



Using the Quranic Arabic Corpus for comparative analysis of the Arabic and English verb systems

Jawharah Alasmari^{1, a}, Janet C.E. Watson^{2, b}, D. Eric Atwell^{3, c}

¹ School of Languages Cultures and Societies, University of Leeds, UK
Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia

² School of Languages Cultures and Societies, University of Leeds,

³ School of Computing, University of Leeds, UK

¹ml14jsna@leeds.ac.uk, ²j.c.e.watson@leeds.ac.uk ³e.s.atwell@leeds.ac.uk

ABSTRACT

The Quranic Arabic Corpus is an important computational resource for research in Arabic. The main purpose of this paper is to provide some details of morphological and syntactic structures of Arabic and English verbs through computing studies of their use in the Quran. The paper will also highlight some investigations into the use of a sub-verb corpus, along with translations, in order to consider how Quranic contexts employ verb forms to indicate time and how Arabic verbs are rendered into English.

Keywords: Quran, Quranic Arabic Corpus, Arabic verb, English translations.

1. INTRODUCTION

A corpus is “a collection of written or spoken material stored on a computer and used to find out how language is used” or “a collection of a single writer's work, or of writing about a particular subject” (Cambridge Dictionary, 2016). Nowadays corpora have become one of the main computational tools used in teaching and studying languages. The importance of corpora in language studies is that corpora can contain a large amount of information about all areas of language. This tool can be used in many linguistics research areas, such as language teaching and learning, applied linguistics, lexicography, etc. It also can be used as a tool of bilingual concordance (Alfaifi et al, 2014). The present paper aims to explain how the Quranic Arabic Corpus (Dukes, 2012) can be used to explore the verb systems of both Arabic and English languages, paying attention to the similarities and differences between them, and provide an understanding of morphology and forms of Arabic and English verbs in their syntactic context.

2. LITERATURE REVIEW

2.1 The importance of using a corpus of Arabic language texts in language studies

In using empirical data, the corpus is a tool “that enables linguists to make objective statements rather than those which are subjective” (Alansary et al, 2014). The corpus allows empirical analysis of a large number of texts related to linguistics or language such as grammar, lexicography, semantics, natural language processing and other language studies that could not be done in any other way (ibid). The corpus allows students studying a foreign language to be able identify more possible contexts in which to respond to the word. Though, currently researchers who are interested in the English language use a corpus as a powerful

tool for learning and teaching or the development of machine translation, the use of a corpus in Arabic language studies has received less attention (Alfaifi et al, 2014).

Arabic words can be changed according to their moods (nominative الرفع, accusative النصب or genitive الجر). Using a corpus can help the researchers to discover the changes that occur to a word. For example, the differences between the word الطالبان and الطالبين happen according to the differences in the case of the noun. Alansary et al (2014) make a significant point about the benefit of using a corpus-based approach using empirical methods over theoretical methods usually used to study language issues. Grammarians have discovered a corpus to be a useful resource in investigating the syntax or semantics of a language.

2.2 Examples of using Corpus in Grammar

A-Investigating morphological characteristics

Using a corpus for morphological analysis allows the users to search for prefixes and suffixes and infixes that can be added to the word. For example, the Arabic verb *kataba* كتب 'he wrote' may give various tenses by adding different prefixes or suffixes, *kataba* كتب 'he wrote', *yaktubu* يكتب 'he writes' *sa yaktubu* سيكتب 'he will write'.

B-The distribution and function of a syntactic construction

The investigation of the distribution of words can enable grammarians to carry out the rules of the language's syntax restrictions (Alansary et al, 2014). For example, in English, the present perfect can be used with unspecific expressions such as: ever, never, once, many times, several times, before, so far, already, yet, etc.

