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## A CONTRASTIVE STUDY OF THE ARABIC AND ENGLISH VERB TENSE AND ASPECT A CORPUS-BASED APPROACH

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### Abstract

*There is so far only limited research that applies a corpus-based approach to the study of the Arabic language. The primary purpose of this paper is therefore to explore the verb systems of Arabic and English using the Quranic Arabic Corpus, focussing on their similarities and differences in tense and aspect as expressed by verb structures and their morphology. Understanding the use of different verb structures, participles, and auxiliary verbs that are used to indicate time and actions may be one way to improve translation quality between Arabic and English. In order to analyse these forms, a sub-corpus of two Arabic verb forms and their translations in English were created. The Arabic verbs and their English translations were then compared and analysed in terms of syntactic and morphological features. The following English translations of the Quran were used: Sahih International, Pickthall, Yusuf Ali, Shakir, Muhammad Sarwar, Mohsin Khan, Arberry. The analysis shows a considerable disagreement between the Arabic verb tense and aspect, and their translations. This suggests that translating Arabic verbs into English is fraught with difficulty. The*

*analysis of the corpus data can be categorised and calculated and can then potentially be used to improve the translation between the two languages.*

## **Keywords**

Arabic Verb, Verb Corpus, Translation

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## **1. Introduction**

Various studies have examined the differences between the verb system used in Arabic and those used in other languages (Eisele, 1990; Zollmann Venugopal, & Vogel, 2006, Alasmari, Watson, & Atwell, 2017). Understanding the correspondence between a verb form and the concept of time—past, present or future—is in fact one of the most important aspects of any language. Much attention has therefore been given to this in the study of Arabic. Additionally, grammarians of Arabic and English have made numerous attempts to provide an understanding of the differences between the completeness and incompleteness of actions, the points of action, and period's duration (Reishaan & Ja'far, 2008).

To this day, some contemporary linguists criticise early grammarians for their sole focus on the verb form to indicate time in Arabic. They also argue that the lack of attention to contextual elements that define the verb—in terms of tense, aspect and mood—is one of the main challenges when translating between Arabic and English (Reishaan & Ja'far, 2008; Eisele, 1999; El-Sadek, 2014). In order to examine the use of tense, aspect, and modality of verb systems—to aid the translation of Arabic into English—steps must be taken to respond appropriately to the inflection elements and their rules. In this regard, Carstairs-McCarthy (2002) suggests that systematic comparisons of the grammatical characteristics of languages should address morphology and syntax in tandem, and acknowledge their relative importance for forming lexical items in particular.

### **1.1 Research issue**

As the Arabic verb has not commonly been considered from a corpus-based approach— although this approach has been found to be a useful resource in investigating the syntax or semantics of a language (Alasmari et al., 2017) —the principal objectives of the study are as follows:

- Account for the verb systems of Arabic and English, paying particular attention to their similarities and differences using the Quranic Arabic corpus to reveal details relating to tense and aspect as expressed by the verb forms under investigation.
- Provide some details of the translation challenges in an effort to improve the translation of verbs between Arabic and English.

## 2. Verbs in Arabic

The Arabic language has a unique verb system which differs from that used in English. In Arabic, the verb is the most important part of a sentence, as the verb conveys both action and time. In Arabic verbs, tense and aspect can be represented using the rules of inflectional morphology (Truck, 2010); therefore, only details of morphological inflection will be discussed in this research.

### 2.1 Inflectional verbal morphology

The inflectional verbal morphology of Arabic distinguishes between a suffix conjugation and a prefix conjugation, generally referred to by linguists as the perfect and the imperfect. The suffix conjugation typically refers to the past tense, while the prefix conjugation typically refers to the present tense.

