their Arabic equivalents.

This software was also chosen for its concordance feature. Each file was used to build an individual corpus (see Table 3.14), and the concordance feature was used to retrieve the number of occurrences of different features of the texts. For this to work, four sub-corpora were built: a 1997-2000 translated Arabic scientific texts corpus, a 2016-2018 translated Arabic scientific texts corpus, a 1997-2000 original Arabic scientific texts corpus, and a 2016-2018 original Arabic scientific texts corpus. Two of these were single-language corpora, and two were bilingual. Each corpus consisted of a table that included specific information related to the scientific articles. For example, the single-language tables included the title of the article, the passive sentence, the category of the passive verb (e.g., Measure I), the number of passive verbs occurring in the article, the number of words in the article, and whether the passive was agentless or agentive. (See chapter four: Tables 1 and 3.)

Table 3.14 shows the features that can be used in Sketch Engine. The right side shows the 1997-2000 original sub-corpus, which was uploaded into the software.
Table 3.15 shows the concordance tool, which was used in this research to retrieve the number of occurrences of the passive tense and measure.

Table 3.16 shows the number of passive measures that belong to Form IV in the 1997-2000 original corpus.
Table 3.17 shows the result details for Form IV search in the 1997-2000 original corpus. The bilingual Arabic-translated tables included the English passive structure, its Arabic translation, and the strategy used to translate the English passive verb. The strategies included translating the passive with a passive, or an active. The tables also included the category of the passive verb (e.g., Measure I). (See chapter four: Tables 2, and 4.)

To summarise, this chapter is divided into two main parts: the theoretical framework and methodology. The theoretical framework provides a background to the notion of corpus. This includes its definition, why this method is preferred, its uses, and advantages and disadvantages. This is followed by the types of corpora in translation studies, namely parallel, multilingual, and comparable, and their advantages and disadvantages. Next, a review of the available English/Arabic corpora is provided and followed by corpora marking-up methods.

The second part focuses on the corpora used in this thesis, namely parallel and comparable. The steps of making a corpus, and the requirements, which include text standards, text genre, sources, and a review of the texts used, are described. This is followed by the data size, the tools and software used to process each corpus.
3.3.2.1.4 Microsoft Excel

Excel was used to organise and divide the data, to generate percentages, to provide high-level visual summaries, and to analyse each corpus. Each corpus was divided into different sections. See immediately below. Excel was also used for the data analysis results comparisons (see tables in section 4.3).

Table 3.18 outlines the 1997-2000 original passive structures. The passive forms were retrieved from the original texts, and then analysed in the Excel sheet manually.
Table 3.1 outlines the 2016-2018 original passive structures. The passive forms were retrieved from the original texts, and then analysed in the Excel sheet manually.

Table 3.20 outlines the 1997-2000 translated passive structures. The text analysis in the 1997-2000 translated corpus is done manually. However, LancsBox software was used to identify the passive forms, and LF Aligner software was used for the text alignment.
Table 3.21 outlines the 2016-2018 translated passive structures. The text analysis in the 2016-2018 translated corpus is done manually. However, LancsBox software was used to identify the passive forms, and LF Aligner software was used for the text alignment.

Table 3.22 shows one of the tables used in section 4.3. After conducting the text analysis, Excel was used to generate percentages and make calculations for the data results.
Chapter Four

Analysis and Discussion

Research questions

To begin this chapter, it is appropriate to restate the research questions that this thesis has attempted to answer:

1. In what ways has English affected the structure of the passive voice in scientific texts translated from English to Arabic?

2. In what ways has English translation encouraged the employment of English passive voice structures in non-translated (original) Arabic scientific texts?

4.1 The Parallel Corpora Results

As explained previously, LancsBox was used to retrieve the passive structures from the pre-aligned English and Arabic texts. For this purpose, the software was adjusted to show about 35 words before and after the passive form. This allows the Arabic structures aligned to the English structure to show as well. This, however, did not give accurate results. The structures were saved as txt files and copied into a document text, where they were manually cleared and organised. Finally, both the English and Arabic passives were underlined and manually analysed into Excel sheets. (See full version of the sheets in chapter four: Tables 1, 2, 3, and 4.)

The term ‘clause’ was preferred because it is considered the English equivalent of the Arabic جملة sentence (Dickins, 2020: 63). The use of the word ‘sentence’ was intentionally avoided because it is challenging to find a definition that cover all the aspects for both Arabic and English. In short, a sentence is not always a simple sequence of words. Dickins (2010: 1078-1080) provides three definitions, each with its own focus: grammatical, semantic, and intonational or punctuational. Dickins then combines the grammatical, semantic, and intonational systems into one definition, suggesting a sentence is a unit that consists of a
proposition-based grammatical structure, while its intonational features comprise an independent entity, with a start and a finish.

Dickins (ibid) explains that, in English, the common ways of identifying a ‘punctuational sentence’ are a full-stop at the end and a capital letter at the beginning. Since capital letters do not exist in Arabic – and full stops are not a reliable means of indicating the end of what is thought to be a sentence – he suggests one workaround: namely, to have native Arabic speakers read the text aloud. This, unfortunately, was not appropriate for the investigation of this parallel corpus.

The Arabic language structure is more flexible than English, as explained previously, and it is acceptable for written structures to start with a ُwa ‘and’. In spoken Arabic, it is also common to start a separate intonational sentence with this. Some might argue that it is unacceptable to begin an English sentence with ‘and’, but this is an old rule. In writing, though rare, it is acceptable to begin a sentence with a coordinating conjunction for various purposes – such as, separating the clause that begins the sentence from the previous one, directing attention to one clause’s relationship with a previous clause, and so on. In informal speech, it is also normal to begin an intonational sentence with ‘and’. Dickins (2020: 14-18) defines an ‘intonational sentence’ as a sentence comprising one or more tone units, with the last of these units having a ‘final’ (as opposed to a ‘non-final’) intonation pattern.

Dickins (2020: 63) identifies two basic types of clauses: *jumla fiʕliyya* ‘verbal clause’, and *jumla ismiyya* ‘nominal clause’. In traditional Arabic grammar, the verbal clause or sentence starts with a verb. The Arabic verbal clause is flexible and is considered acceptable without the mention of an explicit subject or an object. The nominal clause or sentence has two components: the predicand, which literally means ‘what begun with it’, and predicate, which literally means ‘piece of news’. The predicand begins with a noun, noun phrase, an adjective, etc. The predicate may be a noun, a noun phrase, an adjective, an adjective phrase, verb, a verb phrase, etc. (This will be covered in further detail in section 4.1.1.2.)

In English, a sentence structure is comprised of up to five elements, according to Quirk, et al. (1973:10): subject, verb, complement, object, and adverbial (also mentioned in Quirk, 1972;34; and Eastwood, 1994). Word order is important, and, unlike in Arabic, the subject and verb order show which is which. For example, nouns accept an ‘s’ in the plural form but do not have suffixes to indicate whether they are a subject or an object. The word order is only changed
when there is a reason to do so (Eastwood, 1994:5). Since the term ‘sentence’ is too vague and the English and Arabic definitions do not entirely align, the terms ‘clause’, ‘structure’, and ‘form’ are utilised in this thesis, depending on the context.

Throughout this chapter, the passive and active will be referred to as passive or active forms and not passive or active verbs, unless what is being referred to is specifically a verb, as the passive occurs with both verbs and (passive) participles. The same is true for the active. The term ‘active verb’ is quite limited and does not include all the different elements included in this form.

When presenting and comparing elements, the percentages are included. In addition, as the passive structure and its different elements are not very common in either language, it was deemed preferable to count the occurrences of the elements per 100,000 words.

The formula for number of occurrences: \[
\text{number of an element} = \frac{\text{size of the corpus in which it occurs}}{100,000}
\]

For example, the passive participle occurred 11 times in the 1997-2000 Arabic parallel corpus, thus its frequency was calculated as follows: \(11 \div (26,990 \text{ [the size of this corpus]} \div 100,000)\) = 40.67 per 100,000.


4.1.1 1997-2000 Translated corpus: passive structures
The 1997-2000 English corpus consists of 31,019 words, while its Arabic translation consists of 26,990 words. The following table presents a summary of the translation procedures used:
4.1.1.1 Translation procedures used by the translators

<table>
<thead>
<tr>
<th>1.</th>
<th>Translating the passive form into an active form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Active participle with active meaning</td>
</tr>
<tr>
<td>1.2</td>
<td>Medio-passive verb/participle (active form with medio-passive meaning)</td>
</tr>
<tr>
<td>1.3</td>
<td>Active verb with active meaning</td>
</tr>
<tr>
<td>1.4</td>
<td>‘Be accomplished’ verb</td>
</tr>
<tr>
<td>1.5</td>
<td>Verbal noun</td>
</tr>
<tr>
<td>1.6</td>
<td>Relative clause</td>
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<tr>
<td>1.7</td>
<td>Nominal clause</td>
</tr>
<tr>
<td>1.8</td>
<td>Compound structure</td>
</tr>
<tr>
<td>1.8.1</td>
<td>Verb + verbal noun</td>
</tr>
<tr>
<td>1.8.2</td>
<td>Verbal phrase consisting of kān followed by a complement</td>
</tr>
<tr>
<td>1.8.3</td>
<td>Modal structure that consists of يمکنān ‘could’, ينیبی yanbaği ‘ought to’, or لابدā lā budd ‘should’, followed by a verbal noun</td>
</tr>
<tr>
<td>1.9</td>
<td>Other procedure</td>
</tr>
<tr>
<td>1.9.1</td>
<td>Adverbial phrase + verbal noun (this is found only in the 1997-2000 translated corpus, where it occurs 8 times)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.</th>
<th>Translating the passive form into a passive form</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Passive verb</td>
</tr>
<tr>
<td>2.2</td>
<td>Passive participle</td>
</tr>
<tr>
<td>2.3</td>
<td>Verbal phrase consisting of kān followed by a passive complement</td>
</tr>
<tr>
<td>2.4</td>
<td>Verbal phrase consisting of kān followed by a passive participle complement</td>
</tr>
</tbody>
</table>

Table 4.5 outlines the procedures used by the translators to translate the English passive (and reduced passive) structures in the 1997-2000 translated corpus. They can be divided into two main categories, and a number of subsidiary categories.

4.1.1.1.1 Translating the passive form into an active form

There is a total of 148 passive forms in the 1997-2000 translated corpus, and 87 of these were translated into an active form, comprising 58.78% of the total (58.78 per 100,000 words). These active forms can be further into various categories, as shown in Table 4.5 above and described in the following subsections.
4.1.1.1.1 Active participle with active meaning

The participle and the infinitive ‘maṣdar’ are nominal forms in Arabic (note that Arabic grammar subsumes what might be considered to be adjectives under the category of nouns). There are two types of Arabic participles: اسم الفاعل ʿism al-fāʿil ‘the active participle’, and اسم المفعول ʿism al-mafʿūl ‘the passive participle’. The basic form of the active participle means ‘doing, having done’, whereas the basic form of the passive participle means ‘being done, having been done’. Just like the perfect and imperfect verb forms, the active and passive participles have 10 forms (Schulz, 2000: 280). Both participles were used by translators to translate the passive form. Active participles comprise 7 of the 87 active forms, i.e. 8.05% (25.94 per 100,000 words). For example, ‘The slow component is associated with equatorial regions of the sun’ was translated as ʾinna al-murakkiba al-ḥaṭṭa murtabiṭa bil-manāṭiq al-ʾistiwāʾiya min al-šams. The English passive verb ‘is associated’ is translated with the active participle murtabiṭa.

4.1.1.1.2 Medio-passive verb/participle (active form with medio-passive meaning)

This category occurred only once, i.e. 1.15% (3.71 per 100,000 words). A verb is considered medio-passive when it is active in form but semantically has a passive-like meaning. Derived forms of the basic verb Form I can indicate a passive-like meaning, especially Forms V, VII, VIII, and IX. An example is ‘The plaster was composed of gypsum, anhydrite’, which was translated as ʿwa kānat ṭabaqat al-mīlāṭ tatakawwan min al-jibs wa al-ʾaʾnīdīʿayt. The passive verb ‘composed’ is translated with the medio-passive tatakawwan.

4.1.1.1.3 Active verb with active meaning

Many active forms belonged to this category, accounting for 34 of the 87 active forms i.e. 39.08% (125.97 per 100,000 words). For example, ‘The tomb’s wall paintings were severely disturbed as well, but this was the result of natural processes, not of grave robbers’ was translated as ʾkaḍālika fasādat al-rūsūm al-jidāriyya lil-maqbara bišidda, wa lakin haqā kān bisabab al-ʿawāmil al-ṭabīʿiya wa laysa bi müşl luṣs al-maqābir.

4.1.1.1.4 ‘Be accomplished’ verb

This category involves the use of التم tamma ‘be done’ with the مصدر maṣdar ‘verbal noun’. It occurred in 3 of 87 active forms, i.e. 4.45% (11.12 per 100,000 words). For example, ‘until the
The word “intelligent” is defined as ‘ilā ‘an yatimma ta‘rīf kalimat “ḏakī”, and ‘That perspective has been gained from the growing awareness that by-products from a global technological society have the power to alter the planetary climate’ was translated as وقد تم اكتساب هذا المنظور من الإدراك المتزايد بأن بإمكان المنتجات الثانوية التي تخلقها الصناعات أن تغير مناخ كوكبنا wa qad tamma ʾiktisāb haḏā al-manṣūr min al-ʾidrāk al-muatzāyid biʾanna biʾimkān al-muntajāt al-tānāwiyāya allatī tuḵallīfu-hā al-šiṅāfīt ’an tuḡayyir manāk kawkabīnā.

4.1.1.1.5 Verbal noun

The المصدر/maṣdar verbal noun’ is derived from the verb that refers nominally to an activity or an action the verb denotes. This occurred in 5 of the 87 active forms, i.e. 5.75% (18.53 per 100,000 words). For example, ‘Certainly, the enthusiasm of the British visitors, the flattery of being asked and the challenge of the research problem all swayed him’ was translated as من المؤكد أن حماس الزوار البريطانيين، والإطروة الناتجة من دعوته لشغل المنصب، والتحدي الخاص بالبحث، كانت جميعا وراء هذا القبول min al-muʾakkad ʾannā ḥamās al-zuwwār al-bīrīṭāniyīn, wā al-ʾiṭrāʾ al-nāṭij min daʿwat-ih lišaġl al-manṣib, wa al-taḥaddī al-kāṣṣ bimuškilat al-baḥt, kānat jamīʿan waḥda haḏā al-qubūl. The word دعوته daʿwat-ih is a noun with a verb meaning and denotes an activity.

4.1.1.1.6 Relative clause

Relative clauses consist of الذي/allatī or a related form, such as the feminine singular=allatī, followed by a verb. They occurred in 4 of 87 active forms, i.e. 4.60% (14.82 per 100,000 words). For example, ‘Debate continues on how much of it is caused by the burning of fossil fuels’ was translated as فإن النقاش مازال محتمدا حول النسبة منه التي يسببها حرق الوقود الأحفوري faʾinna al-niqāš mā zāl muḥṭadimā ḥawl al-nisba min-h allatī yusabbibuhā ḥarq al-waqūd al-ʿuḥfūrī.

4.1.1.1.7 Nominal clause

Some passive forms were translated by a verbless structure. A nominal clause replaced the use of the active verb in 4 of 87 forms, i.e. 4.60% (14.82 per 100,000 words). For example, ‘Finally, they were so obviously imperilled that the Egyptian government closed the tomb to the public in the late 1930s’ was translated as وفي النهاية كان من البديهي أن تلجأ الحكومة المصرية إلى إغلاق المقبرة أمام الزوار في أواخر الثلاثينيات من القرن الماضيWa fi al-nihāya kān min al-badīhī ʾan taljaʾ al-ḥukūma al-miṣrīyyaʾilā iglāq al-maqbaraʾamām al-zuwār fīʾawākir al-ṭalāqīniyyāt min al-qarn al-mādī.
4.1.1.1.8 Compound structure

Compound structures occurred in 21 of 87 forms, i.e. 24.14% (77.81 per 100,000 words). They consist of two structures combined and are divided into three subsections: verbal + verbal noun; verbal phrase consisting of كان kān, followed by a complement; and a modal structure that consists of يمكن yumkin ‘could’, ينبغي yanbaği ‘ought to’, or لا lā budd ‘should’, followed by a verbal noun.

4.1.1.1.8.1 Verb + verbal noun

A compound structure involving a verb followed by a verbal noun occurred in 10 of 87 active forms, i.e. 11.49% (37.05 per 100,000 words). For example, ‘They examined the paint to see whether it was flaking, being abraded, or losing its cohesiveness’ was translated as وفحصوها وفسح أوسحت ألا تعرض للتقشر أو السحح أو الفقدان تماسكه wa faḥaṣū al-ṭilā’ liyarū ’in kān qad tašarrad lil-taqaṣṣur aw al-sahaj aw lifuqdān tamāsuk-ih.

4.1.1.1.8.2 Verbal phrase consisting of كان kān followed by a complement

The use of كان kān ‘to be’ and its sisters was a relatively common way of translating the passive form. It occurred in 8 of 87 active forms, i.e. 9.20%. Certain verbs are called ‘sisters of كان kān, because they are similar to كان kān in their syntactic behaviour and meaning. They take a subject and a predicate instead of a subject and an object, like many verbs (Ryding, 2005). كان kān occurs in different forms, e.g. كانتا kānata ‘they two (f.) were’, كان kān ‘he/it (m.) was’, يكون takūn ‘he/it (f.) was’, and تكون yakūn ‘he/it (m.) is’, يكون kawn ‘being (verbal noun)’, كانت kānat ‘she/it (f.) was’, and تكون takūn ‘she/it (f.) is’. Its sisters include: قد bāt ‘to become’, ظل dalla ‘to keep, to remain’, أصبḥ ’aṣbah ‘to become’, أمسى ’amsā ‘to become’, أضيḥ ʾaḍḥā ‘to become’, صار ʾasr ‘to become’, ما دام mā dām ‘as long as’ (literally ‘to not continue’), ما زال mā zāl ‘to remain, to continue to be’. This is the only technique found in both the active (29.64 per 100,000 words) and passive (14.82 per 100,000 words) translated Arabic structures. An example is ‘But it is clear she was beloved by her husband’, which was translated as افا كان يعشقه ولكن من الواضح أنه كان يعشقها wa lakin min al-wāđīh ʾanna-h kān yaʕšqhā.

4.1.1.1.8.3 Modal structure that consists of يمكن yumkin ‘could’, ينبغي yanbaği ‘ought to’, or لا lā budd ‘should’ followed by a verbal noun

Modality exists in both Arabic and English languages, but the two languages employ different structures. In English, modal forms include modal auxiliaries such as ‘could’, ‘may’, and...
‘should’, while in Arabic they include verbs such as yumkin ‘could’, ينبغي yanbagī ‘ought to’; nominals such as ﻰ lā budd ‘should’, and adverbials such as min al-jā’īz, ‘may’ and من الممكن min al-mumkin ‘possible’.

Modal structures occurred in 3 of 87 active forms, i.e. 3.45% (11.12 per 100,000 words). For example, ‘And refer only to things which admit of being perceived by the senses’ was translated as ويشير فقط إلى الأشياء التي يمكن إدراكها بالحواس wa yuṣīr faqaṭ ‘ilā al-′ašyā’ allatī yumkin ʾidrākuhā bil-ḥawāss.

4.1.1.1.9 Other procedure
The other procedure found only in the 1997–2000 translated corpus was adverbial phrase + a verbal noun.

4.1.1.1.9.1 Adverbial phrase + a verbal noun
This occurred in 8 of 87 active forms, i.e. 9.20% (29.64 per 100,000 words). Arabic adverbials fall into different categories, such as adverbials of time, قبل qabl ‘before’, بعد baʿd ‘after’, and بمجرد bimujarrad ‘as soon as’. For example, ‘The space shuttle could transfer the crew to the Mars craft once it was completed’ was translated as ويستطاع المكوك الفضائي نقل الملاحين إلى سفينة المريخ بعد الانتهاء من إنجازها wa bi-stifāši al-makūk al-faḍāʾī naql al-mallāḥīn ‘ilā safīnat al-marrīk baʿd al-’injāzihā.

4.1.1.1.2 Translating the passive form into a passive form
This was the second-most-common strategy used by the translators in the 1997–2000 translated corpus. It comprised 61 of 148 passive forms, i.e. 41.22% of examples retrieved from the English corpus. The procedure can be divided into four sub-categories, as discussed in the following sections.

4.1.1.1.2.1 Passive verb
The passive verb comprises the majority of the translated passive forms, accounting for 46 of 61, i.e. 75.41% (170.43 per 100,000 words). An example of a passive verb translated as a passive verb is, ‘The topography gets more interesting on the rim of Valles Marineris, which is thought to resemble the Canyonlands in Utah’, which was translated as ويتصبح الطبوغرافيا أكثر بينية على حافات فالليس مارينيريس الذي يعتقد بأنه يشبه كانيونلاندس بولاية يوتا الأمريكية wa tuṣbih al-
It should be noted that the only passive verbs considered in the Arabic translation were those that were equivalents of the English passive verbs. Other Arabic passive verbs in the texts were not counted. This was because the focus was on the number of passive verbs in the English texts and the extent to which these were retained in the Arabic translations. In addition, this allowed for a coherent comparison of the Arabic translated and original texts. The inclusion of all the Arabic passive forms without equivalents in the English texts would have led to incoherent results. Another issue (mentioned previously in section 3.3.2.1.2) is that not all the passive forms in the English texts had been translated into Arabic. Those that were not translated at all were not included in the total count.

4.1.1.1.2.2 Passive participle
This was the second type of Arabic participle (mentioned in section 4.1.1.1.1), the other being the active participle. Passive participles occurred in 11 of 61 passive forms, i.e. 18.03% (40.76 per 100,000 words). For example, ‘Astronauts in low Earth orbit are protected by the planet’s magnetic field,’ was translated as إن رؤاد الفضاء في مدار أرضي منخفض محميون بفضل الحمل المغناطيسي الأرضي ‘inna ruwwād al-faḍā’ fī madār ʾarḍī munḳafiḍ maḥmiyyūn bifaḍl al-ḥaql al-maḡnāṭisī al-ʾarḍī.

4.1.1.1.2.3 Verbal phrase consisting of كان followed by a passive complement
This occurred in 1 of 61 passive forms, i.e. 1.64% (3.71 per 100,000 words). In Arabic, it is possible for a verbal phrase to be used as the equivalent of the verb ‘to be’ or ‘been’. For example, ‘As well as other photographic records that had been made in the intervening years’ was translated as إضافة إلى سجلات مصوره أخرى كانت قد انجزت في أعوام تالية ‘idāfatan ’ilā sijjilāt muṣawwara ʿukrā kānat qad ʾunjizat fī ʾaʿwām tāliya. The verbal phrase كانت kānat, followed by a passive verb انجزت ʿunjizat, are used to translate the passive form ‘had been made’.

4.1.1.1.2.4 Verbal phrase consisting of كان followed by a passive participle complement
This occurred in 3 of 61 passive forms, i.e. 4.92% (11.12 per 100,000 words). For example, ‘Their initial random placement has been preserved?’ was translated as إن وضعها المبدئي العشوائي ظل محفوظ؟ ‘inna wadʿa-hā al-mabdaʾ ʾi al-ṣaʿwāʾ ʾi ḏalla maḥfūḍa? The verbal phrase ظل ḏalla,
followed by a passive participle محفوظاً mahfūḍa, was used to translate the passive verb ‘preserved’.

