

Find verbs and discretionary predicates

Furkan Dikmen Université Côte d'Azur, CNRS, BCL, France

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1 Introduction

- There seems to be a linguistic distinction between propositions expressing personal opinion and those that express matters of fact (Lasersohn 2005, 2009, 2017; Moltmann 2010; Pearson 2013; Ninan 2014 among others).
 - (1) a. This cake is tasty.
 - b. Voldemort is mortal.
- For example, while propositions with simple predicates of evaluation have been argued to give rise to faultless disagreement, those that express matters of fact do not (Kölbel, 2004).
 - (2) a. Hermione: This cake is tasty.
 - b. Harry: No, it is not.
 - (3) a. Harry: Voldemort is mortal.
 - b. Hermione: No, he is not.
- Many doxastic attitudes have been shown to be neutral with respect to whether they embed propositions expressing personal opinion or those that express matters of facts.
 - (4) Harry {believes, thinks, knows} that {this cake is tasty, Voldemort is mortal}.
- However, some predicates are sensitive to what type of propositions they embed. For example, *find* in English has been argued to be the subjective variant of *believe* (Stephenson, 2007; Korotkova and Anand, 2021; Kennedy and Willer, 2022).
 - (5) #Harry finds Voldemort mortal.
 - (6) a. Harry finds this cake tasty. \rightsquigarrow Harry believes that this cake is tasty.

b. $\llbracket (6a) \rrbracket^{\langle w, g \rangle}$ is defined iff \llbracket this cake is tasty $\rrbracket^{\langle w, g \rangle} \in \llbracket$ discretionary $\rrbracket^{\langle w, g \rangle}$; if defined; $\llbracket (6a) \rrbracket^{\langle w, g \rangle} = \forall w' [w' \text{ is compatible with what Harry believes in w, this cake is tasty in w']$

Muñoz (2019) points out that *find* cannot be a doxastic predicate as opposed to *consider*.

- (7) Situation: Alfonse has forgotten his previous experience with licorice.
 - a. Alfonse doesn't find licorice tasty, but he thinks that it is.
 - b. #Alfonse doesn't consider licorice tasty, but he thinks that it is. (Adapted from Muñoz 2019, p. 275)
 - Although Muñoz (2019) marks (7b) infelicitous, in the forgetfullness scenario, one could still contrast Alfonse's actual evaluation with his current, possibly not accurate belief, with *think*.
 - Second, *consider* itself might not be a conventional doxastic attitude. Consider (8).
 - (8) I believe, and in fact, know, that Harry was absent today. But I do not consider him absent because there are no official records for today.
 - Therefore, the data in (7) is not conclusive.
 - In this presentation, I will bring in more data to support the claim that *find*-verbs do not assert belief states of their subjects.
 - Instead, they make reference to their particular experiences, and belief or knowledge is a side-product, just as in any perception reports.
 - I will extend the analysis to a particular experience-reporting construction in Turkish.
 - Finally, I will discuss how experiences could be mapped to beliefs and knowledge states.

2 Empirical observations

- The starting observation is that *find* predicates "commits the speaker to have" first-hand experience with the object in question (Korotkova and Anand, 2021), as shown in (9a).
- This is not so for belief/knowledge predicates as illustrated in (9b).
 - (9) a. John found the cake tasteless, #though he did not try it.
 - b. John thought/believed/knew that the cake was tasteless, though he did not try it.
- Regular belief ascriptions can involve reasoning external to the taste or more generally personal experience with the object at hand whereas *find* predicates force such experience.