The grammatical categories relevant for verbs are person (first, second, third), number (singular, dual, plural), and gender (masculine, feminine). These categories are realised in the suffixes of the suffix conjugation and in the prefixes (and suffixes) of the prefix conjugation, as the examples in Tables 1 and 2 shows:

**Table 1:** *The suffixes of the Arabic suffix conjugation*

<i>kataba</i> “To write”			
‘I wrote’	<i>katabtu</i>	‘we wrote’	<i>katabna</i>
‘you (m.) wrote’	<i>katabta</i>	‘he wrote’	<i>kataba</i>
‘you (m. pl.) wrote’	<i>katabtum</i>	‘they (pl.) wrote’	<i>katabuu</i>
‘you (f. pl.) wrote’	<i>katabtunna</i>	‘they (f.pl.) wrote’	<i>katabna</i>

**Table 2:** *The prefixes and suffixes of the prefix conjugation for the Arabic verb ‘to write’*

<i>kataba</i> “To write”			
‘I write’	<i>aktubu</i>	‘we write’	<i>nadrusu</i>
‘you (f.) write’	<i>taktubiina</i>	‘she writes’	<i>taktubu</i>
‘you (m. pl.) write’	<i>taktubuuna</i>	‘they (pl.) write’	<i>yaktubuuna</i>
‘you (dual) write’	<i>taktubaani</i>	‘they (dual) write’	<i>yaktubaani</i>

### 2.2 Tense and aspect in Arabic

Among linguists and grammarians investigating the Arabic language, the verb system—or the denotation of verbal forms in Arabic—has long been subject to debate;

namely, the debate on whether Arabic has a tense system or an aspect system. Wright (1967) attributes the origin of the debate to several historic and theoretical factors. Wright (Ibid) maintains that he was not able to understand clearly what was being expressed in terms of perfective, imperfective, or simple aspects in any of the tenses. Odilavadze (2010) also suggests that the traditional orientalist views of Arabic having 'aspect' rather than 'tense' have influenced some scholarly approaches to the categories of 'tense' and 'aspect'. Ryding (2005) explains 'past' and 'present' via a timeline when using the term 'tense', which can be less confusing for learners, while some linguists such as Eisele (1990) suggest that the 'past' and 'present' distinguish between actions that are past and non-past. New descriptions have also been introduced to define the terms 'aspect' and 'tense' (Bubenik, 2011).

The debate amongst contemporary linguists on whether Arabic is tense-specific or aspect-specific continues to this day. El-Sadek (2014) considers Arabic a tense language with two finite forms, one that is prefixed and one that is un-prefixed, an idea which has also been considered by linguists such as Fehri (2012) and Binnick (1991). Brustad (1991) notes that the perfective form *fa'al*, the imperfective *yaf'al* and the participle all define actions, events and states, each from a different viewpoint. In line with the views of tense-aspectualist linguists, El-Sadek (2014) confirms that "both tense and aspect can be expressed verbs in ECA, the verb carries tense only in simple tense forms, while the main predicate (such as the auxiliary *k'an*) marks tense, in compound tense constructions and aspect is marked by the following lexical verb".

In their analysis of Arabic and English verb tense and aspect using Google translate, Alasmari et al (2017) confirm that perfect and imperfect aspects in Arabic verb can be employed to express multiple tenses/aspect based on sentence elements.

### 3. Verbs in English

In English, verb forms provide information about events or actions; for example, time, period, relation to another event or action, and so on. Aarts & Haegeman (2006) explain that in order to express or demonstrate tense, voice; moods and aspect, helping verbs are used. For example, the third person singular uses the auxiliary verbs 'is', 'does' and 'has'.

In English, the main forms of most verbs are the present form, the past form which for regular verbs is indicated by *d*, and *-ed* and the present progressive form made by ending a word with *-ing*: e.g. watch, watched, and watching (Palmer, 2016).

### 3.1 Inflectional morphology

English is considered to have weak verbal inflections compared to Latin, Greek, Spanish and other languages. According to Arista (2012), eight types of English inflectional morphemes are commonly used. These eight types are plural, possessive, comparative, superlative, 3<sup>rd</sup> singular present agreement, past tense, past participle and present participle. The grammatical functions of these eight morphemes and respective examples are provided below.

**Table 3: English Morphemes**

Morpheme	Grammatical Functions	Examples
Plural	Showing things as more than one	Cars, houses, chocolates.
Possessive	Describes the ownership	London's, John's, Maria's.
Comparative	Details the comparison	Faster, whiter, cooler.
Superlative	Expresses the quality	Fastest, whitest, coolest.
3 <sup>rd</sup> Person Singular Present Agreement	Third person singular is agreed with. Present tense is focused.	Walks, pulls, waits.
Past Tense	Reflects the previous actions.	Ran, dropped, cheated.
Past Participle	Past participle is focused.	Chosen, proven, given.
Present Participle	Present participle is focused.	Running, dancing, sleeping.

