



## The Semantics of the Counterfactual Complementizer *Law* in Makkan Arabic

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### ABSTRACT

This paper examines counterfactual (CF) structures in Makkan Arabic, a dialect spoken in the Western region of Saudi Arabia. It expands the study of CF structures beyond English. It also presents novel data highlighting the presence of a CF complementizer *law* that is lexically specified to invoke counterfactuality. The CF *law* interacts with past tense and perfect aspect in embedded propositions, contributing to ongoing debates in semantics about whether the past tense in such contexts is "fake" or "real." Within the framework of possible worlds semantics, the CF complementizer *law* enters the computation with a universal operator ( $\forall$ ) that quantifies over all CF worlds. The past tense morphology within the embedded proposition, headed by *law*, triggers a process called "back-shifting." This process ensures that the events in the CF worlds share the same past as the event in the actual world. The universal operator ( $\forall$ ) not only quantifies over all CF worlds but also over time, indicating that the CF worlds are historically similar to the actual world up to the moment of the utterance. Thus, this study highlights the intricate interaction between the complementizer *law*, tense, and aspect in Makkan Arabic, contributing new insights to cross-linguistic discussions on counterfactuality.

### KEYWORDS

Arabic counterfactuals, counterfactual conditionals, fake past, past tense, perfect aspect, real past

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## 1. Introduction

Conditional statements are known to express the speaker's intentions. When an antecedent clause is associated with a real state of affairs in the past, present, or future, it is called a "strict conditional" (Lewis, 2005, p. 4). This is illustrated in (A), which is a well-known example cited in most counterfactual (CF) literature:

A) If Oswald did not kill Kennedy, then someone else did. (Lewis, 2005)

However, if the state of affairs did not hold in the past or is unlikely to hold in the present or future, it is called a "subjunctive conditional" (Lewis, 2005, p. 3)—also known as a CF conditional—as shown in (B) and (C):

B) If kangaroos had no tails, they would topple over. (Lewis, 2005)

C) If Oswald had not killed Kennedy, then someone else would have. (Lewis, 2005)

The antecedent in CFs is always false, as it contradicts facts in the actual world. CFs became a topic of debate in philosophy due to the works of Lewis (1973) and Stalnaker (1968) and later in semantics through the contributions of Arregui (2005), Kratzer (1979; 2012), latridou (2000), and others.

This paper extends this line of thought by providing a better understanding of CFs through cross-linguistic data from Makkan Arabic (MA). This variety of Arabic is a colloquial urban dialect spoken in Makkah city in the western region of Saudi Arabia. As with any theoretical linguistic research, the data in this study has been verified by native speakers of MA through elicitations, including some of the researcher's family members and friends. The researcher of this paper is also a native speaker of MA. Note that elicitations of MA examples do not represent any numerical analysis or statistics.

This paper is motivated by the fact that most research on CFs has focused on Modern Greek (MG) and English. No study has investigated the possibility of a lexical item that specifically invokes counterfactuality in Arabic. In fact, Arabic CFs have also not received adequate syntactic and semantic attention from Arab linguists, such

as Aoun *et al.* (2010) and Benmamoun (2000). To the best of my knowledge, Karawani's (2014) dissertation on Palestinian Arabic (PA) is the first formal semantic analysis of Arabic CFs. Alotaibi (2014) also provides a descriptive study on the Taif dialect, spoken in the city of Taif in the western region of Saudi Arabia. The researcher's mastery of MA as a variety of Arabic provides a valuable opportunity to investigate this phenomenon.