- (10) a. John thought/believed/knew that the cake was delicious because a friend told him so.
 - b. John found the cake delicious #because a friend told him so.
 - As previously observed in the literature, the first hand experience requirement cannot be analyzed as a lexical presupposition of the embedded predicate (e.g., Ninan 2020).
 - This is so because it does not project under attitudes like *believe* and *know*.
 - This suggests that it must result from the contribution of the embedding *find*.
- Additionally, sentences containing *find* predicates can be felicitously followed up by assertions of non-existence of belief, which would be contradictory to the former if they had doxastic assertions.
 - (11) a. Harry found the food bland because of the bruises on his tongue, but he did not believe that it was actually bland, as his favourite cook made it.
 - b. Harry believed that the food was bland because of the bruises on his tongue, #but he did not believe that it was actually bland, as his favourite cook made it.
 - The sentence in (11a) does not necessarily mean that Harry was of the opinion that the food was tasteless.
 - It talks about a particular experience of Harry given certain problems with his taste receptors.
 - The same continuation, however, generates a contradiction when preceded by a regular epistemic attitude as illustrated in (11b).
- It is not possible to negate a belief assertion with an ability modal, in contexts where the ability to experience a particular taste is lost.
- In contrast, such assertions are natural with *find* predicates.
 - (12) Context: John lost his taste after Covid-19.
 - a. Harry really believes that this food is tasty.#But he cannot believe that it is tasty.
 - b. Harry really believes that this food is tasty. But he cannot find it tasty.
- Another interesting contrast between regular belief ascriptions and *find* predicates emerges in what I call 'baby-feed' contexts.
- Baby-feed contexts allow one to use *find* to talk about a particular experience of a baby whereas a belief ascription to it sounds infelicitous. Consider the context in (13).
 - (13) Context: Harry has a baby of six months old. Whenever he feeds her a particular type of soup, the baby makes a sour face and suffers from gas problems. Harry tells his partner:

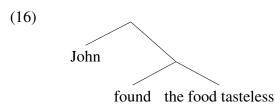
- a. Let's not feed this soup to her. She probably finds it sour.
- b. Let's not feed this soup to her. #She probably believes that it is sour.
- In (13), *find* is appropriate to use based on apparent sensory and physical consequences of feeding a particular type of soup to the baby whereas predicates with obvious beliefs ascriptions fail as shown in (13b).
- I take these contrasts to show that *find* predicates do not assert the belief state of their subjects.

3 Immediate consequences

- Analyses that take *find* to shift the judge parameter is not tenable (e.g., Sæbø 2009).
 - (14) a. $[[tasty]]^{c,w} = \lambda x.\lambda y. x$ is tasty to y at w b. $[[find]]^{c,w} = \lambda x. [[\phi]]^{c,w}(x)$
 - (15) Context: John lost his taste after Covid-19.
 - a. John really believes that this food is tasty, #but according to him, it is bland.
 - b. John really believes that this food is tasty, but he finds it bland.

4 Proposal

• I will assume the simplified structure in (16).



- Accordingly, *find* takes an embedded sentence and the result combines with the experiencer of the state described by the embedded clause.
- I will use a unilateral version of situation semantics, in particular Kit Fine's truth maker semantics to formalize the observations (Fine, 2014, 2017).
- The unilateral truth-making adopts the idea that sentences assert their verifiers, but not a tuple consisting verifiers and falsifiers (Champollion and Bernard, 2024).
- Truth-maker semantics argues for the existence of objects that exactly verify sentences, i.e, the objects whose parts are completely relevant for the truth of the sentence.
- In other words, they lack any parts that are irrelevant for it. It differs from other versions of situation semantics adopting minimal situations (e.g.,Kratzer 1989, 2021)

- These objects could also be understood to be events, states or **attitudinal objects** (Molt-mann, 2007, 2020, 2024).
- I will argue that *find* in its evaluative use introduces one kind of such objects, namely objects of **experiental** kind.
 - Accordingly, *find* takes an embedded sentence and returns a partial function from indiviuals to predicates of states (objects) of truth making with parts verifying the embedded clause.
 - (17) $\begin{bmatrix} \text{find} \end{bmatrix} = \lambda f. \ \lambda x: \ \exists d' \ [\text{find}(d') \land \text{experience}(d') \land \text{experience}(d') = x \end{bmatrix} \land \exists d'' \\ [d'' \in (\Xi_M(f) \text{ or } \Xi_M(\neg f))] \land d'' \sqsubseteq d']. \ \lambda d. \ \text{find}(d) \land \text{experience}(d) \land \text{experience}(d) \land \text{experience}(d) = x \land \exists d''' \ [d''' \in \Xi_M(f) \land d''' \sqsubseteq d]$