### 3.2 Tense and aspect in English

The English language has two tenses, present and past. According to Denison (2013), the past tense and the present tense are the verb tenses used to indicate the time period. There are no future tense forms of English verbs. The future tense is formed through use of 'will' plus the unmarked verb (Dürich 2006).

In terms of aspect, there are two basic grammatical aspects: perfective and imperfective. In English, the term past progressive is used to indicate "imperfect". Imperfect and perfect aspects can be used in conjunction, for example: I was walking (imperfect) when you arrived (perfect). It was windy (imperfect) when you travelled (perfect). The perfect aspect tends to be realised by a past tense form, and the imperfect aspect tends to be realised by a present/future tense. The perfect is used to indicate completed action, while the imperfect is used to indicate continuous action (Wikander, 2014).

## 4. Methodology

In this research, only the imperfect aspect was considered as follows:

- Using Excel software, 176 sentences from the verb corpus were analysed and calculated regarding verb structures from the root *qaf waw lām* قول ‘to say’, from which the following forms are derived: يَقُولُ *yaqūlu* ‘he says’, نَقُولُ *naqūlu* ‘we say’ and يَقُولُونَ *yaqūlūna* ‘they say’.
- 59 verb structures that contain the third person masculine singular form and 12 sentences that contain the first person plural were selected.
- 105 sentences indicate third person masculine plural, and 170 sentences represent the use of the bare imperfect form يَقُولُ *yaqūlu* ‘says’ when used alone, without any preceding words that can change its aspectual function.
- Different colours were used to distinguish between translations of multiple tenses/aspects as the following table shows (Table 4).

**Table 4:** Examples of verb structures and their translations using Excel

The verb	The verse	Sahih International	1	Pickthall	2
naqūlu/نَقُولُ	إِنَّمَا قَوْلُنَا لِشَيْءٍ إِذَا أَرَدْنَاهُ أَنْ نَقُولَ لَهُ كُنْ فَيَكُونُ	but that we say	present simple	only that we say	present simple
liyaqūlū / لِيَقُولُوا	كَذَلِكَ فَتَنَّا بَعْضَهُمْ بِبَعْضٍ لِيَقُولُوا أَهَؤُلَاءِ مَنَّ اللَّهُ عَلَيْهِمْ مِنْ بَيْنِنَا	might say	present simple	say	present simple
waliyaqūlū / وَلِيَقُولُوا	وَكَذَلِكَ نُصَرِّفُ الْآيَاتِ وَلِيَقُولُوا دَرَسْتَ	will say	future	may say	present simple

The table illustrates the verb structures which indicate the first and third person masculine singular/plural imperfect verbs, and the frequency of the translated forms in the Quranic verb sub-corpus.

## 5. Analysis and results

In the analysis, some examples of the verb form in Arabic and their most common English translations were taken into consideration, as the following table shows.

**Table 5:** The verb translations

Quranic Examples 176	Verb translations							
	Sahih International	Pickthall	Yusuf Ali	Shakir	Muhammad Sarwar	Mohsin Khan	Arberry	Total
<b>Present Simple</b>	94	106	103	100	100	98	89	690
<b>Past Simple</b>	5	5	2	5	8	5	5	35
<b>Future</b>	59	48	41	46	40	50	57	341

Perfect (Would, Used To, May, Might, Should)	2	4	9	14	2	7	2	40
Passive	1	0	0	0	0	1	0	2
Infinitive	0	1	8	3	0	6	0	18
Present Perfect	0	0	0	0	1	1	0	2
Comprehensive Translation Of Meaning	0	0	3	0	12	0	0	15
Conditional Perfect	0	0	0	1	0	0	0	1
Present Continue	4	3	0	0	1	1	2	11
Present Perfect Continuous	1	0	0	0	1	0	0	2
Noun	9	8	10	7	11	7	19	71
Past Continuous	1	1	0	0	0	0	2	4
<b>Total</b>	176	176	176	176	176	176	176	1229

As indicated in Table 5, while the Arabic imperfect aspect of the verb, which comprises suffixes conjugation and prefixes conjugation to indicate person, number, gender, or tense, was solely used to indicate time/action, several of the English translations indicate the tense of the verb; for example, more than half of the Arabic examples use the future tense; the second section of translations in the table is in the English future tense.