Since MA is a dialect that diverged from Standard Arabic, both of them share similar conditional complementizers. MA native speakers use various complementizers in conversation, such as *law*, *ʕida*, and *ʕin*. Each complementizer has a specific interpretation depending on the speaker's intentions. This paper focuses specifically on the complementizer *law*, which, unlike *ʕida*, is restricted to invoking CF interpretations. A few examples with the complementizer *ʕida* are presented to illustrate the semantic difference between *law* and *ʕida*, as shown in the following minimal pair:

D) Law kaan                    zurtini                    fi bayti                    ʔams,  
Law kaan.PST.3.SG. visit.PRFV.you.F.me at home.my yesterday,  
kaan                    xabaz-t-lik                    cheesecake  
kaan.PST.3.SG. bake.PRFV.1.for.you.F. cheesecake  
"If you had visited me at home yesterday, I would have baked a cheesecake for you." (Past Orientation)

E) \*ʕida kaan                    zurtini                    fi bayti                    ʔams,  
If kaan.PST.3.SG. visit.PRFV.you.F.me at home.my yesterday,  
Kaan                    xabaz-t-lik                    cheesecake  
Kaan.PST.3.SG. bake.PRFV.1.for.you.F. cheesecake  
"If you had visited me at home yesterday, I would have baked a cheesecake for you."

In (D), the speaker implies that they invited a friend to their home before the utterance time, but the friend did not come. The structure in (D) includes the CF complementizer *law* in the antecedent clause, where the past perfect is used, and a "would-have" conditional in the consequent clause. Note that the MA past perfect is formed with the auxiliary *kaan* followed by the past perfective aspect. Several scholars

studying the Arabic aspectual system, such as Alotaibi (2014) (for the Taif dialect) and Badawi *et al.* (2016), have shown that the past perfect exists and appears in various structures invoking multiple readings in line with Portner's (2003) analysis for English perfect. In Standard Arabic (Badawi *et al.*, 2016), Syrian Arabic (Boneh, 2010), and Moroccan Arabic (Fassi Fehri, 2003), there is an additional structure for the past perfect where the auxiliary *kaan* is followed by the present imperfective. The past perfect in the antecedent clause is not interpreted temporally.

In (D), the event did not occur before the utterance time and contradicts what happened in the past. In other words, visiting the speaker was not accomplished in the past. The past perfect in the antecedent clause is not temporally interpreted. In this case, the appropriate complementizer must be the CF *law*, rather than *siḍā*. In (E), the complementizer *siḍā* cannot be substituted with *law* because the event with *siḍā* may have happened at or after the utterance time, unlike the case with *law*.

Based on the intuitive difference between the two complementizers, the eventuality of visiting failed to be completed before the utterance time whenever the CF *law* is used in the antecedent clause. In contrast, with the complementizer *siḍā*, there is always a possibility that the event will eventually take place.

This phenomenon surrounding the CF *law* cannot be treated in the same way as in MG and English. In these languages, a single complementizer is used for both strict conditionals and CFs, and the only linguistic tools for expressing counterfactuality are tense and aspect. Based on the example given in (D), MA has a richer morphological system for expressing counterfactuality than MG and English. In fact, Abusulaiman (2023) offered novel descriptive data that covers various CF structures in MA other than those employing the CF *law*, such as with the auxiliaries *kaan* and *yarait*. Across these CF structures, the past is an essential linguistic tool for yielding counterfactuality. Without the use of past morphology, counterfactuality cannot be conveyed in a sentence.

This paper focuses only on the semantics of the CF *law* and the way it interacts with past, present, and future orientations. It also provides a formal semantic analysis for a specific MA CF structure with the CF *law* (proposed as item [22] in Section 3.3). Future research will investigate the semantics of the complementizer *siḍā* relative to tense and aspect in MA. To better understand the semantics of the past tense, an example is presented here with the past tense in a free-conditional structure. The eventuality starts and finishes before the utterance time, as illustrated below:

F) Xabazt                                      cheesecake ʔams  
Bake-PRFV.I.                                cheesecake yesterday  
"I baked a cheesecake yesterday."                                      (Simple Past)

In (F), the speaker asserts the completion of the eventuality with the past tense before the utterance time. This view of the past tense is in line with Kratzer's (1998) semantic analysis. The lexical entry for the past is as follows: "Past is only defined if *c* provides an interval *t* that precedes *t<sub>0</sub>*," where *c* represents the context, *t* is the time, and *t<sub>0</sub>* is the utterance time. Comparing examples (F) and (G) reveals a loss of interpretation in the past tense for CF structures.