For any sentence S, $\Xi_M(S) = \{ d: d \Vdash S \}$ For any negative sentence $\neg S$, $\Xi_M(\neg S) = \{ d: \forall d' [d' \Vdash S \rightarrow d \perp d'] \}$

- According to this lexical entry, (18) is a sample derivation for (16).
 - (18) [[John found the food tasteless]] is defined **only if** $\exists d' [find(d') \land experience(d') \land experiencer(d') = John] \land \exists d'' [d'' \in \Xi_M (the food is tasteless) or \Xi_M (\neg (the food is tasteless))] \land d'' \sqsubseteq d';$ **if defined** [[John found the food tasteless]] = $\exists d$ [find(d) \land experience(d) \land experiencer(d) = John $\land \exists d''' [d''' \in \Xi_M (the food is tasteless) \land d''' \sqsubseteq d]]$
- In positive sentences, the presupposition seems trivial. But, it does not make assertion uninformative in the sense of Stalnaker (1977, 1978, 1999, 2002).
- Negative sentences still implicates subject's experience with the relevant situation.
 - (19) a. John did not find the food tasteless.
 - b. \Vdash John had experience with the food.
 - c. \Vdash John found the food not tasteless.
- The presupposition of *find* ensures that this experience requirement is preserved under negation.
- The presupposition says that John had some experience that either verifies that the food was tasteless, or that it was not.
- The assertion says that he did not have the finding experience that verifies it.
- .: He had the experience that verifies its negation.
 - (20) a. **Presupposition**: $\exists d' [find(d') \land experience(d') \land experience(d') = John] \land \\ \exists d'' [d'' \in \Xi_M (the food is tasteless) or \Xi_M (\neg (the food is tasteless)) \land d'' \sqsubseteq d']]$

- b. Assertion: $\neg \exists d \ [find(d) \land experience(d) \land experience(d) = John \land \exists d''' \ [d''' \in \Xi_M (the food is tasteless) \land d''' \sqsubseteq d]]$
- c. $\therefore \exists d \ [find(d) \land experience(d) \land experience(d) = John \land \exists d''' \ [d''' \in \Xi_M(\neg(the food is tasteless)) \land d''' \sqsubseteq d]]$

5 Crosslinguistic extensions

- In many languages, *find* that has an object encounter reading could also refer to particular evaluative experiences of their subjects.
- The analysis for English *find* could naturally extend to these languages.

(21)	a.	Harry yemeğ-i tuzlu bul-du.
		Harry food-ACC salty find-PST
		'Harry found the food salty.' (Turkish)
	b.	Harry ha trovato il cibo salato.
		Harry have found the food salty
		'Harry found the food salty.' (Italian)
	c.	Ham molva-şkhimi-s çkva go-taxal-eri
		this come.NMZ-POSS.1.SG-LOC more PREVERB-gain.weight-PRTCP
		g-dzir-i
		2.OBJ-SEE-1.SG.PST
		'I found you much fatter this time.' (Laz, adapted from Bucaklişi et al. 2007)
(22)	a.	Ev-e gir-dik-ler-inde çocuğ-u baygın bul-du-lar.
		house-DAT enter-NMZ-PL-WHEN child-ACC fainetd find-PST-PL
		'When they came home, they found the child fainted.' (Turkish)
	b.	L'hanno trovato svenuto.
		3.SG.HAVE.3.PL found fainted
		'They have found him fainted.' (Italian)
	c.	Oxori-şa moptisis bere gama-khutsx-eri b-zhir-i.
		house-to when.1.SG.CAME child PREVERB-wake.up-PART 1.SEE-PST
		'I found the kid awake when I came home.' (Laz, adapted from Bucaklişi et al. 2007)
		·

- However, there are also other constructions that are sensitive to this distinction between subjective and objective propositions.
- In particular, Turkish has a construction where personal experience with respect to the truth of the embedded clause is expressed.
- Usually, these constructions embed adjectives describing personal opinion, and not nouns unless there is an additional complementizer *gibi* 'like/as if'.
 - (23) a. Yemek ban-a tuzlu gel-di. food 1.SG-DAT salty come-PST

Lit: 'The food came to me salty.' (\approx it is salty to me/I believe that it is salty.)