Analysis shows that the Arabic imperfect aspect is used to indicate the future tense, for example when the contexts refer to actions in the future, especially when the context is a description of the events of Judgement Day.

The morphemic composition of a verb in its syntactic context is significant here in order to consider verb tense and aspect. For example, after the CONJ – prefixed conjunction *fa-* ‘and’, the verb indicates future tense, with respect to the verb forms that precede it in the sentence. Generally speaking, when a verb is in future tense, verbs that follow must agree with the closer verb in terms of tense after conjunctions such as *fa-*, *wa-* ‘and’, *aw-* ‘or’ etc. This agreement is essential to clarify meaning and to sequence actions in a sentence with multiple verb forms, for example, “Zaid did not study and play yesterday”.

However, sometimes the imperfect aspect can be used to indicate future tense if the form is further clarified with particles. For example, the Arabic imperfect aspect is used to indicate action in the future as the following example shows. The Sahih International translation was used here to consider the meaning and translation of the examples.

The 44th verse of chapter 14 (*sūratib'rāhīm*)

وَأَنذِرِ النَّاسَ يَوْمَ يَأْتِيهِمُ الْعَذَابُ فَيَقُولُ الَّذِينَ ظَلَمُوا رَبَّنَا أَخِّرْنَا إِلَىٰ أَجَلٍ قَرِيبٍ  
مُّجِبِّ دَعْوَتِكَ وَتَتَّبِعِ الرَّسُلَ أُولَٰئِكَ تَكُونُوا آفَئِمَّتُمْ مِن قَبْلُ مَا لَكُمْ مِّن  
ذَوَالٍ ﴿٤٤﴾

**Sahih International:** And, [O Muhammad], warn the people of a Day when the punishment will come to them and those who did wrong will say, "Our Lord, delay us for a short term; we will answer Your call and follow the messengers." [But it will be said], "Had you not sworn, before, that for you there would be no cessation?"

It appears that the imperfect aspect in Arabic indicates the actions in the future, and the actions will be expected to be continuous or repetitive.

The Arabic imperfect aspect can be constructed to indicate future tense if it is used in context with specific particles, such as the emphatic prefix *lām*. These positions have been approved by Arab grammarians such as Al-Zajjāji, & Ibn Al-Sirāj. Consider the following example:

The tenth verse of chapter 11 (*sūrathūd*)

وَلَمَّا أَذَقْتُهُ نِعْمًا بَعْدَ ضِرَاءٍ مَّسَّتْهُ لَيَ قَوْلًا ذَهَبَ السَّيِّئَاتُ عَنِّي إِنَّهُ لَنَفِيعٌ  
فَخُورٌ ﴿١٠﴾

**Sahih International:** But if we give him a taste of favor after hardship has touched him, he will surely say, "Bad times have left me." Indeed, he is exultant and boastful -

The use of the conditional case using the particle 'In' *إِنْ*, in conjunction with the past form followed by the present form in the clause with the emphatic prefix *lām* in *لَمَّا*, is to express that an action is repeated, usual, or that the action takes place regularly. In this case, it can be suggested that the verbs may be translated into English by using future tense, that is, 'will' or 'shall'.

An analysis of the verb sub-corpus also suggests that the Arabic imperfect aspect can be used to express a past action with the prefix 'id' *إِذ* T – time adverb. The prefix 'id' *إِذ* is thus used primarily to indicate actions that have taken place in the past; it can be translated into English as 'when'. Consider the following examples:

The 47th verse of chapter 17 (*sūrat l-isrā*)

مَنْ أَعْلَمُ بِمَا يَسْتَمِعُونَ بِهِ إِذْ يَسْتَمِعُونَ إِلَيْكَ وَإِذْ هُمْ نَجْوَىٰ إِذْ يَقُولُ الظَّالِمُونَ إِن تَتَّبِعُونَ إِلَّا  
رَجُلًا مَّسْحُورًا ﴿٤٧﴾



**Sahih International:** *We are most knowing of how they listen to it when they listen to you and [of] when they are in private conversation, when the wrongdoers say, "You follow not but a man affected by magic."*

In this example, the verses tell stories of events that have occurred in the past by using the imperfect form to mark the moment of speech between the speakers; conveyance of an exchange that has taken place in the past is accomplished with eloquence by using the context to indicate the actual time, which in this case is past tense.