G) Law kaan                                      zurtini                                      fi bayti                                      ʔams,  
Law kaan.PST.3.SG. visit.PRFV.you.F.me at home.my yesterday,  
Kaan                                      xabaz-t-lik                                      cheesecake  
Kaan.PST.3.SG. bake.PRFV.1.for.you cheesecake  
"If you had visited me at home yesterday, I would have baked a cheesecake for you."                                      (Past Orientation)

The use of the past tense in MA CFs is reminiscent of Iatridou's (2000) observation of the loss of temporal interpretation in CF structures in

MG. Semanticists have treated this loss of temporal properties differently. Some, like Iatridou (2000), refer to it as a "fake past" (or modal past), suggesting that it places the speaker in an unreal time rather than actual time. Others, such as Ippolito (2002) and Palmer (2001), consider it to be a "real past."

In brief, my analysis is as follows: I argue that counterfactuality is lexically encoded in MA using the specified CF complementizer *law*. This complementizer is not associated with eventive or stative events but directly yields counterfactuality. In MA, the past perfect is also used as a linguistic tool to construct CF statements with *law*. This cross-linguistic fact distinguishes MA CFs from those in English and MG.

The remainder of this paper is structured as follows. Section 2 explores additional data on the CF *law* in MA before Section 3 discusses the most recent semantic accounts of CF structures and provides an analysis compatible with MA. Finally, Section 4 concludes the discussion on the CF *law*.

## 2. The Counterfactual *Law* in Makkan Arabic

This section provides a brief overview of the CF *law* as described in Standard Arabic and then presents additional data on this CF.

When studying MA CF statements, I often refer to the literature on Classical Arabic grammar, as MA does not have a written grammar. This literature offers a valuable description relevant to the CF complementizer *law* in MA (Al-Ansarie, 1964; Al-Ghalayini, 2009; Al-Kuwari, 2011; Al-Muradi, 1992; Badawi *et al.*, 2016; Ryding *et al.*, 2005; Wright, 2023). To avoid any confusion, it is important to clarify two points here. First, the focus of this paper is on counterfactuality in MA, not in Standard Arabic; Classical Arabic grammar is used only as a guide in this research. Second, this paper does not offer an analysis of the CF complementizer *law* as part of the debates among Arab grammarians. The current discussion is based on the debate among semanticists from the perspective of possible worlds semantics, as dealt with in the works of Lewis (1973), Stalnaker (1968), and many others.

In Classical Arabic grammar, there is a consensus among Arab grammarians that conditional statements are composed of two clauses, similar to the logical structure "If *p*, then *q*." Standard Arabic has a rich system of complementizers, some of which head antecedent clauses to refer to possible events, such as *siḍā*, while others, like the CF *law*, denote "contrary-to-fact" conditionals (Ryding *et al.*, 2005).

Badawi *et al.* (2016) describe the linguistic function of the CF *law* when it heads the antecedent clause. According to these authors, *law* is treated as a particle in such cases: "The particle *law* لاء is generally considered to head conditional (protasis) clauses whose validity is either impossible, highly unlikely, hypothetical or contrary to fact" (Badawi *et al.*, 2016, p. 719).

Let us now examine more examples of the CF *law*, inspired by the examples from MG in Iatridou (2000).