4.1.1.2 The structure of the Arabic passive in the 1997-2000 parallel corpus

When analysing the structure of the passive, it was useful to investigate how similar the Arabic target texts were to the English source texts and how far the target texts deviated from the original Arabic texts. Because Arabic clauses do not have a single fixed word order, the structures were separated into verbal and nominal clauses to examine how each passive structure started.

Abdelfattah (1990, cited in Dickins, 2020: 120) confirms that the use of nominal clauses in the Egyptian newspaper Al-ahram has been increasing since 1935, while the use of verbal clauses has been declining. He explains that the colloquial Egyptian Arabic, which makes heavy use of nominal clauses, is one of the factors encouraging this. Additionally, he mentions that editorial writers began to utilise inna more frequently during this time period, which necessitated the inclusion of a following predicand.

In the scientific texts investigated in this study, nominal clauses were significantly more common than verbal clauses. Dickins (2020) argued that this increase in nominal clauses is the result of a change in the realisational semantic ‘values’ of the phrase-structural para-syntactic structures, rather than a change in the phrase-structural para-syntax of Standard Arabic. Another recent study by Ababneh and Al Rousan (2020) investigated the influence of English translation on the structure of Arabic. It presented a number of Arabic syntactic structures that had shifted in terms of function, with new structures emerging that had not previously existed in Standard Arabic. Their study focused on the media translation field, specifically Jordanian electronic journalism. They found that inexperienced translators who were not competent in both English and Arabic structures were making the mistake of starting with nominal clauses, when verbal clauses were possible. The authors claim that the nominal structure dominates the verbal in modern Arabic.

The current study examined the structures in which the passive form was found to occur. The results for the 1997–2000 translated corpus can be divided into two categories: verbal clauses and nominal clauses. These are discussed in turn in the following sections.
4.1.1.2.1 Verbal clauses

Of the 47 structures retrieved, 35, i.e. 74.47% – i.e. just under three-quarters – begin with a passive form (129.68 per 100,000 words). The frequency of the passive verbal clause in the 1997-2000 parallel corpus surpassed those in all other translated and original corpora. For example, ‘Newcomb was born in 1835 in Wallace, Nova Scotia, the oldest of seven siblings’ was translated as فِي وَالَاس بِولاَيَة نُوْوَا سُكُوشِيا، وَكَانَ أَكْبَرْ اِخْوَهُ الْسَبْعَة wulid nayūkūmb ūm 1835 fī walās bi-wilāyāt nāwā sakūšyā, wa kān ’ākbarʾ ikwat-ih al-sabʕa.

It is worth noting there was a total of 61 passive forms in the 1997–2000 translated corpus, including the passive participle. However, only those 47 structures with passive verbs were selected. This was because the results were to be compared with the 1997–2000 and 2016–2018 original corpora, which only included passive verbs. This provided more accurate results.

4.1.1.2.2 Nominal clauses

Of 47 structures, 12, i.e. 34.04% did not start with a verb, but with other elements (44.46 per 100,000 words). For example, ‘The sounds are trapped inside the sun; they cannot propagate through the near vacuum of space’ was translated as دَاخِل الْشَّمْسِ، وَمَنْ ثَمّ لَا يَمْكِنُهَا تُحْتِجز وَهَذِهِ الْأَصْوَاتَا الْأَنْتِشَارُ فِي الْفَضاءِ الْقَرَبِ فِي الْشَّمْسٍ. 

4.1.1.3 Treatment of the English agentive passive

The number of agentive passive forms found in the 1997-2000 English corpus is 30 of 148 passive forms, i.e. 20.27%. This corpus consisted of 31,019 words, thus the agentive passives comprised 0.10% of the total. Only a minority of these (6 of 30) were translated into Arabic as agentive passive forms (4.05% of all Arabic passive forms and 20% of the English agentive passives). The rest of the English agentive passive forms were translated as active structures (24 of 30, i.e. 80%). This was expected, as Arabic generally does not prefer the use of the agentive passive, plus scientific texts place more emphasis on the action itself than on the doer of the action.

Procedures used by the translators for the agentive passive ‘by-phrase’:

A. The English agentive passive is translated into an Arabic active form:
   • Translating a ‘by-phrase’ with an Arabic equivalent.
   • Grammatical transposition of the ‘by-phrase’.
B. The English agentive passive is translated into an Arabic passive form:

- Translating a ‘by-phrase’ with an Arabic equivalent.

Table 4.6 outlines the procedures used by the translators for the agentive passive.

4.1.1.3.1 The English agentive passive is translated into an Arabic active form

The English agentive passive occurred 30 times in the 1997–2000 parallel English corpus, which consisted of 31,019 words in total. This gave the agentive passive a frequency of 0.10% (96.71 per 100,000 words). Of the 30 occurrences, 24, i.e. 80%, were translated into active structures. These can be divided into two types, as discussed in the following sections.

4.1.1.3.1.1 Translating a ‘by-phrase’ with an Arabic equivalent (e.g. bi-wāsiṭat, bi, bi-fiṣl, ʕan ṭarīqi, ʕan)

Out of the 24 (88.92 per 100,000 words) English agentive passives translated as active structures, 9 used Arabic propositions equivalent to the English ‘by-phrase’, i.e. 37.50%. The translators used 6 different elements to translate agentive passives, as follows: 1. The agentive phrase بفعل bi-fiṣl ‘by the act/fact of’; 2. The preposition ب bi ‘by’ as an agent introducer; 3. The agentive phrase بواسطة bi-wāsiṭat ‘by means of’; 4. The agentive phrase عن طريق ʕan ṭarīqi ‘by way of’; 5. The preposition عن ʕan ‘via’ as an agent; 6. The agentive phrase من قبل min qibal ‘by’.

4.1.1.3.1.1.1 بفعل bi-fiṣl ‘by the act/fact of’

This occurred 3 times, i.e. 33.33% (11.12 per 100,000 words). For example, ‘Space dust comprising materials that have been altered by great heat’ was translated as在市场上 بفعل جراء الشدة al-ğubār al-faḍāʾī allaḏī yataʾallaṯ min mawādd қaḍaʿišat lil-taḏdīl bi-fiṣl ɣarāra ʃaḍīda.

4.1.1.3.1.1.2 ب bi ‘by’

This occurred twice, i.e. 22.22% (7.41 per 100,000 words). For example, ‘Although it is also affected by volcanism,’ was translated as على الرغم من تأثره بالنشاطات fa-ʕalā al-ruḍm min taʾattur-iḥ bil-našātaṯ. Another example was, ‘Refer only to things which admit of being perceived by the senses’, which was translated as ويشير فقط إلى الأشياء التي يمكن إدراكها بالحواس wa yušīr faqaṭ ilā al-ʾaṣyāʾ allaḏī yumkinū ʾidrāku-hā bil-ḥawāṣs.
4.1.1.3.1.1.3  "by means of"
This occurred once, i.e. 11.11% (3.71 per 100,000 words). Thus, ‘Now being scrutinized by LAS- CO and UVCS’ was translated as ‘التي يجري تفحصها بواسطة الآلتين لاسكو ويوفي سي إس’.

4.1.1.3.1.1.4 ‘by way of’
This occurred once, i.e. 11.11% (3.71 per 100,000 words). Thus, ‘It appears that heat was transferred, at least in the relatively recent past, by the eruption of vast plains of basaltic lava’ was translated as ‘ويبدو أن الحرارة كانت تنتشر في الماضي القريب نسبيا على الأقل، عن طريق انفجارات حمم’.

4.1.1.3.1.1.5 ‘via’
This occurred once, i.e. 11.11% (3.71 per 100,000 words). Thus, ‘Infrared light, also emitted by stars, is later projected through the ice’ was translated as ‘وإلى جليد لمعرفة ما تكون عن النجوم أيضا على الجليد لمعرفة ما تكون عن الجليد’.

4.1.1.3.1.1.6 ‘by’
This occurred once, i.e. 11.11% (3.71 per 100,000 words). Thus, ‘Few of the ones we’ve been to could have been accessed by a nonspecialized rover’ was translated as ‘وربما كان من الممكن الوصول إلى العدد القليل الذي بلغنا منها من قبل جوازة غير متخصصة’.

4.1.1.3.1.2 Grammatical transposition of the ‘by-phrase’
This technique was used more often than a direct equivalent of the ‘by-phrase’, appearing in 15 out of 24 forms, i.e. 62.50%. This process occurs in translation when part of speech order is changed. In this case, English passive forms were replaced by a rephrased Arabic structure without any mention of the agentive phrase.

When translating the English agentive passive, many translators used grammatical transposition, changing the agentive passives into active forms in Arabic. The translators here...
did not use prepositions to replace the ‘by-phrase’, but rather rephrased the structures to make them more natural. For example, ‘Earth and Venus, on the other hand, have climates that are driven by the dynamic interplay’ was translated

أما الأرض والزهرة فهما مناخان يحكمهما التفاعل الديناميكي المنتبه بين السيرورات الجيولوجية والجوية ammā al-'ard wa al-zuhra fa-lahumā manākān yahkum-humā al-taţā Política

The phrase ‘dynamic interplay’ al-taţā Política is the subject of the verb ‘are driven’ yahkum-humā. The subject is the agent here. Another example can be found in, ‘But it is clear she was beloved by her husband’, which was translated as wa lakin min al-wādīḥ 'anna-h kān yaʕšiq-hā.

4.1.1.3.2 The English agentive passive is translated into an Arabic passive form

The English agentive passive occurred 30 times in total (111.15 per 100,000 words). Out of these, 6, i.e. 20% were translated into a passive structure.

4.1.1.3.2.1 Translating the ‘by-phrase’ with an Arabic equivalent (e.g. bi-wāsiṭat, bi, bi-fiʕl, ʕan ğarīqi, ʕan)

The English agentive passives found in the 1997-2000 corpus were translated into a passive structure using Arabic propositions equivalent to the English ‘by’ 6 out of 30 times, i.e. 20% (22.23 per 100,000 words). Four techniques were used to translate English agentive passives that were translated as Arabic agentive passive structures: 1. The agentive phrase بواسطة bi-wāsiṭat ‘by means of’; 2. The agentive phrase فعل bi-fiʕl ‘by the act/fact of’; 3. The preposition ب bi ‘by’ as an agent introducer; and 4. The agentive phrase بفضل bi-faḍl ‘thanks to’. Similar techniques were used on the rest of English agentive passives that were translated as Arabic active structures (24 out of 30) (as discussed in section 4.1.1.3.1.1). It should be emphasised that, unlike in the examples discussed in the previous section, grammatical transposition of the ‘by-phrase’ technique is not used in agentive passives in Arabic.

4.1.1.3.2.1.1 بواسطة bi-wāsiṭat ‘by means of’

This occurred twice, i.e. 33.33% (7.41 per 100,000 words). For example, ‘The propellant, generally hydrogen, is first ionized by radio waves and then guided into a central chamber’ was translated as وعَيْيَانٌ أولاً الوقود الداسر - الذي هو هيدروجين عموماً - بواسطة موجات راديوية، ثم يوجه إلى حجرة مركزية wa yu‘ayyan ‘awlā al-waqūd al-dāsir al-laĎī huw hadrūjīn šumūmā bi-wāsiṭat mawjāt rādyuwiyya, ūmnūmah yawajjah ‘ilā ḥu源自 markzyiya. The other example, ‘Flows into a chamber and is ionised by an electron gun’, was translated as وعَيْيَان بواسطة مدفع إلكتروني wa yu‘ayyan bi-wāsiṭat midfaʕ iliktrūnī.
4.1.1.3.2.1.2  

This occurred twice, i.e. 33.33% (7.41 per 100,000 words). ‘They are pushed along by the gentle pressure of sunlight—feeble but free’ was translated as تَدْفَعُ هَذَهُ الأَشْرَعَةُ الْبِضْحِ الأَسْرِيَّةُ بِيَلِدَةُ الْأَمْرُ الْسَمْسُ الْقَانُوْنِيُّ، لَكِنَّهَا طَلِيقٌ - tudfaḥ haḍḥi al-ašriyya bil-ḍagiatan li-nūr al-šams al-ḍaṣrīf, lakinnahu ṭaliq, and ‘The theory that liquid water was once stable on Mars has been bolstered by the Mars global surveyor prob,’ was translated as قد ظَنَّ النَظَرَةُ القائِلةُ بِأنَّهُ كان يوجد في وقت من الأوقات ماء سائل على المريخ التي أخذها مسبار الناسا للمريخ qad duṣʿim al-naḍariyya al-qāʿ ila biʾan-ni kān yūjād fi waqt min al-ʿawqāt māʾ sāʾil sāʾil al-mirrik bil-ṣuwar allātaʾ akadhā masbār al-māsh al-ṣāmil lil-mirrik.

4.1.1.3.2.1.3  

This occurred only once, i.e. 16.67% (3.71 per 100,000 words). In that instance, ‘That appeared to have been deeply incised by water flowing for hundreds if not thousands of years’ was translated as بدأ أنه شُقَّ بعمق يفعل مياه جرّ فيه قبل مئات، إن لم يكن آلافا، من السنين badāʿ an-ni hu šuqqa bi-ṣumq bi-fiḍl miyāh jarat fihi qabl miʾāt,ʾin lam yakun ʾālāf min al-sinīn.

4.1.1.3.2.1.4  

Similarly, this occurred only once, i.e. 16.67% (3.71 per 100,000 words). In that instance, ‘Astronauts in low Earth orbit are protected by the planet’s magnetic field’ was translated as إن رواد الفضاء في مدار أرضي منخفض بفضل الحقل المغناطيسي الأرضي in rwād al-faḍāʾ fi madārī ʾardī munakfīd maḥmiyyūn bi-faḍl al-ḥaql al-maγnaṭīsī al-ʿardī.

4.1.1.4 The passive form context

This section examines the elements that occurred with the passive structure in the 1997–2000 and 2016–2018 parallel/original corpora and highlights the subtle changes in the passive context. The comparison of these elements across corpora revealed where they could be found and whether they increased over time, declined, or disappeared altogether. This was crucial for understanding and analysing the contexts in which the passive form appeared.

4.1.1.4.1 The use of كان kān ‘to be’ and its sisters

As mentioned in section 4.1.1.1.8.2, the use of kān is a common procedure for translating the English passive, and it is found in the translated active and passive structures. The passive form occurred as a kān complement, where the complement was either a passive verb or a passive
participle, in 4 out of 61 passive structures, i.e. 6.56% (14.82 per 100,000 words). For example, ‘As well as other photographic records that had been made in the intervening years’ was translated as ‘idāfa ‘ilā sijjilāt muṣawwara ʿukrā kānat qad ‘unjizat fi ’āswām tāliya. Kān, here, is followed by a passive verb ‘unjizat. Another example, ‘And whether it was covered with dirt, dust or insect nests’ was translated as wa mā ‘idā kān muqattā bil-awsāk ‘aw al-ʾatriba ‘aw ʾaʕšā al-ḥašarāt. Kān, here, is followed by a passive participle muqattāḥā.

Kān also occurred at the start of a passive structure once out of 61 passive structures, i.e. 1.64% (3.71 per 100,000 words). ‘It had already been broken into and looted’ was translated as kānat qad kusirat wa sulib mā fiḥā.

4.1.1.4.2 The particle قد qad

The particle قد qad is commonly found in translations of passive structures. Traditionally, قد qad is used in Arabic as an emphatic particle, preceding the perfect verb to signify completion of the action or proximity to the beginning an action. Dickins and Watson (1999) highlight that the particle قد with the perfect tense is typically thought to accentuate the entirety of the clause in which it appears. This particle appeared in 13 out of 61 passive structures, i.e. 21.31% (48.17 per 100,000 words). For example, ‘Some of its instruments are now poised to resolve several other mysteries’ was translated as wa qad ʿunīṭ bibaṣḍ al-ʾajhiza ʿalā matn sūḥū muhimmat kašf ʾasrār ʾuḳrā.

4.1.1.4.3 Conjunctions: و wa, ف fa, ثم tumma, and أو aw

A conjunction is a word or phrase that connects one part of a sentence with another. Oxford Modern English Grammar (Aarts, 2011) defines a conjunction as a linking word. There are two types of conjunctions: subordinating and coordinating. A subordinating conjunction helps to subordinate one clause to another (e.g., ‘that’, ‘whether’, and the interrogative ‘if’ and ‘for’). The coordinating conjunctions – such as ‘and’, ‘but’, and ‘or’ – are used to link phrases and words. Dickins (2017:2) explains that coordinators link nominal, verbal, adjectival, and clausal words and phrases in both English and Arabic. Ryding (2005:407) defines Arabic conjunctions as words and phrases that syntactically and semantically coordinate, subordinate and link clauses. Abu Chacra (2007:51) reports و wa, ف fa, and ثم tumma as the most common coordinating conjunctions. Dickins and Watson (1999, cited in Dickins, 2017: 1) add that, in Standard Arabic, the most fundamental coordinating conjunctions are و wa ‘and’ (when not
used in a subordinating context); ف fa ‘and/so’; ثم tumma ‘then’; and أو aw ‘or’. All other conjunctions are subordinating, including و wa ‘and’, when used as a circumstantial حال hāl clause introducer. Conjunctions occurred in 38 out of the 61 translated passive structures retrieved from the 1997-2000 translated corpus, i.e. 62.30%.

- و wa ‘and’ is joined to the following word and – unlike in English, where it is usually added before the last constituent of a chain of coordinated words – it is normally repeated before every constituent of a chain of coordinated words. و wa is the most commonly used conjunction in Arabic generally and in the translated structures retrieved from the parallel corpus specifically. Unlike in English, sentences often begin with the conjunction و wa. It appears both as a clause initiator and a coordinating conjunction between two phrases. و wa accounted for 28 out of 38 conjunctions, i.e. 73.68%. For example, ‘The treasures that were to accompany Nefertari in her death were gone, her sarcophagus smashed and her mummy spirited away’ was translated as تابوتها و حطم و اخفت الكنوز التي كانت مصاحبة لنفرتاري في قبرها و خطم تابوتها wa-‘ktafat al-kunūz allatī kānat musāhiba linafartārī fī qabrīhā wa ḥuṭim tābūthā.

- ف fa ‘and/so’ is joined to the following word and suggests a succession or an order between states or actions. This accounted for 9 of 38 conjunctions, i.e. 23.68%. For example, ‘Elements of both models have been incorporated into the prevailing interpretation of the past billion years of Venus’s geologic history’ was translated as فقدعناصر من كلا النموذجين في التفسير السائد للتاريخ الجيولوجي لكوكب الزهرة خلال البليون سنة المنصرمة fa-qad ʿudmijat ʿanāṣir min kilā al-namūḏajayn fī al-tafsīr al-sāʿid lil-tārīkh al-jūlūjī likawkab al-zuhra ḳilāl al-bilyūn sana al-munṣarīma.

- ثم tumma ‘then, and then’ is not joined to the following word and suggests a succession with a time break between the actions. This occurred once out of the 38 conjunctions, i.e. 2.63%. In that instance, ‘And then guided into a central chamber threaded with magnetic fields’ was translated as ثم يوج ه ثم يوج ه إلـى حجرة مركزية تجتازها حقوـل مغـنتـيـسية tumma yuwajjah ʾilā ḥujra markaziyya tajtāzu-hā ḥuqūl maġnāṭīsiyya.

4.1.1.5 Tense and measure of the passive verb

In the following analysis, the term ‘Measure’ was preferred to ‘Form’ for describing verb categories I-X, as the latter has different uses in linguistics and could have caused confusion.
Table 4.7 shows that the perfect passive was the most commonly used verb type (27 out of 47 passive structures, i.e. 57.45% (100.04 per 100,000 words)), while the imperfect passive accounted for the remaining 20, i.e. 42.55% (74.10 per 100,000 words). Measure I was the most common in the perfect passive, accounting for 13 of the 27, i.e. 48.15%, and Measure II was the most common Measure in the imperfect passive, comprising 8 of the 20, i.e. 40%.
The 2016-2018 parallel corpus was divided into two sub-corpora: the 2016-2018 English corpus and the 2016-2018 translated corpus (its Arabic translation).

4.1.2 2016-2018 Translated corpus: passive structures
The 2016–2018 English corpus consisted of 20,573 words, while its Arabic translation comprised 19,517 words. The following tables presents summaries of the translation procedures used.

4.1.2.1 Translation procedures used by the translators

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Table 4.8 outlines the procedures used by the translators to translate the English passive (and reduced passive) structures in the 2016-2018 translated corpus. They can be divided into two main categories with sub-categories for each.
In total, 123 passive forms were retrieved from the 2016-2018 parallel corpus (597.87 per 100,000 words). Two translation strategies were used to translate the English passive form: namely, translation into the active form and translation into a passive form.

4.1.2.1.1 Translating the passive form into an active form
Out of the 123 passive forms, 71, i.e. 57.72%, were translated into active forms (363.79 per 100,000 words). This was similar to the 1997-2000 translated corpus, where 87 out of 148, i.e. 58.78% passive forms were translated into active forms. The Arabic active structures can be divided into 8 different categories, detailed in the following sections.

4.1.2.1.1.1 Active participle with active meaning
This occurred in 7 of 71 active participles, i.e. 9.86% (35.87 per 100,000 words). This was also similar to the 1997-2000 translated corpus, where 7 of 87 were translated as active participles, i.e. 8.05%. For example, ‘There are around 40 institutions involved in this project’ was translated as فلما يقرب من 40 مؤسسة مشتركة في هذا المشروع faṭimma mā yaqrub min 40 muʾassasa mušārika fī haḏā al-mašrūʿ.

4.1.2.1.1.2 Medio-passive verb/participle (active form with medio-passive meaning)
The use of the medio-passive to translate the passive form was higher in the 2016-2018 translated corpus (6 out of 71, i.e. 8.45%) than in the 1997-2000 translated corpus (1 out of 87), i.e. 1.15%. It occurred in 30.74 per 100,000 words. For example, ‘Very little is known about the atmosphere and climate’ was translated as ﻟَا يتوافر لدينا الكثير من المعلومات حول الغلاف الجو والمناخ lā yatawāfūrū ladaynā al-kašīr min al-maṣlūmāt haww al-ḡilāf al-jawwī wa al-manāḵ.

4.1.2.1.1.3 Active verb with active meaning
This was the most used strategy in translated active forms, with 12 active verbs of 71, i.e. 16.90% (61.48 per 100,000 words). This number of active verbs was higher in the 1997-2000 translated corpus, where they accounted for more than one-third of the active forms (34 out of 87), i.e. 39.08%. For example, ‘The Palaeodeserts team is based at the Max Planck Institute for the Science of Human History in Jenna, Germany’ was translated as يتخذ فريق الصحراى القديمة من معهد ماكس بلانك لعلم التاريخ البشري في جينا، ألمانيا مقرًّا له yattaḳīḏ farīq al-ṣaḥārī al-qadīma min maṣḥad māx blānk liṣulūm al-tārīk al-bašārī fī jīnā, ʾalmānyā maqarran la-h.
4.1.2.1.4 ‘Be accomplished’ verb
This occurred in just 2 of the 71 active forms, i.e. 2.82% (10.25 per 100,000 words). This was slightly lower rate than in the 1997–2000 translated corpus, where it occurred in 3 of 87 active forms, i.e. 4.45%. For example, ‘The total figure, however, will be disclosed’ was translated as wa sayattimm al-ʾifṣāḥ ʿan al-raqam al-nihāʾī. The passive verb ‘disclosed’ was translated by a ‘be accomplished’ verb ʿamma, followed by a verbal noun الإفصاح.

4.1.2.1.5 Verbal noun
This occurred in 8 of the 71 active forms, i.e. 11.27% (40.99 per 100,000 words). This is double the amount retrieved from the 1997-2000 translated corpus, where it occurred in 5 of 87 active forms, i.e. 5.75%. For example, ‘It marries together two traditionally different fields: how information is stored in quantum things’ was translated as إنه يجمع مجالين مختلفين لا يجتمعان في العادة: ʾinna hu yajmaʿ majālayn muktaлиflyn lā yajtmiʿān fī al-ʿāda: kayfiyyat takzīn al-maṣlūmāt fī ʾaṣyāʾ kammiyya.

