***painting cows* from a type-logical perspective** **S. Bücking, Tübingen**

Aim: Depiction verbs in combination with an indefinite noun phrase allow an ('unspecific') image reading and a ('specific') portrait reading (Goodman, 1969; Zimmermann, 2006, 2016):

(1) Ben painted (draw, sculpted, ...) a cow.
   a. 'Ben painted an image of an unspecific cow.' i(mage)-reading
   b. 'There is a specific cow that Ben painted.' p(ortrait)-reading

I will develop a meaning adaption account according to which depiction verbs select for representations: the representation's source is either the noun (i-reading) or coercion from objects to representations (p-reading). The proposal, framed in type composition logic (Asher, 2011), will be shown to solve puzzles of the property-based analysis by Zimmermann (2006, 2016).
Key traits: (i) The combination of depiction verbs with true quantifiers as in (2) licenses the p-reading in (2a), but not the i-reading in (2b) (Forbes, 2013; Zimmermann, 2016). Nevertheless, quantification over images is feasible, as in (2c). This is supported by the observation that the noun can receive an i-reading even if no depiction verb is given, as in (3) (Partee, 2010, fn. 6).

(2) Ben painted every cow here.
   a. [on a farm] ✓ 'Ben produced a portrait of every cow on the farm.'
   b. [on a farm] ≠ 'Ben produced an image of the presence of every cow.'
   c. [in a museum] ✓ 'Ben produced every cow-image in the museum.'

(3) [showing a picture book] Where is the cow? – Here is the cow.

As noted by Zimmermann (2016), the property-analysis of the i-reading predicts the contrast between (2a) and (2b), but it is at odds with the referential force needed for (2c) and (3). Following Partee (2010), I conclude that nouns can adapt an appropriate representational meaning.

(ii) Zimmermann (2016) challenges adaption accounts of i-readings by examples such as (4) (s. his (65)/(66)). These would wrongly predict that nouns as such license anaphors to pictures.

(4) a. Ben painted #(a picture of) a cow. It is exhibited in the Louvre.
   b. That is #(a picture of) a cow, and I'll put it in my pocket.

I consider this reasoning flawed: (4a) and (4b) suggest anaphoric links to the media on which the representations are realized. But adaption accounts merely say that nouns can introduce representations. Once this distinction is controlled for, anaphors to representations are licit; see (5a), where *turn out* selects for representations instead of media, or (5b), where medium and representation coincide. That is, anaphoric references in fact support adaption accounts.

(5) a. Ben painted a cow. It turned out very beautifully.
   b. Ben sculpted a cow and put it his pocket.

(iii) For the p-reading, Zimmermann (2006) offers the standard *de re*-construal in (6). Crucially, the relevant property is presupposed to uniquely identify the portrayed object. Zimmermann, however, concedes that this is at odds with twin scenarios such as (7), where no such property is given. So, (6) does not capture properly the link between portrait and object.

(6) $\exists x \exists P[\text{cow}(x) \wedge \text{given qua}(x, \text{Ben}, P) \wedge \exists y[\text{paint}(\text{Ben}, y) \wedge \text{picture}(y) \wedge \text{represent}(y, P)]]$

(7) [A & B are qualitatively identical bridges] Ben painted bridge A.

Proposal: Following Asher (2011), I assume semantic terms to include fine-grained type presuppositions (encoded by parameters π) that must be met by the terms' arguments during composition. Specifically, I propose two interacting hypotheses. First, nouns presuppose the justification of disjoint types consisting of the object-type and its corresponding representation, as in

(8a). Second, depiction verbs select for representations, but license local coercion from objects to representations if a type-conflict arises. This adaptive potential is captured by polymorphic types, as $\rho(\text{HEAD}(\Psi))$ in (8b) (where HEAD maps a quantifier to its fine-grained head-type).