H) Law kaan                                      ʔaxaḍ                                      ʔa-dawaa,  
Law kaan.3.SG.M.PST. take.PRFV.3.SG.M. the-syrup,  
Kaan                                      ʔathassan  
Kaan.3.SG.M.PST. get.better.PRFV.3.SG.M.  
"If he had taken the syrup, he would have gotten better."                                      (Past Orientation)

In (H), the morphological structure exhibits two layers of past, in both the antecedent and consequent clauses, as described by Iatridou (2000). The first layer of past refers to a non-actual world (the CF world), while the second layer indicates a time distant from the

utterance time, resulting in a past reference. Thus, we are comparing not only time distinct from the actual time but also CF worlds that differ from the actual world (the evaluation world).

The structure of example (H) consists of an antecedent clause headed by the CF *law* followed by a consequent clause (a “would-have” conditional). In both clauses, the perfect aspect is used, with the auxiliary *kaan* followed by the perfective aspect. This structure creates the perfect aspect in MA. A similar structure has been previously described for Standard Arabic as “blueperfect,” by Badawi *et al.* (2016) and Wright (2023).

I) Law ʔaxað ʔa-dawaa, yithassan  
Law take.PRFV.3.SG.M. the-syrup., get.better.IMPRFV.3.SG.M.  
“If he took the syrup, he would get better.” (Present Orientation)

In (I), the past perfective is used in the antecedent clause, and the “would-have” conditional appears in the consequent clause. Here, counterfactuality is expressed solely through the CF *law*. The presence of *law* inherently guarantees counterfactuality.

J) Law ʔaxað ʔa-dawaa bukra, kaan yithassan  
Law take.PRFV.3.SG.M. the-syrup tomorrow, kaan.3.SG.M get.better.IMPRFV.3.SG.M.  
“If he took the syrup, he would have gotten better.” (Future Orientation)

If the CF *law* is substituted with *siðā*, the CF reading is precluded because *siðā* is incompatible with CF interpretation. The semantics of *siðā* imply an eventuality that is likely to occur at or after the utterance time.

In contrast to Arregui (2005), the CF *law* always invokes counterfactuality regardless of whether the predicate in the antecedent clause is stative or eventive, as shown in (K)–(M):

K) Law ʔomar kaan ʔabbaha,  
Law Omar. kaan3.SG.PST. 3.SG.M. love.PRFV.her,  
Kaan ʔatawaa ʔha  
Kaan.3.SG.PST. 3.SG.M.marry.PRFV.her.  
“If Omar had loved her, he would have married her.” (Past Orientation)

L) Law ʔomar ʔabbaha, yitzawaa ʔha  
Law Omar 3.SG.M. love.PRFV.her, 3.SG.M.marry.IMPRF.her.  
“If Omar loved her nowadays, he would marry her.” (Present Orientation)

M) Law ʔomar ʔabbaha, kaan yitzawaa ʔha  
Law Omar love.PRFV.3.SG.M.her, kaan.3.SG.M. 3.SG.M.marry.IMPF.her.  
“If Omar loved her, he would have married her.” (Future Orientation)

Table 1 summarizes the tenses and aspects associated with the CF *law*. The past perfect can take various forms depending on the orientation in the past, present, and future.

Table 1: Summary of MA conditional structures with the complementizer *law*

Conditional	Antecedent	Consequent “Would-have”
<i>law</i> : “CF future”	Past perfective	Past perfect: <i>kaan</i> + imperfective
<i>law</i> : “CF past”	Past perfect	Past perfect: <i>kaan</i> + perfective
<i>law</i> : “CF present”	Past perfective	Present imperfective

### 3. The Semantics of Counterfactuals: The Case of *Law*

There has been a long-standing debate among semanticists about the formal relationship between the past tense and counterfactuality. This debate began with Iatridou (2000) and has continued with contributions from Arregui (2005), Condoravdi (2001), Ippolito (2002; 2004; 2006; 2008; 2013), Karawani (2014), Portner (2009),

Schulz (2017), and von Prince (2019). These accounts diverge in their treatment of past tense within CF environments and can be classified into two categories. The first approach, proposed by Iatridou (2000) and Karawani (2014), treats past tense as a “fake past” (modal past). The second approach, proposed by Arregui (2005), Condoravdi (2001), and Ippolito (2002), treats it as a “real past.”