- b. #Bu taş ban-a katı gel-di.
 this rock 1.SG-DAT solid come-PST Lit: 'This rock came to me solid.'
- c. #Harry ban-a vegan gel-di. Harry 1.SG-DAT vegan come-PST Lit: 'Harry came to me a vegan.
- (24) a. Yemek ban-a tuzlu gibi gel-di. food 1.SG-DAT salty like come-PST Lit: 'The food came to me as if it is salty.'
 - b. Harry bana vegan gibi gel-di. Harry 1.SG-DAT vegan like come-PST Lit: 'Harry came to me like a vegan.'
 - c. Harry ban-a ev-i terk et-ti gibi gel-di. Harry 1.SG-DAT house-ACC leaving do-PST like come-PST Lit: 'Harry came to me like he left home.'
 - d. Bu taş ban-a katı gibi gel-di.
 this rock 1.SG-DAT solid like come-PST
 Lit: 'This rock came to me as if it were solid'
- Just like *find*, *come* in Turkish invokes the inference of belief towards the embedded sentence.
- Since it embeds subjective predicates, there is also an issue of whether the dative marked argument is part of the embedded clause (e.g., as a judge) or an experiencer of the matrix verb.
- I conclude that just like *find*, *come* only conveys a particular experience of its subject.
- The dative marked arguments is not the judge of the embedded clause, but the experiencer of the matrix verb.

5.1 Beliefs and experiences

- Just like *find*, negating the belief inference does not yield contradiction with *come*.
 - (25) a. Bu yemek ban-a tuzlu gel-di. Ama gerçekte tuzlu this food 1.SG-DAT salty come-PST but actually salty ol-duğ-un-u düşün-m-üyor-um. be-NMZ-POSS-ACC believe-NEG-IMPERF-1.SG-IMPERF-1.SG Lit: 'This food came to me salty (This food is salty to me). But I do not believe that it is actually salty.'
 b. Bu yemeğ-in tuzlu ol-duğ-un-u düşün-üyor-um.#Ama gerçekte
 - this food-ACC salty be-NMZ-POSS-ACC believe-IMPERF-1.SG but tuzlu ol-duğ-un-u düşün-m-üyor-um. actually salty be-NMZ-POSS-ACC believe-NEG-IMPERF-1.SG

'I believe that this food is salty. But I do not believe that it is actually salty.'

- (26)Anestezi-den dil-im uyuş-tu. Bu yüzden bu çorba a. anethesia-ABL tongue-1.SG.POSS get.numb-PST this cause this soup gel-di. Ama aslında tatsız ban-a çok tatsız 1.SG-DAT much tasteless come-PST but in fact tasteless ol-duğ-un-u düsün-m-üyor-um. be-NMZ-POSS-ACC believe-NEG-IMPERF-1.SG 'Due to the anesthesia, my tongue went numb. That's why this soup tastes very bland to me. But I do not believe that it is actually bland.'
 - b. Bu çorba-nın çok tatsız ol-duğ-un-u düşün-üyor-um. this soup-GEN much tasteless be-NMZ-POSS-ACC believe-IMPERF-1.SG
 #Ama aslında çok tatsız ol-duğ-un-u düşün-m-üyor-um. but in.fact much tasteless be-NMZ-POSS-ACC believe-NEG-IMPERF-1.SG
 'I believe that this soup is tasteless. But I do not believe that it is actually tasteless.'
- Similarly, baby-feed contexts allow for the felicitous use of *come* whereas belief ascriptions sound infelicitous.
 - (27) Context: John has a baby of six months old. Whenever he feeds her a particular type of soup, the baby makes a sour face and suffers from gas problems. John tells his partner:
 - a. Ginnie-ye bu çorba-dan ver-me-yelim. Muhtemelen on-a ekşi Ginnie-DAT this soup-ABL give-NEG-OPT.1.PL probably her-DAT sour gel-iyor. come-IMPERF