4.1.2.1.6 Relative clause
Relative clauses occurred in 9 of 71 active forms, i.e. 12.68% (46.11 per 100,000 words). This was more than double the amount retrieved from the 1997–2000 translated corpus, where it occurred in just 4 of 87 active forms, i.e. 4.60%. For example, in the 2016–18 corpus, ‘These films have low number of traps, which are usually generated due to impurities’ was translated as تمثل تلك هذه الوقائع عددًا قليلاً من الفخاذا، التي تنشأ عادة بسبب شوائب tamtalik haḍhihi al-raqāʾiq ʾiḏādan qalīlan min al-fīkāʾ, allatī tanša ʿilā maḥṣūs ʾiḍāfiyya.

4.1.2.1.7 Nominal clause
Nominal clauses also occurred in 9 of 71 active forms, i.e. 12.68% (46.11 per 100,000 words). This was more than double the amount retrieved from the 1997–2000 translated corpus, where it occurred in 4 of 87 active forms, i.e. 4.60%. For example, in the 2016–18 corpus, ‘From here on in additional observations are still needed’ was translated as انطلاقا من هذا، لا تزال هناك حاجة إلى ملاحظات إضافية inṭilāqan min hunā, lā tazālu hunāk ḥāja ʾilā malḥūḍāt ʾiḍāfiyya.
4.1.2.1.1.8 Compound structure

Compound structures occurred in 18 of 71 forms, i.e. 25.35%, (92.23 per 100,000 words). This was similar to the number retrieved from the 1997–2000 translated corpus (21 out of 87 forms), i.e. 24.14%. These included three sub-types, discussed in the subsections below.

4.1.2.1.1.8.1 Verb + verbal noun

This occurred in 5 of 71 active forms, i.e. 7.04% (25.62 per 100,000 words). This is lower than the number retrieved from the 1997-2000 translated corpus (10 of 87 active forms), i.e. 11.49%.

For example, ‘We now know, is a moon being flexed and pulled’ was translated as 'أصبحنا نعرف الآن أن إنسيلادوس قمر يتعرض للشد والجذب' (ًashbahnā naʕrif al-ʾān ʾan ʾinsīlādūs qamar yataarrad lil-šadd wa al-jāḏb).

4.1.2.1.1.8.2 Verbal phrase consisting of كأFollowed by a complement

This occurred in 11 of 71 active forms, i.e. 15.49% (56.36 per 100,000 words). This is higher than the number retrieved from the 1997-2000 translated corpus, 8 out 87 active forms, i.e. 9.20%. For example, ‘So we were thrilled to greet one such storm in late 2010’ was translated as 'ومن ثم كان من المثير للغاية بالنسبة لنا أن نشهد إحدى العواصف في أواخر عام 2010' (wa min ṭumma kān min al-muṯūr lil-ġāya bil-nisbat la-nā ʾan nuṣahid ʾiḥdā al-ʿawāṣif fī ʾawāḳir ʿām 2010).

4.1.2.1.1.8.3 Modal structure that consists of يمكن ‘could’, ينبغي ‘ought to’, لا بد ‘should’ followed by a verbal noun

This occurred in 2 of 71 active forms, i.e. 2.82% (10.25 per 100,000 words). This is slightly less than in the 1997-2000 translated corpus, where it occurred in 3 of 87 active forms, i.e. 3.45%. For example, ‘The final planet was captured passing only once.’ was translated as 'وقد أمكنت التقاط مرور الكوكب الأخير مرة واحدة فقط' (waqad ʾamkan ʾiltiqāṭ murūr al-kawkab al-ʾaḵīr marra waḥida faqaṭ).

4.1.2.1.2 Translating the passive form into a passive form

Of the 123 passive forms retrieved from the 2016–2018 English parallel corpus, 52, i.e. 42.28%, were translated into a passive form. This was similar to the 1997–2000 translated corpus, in which these accounted for 61 of 148, i.e. 41.22%. Thus, in the scientific texts examined, the translation of the passive form into passive forms had increased slightly in
frequency between 1997–2000 and 2016–2018. This method included four sub-categories, as discussed below.

4.1.2.1.2.1 Passive verb
This subcategory included most of the occurrences, with 33 of 52, i.e. 63.46%. 33 out of 52 passive forms being translated into passive verbs (169.08 per 100,000 words). This marked a decline since the 1997–2000 translated corpus, where these accounted for 46 of 61, i.e. 75.41%. For example, ‘But this is a first where their thermal characteristics were used as indicators to separate healthy cells from diseased ones’ was translated as

4.1.2.1.2.2 Passive participle
This occurred in 10 of 52 passive forms, i.e. 19.23% (51.24 per 100,000 words). This was similar to the 1997–2000 translated corpus, where the passive participle occurred in 11 of 61 passive forms, i.e. 18.03% (40.76 per 100,000 words). For example, ‘The study rooted out others in which mutations are known to cause pigmentation impairments’ was translated as

4.1.2.1.2.3 Verbal phrase consisting of كان followed by a passive complement
This subcategory included 3 of 52 passive forms, i.e. 5.77% (15.37 per 100,000 words). This was more than in the 1997–2000 translated corpus, where this concerned only 1 of 61, i.e. 1.64%. For example, ‘Previously, the Arabian Peninsula had long been thought to be far from the main stage of human evolution.’ was translated as

4.1.2.1.2.4 Verbal phrase consisting of كان followed by a passive participle complement
This occurred in 6 of 52 passive forms, i.e. 11.54% (30.74 per 100,000 words). This was more than in the 1997–2000 translated corpus, where it occurred in just 3 of 61, i.e. 4.92%. For example, ‘Space seems like a backdrop to the action of forces and fields that inhabit it but space
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It was observed the strategy of using a verbal phrase consisting of كان kān followed by a complement to translate the English passive form had increased – in both the active and the passive forms – between the 1997–2000 and 2016–2018 translated corpora. The rate of English passive forms translated into Arabic active forms had increased from 9.20% to 15.49%, and the rate of English passive forms translated into Arabic passive forms had increased from 6.56% to 17.31%.

4.1.2.2 The structure of the Arabic passive in the 2016-2018 parallel corpus

In total, there were 36 passive verbs in the 2016–2018 parallel corpus, not including the passive participle forms. These clauses can each be identified as either verbal or nominal.

4.1.2.2.1 Verbal clauses

Of the relevant Arabic clauses, 21 of 36, i.e. 58.33% (107.60 per 100,000 words) were verbal clauses. This marks a decrease in the frequency of verbal structures, compared with the 1997–2000 translated corpus (35 out of 47, i.e. 74.47%), where the structures constituted a majority of clauses. One example of a verbal clause retrieved from the corpus is, ‘The fossil was sent around the world to different labs for CT scanning to create a 3D model’, which was translated as ‘أُرسِلَت الأحفورة حول العالم إلى مختبرات مختلفة لفحصها بالأشعة المقطعية لتشكيل نموذج ثلاثي الأبعاد’.

4.1.2.2.2 Nominal clauses

Almost half of the passive clauses retrieved from the corpus had nominal structures, accounting for 15 of 36, i.e. 44.44% (76.86 per 100,000 words). The 1997–2000 translated corpus had a slightly lower frequency of nominal clauses, at just 12 of 47, i.e. 25.53%). For example, ‘Partial upper jaw bone from Misliya Cave in Israel dates to between 177,000 and 194,000 years ago’ was translated as ‘جزء من عظام فك علوي عُثر عليها في كهف ميسليا بإسرائيل يرجع إلى الفترة ما بين 177،000'.
4.1.2.3 Treatment of the English agentive passive

A total of 123 English passive structures were retrieved from the 2016–2018 English parallel corpus, which comprised some 20,573 words, i.e. 0.60% (597.87 per 100,000 words). Of 123 passive verbs, 13, i.e. 10.57%, were agentive passives. These comprised 0.06% of the total corpus, less than the 1997–2000 English corpus, i.e. 0.10%.

Procedures used by the translators for the agentive passive ‘by-phrase’:

A. The English agentive passive is translated into an Arabic active form:
   - Translating the ‘by-phrase’ with an Arabic equivalent.
   - Grammatical transposition of the ‘by-phrase’.

B. The English agentive passive is translated into an Arabic passive form:
   - Translating the ‘by-phrase’ with an Arabic equivalent.

Table 4.9 outlines the procedures translators followed to translate the agentive passive.

4.1.2.3.1 The English agentive passive is translated into an Arabic active form

Almost all of the English agentive passive structures in the 2016-2018 translated corpus were translated into active forms, accounting for 12 of the 13, i.e. 92.31%. This was higher than in the 1997-2000 translated corpus, where 24 of 30 were translated into active forms, i.e. 80%. Two techniques were used to translate the English agentive phrase ‘by-phrase’: accounting for 12 of the 13; using a ‘by-phrase’ equivalent, such as, 1. ب bi ’by’; 2. بنفün bi-fiʃl ‘by the act/fact of’, and grammatical transposition. These techniques are illustrated in the following sections.

4.1.2.3.1.1 Translating ‘by-phrase’ with an Arabic equivalent (e.g. bi-wāṣiṭat, bi, bi-fiʃl, Šan ūtarīqi, Šan)

ب bi ’by’

This occurred twice of the 4 active structures with a ‘by-phrase’, i.e. 50% (10.25 per 100,000 words). For example, ‘Lately one absolutely fascinating proposal is that the fabric of spacetime is knitted together by the quantum entanglement’ was translated as في الأونة الأخيرة، برز اقتراح مذهل حقًا بأن نسيج الزمكان متلحَّم معا بفضل التشباك الكمي للذرات الكامنة fi alʾāwina al-ʾaķīra, baraz iqtirāḥ mughil ḥaqqan biʾanna nasīj al-zamkān mutlaḥim maṣan biʃād al-taṣābūk al-kammī lil-ḏarrāt
al-kāmina. Another example was, ‘And some of us are so enthralled by this possibility’ was translated as

wa qad iftatan baṣdunā biḥaḍā al-‘iḥtimāl.

4.1.2.3.1.1.2 بفعل bi-fiʕl ‘by the act/fact of’

This also occurred twice out of 4 times, i.e. 50% (10.25 per 100,000 words). For example, ‘Only occasionally being cracked open by extremely high-energy photons’ was translated as

ولا تتعرض للاكتسار إلا من حين لآخر بفعل الفوتونات هائلة الطاقة walā tataṣṣaraḍ lil-‘inkisār ‘illā min ḥīnin liʾākūr bi-fiʕl al-fōtūnāt hāʾila al-ṭāqa.

4.1.2.3.1.2 Grammatical transposition of the ‘by-phrase’

This procedure was used in 8 of 12 cases, i.e. 66.67% (40.99 per 100,000 words), making it more common than the previous procedure. This was similar to the 1997–2000 translated corpus, where grammatical transposition was also used more often than an Arabic equivalent to the agentive passive. However, the percentage in the 2016–2018 corpus was higher, i.e. 66.67%, than that in the 1997–2000 translated corpus (15 out of 24 times), i.e. 62.50%. For example, ‘Grotte des Pigeons was occupied from around 23,000 to 12,000 years ago by the Iberomaurusian culture’ was translated as

فترة الممتدة بين 23,000 و 12,000 سنة خلت, كان كهف الحمام خاضعا لاحتلال الإيبيروموريين fī al-fatra al-mumtadda bayn 23,000 wa 12,000 sana ḳalat, kān kahf al-ḥamām ḳāḍiṣan liḥtilāl al-ʾībīrūmūriyyīn. The English passive structure was translated as an active structure, consisting of a verbal phrase followed by its complement, which was an active participle here.

Another procedure not found in the 1997-2000 translated corpus but which occurred twice, i.e. at 16.67%, in this corpus was the translation of the agentive passive as a verbless form. This happens when the English passive is translated using grammatical transposition that results a nominal clause. For example, ‘The team was led by Michael Petraglia at the Max Plank Institute’ was translated as

قائد الفريق مايكل بتراغليا من معهد ماكس بلانك qāʾid al-farīq māykal batrājliyā min maʾḥad māx blānk. The word قائد qāʾid ‘leader’ is a Measure I active participle noun used to convey the sense ‘was led by’.

4.1.2.3.2 The English agentive passive is translated into an Arabic passive form

Of the 13 English agentive passive structures in the 2016-2018 translated corpus, only one, i.e. 7.69% (5.12 per 100,000 words), was translated using the ‘by-phrase’ Arabic equivalent, على يد alā yadd ‘by the hand of’. No other procedures were used. This is a significantly lower rate
than in the 1997–2000 translated corpus, where they account for 6 of 30, i.e. 20% (22.23 per 100,000 words). This shows that, in the scientific texts examined, the use of the agentive passive in translated Arabic declined significantly between 1997–2000 and 2016–2018, falling from 9.84% to 1.92%.

4.1.2.3.2.1 Translating the ‘by-phrase’ with an Arabic equivalent (e.g. bi-wāṣīṭat, bi, bi-fiṣl, Ṣan ṣaṭīq, Ṣan)

4.1.2.3.2.1.1 على يد ʿalā yad ‘by the hand of’

Almost all of the English agentive passive structures that included a ‘by-phrase’ were transformed into active structures during the translation process, accounting for 12 of 13. In the one exception, i.e. 7.69%, the agentive passive was retained in the Arabic translation. Thus, ‘To indicate Levallois tools were invented by modern humans’ was translated as على أنه إشارة ʿalā ʾanna-ḥ išāra ʾilā ʾanna ʿadawāt lōfālū ʿukturiṣat ʿalā yad al-ʿinsān al-ḥadīṯ.

4.1.2.4 The passive form context

This section considers the passive structure and the minor changes to the passive context in the 2016–2018 translated corpus

4.1.2.4.1 The use of ʿkān ‘to be’ and its sisters

The use of ʿkān followed by a passive verb or passive participle complement increased from 4 of 61 passive structures, i.e. 6.56% (14.82 per 100,000 words) in the 1997–2000 translated corpus to 9 of 52, i.e. 17.31% (46.11 per 100,000 words), in the 2016-2018 translated corpus.

For example, ‘Previously, the Arabian Peninsula has long been thought to be far from the main stage of human evolution’ was translated as في السابق، كان يُعتقد أن شبه الجزيرة العربية بعيدة عن الموقع الأساسي للتطور البشري fī al-sābiq, ʿkān yuṣṭaqaḍ ʾanna šibh al-jazīra al-ʿarabiyya baṣīda ʿan al-mawqūf al-ʿasāsī lil-taṭṭawur al-ḥasār. Here, ʿkān is followed by the passive verb yuṣṭaqaḍ. Another example is, ‘Whether they are installed in ships at sea or embedded in wristwatches’, which was translated as سواء كانت مثبتة في سفن في عرض البحر أو ضمن ساعات اليد sawāʾ kānat muṯabbata fī sufn fī ṣaḥr al-baḥr ʿaw dimn sāʿāt al-yad. ʿKān is followed by the passive participle مثبتة muṯabbata.
4.1.2.4.2 The particle دَ qad

Of 12, 52 passive structures, i.e. 23.08% (61.48 per 100,000 words) included the particle دَ. This is slightly higher than in the 1997-2000 translated corpus, where this only occurred in 13 of 61 passive structures, i.e. 21.31% (48.17 per 100,000 words). For example, ‘The find is reported in a study published today’ was translated as وقد أنُشِر إلى هذا الكشف في دراسة نُشرت اليوم wa qad ῖušīra ‘ilā haḏā al-kašf fi dirāṣa nuširat al-yawm.

4.1.2.4.3 Conjunctions: و wa, ف fa, ث ثم tumma, and او aw

Conjunctions occurred in 19 of the 52 translated passive structures retrieved from the 2016–2018 translated corpus, i.e. 36.54%. Thus, the use of conjunctions had declined significantly from the 1997–2000 translated corpus, falling from 62.30% to 36.54%.

- Almost all the examples retrieved began with the particle و wa ‘and’ (18 out of 19, i.e. 94.74%). For example, ‘The fossil itself was directly dated with a technique called uranium series dating—direct dating is a more reliable method’ was translated as وَحُدِّد عمر الأحفورة نفسها مباشرة بتقنية التأريخ بتسلسل البروتونات-التاريخ المباشر طريقة أكثر موثوقية من التأريخ wa ḥuddid ʿumr al-ʾaḥfuʿra nafṣa-hā mubāšaratān bītaqniyat al-taʾrīkh bītasalsul al-yurānīyūm - al-taʾrīk al-mubāšar ʿatīqah ʾakṭar mawṭūqiyyatan min al-taʾrīk. This was interesting because و wa is not used as an equivalent to the English ‘and’ and occurred at the beginning of the structure.

- The conjunction ف fa ‘and/so’ only appeared once in 19 examples of conjunctions, i.e. 5.26%. Compared with the 1997-2000 translated corpus, the use of ف fa dropped significantly from 23.68% to 5.26%. For example, in the 2016–2018 translated corpus, ‘If the species originated in sub-Saharan Africa around 200,000 years ago as was thought’ was translated as فإنَّا كان الجنس العاقل قد نشأ في أفريقيا جنوب الصحراء الكبرى قبل حوالي 200,000 سنة كما كان يُعتقد fa ʾiḏā kān al-jins al-ʿaql qad našaʾ fiʾafrīqiyā janūb al-ṣaḥrāʾ al-kubrā qabl ḥawālī 200,000 sana kamā kān yuṣṭaqad.

- There were no instances of other particles, such as ثم tumma ‘then’, and او aw ‘or’ in the passive structure in this corpus.

4.1.2.5 Tense and measure of the passive verb

<table>
<thead>
<tr>
<th>Tense</th>
<th>Measure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperfect passive</td>
<td>I</td>
<td>15</td>
</tr>
<tr>
<td>Measure I</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Measure II</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Measure III</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
Table 4.10 shows the perfect passive to be the most common verb type, comprising 21 of the 36 passive structures, i.e. 58.33% (107.60 per 100,000 words), with the imperfect passive accounting for the remaining 15, i.e. 41.67% (76.86 per 100,000 words). This was similar to the 1997-2000 translated corpus, where the perfect passive was the most common (27 out of 47 passive structures, i.e. 57.45%), followed by the imperfect passive (20 out of 47 passive structures, i.e. 42.55%). In terms of the frequency of the verb measure, Measure I was the most common in the perfect passive, occurring in 10 of 21 cases, i.e. 47.62%, and in the imperfect passive, where it occurred in 8 of 15 cases, i.e. 53.33%.
4.2 Comparable Corpora Results


4.2.1 1997-2000 Original passive structures

This research used non-fiction scientific articles; and for various reasons, it proved challenging to find appropriate texts in Arabic. First, it was difficult to locate published scientific articles for the period of 1997–2000, as most journals focus on literary and religious writing. Most Arabs published scientific articles in English, unlike social sciences and humanities where they published them in Arabic. The Arab’s exposure to the rest of the world was limited, and the scientific texts published in the region were mostly religious in nature. For example, one of the original Arabic texts used in the comparable corpus, which is titled تثبت علميًا ṣṭubbiṭa ʕilmiyyan ‘Scientifically Proven’, uses Quranic verses abundantly and refers to the Prophet SAWS and his teachings, adding a religious feel to the text. In addition, all the texts were in a hard-copy format and needed to be processed by an OCR tool. This made it very challenging to use texts written during this period. For these reasons, plus copyright issues, samples were used for the corpus (see section 3.3.1.7), instead of full texts (this was not the case with the other texts, which were taken from scientific journals and are available in article format). The passive structures were retrieved manually and analysed in an Excel sheet. The English translations of the examples used in this, and the next section are done by the researcher. The 1997–2000 original corpus (16,686 words) was smaller than the 2016–2018 original corpus (20,939 words) and the other 1997–2000 and 2016–2018 parallel corpora (58,009 words and 40,090 words, respectively). In total, six texts were used for the original corpus, with 4 being the smallest number of passive verb occurrences in a text and 32 being the largest. A total of 119 passive verbs were found in the original corpus (see chapter three: Table 4 for more information).

4.2.1.1 The structure of the Arabic passive in the 1997-2000 original corpus

This investigation revealed how native Arabic speakers created passive structures in the 1997–2000 original texts. Passive verbs were found in both the verbal and the nominal clauses.

4.2.1.1.1 Verbal clauses

Of the 119 structures retrieved, 82, i.e. 68.91% (491.43 per 100,000 words), began with a verb. For example, يشرب مع قدح ماء قبل الافطار yuṣrab maʕa qadḥ māʾ qabl al-iftār’ was translated as
‘It is drunk with a cup of water before breakfast’. Here, the verbal clause begins with a passive verb.

4.2.1.1.2 Nominal clauses
The remaining 37 structures, i.e. 31.09% (221.74 per 100,000 words), did not begin with verbs, using other elements instead. Thus, "او الجلسة الشهيرة التي تُسمى "التربيعة" wa al-jalsat al-shahira allati tusammā "al-tarbīya" ‘Or the famous seating position called "squaring"’. The results indicate that the use of verbal clauses exceeded that of nominal clauses.

4.2.1.2 Treatment of the Arabic passive

Treatment of the passive verb:
A. Passive verb used in Arabic without a ‘by-phrase’ equivalent
B. Passive verb used in Arabic with a ‘by-phrase’ equivalent (e.g. bi-wāsīṭat, bi, bi-fišl, źan źarīqi, źan)

Table 4.11 outlines the treatment of the passive form found in the 1997-2000 original Arabic texts.

4.2.1.2.1 Passive verb used in Arabic without a ‘by-phrase’ equivalent
Almost all of the passive structures found in the 1997-2000 original were agentless, accounting for 118 of 119, i.e. 99.16% (707.18 per 100,000 words). For example, 

yušrab maʕ qadḥ mā ʻal-ʻifṭār ‘It is drank with a cup of water before breakfast’.

4.2.1.2.2 Passive verb used in Arabic with a ‘by-phrase’ equivalent (e.g. bi-wāsīṭat, bi, bi-fišl, źan źarīqi, źan)
There was just one, i.e. 0.84% (5.99 per 100,000 words) agentive passive structure in the 1997-2000 original corpus out of 119 passive forms. Thus, the agentive passive occurred approximately 0.00006 times per 16,686 words (the entire corpus size). This occurrence was wa fī dirāsa duṣimāt min qibal madīnat al-муابل seksāśīn wa al-qaqīna, which was translated as ‘And in a study supported by king Abdul Aziz city for science and technology’. Here, the Arabic ‘by-phrase’ equivalent min qibal ‘by’ is used in the passive structure.
The smaller number of ‘by-phrase’ equivalents in the 1997–2000 original corpus could be due to the samples being limited in size or to the text genre. In addition, when this corpus is compared with the 2016–2018 original texts, one finds that a passive with an Arabic ‘by-phrase’ equivalent occurred only twice in the 124 passive forms in the latter (9.55 per 100,000 words). Thus, the agentive passive occurred approximately 0.00010 times per 20,939 words. Another explanation is that the passive with an agent marker was intentionally avoided in these texts.

4.2.1.3 The passive form context
This section examines the passive structure and the minor changes to the passive context in the 1997–2000 original corpus.

4.2.1.3.1 The use of كان kān ‘to be’ and its sisters
Kān and its sisters were found in the 1997–2000 original corpus, but not before the passive verb or at the start of the passive structure (in any of the 119 passive structures). This was intriguing because kān was used with the passive form in both the 1997–2000 and the 2016–2018 parallel corpora. A possible reason for this is that the passive form seems to occur more in the perfect passive tense in the translated corpora. In addition, according to Baker (1998:61), translated texts have a simpler structure compared to the original texts. Hence, instead of using an imperfect passive tense with the passive form, كان kān plus a perfect passive form were used.