In the case of the CF *law*, I follow the second approach, analyzing the past tense as real within CF structures. I also acknowledge the consensus in the related literature that CFs are best treated as implicatures rather than assertions or entailments. For more details, see Anderson (1951) and Iatridou (2000).

This section discusses two formal approaches to the treatment of the past tense in CF structures. I demonstrate how the second approach can best capture the intuitions of the CF *law*.

#### 3.1. Fake Past Approach:

Iatridou’s (2000) proposal is a pioneering analysis that highlights the role of the past tense and past perfect in interpreting CFs. In “The Grammatical Ingredients of Counterfactuality” (2000), she discusses various interpretations of counterfactuality and attributes them to tense morphology in MG, unlike strict conditional statements.

To account for the use of past morphology in CF environments, Iatridou (2000) proposed that the past tense motivates what she termed “feature exclusion” (p. 246), referring to a syntactic operation called “feature checking” in the minimalist approach (see Chomsky [1995] for further details). According to this operation, the tense feature is checked and interpreted in non-CF structures, invoking a temporal interpretation of the past. In CF environments, however, the past tense feature is not interpreted. Iatridou thus proposed the formula shown in (N). Here, the past tense feature can be interpreted either in the domain of time or worlds, with the variable ( $x$ ) ranging over either domain:

N)  $T(x)$  excludes  $C(x)$ . (Iatridou, 2000)

Based on the formula in (N), two possibilities are predicted depending on the speaker’s intention and the pragmatic elements of the eventuality. The first possibility arises when the variable ( $x$ ) ranges over time. In this case, the result will be as follows:

O)  $T(t)$ : the time interval (set of times) we are talking about (Iatridou borrowed the term “topic time” from Klein [1994]).

P)  $C(t)$ : the time interval (set of times) that for all we know is the time of the speaker (i.e., utterance time).

In (P), the variable  $x$  represents “what we are talking about,” while  $T(x)$  denotes  $Topics(x)$ . Conversely,  $C(x)$  represents “the  $x$  that for all we know is the  $x$  of the speaker.” The proposal of the exclusion feature is predicted to range over time, excluding the utterance time and referring to an eventuality that occurred in the past, as represented in (Q):

Q) The topic time excludes the utterance time. (Iatridou, 2000)

The above schema captures the intuition that when past morphology receives its temporal interpretations, the eventuality is completed before the utterance time.

The second possibility arises when the exclusion feature refers to worlds that differ from the actual world. In such cases, the event in the antecedent clause is excluded from the actual world. Here, the past tense loses its temporal properties, resulting in a CF interpretation. CF interpretations refer to worlds distinct from the actual world, regardless of the use of past morphology in the antecedent and the past perfect in the consequent, as shown in (R):

R)  $T(w)$ : the worlds that we are talking about (topic: worlds).

S)  $C(w)$ : the worlds that for all we know are the worlds of the speaker (actual world).

Based on (S), we get the following schema:

T) The topic: worlds exclude the actual world. (Iatridou, 2000)

In (T), we can observe how this excluding function operates. The CF interpretation occurs when there is a reference to worlds distinct from and excluding the actual world. This interpretation arises regardless of the use of past morphology in the antecedent and past perfect in the consequent.

To summarize Iatridou's (2000) proposal, the excluding feature accounts for two interpretations of the past tense. The first interpretation is associated with an actual state of affairs that holds before the utterance time, providing a temporal flavor. The second interpretation does not invoke any temporal properties and instead results in a CF reading, where the situation does not hold in the actual world.