2.3 The need for using parallel corpora to research English–Arabic translation

As mentioned above, the Arab world's tendency to not use a parallel corpus leads to uncertainty and doubts of the significance of lexical data in bilingual dictionaries, grammars and parallel translations in English. The effectiveness of developing a parallel corpus for English-Arabic has not been given enough attention in the Arab world (Al-Ajmi, 2004). Many linguistic corpora have been created by those more interested in computational usage or the development of machine translation systems than in linguistics research (Alansary et al, 2014). Therefore, the corpora they use are designed differently from the corpora designed to work with grammatical information or characteristics observable in syntactic contexts that in the past might be obtained only by manual analysis of the characteristic structures of English and Arabic. Making a comparison using a parallel corpus such as a Quran corpus which includes several translations in English can help us to understand the differences in meaning and grammar in different contexts and the technical problems faced in translation (Al-Ajmi, 2004). Using the Quranic Arabic Corpus (Dukes 2012,2013) in my research will show us all the examples of a verb in context, so that we can find the situations in which different tenses and aspects of the verb and its phrases are used, and how Arabic verbs are translated into English.

2.4 Using Quran corpus of the verb system studies

The Arabic language uses a verb system which differs from that used in English. Various different studies have been undertaken over the space of a thousand years to examine the differences between the verb systems used in Arabic and those used in other languages (Eisele, 1990; Zollmann et al, 2006). However, in spite of this, the Arabic language has not been widely studied in corpus-linguistic terms (Eisele, 1990; Zollmann et al, 2006). It has a system of morphology which differs from that used in English or other Indo-European

languages (Sawalha, 2011). Arabic can be categorised as a theme pro-drop language that expresses person, number, and/or gender agreement, as well as tense, aspect, and modality markers with the referent on the verb. Every particular inflection of the verb is quantified exclusively (Gadalla & Abdel-Hamid, 2002).

In Arabic, a verb is formed by the insertion of three to four consonant roots into one of numerous verb patterns. The verb suffixes and prefixes are then affixed in these templates to locate positioning in these templates to locate positioning in the linear structure in relation to: number, person, gender, tense etc. For example, *yaktubu* يَكْتُبُ , *taktubu* تَكْتُبُ , *aktubu* أَكْتُبُ , Dual/Pl. *yakutba* يَكْتُبَا and *naktubu* نَكْتُبُ are used to express present tense verbs and numbers with the same consonantal root conveying related meaning; the suffixes *-tu* and *-nā* in *katbtu* كَتَبْتُ, *ktabna* كَتَبْنَا indicate first person singular and plural respectively in past tense verbs. The passive voice from the root (K-T-B كَتَب) is *kutiba* كُتِبَ which means ‘it was written’ (Bahloul, 1994).

The understanding of the correspondence between the verb-form and the concept of time whether past, present or future is one of the important aspects of any language. Both grammarians of Arabic and English languages have made many attempts to describe the correspondences (Reishaan & Ja’far, 2008). A discussion of this topic is intended to provide understanding of the differences between the completeness and incompleteness of actions, their points and periods, simultaneous and successive events, and the similarities between then (past) and then (future)” (ibid).

In fact, one of the main reasons that both grammarians of Arabic and English languages are interested in this topic is to find a resolution to the greatest challenges to reliable translations between Arabic and English since the Arabic language does not share the same method to construct verbal tense and aspect as English. The understanding of the morphemic composition and forms of Arabic and English verbs, as well as examining particles in their syntactic context using a parallel corpus is a vital step to revealing details in Arabic text translations (Shamaa, 1978).

3. METHODOLOGY

In the Quranic Arabic Corpus, there are 1,475 verbs in a large number of contexts; for example, there are 1,618 occurrences of verbs of the root *qa wa la* قَوْل. Sometimes, verbs have a different syntactic and morphological analysis, whereas at other times they use the same format and meaning in context.

As a first stage, all the contexts for common verbs *qaala* قَالَ and *kaana* كَانَ, in the verses will be considered by building a specific corpus of these verbs with their translations. They will then be compared with their equivalents in the target translations and analysed in terms of syntactic and morphological features. The study will consider the main translation errors that arise. These sentences will be analysed in accordance with the structure of TAM markers, vowels, gender and person, etc. A frequency count of the different verb constructions in the two languages will be performed to explain ways in which Arabic verbs can be rendered into English. A sub-corpus of the verbs with their contexts will be manually collected from the Quranic Arabic corpus. Then some questions can answered more clearly using the sup-corpus. Here are some leading questions:

- What are the subjects of these verbs?
- How do these verbs agree in P(erson), N(umber) and G(ender)?