As the corpus shows, the imperfect aspect *يَقُولُونَ* *yaqūlūna* 'they say', which refers to the third person masculine plural, was used to indicate the present perfect progressive tense, indicating that an action has been repeated over a period of time in the past, and is continuing in the present, and/or will continue in the future. However, different translations were provided, using, for example, present simple and present continuous. Consider the following:

The 73rd verse of chapter 5 (*sūrat l-māidah*)

لَقَدْ كَفَرَ الَّذِينَ قَالُوا إِنَّ اللَّهَ ثَالِثُ ثَلَاثَةٍ وَمَا مِنْ إِلَهٍ إِلَّا إِلَهُ وَاحِدٌ وَإِنْ لَمْ  
يَنْتَهُوا عَمَّا يَقُولُونَ لَيَمَسَّنَّ الَّذِينَ كَفَرُوا مِنْهُمْ عَذَابٌ أَلِيمٌ ﴿٧٣﴾

**Sahih International:** *They have certainly disbelieved who say, "Allah is the third of three." And there is no god except one God. And if they do not desist from what they are saying, there will surely afflict the disbelievers among them a painful punishment.*

After comparison of the original with the example translations (not limited to the examples described here), it is possible to conclude the following:

1. English has multiple grammatical class forms for tenses and aspect, the perfective/imperfective.
2. Arabic and English are similar in indicating tense through morphological features.
3. Even though Arabic has only two aspectual forms, perfect and imperfect, Arabic and English have sub-classes of aspect, such as progressive, predictive, habitual, and generic, indicated through the use of particle, main verb or auxiliary. See in the following some examples:
  - The Arabic imperfect aspect can be used to convey the present continuous (when an action takes a long time to complete or has a continuous effect).
  - The Arabic imperfect aspect can be used for an activity that is happening at the moment of speaking.
  - The Arabic imperfect aspect can be used to refer to planned events or future arrangements. In English, this happens when the verb refers to a future action.



- The Arabic imperfect aspect can be used to express a habitual action.
- Based on grammatical rules, the Arabic imperfect aspect can be used to refer to an action that has happened in the past when it is used with the prefix *'id* / **T** – time adverb, which is typically used to indicate past tense.
- The Arabic imperfect aspect can be used to indicate the future tense if it contains the EMPH – emphatic prefix *lām*, which is typically used to indicate future tense.
- The Arabic imperfect aspect can be used to indicate an action repeated over a period of time in the past, which is continuing in the present, and/or will continue in the future. In English, this is the present perfect continuous.
- The examples of the sub-corpus indicate that the Arabic imperfect aspects can sometimes be used to express the future, past and present tense/aspect without the use of particles or auxiliaries.
- In some examples, the Arabic imperfect aspect does not describe an action related to time; it is solely a description of the situation.

## 6. Conclusion

The analysis demonstrates that there are significant differences between Arabic and English morphological rules and word structure, particularly with respect to tense and aspect. In Arabic and in English, the imperfect aspect is used for completed actions in relation to the present moment, a moment in the future or a moment in the past. These results confirmed previous results by, for instance, Alasmari et al (2017), and Al-Aswad (1983). The seemingly widespread belief held by translators that Arabic verbs are narrowed to limited indications of past, present and future is therefore not correct (Fayyad, 1997). In order to address this misconception, syntactic and morphological instructions must be given to the translator. Occasionally, problems in Arabic-English translation may also arise due to lack of understanding of morphological conditions such as prefixation vs. suffixation, different meanings of individual forms, and the recognition of particular tools and auxiliary verbs in contexts.