Karawani (2014) provided the first analysis of Arabic CF *law* in PA. Her analysis was based on Iatridou's (2000) concept of treating past tense as a "fake past" by applying the excluding feature. She further developed the notion of the "non-actual veridicality" (NAV) morpheme (Karawani, 2014, p. 179). The NAV morpheme applies to a true proposition when there is a world–time pair that differs from the actual world  $w$  and the utterance time  $t$ . In this case, either  $w'$  or  $t'$  is distinct from  $w$  or  $t$ , respectively. The NAV morpheme is optional with the CF *law* since the *law* itself is sufficient to yield counterfactualty. Relative to structural height, when the NAV morpheme is generated above the second tense phrase (TP), it functions as a modal marker, as shown in (U). It can create a CF complex with the complementizer *šidā* or strengthen counterfactualty with *law*.

U) CP >> (MoodP) >> TP<sub>2</sub> >> TP<sub>1</sub> AspP >> vP. (Karawani, 2014)

### 3.2. Real Past Approach:

Regarding the CF *law*, I believe that Iatridou's proposal requires further development to fully capture the corresponding intuitions. In this paper, I propose an alternative analysis of Arabic CFs, following Arregui (2005) and Ippolito (2002). In this analysis, the past tense is treated as real, for the following reasons:

- The CF *law* has an independent lexical entry in MA.
- Treating the past tense as real rather than "fake" is in line with the "back-shifting" process outlined by Ippolito (2002; 2004; 2006; 2008; 2013) and von Prince (2019).
- In MA, the auxiliary *kaan* + past perfective constitutes the past perfect, differing from Karawani's (2014) treatment in PA, where this structure represents the past perfective.

Accordingly, I predict that two components yield CF interpretations using the CF *law* in MA: (A) tense and aspect morphology and (B) the presence of a specific lexical item devoted to counterfactualty. My analysis is inspired by three proposals that treat the past tense as real, made by Arregui (2005), Ippolito (2002; 2004; 2006; 2008; 2013), and von Prince (2019). All three acknowledge the role of the past tense in deriving the CF interpretation.

Using *back-shifting* places the speaker in a past domain, triggering historical worlds with CF events. These events share the history of actual events but did not occur, aligning with Arregui's (2005, p. 42) notion of "similar worlds." This term echoes Lewis's (1973) concept, where the evaluation world reflects the degree of similarity across possible worlds that share the same episodic past. By focusing on similar worlds, this analysis supports the treatment of the past tense as real, where only events within CF worlds share the same history. The following sections present the elements that constitute the MA CF structure with the CF complementizer *law*.

### 3.3. Structure of Conditional Statements:

The structure of a conditional statement with the CF *law* reflects the basic components of conditionals in Kratzer's (1977; 1981) "tripartite structure," (Kratzer, 1977, p. 241). The antecedent is interpreted as a restriction on the covert modal operator  $R$ , while the time of the consequent is interpreted within the nuclear scope. Although Kratzer did not address the past within CFs, Ippolito (2002) extended this structure to include the past, asserting that the accessibility relation  $R$  is linked to a time parameter  $t$ , as illustrated later in Figure (1). In the modal base, the set of accessible worlds is defined as the set of worlds  $w'$  accessible from the evaluation world  $w$  at the evaluation time  $t$ . Ippolito (2006; 2008) further developed this structure by identifying the accessibility relation as a "historical accessibility relation."

I believe this historical accessibility relation effectively captures the back-shifting process triggered by the use of past morphology. By employing the past tense, the speaker compares the actual world with similar accessible worlds from the past. Consequently, CF conditionals are interpreted through two parameters: the accessibility relation parameter and the similarity parameter. The first parameter is time-dependent, while the second functions as a linguistic tool to measure similarity.