4.2.1.3.2 The particle قد qad
Unlike in the 1997–2000 and 2016–2018 parallel corpora, the particle قد was not common in the 1997–2000 original corpus. It appeared in just 3 of the 119 passive structures, i.e. 2.52% (17.98 per 100,000 words). For example، قدَّر قِيل حينها إن أولئك الطلاب fa qad qīla ḥīnahā ’inna ’ūlāʾka al-ṭullāb was translated as ‘It was said at the time that those students’.

4.2.1.3.3 Conjunctions: و wa، ف fa، ثم tumma، and أر aw
Conjunctions occurred in 70 of the 119 translated passive structures retrieved from the 1997–2000 original corpus, i.e. 58.82%.
- The conjunction و wa ‘and’ accounted for 62 of 70 conjunctions, i.e.88.57%. For example، يُطلب من المعالج أن يتناول هريس الحنطة wa yuṭlab min al-mutaṣâlij ʾan yatanāwal harīs al-ḥunṭa was translated as ‘The patient is asked to eat wheat mash’.
• The conjunction venting fa ‘and/so’ accounted for 5 of 70 conjunctions, i.e. 7.14%. For example, فَتُعد مرحلة شديدة النشاط fa tuṣadd marḥala šadīdat al-našāṭ was translated as ‘It is considered a very active phase’.

• The conjunction ثم tumma ‘then’ accounted for 2 of 70 conjunctions, i.e. 2.86%. For example, ثم يوصي المريض بالافطار عليه tumma yūṣā al-marīḍ bil’ifṭār ʕalay-h. was translated as ‘Then the patient is recommended to have it as a breakfast’.

• The conjunction أو aw ‘or’ accounted for 1 of 70 conjunctions, i.e. 1.43%. Thus، او الجلسة او المشهورة التي تُسمى ”التربية” aw al-jalsa al-šahīra allatī tusammā “al-tarbīa” was translated as ‘Or the famous seating position called "squaring"’.

4.2.1.3.4 The use of certain verbs in the passive

The verb يُعد was the most commonly used passive form in the 1997–2000 original corpus. It occurred in 38 of 119 translated passive structures, i.e. 31.93%. يُعد is known as a ‘semantically light’ verb that is added for stylistic reasons. The clause still holds its meaning if this ‘semantically light’ verb is deleted or replaced by an adjective or a noun. It occurs at least partly because Arabic prefers a clause that starts with a verb, i.e. a verbal clause, (Dickins and Watson, 1999). This verb was not common in the translated corpora. An example found in the 1997–2000 original corpus is as follows: علم الوراثة أساس تربية النباتات yuṣadd šīlm al-wirāṭa ʾasās tarbiyat al-nabātāt ‘Genetics is considered the basis of plant breeding’.

4.2.1.4 Tense and measure of the passive verb

Sketch Engine was used to retrieve the types of passives in the 1997-2000 original corpus. This was done by manually creating tables that included the title of the article, the passive structures, the measure used, and the number of times the passive occurred in the article. The concordance tool in Sketch Engine was used on the table to retrieve all the required information from the corpus (e.g., the number of times each measure occurred).
Table 4.12 shows the imperfect passive to be the most commonly used verb type, accounting for 100 of 119 passive structures, i.e. 84.03% (599.30 per 100,000 words), followed by the perfect passive, which occurred in 19 of 119 passive structures, i.e. 15.97% (113.87 per 100,000 words). The results show that Measure I was the most common measure for both the imperfect passive, 66 of 100, i.e. 66%, and the perfect passive (10 of 19, i.e. 52.63%). See Table 4.12 for more information.
The 2016-2018 comparable corpus is divided into two sub-corpora: the 2016-2018 original corpus and the 2016-2018 translated corpus. This section focuses on the 2016–2018 original corpus.

4.2.2 2016-2018 Original passive structures

In total, 22 original scientific Arabic articles were included in the 2016–2018 comparable corpus. There was a total of 20,939 words, with passive forms occurring 124 times, i.e. 0.59%. The passive form was found in all articles, with a minimum occurrence of 1 and a maximum of 12. The articles ranged in size, with 409 words being the smallest and 2,616 the largest.

It is important to keep in mind that the author’s style of writing and their knowledge of English could affect how the article was written and the number of passives it contained. Some writers naturally use the passive voice more than others. For example, in one of the original scientific articles, سبعة كواكب جديدة شبيهة بالأرض sabīṭa kawākib jadīda šabīha bil-ʿard ‘Seven New Planets Similar to Earth’, the author writes in an interview style. The style is personal, and the author involves himself and his team in the research and uses phrases such as وَأنا متأكد waʾnā mutaʾakkid ‘and I’m sure’, ينقصنا yinquṣnā ‘we are missing’, ونصل linaṣil ‘we reach’, and لني شخصيًا bil-nīšaḥ līšaqqīna ‘for me personally’. Only 2 passives were retrieved from this article, which consisted of 1,167 words. Other articles of similar word counts included more occurrences of the passive form. For example, the article مستوى سطح البحر يرتفع بوتيرة أسرع مما يُعتقد mustawā saṭḥ al-bahr yartafiʿ biwatīraʾ asraʕ mimmā yuṣṭaqad ‘The Sea Water Level Rising at a Rate Higher Than Previously Thought’ comprised 1,260 words, and 5 passive structures were retrieved. This would be worth investigating in future research (see chapter three: Table 5 for more information).

4.2.2.1 The structure of the Arabic passive in the 2016-2018 original corpus

Passive forms occurred in both verbal and nominal clauses, as discussed in the following sections.

4.2.2.1.1 Verbal clause

Of the 124 structures, 75 began with a verb, i.e. 60.48% (358.18 per 100,000 words). For example، يُطلق عليها المُضغة. The structure of the Arabic passive in the 2016-2018 original corpus was translated as ‘It is called the embryo - which forms the embryo at a
later time’. Thus, the number of verbal clauses had decreased, compared to the 1997–2000 original corpus, where verbal clauses comprised 68.91% of the clauses (491.43 per 100,000 words).

4.2.2.1.2 Nominal clause

Of the 124 structures, 49 did not begin with a verb, using other elements instead, i.e. 39.52% (234.01 per 100,000 words). For example, في دراسة أدبيّة في الولايات المتحدة الأمريكية, was translated as ‘In a study conducted in the United States of America’. This is a nominal clause that begins with a prepositional phrase في دراسة ‘in a study’. The 1997–2000 original corpus included a lower percentage of nominal clauses than the 2016–2018 original corpus, with 31.09% (221.74 per 100,000 words).

4.2.2.2 Treatment of the Arabic passive

<table>
<thead>
<tr>
<th>Treatment of the passive verb:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Passive verb used in Arabic without a ‘by-phrase’ equivalent</td>
</tr>
<tr>
<td>B. Passive verb used in Arabic with a ‘by-phrase’ equivalent (e.g. bi-wāṣiṭat, bi, bi-fiṣl, ʕan ṭarīqī, ʕan)</td>
</tr>
</tbody>
</table>

Table 4.13 outlines the treatment of the passive form found in the 2016–2018 original Arabic texts.

4.2.2.2.1 Passive verb used in Arabic without a ‘by-phrase’ equivalent

The great majority of the passive structures retrieved from the 2016–2018 original corpus were agentless passives (122 out of 124), i.e. 98.39%. One example is تُقدر بحوالي 261 مليون كيلومتر, was translated as ‘It is estimated at about 261 million km’. For comparison, the 1997-2000 original corpus had an even higher percentage of agentless passives, i.e. i.e. 99.16%.

4.2.2.2.2 Passive verb used in Arabic with a ‘by-phrase’ equivalent (e.g. bi-wāṣiṭat, bi, bi-fiṣl, ʕan ṭarīqī, ʕan)

Of the 124 passive structures, 2, i.e. 1.61%, had a ‘by-phrase’ equivalent (9.55 per 100,000 words). This was an increase from the 1997–2000 comparable corpus, where only 1 agentive
passive was retrieved from 119 passive forms (5.99 per 100,000 words). Two ‘by-phrase’ equivalents were used: بِوَاﺿِطَة ‘by means of’, and من قبل ‘by’. The ‘by-phrase’ equivalent بِوَاﺿِطَة ‘by means of’ was also used in the 1997–2000 translated corpus, whereas من قبل ‘by’ was only found in the 1997–2000 original corpus. For example، إن الثقب صُنع بِوَاﺿِطَة ‘The hole is made by a sharp tool’. The agent ‘sharp tool’ was introduced using an equivalent to the English ‘by’, which suggests a similarity with the English agentive passive structure. The other example is العَمْلِ تُكَشِب جَمِس وَيْبِلِلْفَضْلِي من قبل مركز غودارد ‘The James Webb Space Telescope was designed by the Goddard Centre’. Both translations would have sounded more natural if they had been written as active structures because the passive structures do not serve any purpose here (as mentioned in section 2.3.5).

4.2.2.3 The passive form context
The passive form context is discussed in the sections below.

4.2.2.3.1 The use of كان ‘to be’ and its sisters
كان occurred only once out of 124 passive structures, i.e. 0.81% (4.78 per 100,000). This example was، لِلْيَتْنِم عِنْدَ عَوَامِلْ ‘And the egg’s albumen was used to prevent weather factors’. The passive verb يُستخدَم is a كان complement. A less than 1% increase does not suggest a strong influence from the translated texts.

4.2.2.3.2 The particle قد
The use of the particle قد increased marginally – from 3 of 119 passive structures, i.e. 2.52% (17.98 per 100,000 words) in the 1997–2000 original corpus to 4 of 124, i.e. 3.23% (19.10 per 100,000 words). This suggests the influence of the translated texts was not substantial. One example was found in قد وُجدَت في أي وقت مضى على سطح المريخ ‘Has it ever been found on the surface of Mars’.

4.2.2.3.3 Conjunctions: و، ف، ثم، أو، and اَو
Conjunctions occurred in 42 of the 124 translated passive structures retrieved from the 2016–2018 original corpus, i.e. 33.87%. The number of conjunctions decreased from the total of the 1997–2000 original corpus (70 out of the 119, i.e. 58.82%).
• The conjunction 
wa ‘and’ occurred in 34 out of the 42 clauses beginning with a conjunction, i.e. 80.95%. The conjunction 
wa ‘and’ occurred more often in the 1997–2000 original corpus (62 out of the 70, i.e. 88.57%) than in the 2016–2018 original corpus (80.95%). For example, “فینوس اکسپرس” was translated ‘It is called “Venus Express”.

• The conjunction 
fa ‘and/so’ occurred in 5 of 42 conjunctions, i.e. 11.90%, which was higher than the 5 of 70 (i.e. 7.14%) retrieved from the 1997–2000 original corpus. For example, “وفقاً دراسة علمية نُشرت مؤخرًا في دورية "نيتشر كومونيكيشن“،” was translated ‘According to a scientific study recently published in the journal Nature Communications’.

• The conjunction 
ṯumma ‘then’ did not appear in this corpus with the passive structure.

• The conjunction 
aw ‘or’ occurred in 3 of 42 conjunctions, i.e. 7.14%. This was higher than in the 1997–2000 original corpus, where it accounted for just 1 of 70 aw conjunctions, i.e. 1.43%. For example, “أو ما يُعرف بالمصباح اليد ذي فرق جهد 5 فولت” was translated as ‘Or what is known as the LED lamp with a voltage difference of 5 volts’.

4.2.2.3.4 The use of certain verbs as a passive
The verb 
yu’add was the most common passive verb in the 2016–2018 original corpus, occurring in 27 of 124 passive structures, i.e. 21.77%. It occurred in most of the scientific articles. This was similar to the 1997–2000 original corpus, where it occurred in 38 of 119 translated passive structures, i.e. 31.93%. For example, “يُعد ثاني أقرب الكواكب للشمس” was translated as ‘It is considered the second closest planet to the sun’. This was notable because the verb did not occur in the 1997–2000 translated texts and occurred only once out of 61 passive structures, i.e. 1.64% in the 2016–2018 translated texts.

4.2.2.4 Tense and measure of the passive verb
As with the 1997–2000 original corpus, Sketch Engine was used to retrieve information from the 2016–2018 original corpus.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperfect</td>
<td>82</td>
</tr>
<tr>
<td>Measure I</td>
<td>47</td>
</tr>
<tr>
<td>Measure II</td>
<td>11</td>
</tr>
<tr>
<td>Measure III</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 4.14 shows the imperfect passive to be the most commonly used verb type, accounting for 82 of 124 passive structures, i.e. 66.13% (391.61 per 100,000 words), followed by the perfect passive (42 out of 124, i.e. 33.87%). There was a decrease in imperfect passive use when compared to the 1997–2000 original corpus, where the imperfect passive occurred in 100 of 119 passive structures, i.e. 84.03% (599.30 per 100,000 words). Measure I was the most common measure in both the imperfect passive, with 47 of 82, i.e. 57.32%, and the perfect passive, with 21 of 42, i.e. 50%. (See Table 4.14 for more information.)
4.3 Parallel and Comparable Corpora Results

I have compared the 1997-2000 parallel corpus with the 2016-2018 parallel corpus, and the 1997-2000 original corpus with the 2016-2018 original corpus in previous sections. In this section, the 1997-2000 and 2016-2018 parallel corpora (including their two sub-corpora: English texts and their Arabic translations) and the 1997-2000 and 2016-2018 comparable corpora (including their two sub-corpora: the original texts and the translated texts) are compared.

4.3.1 Similarities and differences between the translation procedures used by the translators in the 1997-2000 and 2016-2018 translated corpora (parallel corpus)

Table 4.15 outlines the sub-corpus that will be analysed in this section.


In both the 1997-2000 and 2016-2018 translated corpora, converting the English passive into an active structure was more common (58.78% and 57.72%, respectively) than translation into a passive structure (41.22% and 42.28%, respectively). The use of the active verb as a procedure to translate the passive structure decreased from 39.08%, in the 1997-2000 translated corpus, to 16.90% in the 2016-2018 translated corpus. There was an increase in use of some translation procedures, such as medio-passive (1.15% and 8.45%, respectively), nominal clause (4.60% and 12.68%, respectively), relative clause (4.60% and 12.68%, respectively), verbal noun (5.75% and 11.27%, respectively), and verbal phrase followed by its complement (9.20% and 15.49%, respectively). Other translation procedures stayed at similar levels, and these included the active participle (8.05% and 9.86%, respectively), the “be accomplished” verb (3.45% and 2.82%, respectively), and a modal verb followed by a verbal noun (3.45% and 2.82%, respectively). Between the 1997-2000 and the 2016-2018 translated corpora, the procedure of using a verb followed by a verbal noun became less common (11.49% and 7.04%, respectively). The procedure of using an adverbial phrase followed by a verbal noun was found only in the 1997-2000 translated corpus (9.20%).

A number of procedures were utilised to translate the English passive into a passive structure. The procedure of translating the English passive form as an Arabic passive verb in a passive structure became less common between 1997–2000 and 2016–2018, declining from 75.41% to
63.46%, whereas the use of a verbal phrase followed by a passive form (passive verb or passive participle) complement increased (6.56% and 17.31%, respectively). The use of the passive participle to translate the English passive stayed at a similar level (18.03% and 19.23 respectively). (See Table 4.16 for more information.)

<table>
<thead>
<tr>
<th></th>
<th>1997-2000 Translated passive structures</th>
<th>2016-2018 Translated passive structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active participle</td>
<td>8.05%</td>
<td>9.86%</td>
</tr>
<tr>
<td>Medio-passive</td>
<td>1.15%</td>
<td>8.45%</td>
</tr>
<tr>
<td>Active verb</td>
<td>39.08%</td>
<td>16.90%</td>
</tr>
<tr>
<td>&quot;Be accomplished&quot; verb</td>
<td>3.45%</td>
<td>2.82%</td>
</tr>
<tr>
<td>Nominal clause</td>
<td>4.60%</td>
<td>12.68%</td>
</tr>
<tr>
<td>Relative clause</td>
<td>4.60%</td>
<td>12.68%</td>
</tr>
<tr>
<td>Verbal noun</td>
<td>5.75%</td>
<td>11.27%</td>
</tr>
<tr>
<td>Compound structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal phrase followed by its complement</td>
<td>9.20%</td>
<td>15.49%</td>
</tr>
<tr>
<td>Modal verb followed by verbal noun (or an active participle)</td>
<td>3.45%</td>
<td>2.82%</td>
</tr>
<tr>
<td>Verb + verbal noun</td>
<td>11.49%</td>
<td>7.04%</td>
</tr>
<tr>
<td>Other procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td>75.41%</td>
<td>63.46%</td>
</tr>
<tr>
<td>Passive participle</td>
<td>18.03%</td>
<td>19.23%</td>
</tr>
<tr>
<td>Verbal phrase followed by its complement (a passive participle)</td>
<td>4.92%</td>
<td>11.54%</td>
</tr>
<tr>
<td>Verbal phrase followed by its complement (a passive)</td>
<td>1.64%</td>
<td>5.77%</td>
</tr>
</tbody>
</table>

Table 4.16 outlines the procedures used to translate the English passive form in the 1997-2000 and 2016-2018 translated corpora.

4.3.2 The structure of the Arabic passive in the 1997-2000 and 2016-2018 translated and original corpora (comparable corpus)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2018 Original corpus →</td>
<td>2016-2018 Translated parallel corpus</td>
<td></td>
</tr>
<tr>
<td>1997-2000 Translated parallel corpus →</td>
<td>2016-2018 Translated parallel corpus</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.17 outlines the sub-corpora that will be analysed in this section.
Comparing the structure of the passive in terms of verbal and nominal clauses in the original corpora with the structure of the passive in the translated corpora revealed interesting results. In passive structures, the number of verbal clauses in the 1997-2000 translated corpus (74.47%) exceeds that of verbal clauses in the other corpora. Specifically, in the 1997–2000 and 2016–2018 translated corpora, verbal clauses accounted for 35 of 47, i.e. 74.47%, and 21 of 36, i.e. 58.33%, respectively; whereas in the 1997-2000 and 2016-2018 original corpora, the frequency of verbal clauses decreased from 82 of 119, i.e. 68.91%, to 75 of 124, i.e. 60.48%, respectively. The results show that the number of passive clauses with an initial verb (verbal clauses) had decreased in both the original and translated corpora. However, the number of verbal clauses was significantly higher than the number of nominal clauses in all corpora; thus the gradual decrease suggests an influence of translation. The percentage of verbal clauses decreased from 68.91% in 1997-2000 to 60.48% in 2016-2018 original corpus.

This also confirms what was previously said (in section 4.1.1.2) about nominal structures increasing in frequency. However, it is possible that the higher number of verbal clauses is unique to the passive structure as most passive structures include a passive verb. More research is needed in this area to determine whether certain forms of clauses are more likely to have an initial verb.

The remaining passive structures were nominal in all corpora. In the 1997-2000 and 2016-2018 original corpora, nominal passive clauses occurred in 37 of 119 passive clauses (i.e. 31.09%) and 49 of 124 passive structures (i.e. 39.52%), respectively. In addition, they occurred in 12 of 47 passive clauses (i.e. 25.53%) and 15 of 36 (i.e. 44.44%) in the 1997-2000 and 2016-2018 translated corpora, respectively. It is interesting that the percentages of nominal clauses in the 1997-2000 original and translated corpora were lower than those in the 2016-2018 original and translated corpora. One possible reason is the influence of the English structure on the original and translated Arabic structures over time, which has been decreasing the passive structures starting with a verb (see Table 4.18 for more information).
Table 4.18 outlines the number of passive structures starting with a verb and the number of passive structures starting with another grammatical element in 1997–2000 and 2016–2018 translated and original corpora.

4.3.3 The treatment of the agentive passive verb in the translated and original corpora (parallel and comparable corpus)

Table 4.19 outlines the sub-corpora that will be analysed in this section.

The use of the agentive passive differed depending on the type of the text (original versus translated), the time period (1997–2000 versus 2016–2018), and the language use (Arabic versus English). In the 1997-2000 original corpus, the agentive passive only occurred once in 119 passive verbs (5.99 per 100,000 words), while it occurred twice in 124 passive verbs (9.55 per 100,000 words) in the 2016-2018 original corpus. Its use was highest in the 1997-2000 translated corpus (6 out of 61 passive forms, i.e. 9.84%), and it saw a decline in the 2016-2018 translated corpus to just 1 agentive passive of 52 passive forms, i.e. 1.92%. This is noteworthy because the agentive passive was more common in the 1997-2000 translated corpus than in the original corpus for the same period, but less common in the in the 2016-2018 translated corpus (5.12 per 100,000 words) than in the original corpus of the same period (9.55 per 100,000 words).
words). This calculation does not include English agentive passive forms that were translated as active structures with a ‘by-phrase’ equivalent. (See Tables 4.15, 4.16, 4.17 and 4.18 for more information.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>‘By-phrase’ appeared in an active structure</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>‘By-phrase’ appeared in a passive structure</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.20 shows the number of ‘by-phrase’ passives that were translated into active and passive forms in both the 1997-2000 and 2017-2018 translated corpora.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>‘By-phrase’ appears in an active structure</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>‘By-phrase’ equivalent</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Grammatical transposition</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>‘By-phrase’ appears in a passive structure</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>‘By-phrase’ equivalent</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.21 shows how the English ‘by-phrase’ passives were translated into Arabic in the 1997-2000 and 2017-2018 translated corpora.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>‘by-phrase’</td>
<td>1</td>
<td>2</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>‘by-phrase’ equivalent</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Grammatical transposition of the ‘by-phrase’</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Total number</td>
<td>1</td>
<td>2</td>
<td>30</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 4.22 shows how often the Arabic ‘by-phrase’ equivalent was used instead of grammatical transposition in all the 1997–2000 and 2017-2018 original and translated corpora.
Table 4.23 presents the frequency of occurrence of the agentive passive in each sub-corpus. The formula used to calculate occurrence in relation to the size of the respective corpus was as follows:

\[
\frac{\text{the number of the agentive passive forms in a corpus}}{\text{the number of words of that corpus}}.
\]

The formula for occurrences per 100,000 words was as follows: the number of agentive passives in a corpus divided by the size of that corpus divided by 100,000.

The results show that the agentive passive had the highest frequency in the 1997-2000 English corpus, followed by the 2016-2018 English corpus (see Table 4.23). In addition, the number of agentive passives in the English texts decreased between 1997-2000 and 2016-2018 (from 96.71 to 63.19 per 100,000 words). The agentive passive was used the least in the 2016-2018 translated corpus (96.71 per 100,000 words), followed by the 1997-2000 original corpus (63.19 per 100,000 words). This confirms that the agentive passive is more common in English than in Arabic. The table also shows a decline in the use of the agentive in the translated texts between 1997-2000 and 2016-2018 (from 22.23 to 5.12 per 100,000 words), alongside a slight increase in the use of the agentive passive in the original texts (from 5.99 to 9.55 per 100,000 words). The original corpora reflect a change in the passive voice (between 1997-2000 to 2016-2018), but only marginally and – to this researcher’s knowledge – only in the genre of scientific writing.
4.3.4 The frequency of the use of the passive verb in the 1997-2000 and 2016-2018 English and original corpora

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-2018 English parallel corpus →</td>
<td>2016-2018 Original corpus</td>
</tr>
</tbody>
</table>

Table 4.24 outlines the sub-corpora that will be analysed in this section.