Lit: 'Let's not give this soup to her. It probably comes to her sour.'

b. Ginnie-ye bu çorba-dan ver-me-yelim. #Muhtemelen ekşi Ginnie-DAT this soup-ABL give-NEG-OPT.1.PL probably sour ol-duğ-un-u düşün-üyor.
be-NMZ-POSS-ACC think-IMPERF 'Let's not give this soup to Ginnie. She probably believes that it is sour.'

5.2 Judge or experiencer?

- The dative marked argument does not belong to the lower clause.
- It is not the overt realization of judge for the embedded discretionary predicate/clause.
- The experiencer object is ungrammatical with isolated embedded sentences.
 - (28) Bu yemek {*/?ban-a / ben-im için} tuzlu.this food 1.SG-DAT 1.SG-GEN for saltyInt: 'This food is salty to me.'

- No Principle B effect is observed between the dative marked experiencer and the object of the embedded predicate.
 - (29) Ayşe-ye_i Ali_k on-u_{i/*k} çek-e-m-iyor gibi gel-di. Ayşe-DAT Ali 3.SG-ACC stand-MOD-NEG-IMPERF like come-PST Lit: 'Ali came to Ayşe like he envies her' (\approx Ayşe thinks that Ali envies her.) *Ayşe thinks that Ali envies himself.
- In contrast, anaphors can be bound by the embedded subject, but not by the experiencer.
- NPI experiencers are not licensed when the matrix predicate lacks negation.
 - (31) a. Ali kimse-ye Ayşe-yi sev-di gibi gel-m-iyor.
 Ali anybody-DAT Ayşe-ACC like-PST like come-NEG-IMPERF
 Lit: 'Ali does not come to anybody as having liked Ayşe.'
 - b. *Ali kimse-ye Ayşe-yi sev-me-di gibi gel-iyor. Ali anybody-DAT Ayşe-ACC like-NEG-PST like come-IMPERF Lit: 'Ali comes to anybody as not having iked Ayşe'.
- Clefting, leaving out the dative experiencer, is possible.
 - (32) [Çorba tuzlu gibi gel-en] benim.soup salty like come-REL 1.SGLit: 'It is me to whom the soup comes like salty.'
- Therefore, the dative marked argument is not the overt realization of judge to the embedded clause, but an experiencer argument for the matrix verb.
- Accordingly, a rough syntax of these clauses would be:

(33) NP-DAT come CP/TP come

5.3 Semantics of *come*

- The semantics of *find* could be extended to *come*.
- The two constructions only differ syntactically.
 - (34) a. Çorba ban-a tuzlu (gibi) gel-di. soup 1.SG-DAT salty (like) come-PST 'The soup came to me salty.'
 - b. [[The soup came to me (like) salty]] is defined **only if** $\exists d' [come(d') \land experience(d') \land experiencer(d') = I] \land \exists d'' [d'' \in \Xi_M((like))$ the soup is salty) or $\Xi_M(\neg((like) \text{ the food is salty}))] \land d'' \sqsubseteq d'$
 - c. **if defined** [[the soup came to me (like) salty]] = $\exists d [come(d) \land experience(d) \land experiencer(d) = I \land \exists d''' [d''' \in \Xi_M((like) the food is salty) \land d''' \sqsubseteq d]]$

(35) a.
$$\Xi_M$$
(the soup is salty) = {d: d || the soup is salty }

b. Ξ_M (like the soup is salty) = {d: $\forall d' [d' \Vdash \text{the soup is salty} \rightarrow d \approx d']}$

6 How do we account for belief inferences?

- Let us recall that both *find* and *come* invoke the inference of belief.
 - (36) a. Harry found the food tasteless. → Harry believes that the food is tasteless.
 b. Harry-e bu yemek tuzlu gel-di. Harry-DAT this food salty come-PST Lit: 'This food came to Harry salty.' → Harry believes that this food is salty.
- This belief inference might derive from more general principles governing how beliefs might form from perceptual experiences.
- Although there is great body of literature on how beliefs are formed via experiences, for the purposes of this talk, "Sufficieny" thesis will (hopefully) suffice.