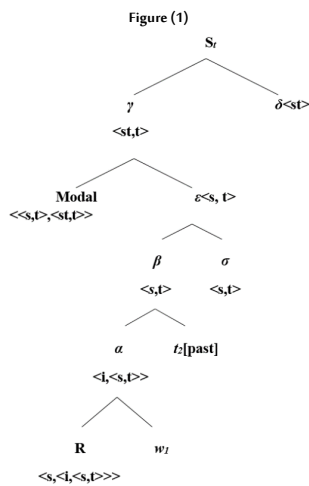
To facilitate the comparison of historically similar worlds, Ippolito (2002) advanced Iatridou's (2000) concept of the second-layer past in the TP and placed this second TP within the domain of the modal operator (inside the accessibility relation). This second TP is situated outside the computation of the CFs, thereby quantifying the entire CF structure. The time of the second TP is anchored to any time that precedes the utterance time.

Under this proposal, the past tense manipulates the time argument of the covert (abstract) modal operator "WOLL," which represents the accessibility time (Ippolito, 2013). The past tense provides a time argument for the accessibility relation, allowing the selection of historical worlds from the evaluation world of the past.

What distinguishes Ippolito's structure of conditionals from Kratzer's (2012) is that the accessibility relations in Ippolito's model are at least binary relations between a world–time pair and the world. This approach involves comparing both worlds and times, resulting in a structure of  $\langle s, \langle i, \langle s, \mathcal{D} \rangle \rangle \rangle$ , where  $i \in I$  ( $I$  is the domain of times), rather than the simpler  $\langle s, \langle s, \mathcal{D} \rangle \rangle$ . In this model, the possible worlds quantified over by the covert modal operator are relative to both a world parameter (the world of evaluation  $w_i$ ) and a time of evaluation  $t_i$ .

By examining the role of the past tense in the computation of CFs, Ippolito places the second layer of past tense outside the conventional tripartite structure. In this framework, the past tense manipulates the time argument of the covert modal operator, which is the accessibility time. The role of the past tense is to provide a time argument for the accessibility relation, allowing for the selection of worlds that are historically accessible from the evaluation world at a past time.

To achieve this selection function, a covert (abstract) modal operator, WOLL, compels the modal to universally select antecedent worlds that are historically accessible from the actual world at the past time, as illustrated in Figure (1).



\* (Ippolito, 2002, p. 243)

When the speaker shifts backward in time, they compare CF worlds to the actual world (the evaluation world). According to Lewis (1973), and later expanded by Arregui (2005), among others, the evaluation world reflects the degree of similarity among possible worlds that share the same episodic past. This analysis supports the view that the past tense is treated as real, where only events within the CF worlds share the same history but fail to occur. In Ippolito (2013) and von Prince (2019), the past perfect consistently triggers a back-shifting process, shifting the speaker's perspective to the past and aligning with other events that share the same episodic history.

In line with Ippolito's (2013) account, the predicted structure for a CF statement using the complementizer *law* in MA is as follows:

V) (PAST (PERF<sub>kaan</sub> ( $\forall \subseteq (Law(SIM(HIST)(\Phi))) (\Psi))))$ )

In (V), the CF *law* combines with a proposition expressed by the conditional antecedent clause  $\Phi$  and quantifies over all ( $\forall$ ) worlds that are historically (HIST) similar (SIM) to the evaluation world and time. When entering the computation with a universal quantificational force ( $\forall$ ), the CF *law* does not require the presence of the NAV morpheme suggested by Karawani (2014).

Given the above discussion, MA data on the CF *law* captures the intuition that the eventuality in the antecedent clause contradicts the eventuality in the actual world. The CF *law*, when used with the past tense or past perfect, activates the process of comparing the actual world with other possible worlds, specifically CF worlds up to the reference time. I also propose that the CF *law* is free from any temporal interpretations and should be treated as a tenseless "overt" modal operator that embeds a temporal structure, as inspired by Ippolito (2013) for WOLL. Unlike Ippolito's (2013) treatment of WOLL as a tenseless covert modal operator, the CF *law* in MA functions as a specific tenseless lexical item dedicated to invoking counterfactuality, in contrast to English.