It is generally believed that the passive is used less frequently in Arabic than in English (as mentioned previously in chapter two, section 2.3.13.4). However, this assumption was not borne out by the results reported from the 1997–2000 and 2016–2018 parallel and comparable corpora. A comparison of the English passive verbs in the 1997–2000 parallel corpus with the Arabic passive verbs in the 1997–2000 original corpus revealed that passive verbs were slightly more frequent in the Arabic original corpus. They occurred 148 times, i.e. 0.477% (477.13 per 100,000 words) in the English texts (31,019 words), and 119 times, i.e. 0.713% (713.17 per 100,000 words) in the Arabic texts (16,686 words). However, the frequency of the passive verbs in the 2017-2018 English parallel corpus is slightly higher than the frequency of the passive verbs in the 2017-2018 original corpus. The passive verb occurred 123 times, i.e. 0.598% (597.87 per 100,000 words) in the English texts (20,573 words), and 124 times, i.e. 0.592% (592.20 per 100,000 words) in the Arabic texts (20,939 words). The results show an increase in English passive-verb use between 1997-2000 and 2016-2018 (from 477.13 per 100,000 words to 597.87 per 100,000 words). Addressing this issue from a more general perspective would require more in-depth research using larger corpora.

At the same time, there was a decrease in Arabic passive-verb use between 1997-2000 and 2016-2018 (from 713.17 per 100,000 words to 592.20 per 100,000 words). This confirms the previous claim (in section 3.3.1.3.2) that the use of the passive form is in decline. (See Table 4.25, below, for more information.)
Table 4.25 details the number of passive verbs (excluding other passive forms, such as passive participles) in every corpus, the size of that corpus, the number of occurrences per 100,000 words, and the percentage of passive verbs.

4.3.5 The passive form context in the 1997-2000 and 2016-2018 original and translated corpora (comparable corpus)

The following sections detail the passive form context in the 1997-2000 and 2016-2018 original and translated corpora (comparable corpus).

4.3.5.1 The use of كان kān ‘to be’ and its sisters

As mentioned, the use of kān increased between 1997-2000 and 2016-2018 in the Arabic translated texts – from 4 of 61 passive structures, including the passive verb and passive participle, i.e. 6.56% (14.82 per 100,000 words), to 9 of 52, i.e. 17.31% (46.11 per 100,000 words). The use of kān followed by its complement in an active structure also increased between the 1997-2000 and 2016-2018 translated corpora – from 9.20% to 15.49%, respectively. (See Table 4.16 for more information.)

The increasing use of kān was not mirrored in the 1997-2000 original corpus, and it only occurred once in 124 passive structures, i.e. 0.81% (4.78 per 100,000) in the 2016-2018 original corpus. This suggests no influence of English translation.

4.3.5.2 The particle قد qad

This particle was used in the 1997-2000 and 2016-2018 parallel corpora, accounting for 13 of 61 occurrences in the translated passive structures, i.e. 21.31% (48.17 per 100,000 words) and 12 of 52, i.e. 23.08% (61.48 per 100,000 words), respectively. In the 1997-2000 and 2016-2018 original corpora, it appeared only 3 times in 119 occurrences (i.e. 2.52%; 17.98 per 100,000.
174

words) and 4 times in 124 occurrences (i.e. 3.23%; 19.10 per 100,000 words), respectively. The use of the particle \( qad \) in translated texts did not change significantly between the 1997-2000 and 2016-2018 original corpora. This suggests that the use of the particle \( qad \) remained relatively stable, and its common use in the translated texts did not influence the original texts. (See Table 4.26 for more information.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The size of the corpus</td>
<td>26,990</td>
<td>19,517</td>
<td>16,686</td>
<td>20,939</td>
</tr>
<tr>
<td>The number of passive forms ( qad )</td>
<td>61</td>
<td>52</td>
<td>119</td>
<td>124</td>
</tr>
<tr>
<td>Percentage of passive forms ( qad )</td>
<td>21.31%</td>
<td>23.08%</td>
<td>2.52%</td>
<td>3.23%</td>
</tr>
<tr>
<td>Occurrence per 100,000 words</td>
<td>48.17</td>
<td>61.48</td>
<td>17.98</td>
<td>19.10</td>
</tr>
</tbody>
</table>

Table 4.26 outlines the number of passive forms in which the particle \( qad \) occurred in all corpora.

4.3.5.3 Conjunctions: \( \& \text{ wa, f } fa, \text{ & } tumma, \text{ and } \text{ aw} \)

The results show that conjunctions were the most common grammatical element in all 1997–2000 and 2016–2018 translated and original corpora. In the 1997–2000 and 2016–2018 translated corpora, conjunctions occurred in 38 of 61 and 19 of 52 passive forms, respectively. The number of conjunctions decreased between 1997-2000 and 2016-2018 from 62.30% to 36.54%. The most common particle in the 1997-2000 translated corpus was \( \& \text{ wa} \), which occurred with 73.68% of passive structures, followed by \( \text{ f } fa \), with 23.68%, then \( \text{ & } tumma \) with 2.63%. This was similar to the 2016-2018 translated corpus, where \( \& \text{ wa} \), at 94.74%, was dominant, followed by \( \text{ f } fa \), at 5.26%. \( \text{ & } tumma \) and \( \text{ aw} \) do not appear in this corpus. The results also show an increased use of the particle \( \& \text{ wa} \), at 94.74%, compared with the 1997-2000 translated corpus, at 73.68%.

In the 1997-2000 and 2016-2018 original corpora, conjunctions occurred with 70 of 119 passive structures and 42 of 124, i.e. 67.96% and 46.67%, respectively. As with the 1997-2000 and 2016-2018 translated corpora, the number of conjunctions decreased between 1997-2000 and 2016-2018 from 58.82% to 33.87%, respectively.

The most common particle in 1997-2000 original corpus is \( \& \text{ wa} \), at 88.57%, followed by \( \text{ f } fa \), at 7.14%, \( \text{ & } tumma \), at 2.86%, then \( \text{ f } aw \), at 1.43%. This was similar to the 2016-2018 original corpus, where \( \& \text{ wa} \), at 80.95%, was the most common conjunction, followed by \( \text{ f } fa \)
The results also show a decrease in the use of the particle ُو wa, at 80.95%, compared with the 1997-2000 translated corpus, at 88.57%, as well as an increase of the particles ُفا fa, at 11.90% and ُأو aw, at 7.14%, compared with the 1997-2000 translated corpus (where they are found in 7.14% and 1.43%, respectively).

A comparison of the 1997–2000 and 2016–2018 translated corpora with the 1997–2000 and 2016–2018 original corpora produced similar results. Both the 1997-2000 translated and original corpora make greater use of conjunctions (62.30% and 58.82%, respectively) than the 2016-2018 translated and original corpora (36.54% and 33.87%, respectively). This could suggest the influence of English structure on the original and translated Arabic structures over time. However, more research is needed to confirm this. (See tables 4.27 and 4.28 for more information.)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>The size of the corpus</td>
<td>26,990</td>
<td>19,517</td>
<td>16,686</td>
<td>20,939</td>
</tr>
<tr>
<td>The number of passive forms</td>
<td>61</td>
<td>52</td>
<td>119</td>
<td>124</td>
</tr>
<tr>
<td>Conjunction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ُو wa</td>
<td>28</td>
<td>18</td>
<td>62</td>
<td>34</td>
</tr>
<tr>
<td>ُفا fa</td>
<td>9</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>ُتمّ ﺪ tamma</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>ُأو aw</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4.27 outlines the number of conjunctions occurring with the passive forms in all corpora.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The size of the corpus</td>
<td>26,990</td>
<td>19,517</td>
<td>16,686</td>
<td>20,939</td>
</tr>
<tr>
<td>The number of passive forms</td>
<td>61</td>
<td>52</td>
<td>119</td>
<td>124</td>
</tr>
<tr>
<td>Conjunction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ُو wa</td>
<td>62.30%</td>
<td>36.54%</td>
<td>58.82%</td>
<td>33.87%</td>
</tr>
<tr>
<td>ُفا fa</td>
<td>73.68%</td>
<td>94.74%</td>
<td>88.57%</td>
<td>80.95%</td>
</tr>
<tr>
<td>ُتمّ ﺪ tamma</td>
<td>23.68%</td>
<td>5.26%</td>
<td>7.14%</td>
<td>11.90%</td>
</tr>
<tr>
<td>ُأو aw</td>
<td>2.63%</td>
<td>0.00%</td>
<td>2.86%</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>0.00%</td>
<td>0.00%</td>
<td>1.43%</td>
<td>7.14%</td>
</tr>
</tbody>
</table>

Table 4.28 outlines the percentage of conjunctions occurring with the passive forms in all corpora.
4.3.6 Comparison in the tense and measure of passive verbs in the 1997-2000 and 2016-2018 original and translated corpora (comparable corpus)

A comparison of the translated and original texts in terms of the measure of the passive verb revealed that Arabic favoured the imperfect passive in both the 1997–2000 and the 2016–2018 original corpora, whereas the translated texts in the 1997-2000 and 2016-2018 parallel corpora favoured the perfect passive.

Out of the 119 passive verbs in the 1997-2000 original corpus, the imperfect passive occurred 100 times, i.e. 84.03% (599.30 per 100,000 words) and the perfect passive 19 times, i.e. 15.97% (113.87 per 100,000 words). Out of 124 passive verbs in the 2016-2018 original corpus, the imperfect passive accounted for 82, i.e. 66.13% (391.61 per 100,000 words) and the perfect passive 42, i.e. 33.87% (200.58 per 100,000 words). Thus, the imperfect passive was substantially more common than the perfect passive in both original corpora (599.30 per 100,000 words and 391.61 per 100,000 words). In addition, the use of the imperfect passive declined from 84.03% in the 1997–2000 original corpus to 66.13% in the 2016–2018 original corpus. This could suggest the influence of translated texts, which showed a preference for the perfect passive, as such texts in our study made greater use of the perfect passive.

Out of the 47 passive verbs (excluding other passive forms such as the passive participle) in the 1997-2000 translated corpus, the imperfect passive accounted for 20, i.e. 42.55% (74.10 per 100,000 words) and the perfect passive 27, i.e. 57.45% (100.04 per 100,000 words). Of the 36 passive verbs (excluding other passive forms such as the passive participle) in the 2016-2018 translated corpus, the imperfect passive accounted for 15, i.e. 41.67% (76.86 per 100,000 words) and the perfect passive 21, i.e. 58.33% (107.60 per 100,000 words). The results show that the perfect passive was slightly more common than the imperfect passive in both translated corpora. They also show that the use of the perfect passive remained at roughly the same level in the 1997–2000 and 2016–2018 translated corpora, with 42.55% and 41.67%, respectively.

It would be interesting to explore whether this held true for texts older than 1997–2000 and texts belonging to different genres. In both the 1997-2000 and 2016-2018 original corpora, the imperfect passives Measure I was the most common. This accounted for 66.00% (1997–2000) and 57.32% (2016–2018) of all the imperfect passives. This was similar in the 1997-2000 and 2016-2018 translated corpora, where it made up 35.00% and 53.33% of all imperfect measures,
respectively. However, Measure II (40.00%) was more common than Measure I (35.00%) in the 1997–2000 translated corpus.

In the 1997-2000 and 2016-2018 original corpora, the perfect passive Measure I was the most common. This accounted for 52.63% (1997–2000) and 50% (2016–2018) of all the perfect passives. This was the same for the 1997–2000 and 2016–2018 translated corpora, where they accounted for 48.15% and 47.62%, respectively, of all the perfect passives.

The results show that all texts in the original and parallel corpora avoided certain verb measures – specifically Measure VI, Measure VII, and Measure IX in the imperfect passive and Measure V, Measure VI, Measure VII, and Measure IX in the perfect passive. This was expected because these measures rarely occur in the passive.

To conclude this section, as mentioned previously, the data results suggest that there was a decrease in the imperfect passive between the 1997-2000 and 2016-2018 in original corpora (from 84.03% to 66.13%, respectively). (See Table 4.29 and Table 4.30 for more information.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperfect passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure I</td>
<td>100</td>
<td>20</td>
<td>82</td>
<td>15</td>
</tr>
<tr>
<td>Measure II</td>
<td>66</td>
<td>7</td>
<td>47</td>
<td>8</td>
</tr>
<tr>
<td>Measure III</td>
<td>12</td>
<td>8</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Measure IV</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Measure V</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Measure VI</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure VII</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure VIII</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Measure IX</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure X</td>
<td>12</td>
<td>1</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Perfect passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure I</td>
<td>19</td>
<td>27</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>Measure II</td>
<td>10</td>
<td>13</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Measure III</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Measure IV</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Measure V</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Measure VI</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure VII</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure VIII</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 4.29 shows the number of verbs that occurred in each tense and measure in the 1997-2000 and 2016-2018 parallel and comparable corpora.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure IX</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure X</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.30 shows the number of occurrences per 100,000 words of each verb tense and measure in the 1997-2000 and 2016-2018 parallel and comparable corpora.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure IX</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Measure X</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.30 shows the number of occurrences per 100,000 words of each verb tense and measure in the 1997-2000 and 2016-2018 parallel and comparable corpora.
To summarise, this chapter focuses on answering the research questions and is divided into three main parts: the parallel corpora results, the comparable corpora results, and the parallel and comparable corpora results. The parallel corpora results section presents the translation procedures used by the translators, the Arabic passive structure, treatment of the English agentive passive, the passive form context, and the tense and measure of the passive verb in both the 1997-2000 and 2016-2018 translated corpora. The comparable corpora results section presents the 1997-2000 and 2016-2018 original passive structures, the treatment of the Arabic passive, the passive form context, and the tense and measure of the passive verb. The parallel and comparable corpora results section compares the results retrieved from all corpora. Different techniques, such as tables and percentages, are used to make the results easier to read and understand. The comparison includes the translation procedures used by the translators in parallel corpora, the structure of the Arabic passive, treatment of the agentive passive verb, the frequency of the use of the passive verb, the passive form context, and the tense and measure of passive verbs in both the parallel and comparable corpora.

The main significant findings indicate that the English language has affected the Arabic passive form in translated and original texts. There is a slight increase in the agentive passive forms in the 2016-2018 original corpus. This may indicate the English agentive passive influence. However, there was a decrease in the agentive passive forms in the English texts and their Arabic translations. This indicates that the decrease in the English agentive passive has also carried over to translated texts. All scientific texts retrieved from the translations were translated by experienced translators, which could be another reason for the decrease in the translated agentive passives (as mentioned in section 2.3.1.1.2).

There is an increase in the passive forms in the English texts, which was mirrored by the translated texts. This contradicts two studies (Banks, 2017: 17; Inzunza, 2020: 563) (see section 3.3.1.3.2.) that claim the passive form has been declining. However, this was the opposite in the original corpora, where passive forms have been decreasing. The results show the passive structures occurring in verbal clauses in all translated and original corpora have been on the decline. This indicates a decrease in structures starting with a verb, which the Arabic language favours (see section 2.3.3). They also show a decline in the use of the passive in the ‘imperfect passive’ in all translated and original corpora, which indicates the translated structure influenced the original.
Chapter Five
Conclusion

5.1 Introduction

This corpus-based investigation of the influence of the English language on the use of the passive voice in Arabic scientific texts has revealed that English has left its mark on the translated texts – and this extends to original Arabic texts. The data show that English influenced the Arabic passive structure in translated texts between 1997-2000 and 2016-2018, and original texts in 2016-2018. There was a minor increase in the agentive passive between the 1997–2000 and 2016–2018 original corpora (0.84% to 1.61%, respectively), alongside a decrease in the 1997–2000 and 2016–2018 English and translated texts (9.84% to 1.92%, respectively). This may indicate the English agentive passive influence. There is also a decline in the agentive passive forms in the English texts and their Arabic translations. There is an increase in the passive forms in the English texts, which was mirrored by the translated texts. In addition, the passive forms in the English texts and their Arabic translations have been increasing. This was not the case in the original texts, where the passive form has been declining.

The Introduction to this thesis (section 1.4) summarised all the chapters of this research; hence, there is no need to repeat that information here. Instead, the conclusions drawn from each corpus are highlighted.

The primary results of the analysis of the 1997–2000 and 2016–2018 parallel corpora are as follows:

- The number of passive forms increased from 0.48% (477.13 per 100,000 words) to 0.60% (579.87 per 100,000 words) between 1997-2000 and 2016-2018 in the English parallel corpora.
- Agentive passive structures in the English scientific articles decreased significantly between 1997-2000 and 2016-2018, from 20.27% (96.71 per 100,000 words) to 10.57% (63.19 per 100,000 words), respectively.
- The number of passive structures increased slightly from 0.23% (226.01 per 100,000 words) to 0.27% (266.43 per 100,000 words) between 1997-2000 and 2016-2018 in the translated parallel corpora.
Most agentive passives are translated as actives in both the 1997-2000 translated corpus (80%) and the 2016–2018 translated corpus (92.31%).

There were more English agentive passives translated as agentive passives in Arabic in the 1997–2000 translated texts (9.84%) than in the 2016–2018 translated texts (1.92%).

More translated passive structures in the 1997-2000 and 2016-2018 translated corpora occurred in verbal clauses than in nominal clauses: 74.47% and 58.33%, respectively.

The primary results of the analysis of the 1997–2000 and 2016–2018 comparable corpora are as follows:

- The number of passive structures decreased from 0.71% (713.17 per 100,000 words) to 0.59% (592.20 per 100,000 words) between 1997-2000 and 2016-2018 in the original corpora.
- There was an increase in use of kān followed by its complement in the translated passive structures between the 1997–2000 (6.56%) and 2016–2018 translated corpora (17.31%), compared to the 1997–2000 and 2016–2018 original corpora.
- The number of agentive passives in the original texts increased very slightly over 20 years, from 0.84% to 1.61%.
- Passive structures favoured the perfect passive in both the 1997–2000 and the 2016–2018 translated corpora (57.45% and 58.33%, respectively), whereas they favoured the imperfect passive in both the 1997–2000 and the 2016–2018 original corpora (84.03% and 66.13%).
- The majority of the passive structures in the 1997–2000 and 2016–2018 original corpora favoured a verbal clause over a nominal one, with 68.91% and 60.48%, respectively. However, the use of verbal clauses seemed to be in decline in all the 1997–2000 and 2016–2018 translated and original corpora.

5.2 Answers to research questions

First question:
To determine how English affected the structure of the passive voice in scientific texts translated from English to Arabic, English scientific texts along with their Arabic translations were collected to compare the similarities and differences. Since it is time consuming and beyond the scope of the research to compare all aspects of the texts, the focus is on a number of elements:
1- The translation procedures used by the translators for the passive structure

This shows how likely the translators are to retain the passive form in the translated text and follow the source text style or use other procedures to replace the use of the passive form in the source text. The results revealed that 58.78% of the passive forms in the 1997-2000 translated corpus and 57.72% in the 2016-2018 translated corpus were translated into active forms, which could be interpreted as Arabic not following the English use of the passive in translation. Interestingly, the highest use of the passive form was recorded in the 1997-2000 original corpus, and not in the English texts. (See Table 4.25 for more information.)

2- The Arabic passive structure

Analysing the Arabic passive structure in both the translated and original texts show the extent to which English influenced the passive form. This analysis revealed that verbal clauses occurring in passive structures have decreased between 1997-2000 and 2016-2018 in both translated and original texts, but verbal clauses still exceed nominal clauses in number. Interestingly, the highest number of verbal clauses occurring in passive structures was found in the 1997-2000 translated corpus, i.e. 74.47%. (See Table 4.18 for more information.)

3- The passive form context

This includes three grammatical elements (the use of كَانَ kān ‘to be’ and its sisters, the particle قَدَ qad, and conjunctions وَ wa, فَ fa, مَثَلَ tumma, and أوَ aw) that occur with the passive structure in translated texts. These are compared with the same elements in the original texts. The results revealed that the use of kān increased between 1997-2000 and 2016-2018 in the Arabic translated texts but this was not mirrored in the 1997-2000 original texts, and kān only occurred once in the 2016-2018 original texts. (See Table 4.16 for more information.) The particle قَدَ qad was used extensively in the 1997-2000 and 2016-2018 translated texts, i.e. 21.31% and 23.08%, respectively. However, this use was not mirrored in the 1997-2000 and 2016-2018 original texts, where the proportions were 2.52% and 3.23%, respectively. (See Table 4.26 for more information.) The conjunctions reveal different results. Both the 1997-2000 translated and original texts make greater use of conjunctions (62.30% and 58.82%, respectively). This use decreased in the 2016-2018 translated and original corpora to 36.54% and 33.87%, respectively. The results could suggest the influence of translated texts. (See tables 4.27 and 4.28 for more information.)

4- The tense and measure of the passive verb
The analysis shows that Arabic favoured the imperfect passive in both the 1997–2000 and the 2016–2018 original texts, whereas the 1997-2000 and 2016-2018 translated texts favoured the perfect passive. The results show a decrease in the imperfect passive between the 1997-2000 and 2016-2018 in original texts from 84.03% to 66.13%, respectively, which could suggest the influence of translated texts. (See Table 4.29 and Table 4.30 for more information.)

Second question:
To determine how English translation encouraged the employment of English passive voice structures in original Arabic scientific texts, the treatment of the English agentive passive in translated texts is analysed and compared with the original texts. The results show the use of the agentive passive went from 9.84% in the 1997-2000 translated texts to 1.92% in the 2016-2018 translated texts. It occurred once (5.99 per 100,000 words) in the 1997-2000 original texts and twice (9.55 per 100,000 words) in the 2016-2018 original texts, which does not suggest a significant influence. (See table 4.21, 4.22 and 4.23 for more information.)

5.3 Contribution to knowledge, limitations and future research
The parallel and comparable corpora with annotated dataset of active and passive form categories and contexts are intended to be made open access to other researchers.

With respect to the current research, it is emphasised that the results refer only to the texts that were sampled; analyses of other texts could produce different results. Hence, it is not possible to draw general conclusions. The question of whether the results could be generalised to other text genres requires further investigation.

The study’s findings are expected to contribute primarily to the literature on the role of translation in language change in general and the effect English translation has on the passive structure in the Arabic language in particular. This thesis provides a resource for educators, researchers and other individuals interested in this field, and its findings can be compared with those of similar studies conducted in this area. The present study could also be duplicated and used to investigate other languages as well. This would present an interesting avenue for further research.

There are many other areas yet to be explored. Although it is generally agreed that the passive voice is not used as prolifically in fiction as it is in scientific writing, observations of the
treatment of the passive in fiction are highly rewarding because there is no universal style of fiction writing and it can thus be supposed that there are differences in the use of the passive voice between individual works. Because passive voice is used less often in fiction, it may be more likely to be translated into a passive than an active structure, unlike in scientific texts, where it is used abundantly and is arguably less likely to be translated into the passive structure. This was not the focus of the current study, but it could be very important for future research.

