Perfective aspect interaction with epistemic *qad* in Makkan Arabic

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This paper accounts for the interaction between an epistemic modal particle *qad* and aspect in Makkan Arabic (MA). MA provides interesting novel combination of epistemic modals and perfective aspect, which invokes actuality-entailments. This occurs contrary to the understanding that such entailments are missing with epistemic modals (Portner 2009). I argue that perfective aspect results in manipulation of the ordering source for epistemic modals that results in actuality-entailments.

Empirical landscape: *Qad* displays multiple nuances depending on the type of aspect present in its complement clause (Al-Muradi 1992; Al-Ansarie 1964; Bahloul 2008; Meziani 1983; Fassi Fehri 1993; 2012). With imperfective aspect, the interpretation of epistemic *qad* is that of possibility, as in (1).

(1)   Muna **qad** ti-ktub   ʕ-al-waazib
        Muna **qad** 3.SG.F.-write.**IMPFV.** ʕ-the-homework
        'Muna might write the homework, (but I am not sure that she will do it).'

Without *qad*, as in (2), the sentence would report a present habit. The prefix *ﬁa-* would be needed for a future-shifted interpretation (see (2)). The uncertainty continuation is not felicitous:

(2)   Muna (#qad)**ﬁa**-ti-ktub   ʕ-al-waaʒib
        Muna **Fut.**-3.SG.F.-write.**IMPFV.** ʕ-the-homework(#but I am not sure that she will do it)

The second flavour for epistemic *qad* is with perfective, as in (3). With perfective, *qad* receives the interpretation of *certainty*, called the "indeed reading" (Fassi Fehri 1993; 2012).

(3)   Muna **qad** ʃaaf-at   ʒinie
        Muna **qad** see.PFV.-3.SG.F. a.ghost
        'Muna indeed saw a ghost.'

Background: The observations surrounding *qad* are reminiscent of the modal-aspect interaction discussed by Bhatt (1999), Hacquard (2006; 2009; 2014), Piñón (2003), and Homer (2009), and manipulation of the ordering source by Kratzer (1981; 2012), Portner (2009), Peterson (2008), and Matthewson, Davis, and Rullmann (2007). However, even though they provide fruitful insights into root modal-aspect interactions, they are not immediately applicable to MA epistemic modal-aspect data. **Research questions:** (a) Does *qad* show the same relative modal-aspect height proposed by Hacqaurd (2006; 2009)? (b) Does perfective aspect cancel the epistemic modal component of *qad*?

Analysis: Considering the intuition of perfective aspect, I follow contemporary proposals that account for cross-linguistic variation of modality relative to manipulations of aspects of their interpretation either a modal base or an ordering sources (see Kratzer, 2012; Von Fintel & Iatridou, 2008; Rubinstein, 2012 a.o.). Epistemic *qad* is analogical to the "modals without duals" discussed by Kratzer (2012). In this system, the ordering source is the domain restriction for the set of the closest accessible worlds. Also, the ordering source interacts with an empty modal base. With imperfective, the domain of restriction is broad; therefore, the possibility reading becomes stronger, as in (1). When the ordering source is narrow, the necessity reading becomes weaker. Hence, it captures the "indeed reading" with perfective, as shown in (3). As a result, this type of domain restriction causes the distinction between necessity and possibility to collapse. A unified lexical entry for the epistemic *qad* is formalized below:

(4) $[[\textbf{qad}]]^{g,\,w}@= \lambda f.\ \lambda g.\ \lambda p.\ \exists\ w' \in \text{MAX}_{g(w_@)}: (\bigcap f\ (w@):\ p(w')= 1$

Finally, this paper contributes to a better understanding of epistemic modal particles that enter into a relationship with aspect. The epistemic modal over perfective aspect which yields actuality en-

tailment process, which was arguably blocked in the modal-aspect height view (Hacquard, 2006).

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