W)  $[[law]]^{c,g,w,t} = \lambda t' \in D_{t'} \lambda p \in D_{<st>} \lambda q \in D_{<st>}. \forall w' [w' \in SIM_w(HIST_{w,t}(p)) \rightarrow w' \in q]$

In (W), the overt modal operator  $[[law]]$  takes two propositional arguments,  $p$  and  $q$  (the antecedent  $p$  and the consequent  $q$ ), along with a time argument  $t'$ . This time argument manipulates the historical (HIST) accessibility relation to select the most similar (SIM) and closest worlds to the actual world.

Considering that CF *law* invokes counterfactuality in MA, I perceive that the semantics of the CF *law* resemble those of epistemic modals for the following reasons.

First, the CF *law* operates with a universal quantifier ( $\forall$ ), which quantifies over CF worlds rather than possible worlds. The judgment

of the proposition is made from the perspective of what the speaker knows. I propose that it functions similarly to epistemic modals, such as "must" or "might." It is important to note that I do not claim that the CF *law* is a modal in the traditional sense. Instead, the intuitions surrounding the CF *law* are based on the speaker's knowledge of a particular state of affairs, where the event in the antecedent did not occur in the real world. Thus, the truth value of the antecedent is considered false when using the CF *law*.

Second, when a speaker uses the CF *law*, they base their judgments on what they know in world  $w$ . This observation aligns with Kratzer's (1977; 2012) analysis of epistemic modals.

In sum, I believe the discussion on the complementizer *law* reflects the concept of "modal displacement," as explored by Kratzer (2013). This phenomenon is triggered by the creative use of natural language, where modality is not confined to modal auxiliaries but can also involve other categories, such as adverbials or morphemes. For further reading on this topic, see Matthewson's (2016) work on the Salish language *St'at'imcets*.

## 4. Conclusion

This paper extends the formal cross-linguistic studies of CF structures. The topic of counterfactuality has received limited scholarly attention in Arabic linguistics except in Karawani's analysis (2014) of PA. MA is subject to formal semantic analysis on a par with other languages. What makes MA distinctive is its possession of a specific complementizer invoking counterfactuality—*law*. This paper lays the groundwork for future formal analyses of Arabic CF structures, providing a basis for comparison with other Arabic varieties.

In the literature on formal semantics, the past tense embedded inside a CF clause did not receive a formal investigation until Iatridou's work of 2000. Iatridou observed the semantic behavior of the past tense inside a CF clause in MG and English. Considering this observation, she claimed that the past tense in these constructions can best be treated as fake. Following Iatridou, Ippolito offered an alternative view of the past tense in CFs, through extensive studies undertaken from 2002 until 2013. In the context of possible worlds semantics, Ippolito analyzed the past tense by comparing the event within a CF structure to other past events that shared similar historical circumstances and properties. In other words, Ippolito showed that the past morphology of the event triggers a comparison with other past events that share historically similar circumstances. This process of back-shifting was also adopted by von Prince (2019).

The difference between the actual world–time pair and the past world–time pair relies on the occurrence of the event. According to the intuitions of counterfactuality, an event inside a CF clause failed to occur and was not completed for certain reasons in the past. Therefore, the interpretations of CFs contradict what happened in the actual world at the utterance time.

Returning to MA, we have seen that a CF structure does not solely rely on the past morphology but also has an extra ingredient for expressing counterfactuality. This extra ingredient is the CF complementizer *law*. Any structure containing the complementizer *law* is exclusively interpreted as CF, without any alternative interpretations. When it comes to the treatment of the past tense with *law*, the past tense behaves as real relative to the back-shifting process outlined by Ippolito (2002; 2004; 2006; 2006; 2008; 2013) and von Prince (2019).

Considering the computation with the CF complementizer *law*, *law* functions as an overt operator that quantifies over all possible worlds. This operator also selects only possible worlds that are historically similar to the evaluation world (the actual world).

Further research by Arab linguists on Arabic CFs and strict conditionals is needed, from both a semantic and syntactic perspective. This research will have a great impact on their acquisition in Arabic.

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