(8) a. $[\![\text{cow}]\!] = \lambda x \lambda \pi.\text{cow}(x, \pi * \text{ARG}_1^{cow} :\ \text{ANIMAL} \vee \text{R}_{\text{ANIMAL}})$

b. $[\![\text{paint}]\!] = \lambda \Psi \lambda z \lambda \pi.\Psi(\lambda y \lambda \pi'.\text{paint}(z, y, \pi'))(\pi * \text{ARG}_2^{paint} :\ \text{R} - \rho(\text{HEAD}(\Psi)))$

(9) $[\![\text{a}]\!] = \lambda Q \lambda P \lambda \pi \exists x[Q(x)(\pi) \wedge P(x)(\pi)]$ / $[\![\text{every}]\!] = \lambda Q \lambda P \lambda \pi \forall x[Q(x)(\pi); P(x)(\pi)]$

I-reading: For (5a), application yields (10). The requirements for x can be met by a simple meet operation; s. $(\text{ANIMAL} \vee \text{R}_{\text{ANIMAL}}) \sqcap \text{R} = \text{R}_{\text{ANIMAL}}$. This gives us the justified form in (11).

(10) $[\![\text{paint a cow}]\!] = [\![\text{paint}]\!]([\![\text{a}]\!]([\![\text{cow}]\!])) = \lambda z \lambda \pi \exists x[\text{cow}(x, \pi * \text{ARG}_2^{paint} :\ \text{R} - \rho(\text{COW}) * \text{ARG}_1^{cow} :\ \text{ANIMAL} \vee \text{R}_{\text{ANIMAL}}) \wedge \text{paint}(z, x, \pi * \text{ARG}_2^{paint} :\ \text{R} - \rho(\text{COW}))]$

(11) $\lambda \pi \exists x :\ \text{R}_{\text{ANIMAL}}[\text{cow}(x, \pi) \wedge \text{paint}(\text{Ben}, x, \pi)]$ 'Ben painted a cow-representation.'

As desired, (11) renders the representation anaphorically accessible. Notably, the choice of the type R_{ANIMAL} makes the type ANIMAL inoperative, which explains for free why cows of flesh and blood are anaphorically opaque on the i-reading; s. (12). Finally, the same derivation yields (13) for (2) with a true quantifier; this correctly predicts i-reading (2c) instead of i-reading (2b).

(12) Ben painted a cow_{image}. $\#\text{It}_{animal}$ was called Bella.

(13) $\lambda \pi \forall x :\ \text{R}_{\text{ANIMAL}}[\text{cow}(x, \pi); \text{paint}(\text{Ben}, x, \pi)]$ 'Ben painted all cow-representations.'

P-reading: On p-readings, the context determines that the restricting noun argument justifies the object-type. This yields (14) for (2)/(2a) and, thus, a conflict in the nuclear scope: x cannot be both an animal and its representation. However, the polymorphic type $\rho(\text{COW})$ allows for mapping cows to representations; technically, justification then proceeds via Type Accommodation with Generalized Polymorphic Types (s. Asher (2011, 225)), which yields the revised logical form in (15).

(14) $\lambda \pi \forall x :\ \text{ANIMAL}[\text{cow}(x, \pi); \text{paint}(\text{Ben}, x, \pi * \text{ARG}_2^{paint} :\ \text{R} - \rho(\text{COW}))]$

(15) $\lambda \pi \forall x :\ \text{ANIMAL}[\text{cow}(x, \pi); \exists w :\ \rho(\text{COW})[\phi_{\rho(\text{COW})}(w, x, \pi) \wedge \text{paint}(\text{Ben}, w, \pi)]]$

As desired, (15) says that for each cow of flesh and blood, there is a representation. Notably, these portraits do not root in the noun *cow*, but in the adaptation as guided by the polymorphic type provided by the verb. Thus, each portrait is dependent on the particular object it represents, which solves the puzzle with twin scenarios. Moreover, their local interpolation within the nuclear scope correctly predicts portraits to be anaphorically inaccessible; s. (16).

(16) [on a farm] Ben painted every cow here. #They turned out beautifully.

Outlook: The given proposal is based on fine-grained lexical information. This makes it well suited for extending it to rarely addressed constraints such as *#Ben wrote a cow*. Specifically, I will argue for the following explanation: first, representations provided by nouns such as *cow* are not propositional (no i-reading), and, second, *write* does not license coercion (no p-reading).

References

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