The passive could also be investigated in other fields, such as different scientific disciplines – physics, chemistry, and biology in the natural sciences, as well as anthropology, sociology, and linguistics in the social sciences. A comparison of the different fields could yield interesting results. In addition, the compilation of a larger diachronic corpus in the various fields could help to explain the transformation of the passive Arabic form.
### Chapter four tables:

#### Table 1: 1997-2000 original passive structures

<table>
<thead>
<tr>
<th>Arabic original passive structure</th>
<th>‘By-phrase’ used in Arabic</th>
<th>Type of verb used</th>
<th>Grammatical analysis of the Arabic passive verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>وبعد الاستفزير توصيل له رمثاء مهروده بتقرها</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>بوصيل للان سمار في اليوم</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>ووصيل له هما صسبر البليمون مع السكر</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>وطلب من المعبدان ان يتدارا هنير الجيطة</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>وها نحص بحث السعد على الاستفزير</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>على نكل جرارات تفرخ الجعلي</td>
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<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>تلك درجة جمعة واحدة فقط</td>
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<td>Imperfect passive - Measure X</td>
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</tr>
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<td>ونقرأ ان هذه الفصلة تساهم على الاستفزير</td>
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<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>كما نحنمو ضيوف الحليض أيضًا</td>
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<td>Imperfect passive - Measure X</td>
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</tr>
<tr>
<td>ولا كنا حالا مثلما نبطر دم توصف شرام</td>
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<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>معمول من ماء ور قدر</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>ونكتب لعلاج الالير ورصة لتحت من عرق السوس</td>
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<td>Imperfect passive - Measure X</td>
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</tr>
<tr>
<td>ونصح المسحوق الحاج</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>ثم بوصيل للريعي بالجافر عليه</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure IV</td>
<td></td>
</tr>
<tr>
<td>حيث ذيني اهدى الراعين بشكل كامل</td>
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<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>أو الجعة السميزة التي تسمى “الريم”</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure II</td>
<td></td>
</tr>
<tr>
<td>أو الجعة السميزة التي تسمى “الريم”</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure II</td>
<td></td>
</tr>
<tr>
<td>الاليرين المختلف عن ملاك البريد ابوجيء</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>وحيث أن نقاط الحليض تأهلا مسيرا من مظاهر</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
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<tr>
<td>كما نحنمو جالا لكلس الالهات النهلية</td>
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<td>Imperfect passive - Measure I</td>
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<tr>
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<td>Passive verb</td>
<td>Imperfect passive - Measure II</td>
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</tr>
<tr>
<td>واليبرس وبعض أنواع القامب وما تسمى بالجروح</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure II</td>
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<td>Imperfect passive - Measure IV</td>
<td></td>
</tr>
<tr>
<td>تعير رحلة دفء الشاب</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
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</tr>
<tr>
<td>بلرناك ان الدم المهدد هو الذي يكون</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure III</td>
<td></td>
</tr>
<tr>
<td>كما الاختاب ان الدمع عموما</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure III</td>
<td></td>
</tr>
<tr>
<td>بعد المسج بحدها كان نعمة</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>التي أجريت على بعض التمامين</td>
<td>Passive verb</td>
<td>Perfect passive - Measure IV</td>
<td></td>
</tr>
</tbody>
</table>
أنَّ النبض يزداد سرعة في كل مرة إضاءتها.

ولذلك فإن أجمل الأغراض قد تزداد روعة وسلامة.

وأما بخصوص في الديناء.

وكان المسأل الذي أثير يومها.

للمرة الأولى لم يُنصَر الصغير، ولكن.

كانتها تعلمت نفسها وحده.

وأخذه إليها كل الألام التي اصيبت.

تقد قيل حينها أن أولاطلاع.

وعليه يجب أن تتخذ تائجها بعض الحفر.

كما تناولت إلى فتاة الصغير في الجامعات.

إذن أنها بدأ تائف.

فإن نيبور أوضح في مقابلة أنه يفضل أن يُعرَف بلقب "أب العاب الفيديو".

كأنها شُغِّلت بنفس واحد.

وتعذر إليها إلقاء الأدوار التي اصابت.

فإن بيير أوضح في مقابلة أنه يفضل أن يُعرَف بلقب "أب العاب الفيديو".

إلا أن الجهاز لم يلق الروعه حيث تأثرت مبيعاته.

والرغم من أن لعبة بنغ بونغ أُطلقت بعد أشهر عدة من أوديوب.

والكاذب نكر في الأعاس الشمسية.

والتي تُحكي في فتاة الصغير.

وترقوم أن يُصِل حجم سوق ألعاَب الفيديو.

وهناك جهاز دَرَيم كاسيت من إنتاج شركة سيفاء الذي أُطلِق في مارس لعام الماضي.

وهو ما يُسمى بالعاب الرمية أو الأعاصير.

وهو ما يُسمى بالعاب الرمية أو الأعاصير.

ويتوقع أن يصل حجم سوق ألعاَب الفيديو.

وهو ما يُسمى بالعاب الرمية أو الأعاصير.

وثوابط من خلال ذلك أن بعضها ما يمكن له.

وإذن يعُجُف في حينها إلا أن النسيان.

وهناك النسيان أو حقيقة.

ولا يُحَكي في سوق الألعاب.

وذلك يُعجِب على بناء كتيبه.

تبدو مشاهدة العاب في العالم من حيث قدرات مشيخة منظمة.

وهو ما يُسمى بالعاب الرمية أو الأعاصير.

وهو ما يُسمى بالعاب الرمية أو الأعاصير.

هذه مشاهدة العاب في العالم من حيث قدرات مشيخة منظمة.

وهو ما يُسمى بالعاب الرمية أو الأعاصير.

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وهو ما يُسمى بالعاب الرمية أو الأعاصير.
<table>
<thead>
<tr>
<th>رقم</th>
<th>الفعل المuffix</th>
<th>شكل الفعل</th>
<th>صيغة الفعل</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>يتم تدشين الشهب الم비용ة في قواعد أول أفريقيا الأرملة في هذا القرن</td>
<td>Imperfect passive</td>
<td>Measure X</td>
</tr>
<tr>
<td>1.2</td>
<td>يتم التعبير الأولى الكليتان البديلة من أهم الممارسات المستخدمة في مفعول القصر</td>
<td>Imperfect passive</td>
<td>Measure I</td>
</tr>
<tr>
<td>1.3</td>
<td>يتم تفويض الفجيرة المحالية من أهم الممارسات المستخدمة في مفعول القصر</td>
<td>Imperfect passive</td>
<td>Measure II</td>
</tr>
<tr>
<td>1.4</td>
<td>يتم تدشين الشهب الم비용ة في قواعد أول أفريقيا الأرملة في هذا القرن</td>
<td>Perfect passive</td>
<td>Measure I</td>
</tr>
<tr>
<td>1.5</td>
<td>يتم تدشين الشهب الم비용ة في قواعد أول أفريقيا الأرملة في هذا القرن</td>
<td>Perfect passive</td>
<td>Measure X</td>
</tr>
</tbody>
</table>

هذه الجمل تظهر استخدامات فعالة في مختلف النواحي وتعكس مدى أهمية الغابات في العديد من الأشكال والتصاميم البيئية.

1. **الغابات الشمالية**
   - تسمى في أمريكا الشمالية بالغابات الشمالية.
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

2. **الغابات الشماليات**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

3. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

4. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

5. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

6. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

7. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

8. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

9. **الغابات الفطيرة**
   - تعددت الأنواع الفطيرة في العالم.
   - تعددت الأنواع الفطيرة في العالم.

10. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

11. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

12. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

13. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

14. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

15. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

16. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

17. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

18. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

19. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

20. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

21. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

22. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

23. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

24. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

25. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

26. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

27. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

28. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

29. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.

30. **الغابات الفطيرة**
    - تعددت الأنواع الفطيرة في العالم.
    - تعددت الأنواع الفطيرة في العالم.
كما أشار تقرير aisle إلى أن بعض التقنيات الزراعية الحديثة تؤدي إلى التصحر في المناطق الجبلية إذا لم تؤخذ في الاعتبار البيئية للحماية لتماسك الحياة.

إذا كان الغابات دورها الرئيسي في مناطق العالم فإن الفرق البزرخ بينها وبين التصحر في المناطق تتمحور عنوان في المنطقة الاستوائية من العالم.

وعبد إزالة وقطع الغابات ورفع الجدران من أم مسببات التصحر في المنطقة عامة.

الغابات المفروض الجبهة دورًا مهمًا في تأسيس جدارية للحماية المائية المكافحة للتصحر في المناطق المدارية المفتوحة التي تتمحور عليه.

وتحاول صياغة الغابات وطولها البياني تتهيأ تجارية وبريقية أجرهم إحداث برامج إداة أمكن تجهيز لغابات العواصم.

وإذًا كان الغابات الدور الرئيسي في مكافحة التصحر؛ فإن التصحر في المناطق شبه الجافة وغابات الجافة في المنطقة الاستوائية من العالم.

ويعتبر إزالة وقطع الغابات ورفع الجدران من أهم مسببات التصحر في المنطقة شبه الجافة.

وتلعب غابات السفوح الجبلية دورًا هامًا في تأسيس النظام الحيوي في كافة مناطق العالم.

وتدخل إزالة وقطع الغابات ورفع الجدران من أهم مسببات التصحر في المنطقة شبه الجافة وغابات الجافة في المنطقة الاستوائية من العالم.

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وفي دراسة علامة بدأ مساحة غابات العود الجزيرة تم الأسنان المائية السرية بفقدانها.

وقد أوضح دراسات التي أجريت في هذا المجال بأن اختيار مصدر صحيح للأشجار يمكن أن يكون أكثر فائدة في مكافحة التصحر.

ومع ذلك تم جزء من الأدوار البيانية على الغابات (المحصول على الكربون).

وإنما أشار في إكتشاف ثلاثة ونوعيات طبيعية ونوعيات عامة كثيرة للغابات في المناطق الجنوبية للربيع في المنطقة.

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<table>
<thead>
<tr>
<th>السياق</th>
<th>الموضة</th>
<th>شكل الأفعال</th>
</tr>
</thead>
<tbody>
<tr>
<td>ويزرخ فيها حوالي فرن من بذور المراعي</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
</tr>
<tr>
<td>وتقدر مساحة المشروع ب77 كيلومتر مربع بطول 77 كيلومتر وعرض</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure II</td>
</tr>
<tr>
<td>وله حرائق الغابات مصدر تهديد للموارد الخشبية</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
</tr>
<tr>
<td>ويمكن أن تستثمر الغابات الطبيعية في جنوب غرب المملكة لاستفادة من فوائدها البيئية والاقتصادية</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure X</td>
</tr>
<tr>
<td>لم توضع غابات المملكة في المنطقة الجنوبية تحت أي نظام إداري من النظم المعروفة في إدار الغابات</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
</tr>
<tr>
<td>ثم تم على ضوء خطط فنية لاحتياجات الحماية (إحدى الظروف)</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
</tr>
<tr>
<td>English source text</td>
<td>Arabic target text</td>
<td>‘By - phrase’ used in English</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Nor do they know why this magnetism is concentrated into so-called sunspots, dark islands on the sun’s surface that are as large as the earth and thousands of times more magnetic.</td>
<td>هناك فانهم لا يعرفون سبب مركز هذا النشاط المغناطيسي في ما يسمى بالبقع الشمسية. هذه البقع المرة مدمرة. تقع على سطح الشمس، هي حجمها من خلال حجم كوكب الأرض، وهي تحتل مواقعها المغناطيسية فوق الأفلاخ النشط. تراقب النشاط المغناطيسي للأرض.</td>
<td>‘By’ phrase used to translate the English passive verb (Active - Passive form)</td>
</tr>
</tbody>
</table>
SOHO’s UVCs have examined the spectral emission of hydrogen and heavily charged oxygen ions in the regions where the corona is heated and the solar wind accelerates.

Information about the heating and acceleration processes is probably retained within the low-density coronal holes.

Some of its instruments are now poised to resolve several other mysteries.

Although this 19th-century astronomer is not well known today, he had written in Wallace, Nova Scotia, the oldest of seven siblings.

Three years later he became an observational astronomer.

He implied that his arguments favoring these positions were credible because he had framed them using the proper method. These contentions, of course, were not universally accepted.

The speech was reprinted in several magazines and distributed widely, resulting in a nationwide discussion on the topic.

and distributed widely, resulting in a nationwide discussion on the topic.

Christians who still endorsed the central claims of "natural theology" were particularly upset. They believed that science augmented religion and that the study of science restricts itself to terms that "have exact literal meanings, and refer only to things which admit of being perceived by the senses, or, at least, of being conceived as thus perceptible.”

"باختصار، يمكننا القول أن العلم الصحيح يقتصر على استغلال معتقدات战斗 الدينية المعتادة مع العلم، وينبغي أن يكون كلامنا عليه المعرفة. نحن نشير إلى أن العلماء الذين يحملون معنا النظرة، أو على الأقل، الذين يعبرون عن أنفسهم على أسس أتيك وتحكيم حقيقي، "

Translating the passive form into an active form

Compounded structure - a verb 'have exact literal meanings, and refer only to things which admit of being perceived by the senses, or, at least, of being conceived as thus perceptible.”

(الجرج) followed by a verbal noun 'have exact literal meanings, and refer only to things which admit of being perceived by the senses, or, at least, of being conceived as thus perceptible.”
<table>
<thead>
<tr>
<th>English</th>
<th>Arabic</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>or, at least, of <strong>being conceived</strong> as thus perceptible.**</td>
<td>أو، على الأقل، التي يمكن فهمها على أساس أنها <strong>تم تصورها</strong> حسياً.</td>
<td>IV</td>
</tr>
<tr>
<td>2nd: Translating the passive form into a passive form</td>
<td>2nd: ترجمة الفعل المضارع إلى الفعل المضارع</td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>Certainly, the enthusiasm of the British visitors, the flattery of <strong>being asked</strong> and the challenge of the research problem all swayed him.</td>
<td>من المواقف التي حصلت بين البريطانيين، والمغرم الذي طلبه الضحية، والتحدي الخاص بشبكة البحث، كانت جميعًا وراء هذا الفعل.</td>
<td></td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>2nd: ترجمة الفعل المضارع إلى الفعل المبتدأ</td>
<td>Measure I</td>
</tr>
<tr>
<td>Verbal noun <strong>da'wuhayn</strong></td>
<td><strong>دعوته</strong></td>
<td></td>
</tr>
<tr>
<td>Measure IV - imperfect passive</td>
<td>Measure IV - imperfect passive</td>
<td></td>
</tr>
<tr>
<td>Through these final years, he remained a dissenter. <strong>He was convinced</strong> and hoped to convince others that,</td>
<td>وخلال هذه السنوات الأخيرة، ظل نيوكومب متمسكًا، كما كان يأمل في <strong>يتبوعه</strong> أن يقنع آخرين</td>
<td>Measure VIII - active participle</td>
</tr>
<tr>
<td>Compounds structure - Verbal phrase consisting of</td>
<td>Compounds structure - Verbal phrase consisting of</td>
<td></td>
</tr>
<tr>
<td>is followed by its complement and an active participle</td>
<td>is followed by its complement and an active participle</td>
<td></td>
</tr>
<tr>
<td>“But if I am asked whether I regard this cause as an intelligent one</td>
<td><strong>سأسألك إذا كنت أعتقد أن هذا السبب هو ذكي؟</strong></td>
<td>Measure I - Perfect passive</td>
</tr>
<tr>
<td>Translating the passive form into a passive form</td>
<td>Translating the passive form into a passive form</td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td>Passive verb</td>
<td></td>
</tr>
<tr>
<td>I am unable to answer until the word “intelligent” is defined</td>
<td>ولكنني لا أستطيع أن أجيب على هذا السؤال إذا كان الكلمة ذكيةً مناطب</td>
<td>Measure I - Perfect passive</td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>Translating the passive form into an active form</td>
<td></td>
</tr>
<tr>
<td>“Be accomplished” verb ‘تم تم إتمام’ followed by a verbal noun ‘تعريف’</td>
<td>“Be accomplished” verb ‘تم تم إتمام’ followed by a verbal noun ‘تعريف’</td>
<td></td>
</tr>
<tr>
<td>Holding the relative rank of rear admiral in the navy, Newcomb <strong>was buried</strong> with full military honors in Arlington National Cemetery.</td>
<td>وقبل أن يدفن نيوكومب في مرتبة عميد في بحرية الولايات المتحدة، فقد كان يحمل رتبة رائد في البحرية</td>
<td>Measure I - Perfect passive</td>
</tr>
<tr>
<td>Translating the passive form into a passive form</td>
<td>Translating the passive form into a passive form</td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td>Passive verb</td>
<td></td>
</tr>
<tr>
<td>Little is known about Nefertari, favorite wife of Ramses II.</td>
<td>لا يعرف الكثير عن نفرتاري، الزوجة المفضلة لرمسيس الثاني</td>
<td>Measure I - imperfect passive</td>
</tr>
<tr>
<td>Translating the passive form into a passive form</td>
<td>Translating the passive form into a passive form</td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td>Passive verb</td>
<td></td>
</tr>
<tr>
<td>But it is clear she was <strong>beloved</strong> by her husband.</td>
<td>ولكن من الواضح أن <strong>كنت محبوبة</strong> من قبل زوجها</td>
<td>Measure I - Perfect passive</td>
</tr>
<tr>
<td>‘by-phrased’ does not have an equivalent</td>
<td>‘by-phrased’ does not have an equivalent</td>
<td></td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>Translating the passive form into an active form</td>
<td></td>
</tr>
<tr>
<td>Compounds structure - Verbal phrase consisting of</td>
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<td></td>
</tr>
<tr>
<td>is followed by its complement and a participle</td>
<td>is followed by its complement and a participle</td>
<td></td>
</tr>
<tr>
<td>When Italian archaeologist Ernesto Schiaparelli discovered the tomb in 1904, it had already been broken into and looted.</td>
<td>عندما اكتشف العالم الإيطالي سكياپاريلي المقصورة في عام 1904، كانت قد سُرقت وتم قطعها</td>
<td>Measure I - Perfect passive</td>
</tr>
<tr>
<td>Translating the passive form into a passive form</td>
<td>Translating the passive form into a passive form</td>
<td></td>
</tr>
<tr>
<td>Passive verb</td>
<td>Passive verb</td>
<td></td>
</tr>
<tr>
<td>The treasures that were to accompany Nefertari in her death were gone, her sarcophagus smashed and her mummy spirited away.</td>
<td>واختفت الكنوز التي كانت مصاحبة لنيفرتاري في قبرها وحطم تابوتها وسرقت مومياؤها.</td>
<td>1st: Translating the passive form into a passive form</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>and her mummy spirited away.</td>
<td>وسرقت مومياؤها.</td>
<td>2nd: Translating the passive form into a passive form</td>
</tr>
<tr>
<td>The tomb’s wall paintings were severely disturbed as well, but this was the result of natural processes, not of grave robbers.</td>
<td>فسدت الرسوم الجدارية بشدة، ولكن هذا كان بسبب العوامل الطبيعية وليس بفعل اللصوص المفترضين.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>Salt had leached from the limestone bedrock into which the tomb was carved and had crystallized below the painted plaster, destroying a large proportion of the paintings.</td>
<td>فقد رشح الملح من الحجر الجيري للصخرة الأمة التي نحتت فيها المقترب، وتمت تبلور تحت الملحق البيني متلفا نسبة كبيرة من الرسوم.</td>
<td>1st: Translating the passive form into a passive form</td>
</tr>
<tr>
<td>2nd: Translating the passive form into an active form</td>
<td>Active verb with active meaning</td>
<td></td>
</tr>
<tr>
<td>(This record supplemented 132 glass plate negatives that Schiaparelli’s photographer had assiduously made in 1904 and 1905, as well as other photographic records that had been made in the intervening years.) But the paintings remained in danger.</td>
<td>وشمل هذا السجل 132 لوحة رسمية سالبة من الفوتوغرافيا التي انتجها مصور سكياپاﺭيل ي بين عامي 1904 و 1905، إضافة إلى سجلات صور أخرى تم إنتاجها في أعوام تالية، ولكن الرسوم بقيت في خطر.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>finally, they were so obviously imperilled that the Egyptian government closed the tomb to the public in the late 1930s.</td>
<td>وفي النهاية كان من البدهي أن تلجأ الحكومة المصرية إلى إغلاق المقبرة أمام الزوار في أواخر الثلاثينات من القرن الماضي.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>Nefertari’s lovely legacy then sat in dusty silence, visited only by a few scholars.</td>
<td>لقد تبعى أرث نفرتايرة الجميل في جهد محدود ومعبر لا يزال، إلا بعض الباحثين.</td>
<td>‘by-phrase’ does not have an equivalent</td>
</tr>
<tr>
<td>a challenging enough task—but the microclimate and hydrological conditions of the entire tomb had to be understood and addressed so that the destruction would not start anew once the work was finished.</td>
<td>لم يكن الأمر يتعلق فقط بناقلة حالة الفروش الجدارية، وهي بحد ذاتها مهمة نهائية، وإنما كان ينبغي لدراسة المناخ الدقيق والظروف الجيولوجية، وكذلك التحالف معها بحيث لا يبدأ التدهور مرة أخرى بعد أن لا يعترضه من المعان.</td>
<td>1st: Translating the passive form into an active form</td>
</tr>
<tr>
<td>and addressed</td>
<td>ودراسة المناخ الدقيق والظروف الجيولوجية.</td>
<td>2nd: Translating the passive form into an active form</td>
</tr>
<tr>
<td>Arabic</td>
<td>English</td>
<td>Compound Structure</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
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</tr>
<tr>
<td>يكتمل العمل</td>
<td>The work was finished.</td>
<td>3rd: Translating the passive form into an active form</td>
</tr>
<tr>
<td>بعد أن انتهت فترة أخرى ممتعة</td>
<td>they also looked for places where rock fragments were jutting through the plaster.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>تعلقاً بالعلاقة بين الأعمدة والأشكال</td>
<td>they also looked for places where rock fragments were jutting through the plaster.</td>
<td>Translating the passive form into an active form</td>
</tr>
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<td>بعد أن انتهت فترة أخرى ممتعة</td>
<td>they also looked for places where rock fragments were jutting through the plaster.</td>
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</tr>
<tr>
<td>.php</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1st: Translating the passive form into an active form

2nd: Translating the passive form into an active form

3rd: Translating the passive form into an active form
| The workers also found that some of the paintings had been varnished with tree resin and egg white—although two modern synthetic resins showed up as well in lab analyses, suggesting that there had been some earlier, undocumented restoration effort. | passing into a passive form | Passive verb | Measure I - Perfect passive |
| The plaster was composed of gypsum, anhydrite and Nile silt, with some crushed limestone mixed in; wheat straw had been used to reinforce it and to prevent it from cracking as it dried. | passing into an active form | Passive verb | Measure X - Perfect passive |
| Concern about the future of these paintings centers on the most obvious threat: salt. When work began on the tomb, thick, 15-millimeter (0.6-inch) layers of salt were discovered under the plaster, forcing it from the wall. | passing into a passive form | Passive verb | Measure VIII - Perfect passive |
| The salt came from Theban limestone, the marine sediment into which the tomb was cut. | passing into a passive form | Passive verb | Measure I - Perfect passive |
| Some was clearly introduced in the wet plaster applied by Ramesses’s wall painters themselves. | as a nominal clause | Active verb with active meaning | |
| Some was clearly introduced in the wet plaster applied by Ramesses’s wall painters themselves. | as a nominal clause | Active verb with active meaning | |
| Since late 1995 a maximum of 150 people a day, in groups of 10 to 15, have been allowed in for no more than 15 minutes. | passing into a passive form | Passive verb | Measure I - Perfect passive |
| In this scenario, the stage for life was set more than four billion years ago when a cold. | passing into an active form | Active verb with active meaning | Measure I |
| Earth coalesced not long after the sun, about 4.5 billion years ago, and was long thought to have retained water and the ingredients for life since then. | passing into an active form | Active verb with active meaning | Compounds structure - a verb followed by a verbal noun ‘finale.’ |
In fact, the moon may be a chunk of Earth that was blown off in a collision with an object the size of Mars.

New evidence has drawn the components of Miller’s atmosphere into question, but his primordial soup theory for how life’s ingredients were spawned by its complement an adverbial complement ‘‘in the earliest possible point when Earth could have safely supported life, organisms were already well enough established that evidence of them remains today.

In other words, only 100 million years or so after the earliest possible point when Earth could have safely supported life, organisms were already well enough established that evidence of them remains today. Most of the carbon is tied up in kerogen, a material composed partly of polycyclic aromatic hydrocarbons, Compounds consisting of polycyclic aromatic hydrocarbons are estimated to drift down to the planet’s surface every day. 

Hundreds of tons of dust alone are estimated to drift down to the planet’s surface every day.