- Do the Arabic and English verbs in these examples consistently use the same form?
- Do the verb forms in these examples always denote tense, or aspect? or both?

As we will see below, some of the above questions require more than a yes or no answer.

4. THE SUB-CORPUS VERB ANALYSIS CONSIDERED IN ARABIC-ENGLISH TRANSLATION

4.1 The structure of the prefix conjugation verb in Arabic and its translations into English

A list of 60 sentences was selected to begin the process of a contrastive analysis of the verb form *yaqūlu* يَقُولُ. One of the aims of this experience is to discover how the Quranic contexts employ the verb forms to indicate tense, gender, number, act. And the second aim is to find the most common translations of the verb *yaqūlu* يَقُولُ. After the collection of these sentences was completed, an Excel programme was used to sort all 60 examples to clarify the analysis. The examples contained twelve fields, extracted from the Quranic Arabic Corpus: one field for sentences in Arabic, another for the verb into Arabic/English, and one field for the morphological analysis of which was in imperfect /indicative mood as example. The English translations of the verb were taken as follows: Sahih International, Pickthall, Yusuf Ali, Shakir, Muhammad Sarwar, Mohsin Khan, and Arberry. The results field was added to show the percentages of the translations of the Arabic imperfect into the English present tense. Different colours were used to distinguish tenses and aspects in the seven translations.

Table 1-2: Sub-corpus of all the Ayat containing the verb *yaqūlu* يَقُولُ, with its translations and morphological analysis

NUMBERS	The Chapter	The verse	The verb	Morphology
1	the 68th vers of the Chapter (2) sūrat I-baqarah (The Cow)	قُلْ إِنَّهُ يَكُونُ لَكُمْ يَوْمَهُ يَوْمَ لَا يَكُونُ لَكُمْ مِنْكُمْ شَيْءٌ وَلَا يَكُونُ لَكُمْ بِهِ عِلْمٌ	يَقُولُ	3rd person masculine singular
2	the 69th verse of chapter 2 (sūrat I-baqarah)	قُلْ إِنَّهُ يَكُونُ لَكُمْ يَوْمَهُ يَوْمَ لَا يَكُونُ لَكُمْ مِنْكُمْ شَيْءٌ وَلَا يَكُونُ لَكُمْ بِهِ عِلْمٌ	يَقُولُ	3rd person masculine singular
3	the 71st verse of chapter 2 (sūrat I-baqarah)	قُلْ إِنَّهُ يَكُونُ لَكُمْ يَوْمَهُ يَوْمَ لَا يَكُونُ لَكُمْ مِنْكُمْ شَيْءٌ وَلَا يَكُونُ لَكُمْ بِهِ عِلْمٌ	يَقُولُ	3rd person masculine singular
4	the 117th verse of chapter 2 (sūrat I-baqarah)	وَأَمَّا قُضِيَ الْأَمْرُ فَلْيَتَوَكَّلْ عَلَى اللَّهِ وَهُوَ يُكَفِّرُ عَنْهُ مَا يَشَاءُ	يَقُولُ	3rd person masculine singular
5	the 200th verse of chapter 2 (sūrat I-baqarah)	فَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
6	the 201st verse of chapter 2 (sūrat I-baqarah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
7	the 47th verse of chapter 3 (sūrat āl 'imrān)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
8	the 8th verse of chapter 3 (sūrat I-baqarah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
9	the 25th verse of chapter 6 (sūrat I-an 'ām)	يَكُونُ الَّذِينَ يَخْلَعُونَ الْأَلْبَامَ	يَقُولُ	3rd person masculine singular
10	the 73rd verse of chapter 6 (sūrat I-an 'ām)	وَيَوْمَ يَكُونُ الَّذِينَ يَخْلَعُونَ الْأَلْبَامَ	يَقُولُ	3rd person masculine singular
11	the 49th verse of chapter 9 (sūrat I-tawbah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
12	the 124th verse of chapter 9 (sūrat I-tawbah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
13	the 27th verse of chapter 13 (sūrat I-ra 'd)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
14	the seventh verse of chapter 13 (sūrat I-ra 'd)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
15	the 43rd verse of chapter 13 (sūrat I-ra 'd)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
16	the 27th verse of chapter 16 (sūrat I-naḥl)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
17	the 47th verse of chapter 17 (sūrat I-isrā)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
18	the 66th verse of chapter 19 (sūrat Maryam)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
19	the 79th verse of chapter 19 (sūrat Maryam)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
20	the 80th verse of chapter 19 (sūrat Maryam)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
21	the 74th verse of chapter 28 (sūrat I-qasas)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
22	the 62nd verse of chapter 28 (sūrat I-qasas)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
23	the 65th verse of chapter 28 (sūrat I-qasas)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
24	the tenth verse of chapter 29 (sūrat I-ankabūt)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
25	the 53rd verse of chapter 5 (sūrat I-mā'idah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
26	the 109th verse of chapter 5 (sūrat I-mā'idah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
27	Chapter (7) sūrat I-a 'raf (The Heights)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
28	the 49th verse of chapter 8 (sūrat I-anfāl)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
29	the 40th verse of chapter 9 (sūrat I-tawbah)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
30	the eighteenth verse of chapter 11 (sūrat ḥūd)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
31	the 44th verse of chapter 14 (sūrat ibrahīm)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
32	the 42nd verse of chapter 18 (sūrat I-kaḥf)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
33	the 52nd verse of chapter 18 (sūrat I-kaḥf)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular
34	the 104th verse of chapter 20 (sūrat ṭā ḥā)	وَمَنْ تَتَّبِعْ فَإِنَّ اللَّهَ تَعَالَى فِي الْآخِرَةِ مُبَوِّدٌ	يَقُولُ	3rd person masculine singular