(37) **Sufficiency**

"If you have an experience e with the content that p, then e gives you defeasible justification to believe that p" Silins (2021).

- In other words, one's experiences with the content p lead to the formation of beliefs with the same content "unless you have gained evidence that your experience is misleading (Silins, 2021)."
 - If you see a person running on the street, you believe that there is a person running on the street, unless you have reasons to believe that your experience is misleading (sight problems).

- In this latter case, the experience is not reliable and will not have any effect on one's knowledge and beliefs.
- However, if the experience with the content p is deemed to be not misleading, then it could generate beliefs with the same content.
- We could define a function that maps an experiential object d_e with its content d' and its holder H to a belief object d_b with the content d' and its holder (Moltmann, 2024).
- (38) For any experiential object d_e with its content d' verifying a sentence S with its holder H:

$$d_e = \langle d'[d' \Vdash S], H, \text{experiential} \rangle$$

Then:

 $f_{\text{belief}}(d_e) = d_b$, where $d_b = \langle d'[d' \Vdash S], H, \text{belief} \rangle$

unless d_e is misleading (i.e., perceptors associated with d_e work as expected).

• Except for non-steoretypical cases where experiences might be misleading, they will mapped to beliefs, which might explain the belief inferences with *find* sentences.

7 Extensions to first-person genericity

- Moltmann (2010, p.187) states that "sentences that apparently give rise to relative truth should be understood by relating them in a certain way to the first person. More precisely, such sentences express [...] 'first-person-based genericity', a form of generalization that is based on an essential first-person application of the predicate."
- Hence, sentences like (39) are statements of how the actual state of affairs are given a first person generalization over other individuals' taste perception.
 - (39) This cake is tasty.
- Obviously, the experience-to-belief mapping is too weak to capture this property of predicates of personal opinion, proposed in Moltmann, as belief assertions/inferences do not imply the content of the belief should hold for everyone.
 - (40) I believe/find that this cake is tasty.
- So, here the relevant notion must be one's knowledge (or what one takes to be their knowledge) regarding how the actual state of affairs are.

- Going back to our earlier example, if one sees a person running on the street, you not only believe that there is a person running on the street, but you know that there is a person running on the street (unless you are aware that you are hallucinating).
- There are different approaches to the formation of knowledge (and its relation to beliefs) Ichikawa and Steup 2024.
- I will simply assume that knowledge objects are created as soon as the relevant state actually holds (or attitude holder takes it to be part of actuality).
- One could accordingly define a function that maps any experiental object d_e with the content d' to objects of facts (knowledge) d_k with the same content iff d' is an object that exists in the actual world.
 - (41) For any experiential object d_e with its content d' verifying a sentence S with its holder H:

$$d_e = \langle d'[d' \Vdash S], H, \text{experiential} \rangle$$

Then:

$$f_{\text{knowledge}}(d_e) = d_k$$
, where $d_k = \langle d'[d' \Vdash S], H$, knowledge \rangle

iff actual(d')

- If the relevant part of the experience also holds in the actual world, it will lead to the formation of knowledge objects.
- Let us assume that a person tastes the cake, and she has now a reliable experience that it tastes good, which leads to the belief that it tastes good, and the experiencer believes this state to actually hold, then she forms a knowledge object with the content that verifies that the cake tastes good.
- Knowledge objects are imposing. In order to form an object of knowledge, one must take its content to hold in the actual world, independent of people's evaluations/personal experiences, hence a first person based generalization.

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