## References

- Aarts, B. & Haegeman, L. (2006). English Word Classes and Phrases. In B. Aarts & A. McMahon (Eds.), *The Handbook of English Linguistics* (pp. 117–145). Malden. USA. Blackwell. <https://doi.org/10.1002/9780470753002.ch6> <https://doi.org/10.1002/9780470753002>

- Alasmari, J., & Atwell, E., Watson, J. (2017). Using the Quranic Arabic Corpus for Comparative Analysis of the Arabic and English Verb Systems. *International Journal on Islamic Applications in Computer Science and Technology*. Vol 5. Available at: <http://www.sign-ific-ance.co.uk/index.php/IJASAT/article/view/1683>
- Alasmari, J., & Atwell, E., Watson, J. (2017). A Comparative Analysis Of Verb Tense And Aspect In Arabic And English Using Google Translate. *International Journal on Islamic Applications in Computer Science and Technology*. Vol 5. Available at: <http://www.sign-ific-ance.co.uk/index.php/IJASAT/article/view/1683>
- Al-Aswad, M, K. (1983). Contrastive analysis of Arabic and English verbs in tense, aspect, and structure. PH.D. Thesis, University of Michigan.US.
- Al-Shdaifat, A.T. (2014). The Formation of Nominal Derivatives in the Arabic Language with a View to Computational Linguistics. PH.D. Thesis, University of Salford, UK.
- Arista, J.M. (2012). The Old English prefix ge-: A panchronic reappraisal. *Australian Journal of Linguistics*, 32(4), 411–433. <https://doi.org/10.1080/07268602.2012.744264>
- Binnick, R. I. (1991). *Time and the verb: A guide to tense and aspect*. Oxford: Oxford University Press.
- Brustad, K.E. (2000). *The syntax of spoken Arabic*. Washington, D. C.: Georgetown University Press.
- Bubenik, V. (2011). Development of aspect and tense in Semitic languages: Typological considerations. *Lingua Posnaniensis*. <https://doi.org/10.2478/v10122-011-0009-2>
- Carstairs-McCarthy, A. (2002). *An introduction to English morphology: Words and their structure*. Edinburgh: Edinburgh University Press.
- Eisele, J. C. (1990). Tense reference, tense and formal aspect in Cairene Arabic. *Current Issues in Linguistic Theory*, (63), 173–212. <https://doi.org/10.1075/cilt.63.10eis>
- Eisele, J.C. (1999). *Arabic verbs in time: Tense and aspect in Cairene Arabic*. (Vol. 20). Wiesbaden: Harrassowitz.
- El-Sadek, S. (2014). *Tense and aspect in Egyptian Colloquial Arabic: An LFG account*. University of Essex.
- Fehri, A.F. (2012). Key features and parameters in Arabic grammar (Vol. 182). Amsterdam: John Benjamins. <https://doi.org/10.1075/la.182>
- Gadalla, H. (2000). *Comparative morphology of standard and Egyptian Arabic*. Muenchen, Germany: Lincom Europa.
- König, E., & Auwera, J. (1994). *The Germanic languages*. London and New York.



- Palmer, J. 2016. Arabic Stories for Language Learners: Traditional Middle Eastern Tales in Arabic and English by Hezi Brosh and Lutfi Mansour (review). *Al-‘Arabiyya: Journal of the American Association of Teachers of Arabic*, 49(1), pp.161-162.
- Reishaan, A.K., & Ja’far, A.A. (2008). Time, tense, and the verb form in Arabic and English: A contrastive study. *majalat alqādsyah ll̥l̥wm altrbwyh*, 1–2.
- Ryding, K.C. (2005). *A reference grammar of modern standard Arabic*. New York: Cambridge University Press. <https://doi.org/10.1017/CBO9780511486975>
- Sibawayh, A.B. (1966). 'Umar.1317 AH. *Kitab Sibawayh (Vol. 2)*. Bulaq, Egypt: al-Matba'ah al-Kubra al-Amiriyyah.
- Tucker, A.M. (2010). *The morphosyntax of the Arabic verb: Toward a unified syntax-prosody*. University of California, Santa Cruz, 95064-1077.
- Watson, J. (2002). *The phonology and morphology of Arabic*. New York: Oxford University Press.
- Wright, W. (1967). *A grammar of the Arabic language (Vol. 1)*. Cambridge: Cambridge University Press.
- Zollmann, A., Venugopal, A., & Vogel, S. (2006). Bridging the inflection morphology gap for Arabic statistical machine translation. In: *Proceedings of the human language technology conference of the North American Chapter of the ACL*. New York, pp. 201–204. <https://doi.org/10.3115/1614049.1614100>