

Decomposing memory reports: a Kurdish perspective

Intro: I develop a compositional semantics for *memory reports* in the Northwestern Iranian language Sorani Kurdish. Building on decompositional approaches to attitude verbs, the analysis incorporates insights from recent work on the semantics of memory (Liefke 2024a, b), while also accounting for their differences from imagination reports in both form and stativity. The approach sheds light on the compositional analysis of memory reports cross-linguistically.

Background: Much work in psychology and the philosophy of memory adopts a *continuist* perspective on the relationship between imagination and memory: on this view, episodic memory is a specific kind of imagining, one that involves reconstruction of past experiences (Addis et al. 2007; Michaelian 2011, 2016). Building on this, Liefke (2024a, b) develops a continuist semantics for memory reports, whose proposal for the semantics of *remember* is in (1).

1) $[[remember]]@ = \lambda R \lambda x. \exists e [exp@(e, x) \wedge t_e < t_@ \wedge imagine@(x, \eta\sigma:R(\omega(e), \sigma) \wedge (\sigma \cap \omega(e)) \geq \theta)]$
On this semantics, *remember* is a restricted version of *imagine* that is i) *past-directed*, ii) *parasitically dependent* on a prior experience, which may be a sensory experience of an actual scene or a non-veridical experience, such as a dream, and iii) *accurate*, by which we mean that the content of the memory report, represented as a contextually chosen scene σ , must match the experienced event's content, denoted $\omega(e)$, up to a certain threshold of accuracy. This allows for an analysis of memory reports as imagination reports that are faithful to the content of a prior experience, while also being able to capture cases of misremembering and variable factivity.

Kurdish memory reports: Given the relation between memory and imagination that this approach relies on, a question that arises is whether memory and imagination reports are compositionally constructed out of shared material in other languages, and whether these forms have properties in common. In many Iranian languages, for instance, there is no simplex verb corresponding to the verb *remember*; rather, memory reports are constructed out of a noun meaning 'memory' and a possessive or locative construction. Focusing on Sorani Kurdish (Northwestern Iranian), memory reports are derived from a noun *bîr* 'memory' accompanied by a locative preposition *le* and a possessive clitic referencing the memory holder. Imagination reports, on the other hand, are formed from a light verb *kirdin* 'do' and *tesewer* 'imagination.'

2) *le bîr=m=e Baban le Slêmanî ežê* 3) *tesewer=im krd Baban le Slêmanî ežê*
in memory=1.SG=is Baban in Slemani lives imagination=1.SG did Baban in Slemani lives
'I remember Baban living in Slemani.' 'I imagined Baban living in Slemani.'

The memory predicate in (2) passes diagnostics for stative predicates, particularly *abstract* or *Kimian state predicates* (Maienborn 2007; Cable & Crippen 2023; Moltmann 2024), while the imagination predicate in (3) is straightforwardly eventive. This can be shown by two diagnostics. First, memory reports are incompatible with the progressive (4), as is the case with abstract state predicates (Dowty 1979; Cable & Crippen 2023). Imagination reports, on the other hand, are fully compatible with the progressive (5).

4) *#xerîk=e/im le bîr=m=e Baban le Slêmanî ežê*
PROG=is/am in memory=1.SG=is Baban in Slemani lives
Intended: 'I am remembering a spider spinning a web.'

5) *xerîk=im tesewer eke-m Baban le Slêmanî ežê*
PROG=am imagination do.PRS-1.SG Baban in Slemani lives
'I am imagining Baban living in Slemani.'

Second, memory reports cannot be felicitously described as having happened (6), while imagination reports can (7). This is strong evidence for the stativity of memory reports, and the eventivity of imagination reports, in these languages (Maienborn 2005; Cable & Crippen 2023).

6) *le bîr=im bû Baban le Slêmanî ežê. #eme dwênê rûyda*
in memory=1.SG was Baban in Slemani lives this yesterday happened
Intended: 'I remembered Baban living in Slemani. #This happened yesterday.'

7) *tesewer=im krd Baban le Slêmanî ežê. eme dwênê rûyda*
imagination=1.SG did Baban in Slemani lives this yesterday happened
'I imagined Baban living in Slemani. This happened yesterday.'

As memory reports are a more restricted form of imagination reports on Liefke's analysis, we expect them to pattern together with respect to their eventivity; imagination reports are eventive, so memory reports should be too. However, memory and imagination reports exhibit very different behavior in this regard. Moreover, since abstract states are standardly taken to be a sort of object distinct from Davidsonian eventualities (Maienborn 2007; Moltmann 2024), it is not clear how one could derive a predicate of such states from an event predicate merely by placing additional restrictions on the latter's meaning.

Analysis: We can speak of memory as though it were a repository of stored mental states, where each state records some prior experience. In this sense, one's memory is the totality of these recorded experiences, with each individual memory corresponding to one of the states contained within this totality. My analysis of Kurdish memory reports formalizes this guiding intuition. On my proposal, the memory noun *bîr* denotes a function from individuals to states, where the state in question is maximal with respect to the set of memory states possessed by the individual.