An ultraviolet lamp bathes infrared light, also emitted by stars, is later projected through the ice to determine what molecules are frozen inside.

Infrared light, also emitted by stars, is later projected through the ice to determine what molecules are frozen inside.

Most of the carbon is tied up in kerogen, a material composed partly of polycyclic aromatic hydrocarbons, Compounds.

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Infrared light, also emitted by stars, is later projected through the ice to determine what molecules are frozen inside.
According to this theory, ice from the mother cloud boiled off, and molecules broke apart and were rearranged in the violence of planet formation.

On the contrary, most comet dust is enriched in rare elements isotopic-signatures.

This duality is manifest in space dust comprising materials that have been altered by great heat right next to others.

The ice is composed primarily of water but often contains up to 10 percent simple molecules such as carbon dioxide, carbon monoxide, methane, methanol and ammonia.

Emerging together from the pre-solar cauldron, Earth and Venus were endowed with nearly the same size and composition.

<table>
<thead>
<tr>
<th>Arabic Sentence</th>
<th>English Sentence</th>
<th>Passive Verb</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>وتدعي هذه النظرية أن الجليد الناجم عن الغيمة الأم قد تبخر وانحل وتكتك وتتكاثر ومن ثم تأديب ترتيبه ببعض مواد أخرى تشكل الكواكب</td>
<td>According to this theory, ice from the mother cloud boiled off, and molecules broke apart and were rearranged in the violence of planet formation.</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
</tr>
<tr>
<td>وعلى عكس ذلك، فإن معظم غبار المذنبات يحتوي على نواة غنية بالعناصر النادرة الموجودة في المواد الأخرى.</td>
<td>On the contrary, most comet dust is enriched in rare elements isotopic-signatures.</td>
<td>Translating the passive form into an active form</td>
<td>The Passive verb is followed by a verbal phrase consisting of 'كان' followed by its complement an adjective</td>
</tr>
<tr>
<td>وعندما يصل ما يتبقى من هذة الإشعاع إلى الغيوم الداكنة تجمد على نواة من السيليكا أو الكربون</td>
<td>the ice formed at, and was never warmed above, approximately 25 kelvins (-400 degrees Fahrenheit).</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
</tr>
<tr>
<td>ومثلً ما تفاعل في هذا الإشعاع إلى الأجسام الكشف المكونة على الأرض ترسم تفاصيل، وهذا ما جعلنا المحققون عند</td>
<td>When the remaining radiation reaches detectors on Earth and is spread out into a spectrum, light missing at certain wavelengths corresponds to particular chemical bonds with the capacity to absorb light.</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
</tr>
<tr>
<td>أدركنا أن الأجسام الشبيهة بالجرح ناجمة عن درجة تقلد بين 25 كلفن (0°F) ودرجة واحدة من 240 كلفن (400°F).</td>
<td>the ice formed at, and was never warmed above, approximately 25 kelvins (-400 degrees Fahrenheit).</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
</tr>
<tr>
<td>our group at NASA Ames and several other teams around the world determined that the ice grains in the dark clouds are frozen on cores of silicate or carbon.</td>
<td>Our group at NASA Ames and several other teams around the world determined that the ice grains in the dark clouds are frozen on cores of silicate or carbon.</td>
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<td>Active verb with active meaning</td>
</tr>
</tbody>
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Emerging together from the pre-solar cauldron, Earth and Venus were endowed with nearly the same size and composition.
This depiction of hell has been brought to us by an armada of 22 robotic spacecraft that have photographed, scanned, analyzed and landed on Venus over the past 37 years.

Earth and Venus, on the other hand, have climates that are driven by the dynamic interplay between geologic and atmospheric processes. Somehow impacts from the first 3.7 billion years of the planet’s history have brought a sparsity of craters is also evident on Earth, where old craters are eroded by wind and water. Terrestrial impact sites are found in a wide range of altered states, from the nearly pristine bowl of Meteor Crater in Arizona.
only 6 percent of them have lava lapping their rims, and only 12 percent have been disrupted by folding and cracking of the crust.

<table>
<thead>
<tr>
<th>by f oldin g and crack ing of the crust</th>
<th>Translating the passive form into an active form</th>
<th>Active verb with active meaning</th>
<th>The passive verb has been omitted and replaced by a different verb in the TT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If they have been covered up by lava,</td>
<td>Translating the passive form into an active form</td>
<td>Passive participle 'مغطاة'</td>
<td>Measure II - passive participle</td>
</tr>
<tr>
<td>why do we not see more craters that are partially covered?</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
<td>Measure IV - Perfect passive - 'عفية'</td>
</tr>
<tr>
<td>And how have they been removed so that their initial random placement has been preserved?</td>
<td>Translating the passive form into a passive form</td>
<td>Passive phrase consisting of 'كل' followed by its complement 'مغطاة'</td>
<td>Measure I - here there is an 'لل' followed by passive participle 'مغطاة'</td>
</tr>
<tr>
<td>their initial random placement has been preserved?</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
<td>Measure IV - Perfect passive</td>
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<td>Elements of both models have been incorporated into the prevailing interpretation of the past billion years of Venus's geologic history;</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
<td>Measure IV - Perfect passive</td>
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<td>and created the vast volcanic plains 800 million years ago, and it has been followed by a reduced level of continued volcanic activity up to the present.</td>
<td>Translating the passive form into an active form</td>
<td>Active verb with active meaning</td>
<td>Measure I</td>
</tr>
<tr>
<td>These intensely crinkled landscapes are located on continent like crustal plateaus that rise several kilometers above the low-land lava plains.</td>
<td>Translating the passive form into an active form</td>
<td>Active verb with active meaning</td>
<td>Measure I</td>
</tr>
<tr>
<td>Analyses by Phillips and by Vicki L. Hansen of Southern Methodist University indicate that the plateaus were formed by extension of the lithosphere (the rigid exoskeleton of the planet,</td>
<td>Translating the passive form into an active form</td>
<td>Active verb with active meaning</td>
<td>Measure I</td>
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</tr>
<tr>
<td>Arabic Text</td>
<td>English Translation</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>That is, the entire lithosphere was lost, and so on.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>But then the clouds were slowly eaten away.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>Water diffused higher in the atmosphere, where it was dissociated by solar ultraviolet radiation.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>The hydrogen slowly escaped into space; half of it was lost within 200 million years.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>sulfur dioxide in Venus's atmosphere is taken on by carbonates much more quickly than water is lost to space.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>A positive feedback ensued: the more the clouds eroded, the less sunlight was reflected back into space, and so on.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>Because sulfur dioxide and water vapor are continuously lost, clouds require ongoing volcanism for their maintenance.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>Although it is also affected by volcanism, the oxygen-rich atmosphere—provided by biota and plentiful water readily removes sulfur gases.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>The oxygen-rich atmosphere—provided by biota and plentiful water readily removes sulfur gases.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td><strong>The amount of water vapor available to these clouds is determined by the evaporation of the oceans, which in turn depends on surface temperature.</strong></td>
<td><strong>Wُجِّهْت لِـ</strong> <strong>حِـلْيَّة</strong> <strong>تَّيْء</strong> <strong>نَّهْرًا عَـٰـ..</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Although nearly all researchers agree that global warming is occurring, debate continues on how much of it is caused by the burning of fossil fuels and how much stems from natural variations.</strong></td>
<td>**وْضْعُ   ** <strong>الْإِنْسَان</strong> <strong>هُمُّ</strong> <strong>الْأَرْضِيَّة</strong> <strong>يَحْدُثُ</strong> <strong>إِنْ وَلَا مَا أَذَٰى</strong> <strong>هُمُّ</strong> <strong>كَلُّكَمْ حِجَرًا</strong> <strong>شَامِّٰلًا</strong> <strong>فِيهِ قُلُوبَ الْفَلْسَات</strong> <strong>بِنَاءً.</strong></td>
</tr>
<tr>
<td><strong>Whether there is a critical amount of carbon dioxide that overwhelms Earth’s climate regulation cycles is not known.</strong></td>
<td><strong>وَكَلِّئَلْ أَلْبَسَهُمْ أَشْعَالًا حَتَّى لَا أَذَٰى كَلِّكَمْ حِجَرًا بِنَاءً</strong> <strong>فِيهِ قُلُوبَ الْفَلْسَات</strong></td>
</tr>
<tr>
<td><strong>In the long run, Earth’s fate is sealed.</strong></td>
<td><strong>فِى الْمَهْدَى الْبَعْدِ أَلْبَسَهُمْ صِيْرًا.</strong></td>
</tr>
<tr>
<td><strong>That perspective has been gained from the growing awareness that by-products from a global technological society have the power to alter the planetary climate.</strong></td>
<td><strong>وَفِى اِلْإِنْسَانِ اِسْتَقْبَلَ أَشْعَالَ أَلْبَسَهُمْ حَتَّى لَا أَذَٰى كَلِّكَمْ حِجَرًا بِنَاءً</strong></td>
</tr>
<tr>
<td><strong>The space shuttle could transfer the crew to the Mars craft once it was completed.</strong></td>
<td><strong>وَبِالسَّبِعِاءَةِ الْمَلكَانِيَّةَ الْمَلِحَّةِ إِلَى سَفِينَةَ النَّجْرٌ مَّعَ الْإِنْجِزَاءِ إِلَى اْلْأَجَّازَةِ</strong></td>
</tr>
<tr>
<td><strong>These engines provide thrust by streaming liquid hydrogen through a solid-core nuclear reactor; the hydrogen is heated to more than 2,550 degrees Celsius and escapes through the rocket nozzle at high speed.</strong></td>
<td><strong>وَلَوْ أَلْبَسَهُمْ حَشْرًا يَتَبَاَعُ الْإِنْسَانِ بِثَلَاثٍ</strong></td>
</tr>
<tr>
<td><strong>The gaseous fuel, such as cesium or xenon, flows into a chamber and is ionized by an electron gun similar to those in television screens and computer monitors.</strong></td>
<td><strong>وَلَا كَثَّرَهَا عَلَى الْأَرْضِيَّة.</strong> <strong>مِثْلُ الْيَزْرَمٍ مَّا لَيْسَ ذَٰٰلِكَ الْإِنْسَانُ مَّعَ كَلُّكَمْ حِجَرًا بِنَاءً</strong></td>
</tr>
<tr>
<td><strong>Because their motion is perpendicular to the magnetic field, they are pushed out into space.</strong></td>
<td><strong>وَلَا كَثَّرَهَا عَلَى الْأَرْضِيَّة.</strong></td>
</tr>
<tr>
<td><strong>The propellant, generally hydrogen, is first ionized by radio waves and then guided into a central chamber.</strong></td>
<td><strong>وَلَا كَثَّرَهَا عَلَى الْأَرْضِيَّة.</strong></td>
</tr>
<tr>
<td>English</td>
<td>Arabic</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>threaded with magnetic fields.</td>
<td>تم بوخذ إلى حة مركزية تجاها حول محل الكواكب صغيرة.</td>
</tr>
<tr>
<td>and then guided into a central chamber threaded with magnetic fields.</td>
<td>ثم يوجه إلى حجة مركزية تجاها حول محل الكواكب التي تحيط بها.</td>
</tr>
<tr>
<td>They are pushed along by the gentle pressure of sunlight—feeble but free.</td>
<td>فإن الجموح يدفعها تحت ضغط ضوء الشمس ضعيفًا.</td>
</tr>
<tr>
<td>For high-thrust rockets, the most fuel-efficient way to get to Mars is called a Hohmann transfer.</td>
<td>ومعظم الوقود يتم الحصول عليه من صناعات الوقود بالمغناطيسي.</td>
</tr>
<tr>
<td>Such a planetary configuration is known to astronomers as a conjunction.</td>
<td>ترتيب فلكي يسمى جنودية.</td>
</tr>
<tr>
<td>and solar flares, the intense streams of protons that are periodically ejected from the sun.</td>
<td>وفلاير الشمسية، التدفق الشديد من البروتونات التي تطلقها الشمس.</td>
</tr>
<tr>
<td>Astronauts in low Earth orbit are protected by the planet’s magnetic field, which traps and deflects the incoming protons, but travelers en route to the moon and Mars forgo this safety.</td>
<td>للفلكيين في المدار الأرضي، تحماية شمسية، التي تلتقط وتوجه البروتونات التي تصل إلى القمر والمسار إلى الزهرة يتم تجاهلها.</td>
</tr>
<tr>
<td>Fortunately, the particles can be easily blocked.</td>
<td>ولحسن الحظ، فإنها يمكن أن يتم عزلها.</td>
</tr>
<tr>
<td>The best shields are made of hydrogen-rich materials such as polyethylene or water; heavier atoms are not as effective, because the proton collisions can dislodge the atoms’ neutrons, triggering a dangerous cascade of radiation.</td>
<td>إن أفضل الأسالك مصنوعة من مواد غنية بالhidrogene، مثل ايثيلين أو الماء، أما الذرات الثقيلة فليس لها تأثير.</td>
</tr>
<tr>
<td>According to the plan, the lander is sent to Mars unmanned, in advance of the crew.</td>
<td>ووفقاً للخطة المرسومة، نرسل المركبة إلى الزهرة قبل إرسال الكادر.</td>
</tr>
<tr>
<td>A speed that would be a casual stroll here is best handled as a run on Mars.</td>
<td>سرعة تقضي بممتنع في المكان يجب أن يتم معالجتها كجري على مريخ.</td>
</tr>
</tbody>
</table>
The topography gets more interesting on the rim of Valles Marineris, which is thought to resemble the Canyonlands in Utah. The theory that liquid water was once stable on Mars has been bolstered by the Mars Global Surveyor probe, which photographed a channel last year that appeared to have been deeply incised by water flowing for hundreds if not thousands of years, Mars Global Surveyor.

Because the Red Planet utterly lacks liquid water, which mops up fine particulates on Earth, it is covered in dust with an average grain size of about two microns—comparable to cigarette smoke. The topography gets more interesting on the rim of Valles Marineris, which photographed a channel last year that appeared to have been deeply incised by water flowing for hundreds if not thousands of years, Mars Global Surveyor.

In addition, Viking lander analyses suggest that particles are coated with corrosive chemicals such as hydrogen peroxide. The topography gets more interesting on the rim of Valles Marineris, which photographed a channel last year that appeared to have been deeply incised by water flowing for hundreds if not thousands of years, Mars Global Surveyor.

Being magnetized and electrically charged, the dust sticks to everything, and water will be in short supply. The topography gets more interesting on the rim of Valles Marineris, which photographed a channel last year that appeared to have been deeply incised by water flowing for hundreds if not thousands of years, Mars Global Surveyor.

A 1992 National Research Council report concluded that the existence of extant or dormant life on Mars should be resolved before astronauts are sent. The topography gets more interesting on the rim of Valles Marineris, which photographed a channel last year that appeared to have been deeply incised by water flowing for hundreds if not thousands of years, Mars Global Surveyor.

"Our fundamental understanding of the overall geological history of the moon is largely derived from the last three Apollo missions," Translating the passive form into a passive form. Passive verb. Measure VIII - Imperfect passive.

The theory that liquid water was once stable on Mars has been bolstered by the Mars Global Surveyor probe, Translating the passive form into a passive form. Passive verb. Measure I - Perfect passive.
Pathfinder was hailed as a vindication of the paradigm, لقد جرى الترحيب بإجبار هذه المركبة الفضائية بإظهار أنها فعالة هذا الأسلوب في استكشاف الفضاء.

The failures will almost certainly mean a longer wait before people are sent to the planet. إن هذين الإخفاقين سيعنيان، على نحو شبه مؤكد، أن علينا التريث مدة أطول قبل إرسال أنس إلى هذا الكوكب.

e.g., says that “if we are serious about resolving the question of life on Mars—and not just whether it’s there but also how far it may have evolved in the past—humans are required.” وعلي سبيل المثال، يقول: “لو أننا جاودن في حل مسألة الحياة على المريخ، وليست فقط قصدًا، بل أيضًا على مدى ما بلغته في الماضي، فإنه من الضروري إرسال أنس إلى هذا الكوكب.

The greater number of launches would mean that the robotic program would take much longer, because opportunities to travel from Earth to Mars are rather limited. ويعني الاعداد الأكبر من العمليات أن البرنامج الإنسالي سيستغرق وقتا أطول، لأن فرص السفر من الأرض إلى المريخ محدودة إلى حد ما.

The problem is that so little is known about several key factors that any analysis must depend on some largely arbitrary assumptions. فالمشكلة هي أننا لا نعرف سوى قليل عن عدد عوامل رئيسية، وبالتالي فإن أي تحليل يجب أن

the small Sojourner rover delivered by Pathfinder traveled just 106 meters. فالسياحة الحوافلة الصغيرة التي أطلقها Pathfnder على الأرجح لم تصل سوى 106 متراً.
“Few of the ones we’ve been to could have been accessed by a nonspecialized rover.

Squyres, a professor of astronomy at Cornell University, notes that more robotic missions to Mars are needed to answer those questions.

To distinguish themselves on the world’s stage, international corporations may contribute capital or technology in exchange for the publicity value of being associated with a Mars mission or for the new technologies, broadcast rights or other potentially lucrative spin-offs.

Compounded structure  
- Modal structure that consists of the ḏan plus another element: a verbal noun alusl, its subject an active participle

Translating the passive form into an active form

Nominal clause

Active participle with active meaning
<table>
<thead>
<tr>
<th>Arabic original passive structure</th>
<th>‘By-phrase’ used in Arabic</th>
<th>Type of verb used</th>
<th>Grammatical analysis of the Arabic passive verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>نظام الإشارة التي يasurer عليه أن تؤدي فعامة من كوكب الزهرة</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure II</td>
<td></td>
</tr>
<tr>
<td>برنامج بوسوم &quot;إكسومارس&quot;</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>قد حث في أي وقت متعلق على سطح المريخ</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>الأسلوب بالمواد التي تحقق بالفعل داخل الاتحاد الأوروبي</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>لم يُحُوَّل副校长 كوكب الزهرة وليست &quot;إكسومارس&quot;.</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>نشرة عدوية في دوريات &quot;أستروروس&quot;</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>إلا أن الدروس الجديدة تبرر هي الأولى من نوعها</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>لم يُحُوَّل副校长 كوكب الزهرة</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure IV</td>
<td></td>
</tr>
<tr>
<td>فيما يُعرف بظاهرة الاحتلال الجغرافي</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>التي كشف فيها أن طموحًا غريبًا</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>جُنحت من خلال النسخة العالمية، كتبها</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>وفي عام 1920، عندما تم تأسيس التنغتان</td>
<td>Passive verb</td>
<td>Perfect passive - Measure VIII</td>
<td></td>
</tr>
<tr>
<td>النتائج ببرنامج بوسوم Possam الذي يعمل في أكثر من أجزاء في مجال الفضاء على رأسها ما يعرف بسياح البحري</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>وقد وُجد ذلك من خلالها</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>بدأ برنامج بوسوم بحث جغرافي ذات وجهة إثنية، بدونًا وغامضًا عليهم</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure IV</td>
<td></td>
</tr>
<tr>
<td>هذا التأسيس</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>العكس، عندما تم تأسيس التنغتان</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>في البداية أن المرحلة التي ستلعبها بوسوم的儿子هم، يكشف تر مور</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>من الممكن أيضًا أن يكون من فريق العمل</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>أجريت سحبة على مستوى منخفضات</td>
<td>Passive verb</td>
<td>Perfect passive - Measure IV</td>
<td></td>
</tr>
<tr>
<td>الوعود الأولي من نوعها في الشرق الأوسط</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>خاصةً في دولة الإمارات التي أخيراً الدورة العربية الأكدر للمحاكم</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>أو سيطرة من المشاركين المفضل</td>
<td>Passive verb</td>
<td>Imperfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>جادحة سطح كوكب الزهرة</td>
<td>Passive verb</td>
<td>Perfect passive - Measure II</td>
<td></td>
</tr>
<tr>
<td>ولكن فيما عدا ما كتب في السابق، فقد tồnت مؤلفة في TREE وально في الورقة الحبرية التي نشرت اليوم 22 فبراير في العدد الإسبيري</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>نشرت</td>
<td>Passive verb</td>
<td>Perfect passive - Measure II</td>
<td></td>
</tr>
<tr>
<td>ورغم مجاورة ما حلته للدراسة، التي تنشر في مجلة هويرمان ريبوركشن</td>
<td>Passive verb</td>
<td>Perfect passive - Measure I</td>
<td></td>
</tr>
<tr>
<td>وفقاً ما جاءت به دراسة بريطانية أمريكية في وحدة بحث التناثر</td>
<td>Passive verb</td>
<td>Perfect passive - Measure IV</td>
<td></td>
</tr>
<tr>
<td>و هو ما تؤكد دراسة أخرى أجريت في جوانب تسال عام 2016</td>
<td>Passive verb</td>
<td>Perfect passive - Measure IV</td>
<td></td>
</tr>
</tbody>
</table>
التقنيات نفسها التي استخدمت على البشر

