WH agreement and the timing of the unbounded dependency formation:
A Chamorro perspective on predictive licensing and interpretation

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Summary. Comprehension of unbounded filler-gap dependencies proceeds actively: gaps are predicted in particular positions before evidence that those positions are unoccupied [1,2]. This phenomenon is well-suited to probing the sources and availability of information that shapes expectations about linguistic relations. Lexically-projected information provides clues to the gap site, but it is less clear how it interacts with information available before lexical access of the verb [3-6]. Here we investigate online comprehension in Chamorro, a verb-initial Austronesian language whose system of WH Agreement provides <u>morphological</u> cues to the extraction site [7].

We report two major findings: (A) Chamorro, like other languages, shows active filler-gap comprehension; but only when a transitive verb is (optionally) inflected for WH Agreement are extracted constituents immediately <u>semantically interpreted</u>. (B) Uninflected forms show no evidence of early interpretation. Comprehenders do, however, experience difficulty comprehending extractions of non-objects, e.g. possessors, across uninflected verbs. This difficulty, we argue, suggests a garden-path [8]: comprehenders do posit gaps for (all compatible) verbs, but only actively interpret them when WH Agreement is visible morphologically. These results support a time-course distinction between formal predictions and their interpretive commitments [9].

Design & Results. Verbs in Chamorro are specially inflected to reflect the grammatical role of extracted arguments [7]. In (1), subject extraction obligatorily triggers infixation of -um- to the verb låksi; oblique extraction also triggers special verb forms. Crucially, <u>WH-inflection for object extractions is optional</u>: (2a)/(2b). Moreover, possessor extraction does not trigger a WH-inflected form (3). Thus, while WH-inflection provides a direct cue to the filler's role, lack of WH-inflection could forestall active comprehension either by (a) providing a more slowly recognized signal for the object analysis; or (b) introducing the possibility of possessor extraction [3,4]. To test whether active comprehension was diminished for uninflected forms, we crossed the extractee's pragmatic plausibility as object **[±PLAUS.OBJ]** with the presence of WH-inflection **[±WH.INFLECT]**: (4)-(5). In two paradigms we probed for an anomaly effect at the verb: In **Exp. 1,** 40 participants listened in an auditory moving window paradigm [10] and judged whether sentences made sense. In **Exp. 2,** 72 participants listened passively and also made a sensicality judgement. Large 'good'/'not good' ('måolik'/'ti måolik') buttons were depicted on screen. Participants were recorded via webcam and their gaze later coded blind by multiple annotators.

The dependent measure was thus either listening times [Exp. 1] or looking preference to the appropriate response button [Exp. 2]. There were 12 targets and 28 non-targets, counterbalancing other factors. Experiments took place in the Northern Marianas, with all materials and interactions in Chamorro. In both paradigms we observed a main effect of **PLAUS.OBJ** and an interaction with **WH.INFLECT** at the verb, such that a disruption/preference-shift due to anomaly was only observed in WH-inflected forms. Nonetheless in the (untimed) judgments, participants systematically dispreferred possessor extractions for **-PLAUS.OBJ** extractions only.

(1)   **Håyi na såstri   lumåksi   i magågu-mu?**   "Which seamstress sewed your clothes?"
          who L seamstress WH[NOM].sew D clothes-AGR?

(2)   **Håfa na tråk (a) pinentåm-mu / (b) un penta**   "Which truck did you paint over again?
          what L truck   WH[OBJ].paint-AGR / AGR-paint
          ta'lu un biåhi? again a time

(3)   **Håfa na tråk   un penta ta'lu   sanme'nåñ-ña?**   "Which truck did you paint its front again?"
          what L truck AGR-paint again front-AGR

(4) (a) [+PLAUS.OBJ, +WH.INFLECT]: =>   (2a)   "Which teacher did you paint over again?"
    (b) [-PLAUS.OBJ, +WH.INFLECT]:
    Håyi na ma'estru pinentåm-mu   ta'lu un biåhi?
    who L teacher   WH[OBJ].paint-AGR again a time

(5) (a) [+PLAUS.OBJ, -WH.INFLECT]: =>   (3)   "Which teacher did you paint his truck again?
    (b) [-PLAUS.OBJ, -WH.INFLECT]:
    Håyi na ma'estru un penta ta'lu tråk-ña?
    who L teacher   AGR paint again truck-AGR

References [1] Frazier & Flores D'Arcais (1989) [2] Aoshima et al. (2004) [3] Boland et al. (1995) [4] Pickering & Traxler (2001) [5] Staub (2007) [6] Omaki et al. (2011) [7] Chung (1998) [8] Stowe (1986) [9] Wagers & Phillips (2009) [10] Ferreira et al. (1996)