8) $bîr = \lambda x. \text{MAX}(\{s \mid \text{MEM}(s) \wedge \pi(x, s)\})$ $\text{MAX}(P) = \iota s [P(s) \wedge \forall s' [P(s') \rightarrow s' \leq s]]$

As the memory noun returns a state upon composing with an individual, additional material is needed to convert it into a predicate. I propose that this is accomplished by the locative preposition *le* in Kurdish, analyzed as a function from a state *s* to a predicate of states that are parts of *s*. Finally, the embedded clause introduces the content of the state (Kratzer 2006, a.o.).

9) $le = \lambda s. \lambda s'. s' \leq s$ 10) *Baban le Slêmanî ežê* = $\lambda s. \text{CONT}(s) = \eta \sigma: \exists e [\text{LIVE}(\text{baban}, \text{slemanî}, e) \wedge e \leq \sigma]$

We derive the following truth conditions for (3): there is a state that is part of the speaker's maximal memory state whose content is a scene in which Baban lives in Slemani.

11) $\exists s' [s' \leq \text{MAX}(\{s \mid \text{MEM}(s) \wedge \pi(s, \text{speaker})\}) \wedge \text{CONT}(s) = \eta \sigma: \exists e [\text{LIVE}(\text{baban}, \text{slemanî}, e) \wedge e \leq \sigma]]$

This analysis straightforwardly accounts for the stativity of the memory reports investigated here, and does so in a way that respects the structure of the memory predicates under discussion.

Beyond Kurdish: Kurdish is not the only language to make use of a stative strategy for expressing memory reports. Persian, for instance, makes use of a similar locative strategy to the Kurdish expression discussed here, which in turn passes diagnostics for stativity.

12) (dar) *yâd=am=e* Maryam *dâre mixune*

in memory=1.SG=is Maryam PROG reads

'I remember Maryam reading.'

13) *yâd=am=bud* Maryam *dâsht* *mixund*. #*In ettefâgh diruz* *oftâd*

memory=1.SG=was Maryam PROG.PST read. this event yesterday fell

Intended: 'I remembered Mary reading. This happened yesterday.'

14) #*dâre yâd=am=e* Maryam *dâre mixune*

PROG memory=1.SG=is Maryam PROG reads

Intended: 'I am remembering Mary reading.'

The stative analysis may thus be profitably extended to memory reports outside of Kurdish.

Memory states and Liefke's analysis: while on my approach the semantics of memory reports is not based on that of imagination reports, my proposal is nevertheless capable of incorporating many of the insights of Liefke's analysis. For example, the past-directedness and relative accuracy of memory states can be encoded as part of what it means to be a memory possessed by an individual: memory states are associated with a previously experienced event whose content must be sufficiently similar to the content of the memory.

15) $\forall s, x [\text{MEM}(s) \wedge \pi(x, s) \leftrightarrow \exists e [\text{EXP}(e, x) \wedge t_e < t_s \wedge \text{SIM}(\text{CONT}(s), \text{CONT}(e)) \geq \theta]]$

Conclusion: My semantics, inspired by the form and properties of memory reports in Sorani Kurdish, captures the stativity and structure of memory reports in this language, while also incorporating insights from Liefke's continuist semantics. More broadly, my proposal is in line with approaches concerned with natural language metaphysics (Bach 1986): semantic analysis reflects what people talk as though there is, independently of its real-world status.

Selected references: Addis, D. R., Wong, A. T., & Schacter, D. L. (2007). Remembering the past and imagining the future: Common and distinct neural substrates during event construction and elaboration. *Neuropsychologia*, 45(7), 1363-1377; Bach, E. (1986). Natural language metaphysics. *Logic, methodology, and philosophy of science VII*; Cable, S. & Crippen, J. (2023). Stative marking in Tlingit: evidence for the complexity of states. Ms.; Kratzer (2006). Decomposing attitude verbs. Talk at the Hebrew University of Jerusalem; Liefke, K. (2024a). 'Remember' is past-directed, parasitic, accurate 'imagine.' Talk at DGfS 2024; Liefke, K. (2024b). Just simulating? Linguistic support for continuism about remembering and imagining. *Review of Philosophy and Psychology*; Maienborn, C. (2005). On the limits of the Davidsonian approach: The case of copula sentences. *Theoretical linguistics*, 31(3), 275-316; Maienborn, C. (2007). On Davidsonian and Kimian states. In *Existence: Semantics and syntax*, 107-130. Dordrecht: Springer Netherlands; Michaelian, K. (2016). Against discontinuism: Mental time travel and our knowledge of past and future events. Moltmann, F. (2024). Lexical decomposition of verbs and the notion of an abstract state. In *Proceedings of Sinn und Bedeutung* 29.