ولذا يعتبر عدد السينابیات والأطفال

وقد تتوفر نتائج التشخيص التي أجريت على ذلك الجمجمة

وقد تتوفر نتائج التشخيص التي أجريت على الجمجمة أول دليل على تجاها

وعبر أن الجمجمة شهدت النقطة الثانوية في فيها فحص مع دقة بين 3000 سنة

أجري تجربة كبيرة منها داخل المعامل المصرية

وأما الثاني فيشدع في إنتاج الشمعة التي تساعد على تغذية الجنين

هكذا أطلع معاً مع فريق العلماء في دراسة "شتر" في دورية كارست بيولوجي

وثير محطة البلوغ الأسرى من المجموعة

تير أن أداة سلك الملايين المجهولة الأولى وفرصة تعليمهم مع هذه الفترة

الحارة التي كبرت الحرة هذه فيما تلغي بين كونها رافضًا أن تعتبر

إلى أن جمجمة البقرة فطرت عليها في موقع "نيبوري"
لا يوجد نص يمكن قراءته بشكل طبيعي من الصورة المقدمة.
<table>
<thead>
<tr>
<th>Arabic Text</th>
<th>Type</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>إن ان الصلب المقاوم للصدأ لا يعدّ مادةً قياسية</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>إن التحليل الطيفي يستخدم لدراسة الضوء</td>
<td>Passive verb</td>
<td>Measure X</td>
</tr>
<tr>
<td>لم يكن وكاً موضعياً للرصد</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>رغم أن ذلك لم يكن شائعاً بعد</td>
<td>Passive verb</td>
<td>Measure VIII</td>
</tr>
<tr>
<td>بدأ أن مجموعة النشأة النسبية لم تتمّ بعد ذلك</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>المعرفة بحوالي 5% فقط من الطاقة الكهربيّة</td>
<td>Passive verb</td>
<td>Measure II</td>
</tr>
<tr>
<td>إلا أن أداً من تلك المرامد لم يتمّن من أجل دراسة</td>
<td>Passive verb</td>
<td>Measure II</td>
</tr>
<tr>
<td>من قبل تسمّي السكوب جيمس ويب الفضائي من قبل مركز غودارد لرحلات الفضاء</td>
<td>Passive verb</td>
<td>Measure II</td>
</tr>
<tr>
<td>أدى مرصّد كبلر الذي أطلق عام 2009 إلى</td>
<td>Passive verb</td>
<td>Measure IV</td>
</tr>
<tr>
<td>المرصّد يستخدم تقنيّة كشف غير مباشرة للفايбор بطريقة العبور</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>وتركز تفضّيات ساقية نبتت</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>الدراسة التي حلّت السجلات الطبيّة وتقاسيم التصوير بجهاز صوتيّة أكثر من أربعة عقد، وُردت في مركز بوسطن الطبي، نُشرت في الواقع، أن مجموعة الأطباء المصابين</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>يعزز هذا الاكتشاف نتائج دراسة سابقة كانت قد أُجريت إلى أن التصوير بجهاز صوتيّة - الذي استخدمت فيه جهات صوتيّة عالية التردد للسراحيّة الجينية واليشابية - وأعضاة الأم للمجتمع الحنفي. ليس خطرًا بيئيّاً قويّاً</td>
<td>Passive verb</td>
<td>Measure X</td>
</tr>
<tr>
<td>التي تشرّبت يوم الاثنين في درة &quot;حماة بيدانيريكس&quot;</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>مستوى سطح البحر يقاس بواحدة أسرع مما يُحسب</td>
<td>Passive verb</td>
<td>Measure VIII</td>
</tr>
<tr>
<td>الدراسة هي المحاولة الأولى من نوعها لتحديد مجموعة من العوامل يمكن أن تؤثر على زيادة التسارع في إرتفاع سطح البحر</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>الدراسة هي المحاولة الأولى من نوعها لتحديد مجموعة من العوامل يمكن أن تؤثر على زيادة التسارع</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>إن تقديرات مقياس البُعوضة ضرورية للفحص</td>
<td>Passive verb</td>
<td>Measure I</td>
</tr>
<tr>
<td>معايير نصف مساحة الثلثان</td>
<td>Passive verb</td>
<td>Measure II</td>
</tr>
<tr>
<td>English source text</td>
<td>Arabic target text</td>
<td>Type of verb used to translate the English passive verb (Active - Passive form)</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>But this is the first where their thermal characteristics were used as indicators to separate healthy cells from diseased ones.</td>
<td>لكن هذه هي المرة الأولى التي استعمل فيها معايير النشاط الحراري المفصلة في الفئات السلبية معايير النشاط الحراري مفصلة في الفئات السلبية</td>
<td>Translating the passive form into a passive form</td>
</tr>
<tr>
<td>When the living cell was swapped with breast and cervical cancer cells in the lab, the nanomembrane similarly revealed their and electronic properties of pure crystalline perovskite films that are made of methylammonium lead iodide1.</td>
<td>عندما استخدمت الخلايا الحرارية سرطان الثدي والرحم في المختبر، كشفت الخلية النانوية بطريقة مماثلة للمادة في الدوائر المصنوعة من ميثيل أمونيوم يوده.</td>
<td>Translating the passive form into a passive form</td>
</tr>
<tr>
<td>These films have low number of traps, which are usually generated due to impurities and defects in materials. Such traps can capture mobile electrons,</td>
<td>هذه القطائن تحتوي على عدد قليل من الفتحات، وهي تكون عادة بسبب الرماد والعيوب في المواد. يمكن لتياتها أن تلتقي بالليثيوم.</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>The star is known as TRAPPIST-1 and the discovery of its seven orbiting planets is the result of more than a thousand hours.</td>
<td>يُعرَﻑ هذا النجم باسم ترائبيست 1، واكتشاﻑ الكواكب السبع التي تدور حوله هو النتائج بعد أكثر من ألف ساعة.</td>
<td>Translating the passive form into a passive form</td>
</tr>
<tr>
<td>now derives its name. Its twin, at Oukaïmeden Observatory in Morocco, was developed more recently to cover the northern as well as southern hemisphere.</td>
<td>يُعرَﻑ هذا النجم باسم ترائبيست 1، واكتشاﻑ الكواكب السبع التي تدور حوله هو النتائج بعد أكثر من ألف ساعة.</td>
<td>Translating the passive form into an active form</td>
</tr>
</tbody>
</table>

**Table 4: 2016-2018 translated passive structures**
<table>
<thead>
<tr>
<th>Arabic</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>The final planet was captured passing only once.</td>
<td>The final planet was captured passing only once.</td>
</tr>
<tr>
<td>وقد أمكن التقاط مرور الكوكب الآخر مرة واحدة فقط.</td>
<td>2017 - 2nd: Translating the passive form into an active form</td>
</tr>
<tr>
<td>Compounded structure - Modal structure that consists of يمكن plus another element: a verbal noun للفقدان</td>
<td>Nominal clause</td>
</tr>
<tr>
<td>to thoroughly characterize these planets, particularly the seventh.</td>
<td>according to preliminary estimates. From here on in additional observations are still needed to thoroughly characterize these planets, particularly the seventh.</td>
</tr>
<tr>
<td>للاقتراحات الأولية. انطلاقًا من هذا، لا تزال هناك حاجة إلى ملاحظات إضافية من أجل وضع توصيف كافٍ لهذه الكواكب، وخاصة السابع منها. -2017</td>
<td>Translating the passive form into an active form</td>
</tr>
<tr>
<td>2017 - Translating the passive form into an active form</td>
<td>Nominal clause</td>
</tr>
<tr>
<td>Compound structure - Modal structure that consists of يمكن plus another element: a verbal noun للفقدان</td>
<td>2017 - Translating the passive form into an active form</td>
</tr>
<tr>
<td>Small stars are good targets for finding Earth-sized planets, because a significant proportion of their light is blocked when they pass across the face of the star.</td>
<td>Most of their light. These telescopes are currently being built at the Paranal Observatory, Chile.</td>
</tr>
<tr>
<td>تمثل النجوم الصغيرة أهدافًا جيدة للعثور على كواكب بناءً على نسبتهم القريبة من الكوكب الأرضي لإبقاء المحاذاة لها.</td>
<td>Translating the passive form into a passive form</td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>Passive verb Measure I - Imperfect passive</td>
</tr>
<tr>
<td>The use of building telescopes in Chile.</td>
<td>القدرة على بناء أنظمة تلسكوبية في مراقبة صحراء أتاكاما التشيلية.</td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>Verbal noun 'building'</td>
</tr>
<tr>
<td>modern humans outside Africa and the Levant, has been found in the Nefud Desert. It shows that our species had spread beyond Africa much earlier than previously thought.</td>
<td>at least 85,000 years old. The find is reported in a study published today in Nature Ecology and Evolution.1</td>
</tr>
<tr>
<td>ظهر على أول اكتشاف عرقي (Homo sapiens) للإنسان العاقل في المملكة العربية السعودية، وتم تحديد عمره بـ 85,000 سنة على الأقل وقد أُشير إلى هذا الكشف في دراسة نشرت في Nature Ecology and Evolution.1. Evolution1. 2018</td>
<td>Translating the passive form into a passive form</td>
</tr>
<tr>
<td>Passive verb Measure I - Perfect passive</td>
<td>2018 - Translating the passive form into an active form</td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>The English verb is a reduced passive (passive participle) 'published'</td>
</tr>
<tr>
<td>in a study published today in Nature Ecology and Evolution.1.</td>
<td>Nature</td>
</tr>
<tr>
<td>في دراسة نشرت اليوم في Nature Ecology and Evolution.1.</td>
<td>Passive verb Measure IV - Perfect passive</td>
</tr>
<tr>
<td>The team was led by Michael Petraglia at the Max Planck Institute for Science of Human History, Jenna, who describes the discovery as &quot;a dream come true&quot; and says it was &quot;like finding the needle in a haystack.&quot;</td>
<td>The team was led by Michael Petraglia at the Max Planck Institute for Science of Human History, Jenna, who describes the discovery as &quot;a dream come true&quot; and says it was &quot;like finding the needle in a haystack.&quot;</td>
</tr>
<tr>
<td>قائد الفريق مايكل بتراجليا من معهد ماكس بلانك لعلم التاريخ البشري يصف هذا الاكتشاف بأنه &quot;حلم تحقق&quot; ويقول إنه &quot;يشبه العثور على إبرة في كومة قش.&quot;</td>
<td>2nd: Translating the passive form into an active form</td>
</tr>
<tr>
<td>‘by-phrase’ does not have an equivalent</td>
<td>Nominal clause</td>
</tr>
</tbody>
</table>
“Traditionally, the movement of modern humans out of Africa, has been conceived of as a single rapid movement 60,000 years ago,” says Petraglia. "

| "Tradicionalmente, كان المعتقد أن حركة البشر المعاصرين من أفريقيا كانت حركة واحدة سريعة حدثت منذ 60,000 سنة، وفقاً لـ Petraglia." |

| The fossil was sent around the world to different labs for CT scanning to create a 3D model. |
| "واسلت الأحفورة حول العالم إلى مختبرات مختلفة لتصوير الأشعة المقطعية لتشكيل نموذج ثلاثي الأبعاد." |

| Verbal phrase consisting of كان followed by its complement a Passive participle | Measure VIII |

| There has been limited archaeological attention given to traces of early humans outside Europe, until recently. |
| "حتى وقت قريب، وُجِّه اهتمام إحاثي محدود بآثارات أولئك الأدوناء خارج أوروبا." |

| Passive verb | Measure II - Perfect passive |

| This meant that little fossil evidence of early humans was recovered in the lands between the Levant and eastern Arabia. |
| "هذا يعني أن هناك معدات أحفورية قليلة عن البشر الأولي في الأراضي الواقعة بين بلاد الشام وشرق أوراسيا، والتي تشير إلى أنها." |

| Passive verb | Measure II - Perfect passive |

|Previously, the Arabian Peninsula has long been thought to be far from the main stage of human evolution. "This discovery firmly puts Arabia |
| "في السابق، كان يعتقد أن الجزيرة العربية بعيدة عن المواقع الأصلية للتطور البشري، هذا الاكتشاف يضع ما كان يعتقد." |

| Passive verb | Measure VIII - Imperfect passive |

| an international and multi-disciplinary effort that is propelled by ambition, and funding from the European Research Council. |
| "أعمال صحراوية قديمة التي جرى البحث therein مدعى ضعف التخصصات، يتبناها جماعات بشرية تميّز من مجتمع البحر الأوربي." |

| ‘by-phrase’ does not have an equivalent | Measure VI |

| says Christopher Bae, paleoanthropologist at University of Hawai'i at Manoa, who was not involved with this study. |
| "يذكره كريستوفر باي، عالِّم ﺍلإحاثة في جامعة ﻫاﻭﺍﻱ ﻭي، الذي لم يشارك في هذه الدراسة." |

| Passive verb | Measure II - Perfect passive |

The fossil was sent around the world to different labs for CT scanning to create a 3D model. says Groucutt. The fossil itself was directly dated with a technique called uranium series dating – direct dating is a more reliable method.

| Passive verb | Measure IV - Perfect passive |

| Verbal phrase consisting of كان followed by its complement a Passive participle | Measure VIII |

| This meant that little fossil evidence of early humans was recovered in the lands between the Levant and eastern Arabia. |

| Nominal clause | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

| There has been limited archaeological attention given to traces of early humans outside Europe, until recently. |

| "أعمال صحراوية قديمة التي جرى البحث therein مدعى ضعف التخصصات، يتبناها جماعات بشرية تميّز من مجتمع البحر الأوربي." |

| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

| This meant that little fossil evidence of early humans was recovered in the lands between the Levant and eastern Arabia. |

| A complex structure يكُنَّ مَعْلُومًا بالبُشَرَاء is a form of the verb وكان، and مشَارَكًا is an active participle. |

| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

| This meant that little fossil evidence of early humans was recovered in the lands between the Levant and eastern Arabia. |

| "أعمال صحراوية قديمة التي جرى البحث therein مدعى ضعف التخصصات، يتبناها جماعات بشرية تميّز من مجتمع البحر الأوربي." |

| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

| This meant that little fossil evidence of early humans was recovered in the lands between the Levant and eastern Arabia. |

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| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

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| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

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| Passive verb | Measure II - Perfect passive |

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| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |

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| Passive verb | Measure II - Perfect passive |

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| Passive verb | Measure II - Perfect passive |

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| Passive verb | Measure II - Perfect passive |

| Passive verb | Measure II - Perfect passive |

<p>| Verbal phrase consisting of كان followed by its complement an active participle | Measure VIII |</p>
<table>
<thead>
<tr>
<th>English</th>
<th>Arabic</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Palaeodeserts team is based at the Max Planck Institute for the Science of Human History in Jenna, Germany and works in cooperation.</td>
<td>يتمثل فريق الصحراء القديمة من معهد ماكس بلانك لعلوم التاريخ البشري في جينا، ألمانيا مقره.</td>
<td>VIII</td>
</tr>
<tr>
<td>people from all over the world who are very heavily involved—there are around 40 institutions involved in this project.</td>
<td>بين أشخاص من جميع أنحاء العالم الذين يشاركون بكثافة في هذه المشروعات—هناك حوالي 40 مؤسسة خاضعة لذلك.</td>
<td>III</td>
</tr>
<tr>
<td>We have about 80 m of drill core sediments, which were mailed to our labs here in Germany and now we’ve put together a large</td>
<td>لدينا ما يقرب من 80 مترًا من الرواسب التي تُرسل إلى المختبرات هنا في ألمانيا، وهي الآن تمثل أجزاء كبيرة.</td>
<td>IV</td>
</tr>
<tr>
<td>This is the largest planetary system discovered outside our solar system to date and was published in the journal Nature.</td>
<td>ويُعد النظام الكوكبي الأكبر الذي اكتشف خارج المجموعة الشمسية حتى الآن هو الذي نُشر في دورية 2.</td>
<td>VIII</td>
</tr>
<tr>
<td>More than a hundred new genes linked to determining hair colour have been revealed in a new large-scale study reported in Nature Genetics.</td>
<td>كشف عن أكثر من مئة جين جديد مرتبطًا بتحديد لون الشعر، وتم تلخيص هذا الاكتشاف في دراسة جديدة نُشرت في دورية 2.</td>
<td>I</td>
</tr>
<tr>
<td>Variations in single nucleotides, the building blocks of DNA, were found to be responsible for about 35% of red hair.</td>
<td>تتضمن التغييرات في الكليوتيدات—the building blocks of DNA—على الأدلة في إنتاج ما يقرب من 35% من الشعر الأحمر.</td>
<td>II</td>
</tr>
<tr>
<td>Translating the passive form into an active form</td>
<td>ترجمة النشاط النشط النشط</td>
<td>1st: Translating the passive form into a passive form</td>
</tr>
</tbody>
</table>
The study rooted out others in which mutations are known to cause pigmentation impairments, such as in Waardenburg syndrome, a condition that can cause hearing loss and colour irregularities in hair, eyes and skin.

Translating the passive form into an active form

Molecular epidemiologist, Jonas Mengel-From of the University of Southern Denmark, who was not involved in the research, says that self-reporting of hair colour can be subject to a degree of misclassification. Some people, for example, might set of genetic data in which hair colour was known. Although predictions for brown and blond hair colour were less accurate, this can potentially help

Translating the passive form into an active form

Grotte des Pigeons was occupied from around 23,000 to 12,000 years ago by the Iberomaurusian culture, which made fine stone
The Near-Eastern genetic connection is relatively clear, according to Iosif Lazaridis, of the Department of Genetics at Harvard Medical School who was not involved with the study.

“The Near-Eastern genetic connection is relatively clear, according to Iosif Lazaridis, of the Department of Genetics at Harvard Medical School who was not involved with the study.”

There are now enough ancient samples from the Middle East and Europe to be fairly sure that the Taforalt samples were indeed more closely related.

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Following a seven-month, 60-million-km journey from Earth—the first by an Arab, Islamic country—Hope is expected to arrive at Mars in early 2021.

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is operating under a strict budget. The total figure, however, will be disclosed once the project has been completed.

“is operating under a strict budget. The total figure, however, will be disclosed once the project has been completed.”

once the project has been completed.

“once the project has been completed.”
within the next 100 years. But so far, fewer details have been released on the Mars 2117 project, though the government has stated the first phase will focus on developing the researchers that will be needed to make the breakthroughs necessary to put humans

In parallel, the MBRSC has been tasked with developing a five-year plan covering the technological, logistical and technical aspects of the project.

KU’s Younes, who is not affiliated with the EMM, says it is plausible for the UAE to accomplish the projects near which the fragments were found.

Now, a team led by Philippe Gillet of the Ecole Polytechnique Fédérale de Lausanne in Switzerland, who was also involved in the earlier research, 

who was also involved in the earlier research,
Gillet says the findings were a surprise, adding that models “have shown that such bodies populated the early solar system, but no clear evidence of their remnants has been found before.”

Matthias Meier, a meteor expert at ETH Zurich, who was not involved in this work, says: “There is a lot of grammatical transposition in this sentence. The English adverb ‘before’ is translated as the Arabic ‘temporal verb’ سُبْحَانِ، while the English passive verb ‘has been found’ is translated by the Arabic verbal noun ‘عثوﺭ’.

GPS receivers—whether they are installed in ships at sea or embedded in wristwatches—calculate their latitude, longitude and altitude. Or embedded in wristwatches—calculate their latitude, longitude and altitude. Installed jammers, for example, on top of landmarks such as Saddam Hussein’s palaces to prevent them from being hit, Mastalir says.

Such signals have been compared with the amount of light given off by a 25-watt bulb, as seen from about 20,000 kilometers away.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Text</th>
<th>Translating the passive form into an active form</th>
<th>Active verb with active meaning</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIII</td>
<td>Rough statistics suggest that every star in the sky is accompanied by at least one such exoplanet.</td>
<td>by at least one such exoplanet</td>
<td>'by-phrase' does not have an equivalent</td>
<td>II</td>
</tr>
<tr>
<td>I</td>
<td>a complex series of masks, mirrors and lenses. But this instrument was a late addition to WFIRST, which is not optimized for a coronagraph.</td>
<td>Translating the passive form into a passive form</td>
<td>Verbal phrase consisting of 'كان' followed by its complement a Passive participle 'مجهزاً'</td>
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<td>I</td>
<td>three instances of ultraviolet shadows soaring over the southern edge of Europa's dark bulk. If the shadows were produced</td>
<td>Translating the passive form into an active form</td>
<td>Compounded structure - verbal phrase 'كانت' followed by its complement an active participle 'مجهزاً'</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Previous evidence of similar plumes was reported in 2014 in Science, but after follow-up observations, those water vapor spouts seemed to have stopped—or were not there in the first place.</td>
<td>Translating the passive form into a passive form</td>
<td>Passive verb</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>that regard, “this [new observation] is exactly as likely as the last detections” to be real, says Britney Schmidt, who is a planetary scientist at the Georgia Institute of Technology and was not involved with the research.</td>
<td>Translating the passive form into an active form</td>
<td>Relative clause 'التي' followed by a verb 'تشاركت'</td>
<td>I - Perfect passive - This is an active, and also grammatically incorrect. I think the correct form is: 'ذُكرَت'</td>
</tr>
<tr>
<td>I</td>
<td>Space seems like a backdrop to the action of forces and fields that inhabit it but space itself is not made of anything—or is it?</td>
<td>Translating the passive form into a passive form</td>
<td>Verbal phrase consisting of 'كان' followed by its complement a Passive participle 'مجهزاً'</td>
<td>I</td>
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The most recent It from Qubit (IfQ) meeting was held in July at the Perimeter Institute for Theoretical Physics in Ontario, where organizers were expecting about 90 registrants.

"I think this is one of the most, if not the most, promising avenues of research toward pursuing quantum gravity," says Netta Engelhardt, a postdoctoral researcher at Princeton University who is not officially involved in IfQ but who has attended some of its meetings.

"It marries together two traditionally different fields: how information is stored in quantum things and how information is stored in space and time," says Vijay Balasubramanian, theory proves as successful as some anticipate, it could very well spark the next revolution in our understanding of space and time," says string theorist Brian Greene of Columbia University, who is not involved in IfQ. "That's a big deal and hugely exciting."

The notion that spacetime has bits or is "made up" of anything is a departure from the traditional picture according to general relativity.

"Lately one absolutely fascinating proposal is that the fabric of spacetime is knitted together by the quantum entanglement of whatever the underlying 'atoms' of spacetime are,"
This discovery (nicknamed ER=EPR, after physicists’ shorthand for wormholes and entanglement) and others like it suggest, surprisingly, that entanglement—which was thought to involve no physical link—can produce structures in spacetime.

Yet physicists chasing this goal have been stymied for a century so far.

In quantum computers, quantum error–correcting codes are a method scientists devised to help protect information from being lost if the entanglement between any particular bits gets broken.

The correspondence itself only works in a “toy model” of the universe that is somewhat simplified from the fully realized cosmos we inhabit.
Some skeptics have questioned how productive IfQ can ever be if it is based on an unrealistic foundation.

“I’ve long felt that the relation between quantum information and quantum gravity is of fundamental importance,” says Raphael Bousso, a physicist at the University of California, Berkeley, who is not involved in IfQ but has worked with some of its collaborators.

The project is reminding some physicists of the heady days in the past when other big ideas were just getting started. For 13 years my life has been lived out there in the outer reaches of the solar system. And now that bountiful scientific expedition has come to an end.

But to understand the dynamics of quantum gravity much more is required, and it is important for the field not to focus too narrowly on a single approach.

The most scientifically capable weather satellite the United States has ever launched is slated to soar into orbit on November 19.

As of this writing, Cassini is scheduled to end its travels around Saturn in mid-September by diving.

The most scientifically capable weather satellite the United States has ever launched is slated to soar into orbit on November 19.
Both the hemisphere-scale color variations and the local piebald patches are caused by a runaway thermal process found only on the slowly rotating lapetus.

It would be surprising to find chemical reactions similar to those we believe are required for water-based biochemistry operating at such temperatures.

And some of us are so enthralled by this possibility that we are designing return missions to Enceladus to find out.

They are also a model for the protostellar disks from which new solar systems are born and even for the billions of pinwheels of dust and gas we call spiral galaxies.
In others, where moons are embedded in the rings, gravity has nudged particles into beautiful structures. Pan, for instance, a roughly 30-kilometer-wide moon in the Encke ring gap, has done this to the particles in its vicinity;

These formations might result from the extreme compression of material passing around small "moonlets" that have been caught in the resonance at the ring's edge like rushing water splashing against a large cliff face on the shore.

Saturn's rings are made of countless icy particles, some as big as houses, and contain gaps due to the gravitational tug of moons.

The atmosphere is divided into wide bands like Jupiter's, although Saturn's bands are less obvious from the outside because of a thick layer of haze lying above the upper ammonia cloud deck.

We were delighted to find, however, that Saturn's atmosphere is not totally unresponsive to the changing seasons.

One distinctive property of Saturn, which has been known for a century, is that on timescales of decades, it is prone to the eruption of colossal storms.

So we were thrilled to greet one such storm in late 2010. Over a period of about 270 days, we

The simple element is considered the backbone of life, and is also abundant in Earth's rocks, atmosphere and oceans.
“This study shows you have the first steps of PAHs, these first rings of benzene,” says Xander Tielens, an astrochemist at Leiden University in the Netherlands who was not involved in the research.

The findings were published today in Science and presented at a meeting of the American Astronomical Society in Washington, D.C.

The jaw fragment, a partial upper jaw bone from Misliya Cave in Israel dates to between 177,000 and 194,000 years ago and is said to belong to Homo sapiens.

But critics caution the identity of the fossil hinges on scant evidence, and that the implications of the find for understanding the rise of our species are limited.
“It’s exciting to find Homo sapiens outside of Africa this early,” says paleoanthropologist Shara Bailey of New York University, an expert on early human teeth, who was not involved in the new Misliya cave study.

If the species originated in sub-Saharan Africa around 200,000 years ago as was thought, the bone-dry Sahara Desert could have been a formidable barrier to migration out of the motherland.

and the oldest known H. sapiens outside of Africa, at Misliya, could be taken to indicate Levallois tools were invented by modern humans, by modern humans, and that they may have facilitated the spread of H. sapiens out of Africa. But not everyone buys that argument. Archaeologist John Shea of Stony Brook University, who was not involved in the new work, notes Levallois-like stone tools have been found at sites in Africa dating to 500,000 years ago, and sites in Armenia dating to more than 300,000 years ago—long before H. sapiens is known to have appeared on the scene.

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References