Sanin International	Pickthall	Yusuf Ali	Shakir	Munammad Sarwar	Monsin Khan	Arberry
says	saith	says	says	explained, "It must be neither too old nor too	says	says
says	saith	says	says	says	says	says
says	saith	says	says	says	says	says
says	saith	saith	says	commands	says	says
says	saith	say	say	say	say	say
says	saith	say	say	pray	say	say
says	saith	saith	says	orders	says	say
say	say	say	say	say	say	say
say	say	say	say	say	say	saying
says	saith	saith	saith	commands	say	says
says	saith	says	says	ask	says	say
say	say	say	say	ask	say	say
say	say	say	say	ask	say	say
say	say	say	say	say	say	say
say	say	say	say	say	say	say
will say	will say	will say	will say	will ask	will say	saying
say	say	say	say	say	say	say
says	saith	says	says	says	says	says
says	saith	says	says	his words	says	says
mentions	speak	talks	says	speaks	talks	says
will say	saith say	will say	shall say	will say	will say	shall say
will say	will say	will say	will say	will ask	will say	shall say
say	say	say	say	ask	say	shall say
say	saith	say	says	say	say	say
will say	will say	will say	will say	say	will say	will say
will say	saith	will ask	will say	will ask	will say	shall say
will say	will say	will say	will say	saying	will say	shall say
said	said	say	said	say	said	said
said	said	said	said	telling	said	said
will say	will say	will say	shall say	will say	will say	will say
will say	will say	say	will say	will say	will say	shall say
said	to say	could only say	said	said	could only say	was saying
will say	will say	will say	shall say	asks	will say	shall say
will say	say	will say	say	will say	will say	will say

4.2. Analysis of the Results

Table 3: the use of the verb *yaqūlu* يَقُولُ says to indicate multiple tenses/aspects in its several translations

The verb form in its translations	Sahih International	Pickthall	Yusuf Ali	Shakir	Muhammad Sarwar	Mohsin Khan	Arberry	Total
present simple	30	35	33	29	32	31	28	218
past	4	2	1	4	2	3	4	20
present perfect continuous	1	0	0	0	1	0	0	2
future	23	18	20	22	17	21	21	142
passive	1	0	0	0	0	1	0	2
perfect (would, used to, may, might, should)	1	3	6	3	0	4	2	19
infinitive	0	1	0	1	0	0	0	2
noun	0	0	0	1	5	0	4	10
past continuous	0	1	0	0	0	0	1	2
Comprehensive translation of meaning	0	0	0	0	3	0	0	3
Conditional perfect	0	0	0	0	0	0	0	0
Total	60	60	60	60	60	60	60	420

Tables 1 and 2 indicate the following:

1. The prefix conjugation verb *yaqūlu* يَقُولُ in the indicative mood was translated into English as follows: says, saith, commands, mentions, speaks, talks.
2. In its translations, the verb *yaqūlu* يَقُولُ was recognised in several tenses/aspects. Several tenses and aspects are provided in Arabic through using particles, lexical and auxiliary verbs.

Consider the following examples:

Table 4: the use of the verb *yaqūlu* يَقُولُ says to indicate different tenses in its several translations

The verse	Sahih International	Pickthall	Yusuf Ali	Shakir	Muhammad Sarwar	Mohsin Khan	Arberry
إِذْ يَقُولُ الْمُنَافِقُونَ وَالَّذِينَ فِي قُلُوبِهِمْ مَرَضٌ غَرَّ هَؤُلَاءِ دِينُهُمْ	said	said	say	said	say	said	said
وَلِيَقُولَ الَّذِينَ فِي قُلُوبِهِمْ مَرَضٌ وَالْكَافِرُونَ مَاذَا أَرَادَ اللَّهُ بِهَذَا مَثَلًا	will say	may say	may say	may say	say	say	may say

3. Recognition of the prefixes and affixes that are added to the verb forms in terms of number was dissimilar in all the sentences that provided the same tense. For example, the verb *yaqūlu* يَقُولُ was employed in the singular form but in some of its translations it was provided without the singular suffix -s in the following example:

Table 5: the use of the verb *yaqūlu* يَقُولُ says to indicate the singular person, with its translations

The verse	Sahih International	Pickthall	Yusuf Ali	Shakir	Muhammad Sarwar	Mohsin Khan	Arberry
فَيَقُولُ رَبِّ لَوْلَا أَخَّرْتَنِي إِلَىٰ أَجَلٍ قَرِيبٍ	says	saith	should say	should say	say	says	says

4. The verb corpus reveals that the imperfect verb indicates the future tense through context particles/القرائن اللفظية والحالية, not through morphological form. Consider these examples:

Table 6: the use of the verb *yaqūlu* يَقُولُ says to indicate future tense, with its translations

The verse	Sahih International	Pickthall	Yusuf Ali	Shakir	Muhammad Sarwar	Mohsin Khan	Arberry
فَيَقُولُ الَّذِينَ ظَلَمُوا رَبَّنَا أَخْرِنَا إِلَىٰ أَجَلٍ قَرِيبٍ	will say	will say	say	will say	will say	will say	shall say

5. An analysis of the whole context of a sentence is required by the translators in order to consider the agreement features of the text between the verb and other elements, such as subjects, pronouns and time of actions.
6. Sometimes in Arberry's translation, the participle 'saying' was used to translate the verb *yaqūlu* يَقُولُ to indicate the present tense (Leech and Svartvik, 1975). Arabic also has this ability to express time using nouns: nominal derivatives/اسم الفاعل واسم المفعول, roots and participles. However, in the Quranic context, every word used has been specifically chosen because of their reference to particularly comprehensive meaning in the contexts. Translating the verb form into an appropriate English verb may help to clarify tense with more accuracy.
7. A comparative study of the verb system may need to consider the following syntactic categories:
- Grammatical relation (subject, direct object, indirect object, pronouns)
 - Grammatical category (person, number, tense, aspect, mood, gender, case, voice...)
8. Semantic analysis of word contexts can help to provide an understanding of the context of what was said or to locate its time or place.

4. CONCLUSION

In a holistic view it can be concluded that the Quranic Arabic Corpus is an important computational tool for studies of the Arabic language. It provides learners and researchers with what they need in the field of language, linguistics and computational studies. It also paves the way for researchers to study morphological and syntactic structures through computational studies of the language of the Quran. In particular, the Arabic source text is aligned to a number of English translations, providing data on the challenges of translating the Arabic verb system to English. A discussion of the differences and similarities between Arabic and English verb systems can help to provide some details which will be used to improve the translation of Arabic into English and the machine translation (MT) as well.

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