

# On not-at-issueness in pictures

Word count: 7763

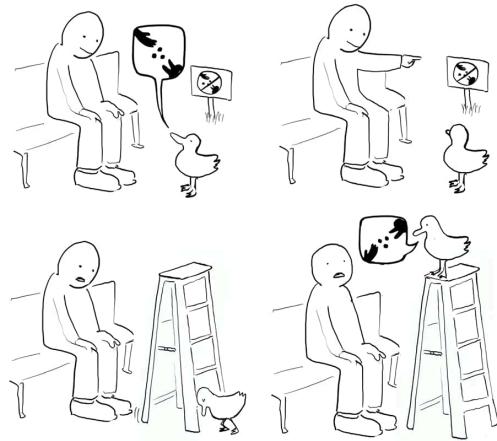
**Abstract** In this paper, I make some empirical observations about not-at-issue content in prohibition signs and discuss their implications for our theories of pictorial semantics and pragmatics. In particular, I show that some aspects of pictorial representations can be not-at-issue because they are not meant to be interpreted iconically or are arbitrary, while others are iconic and non-arbitrary, but resemble non-restricting modifiers in language. I, furthermore, argue that such iconic and non-arbitrary, but not-at-issue aspects of pictorial representations should, in fact, be analyzed as non-restricting modifiers, rather than sublexical presuppositions, as their behavior for the purposes of ellipsis/anaphora resolution and alternative generation under *only* suggests compositional independence.

**Keywords:** pictorial semantics, iconicity, at-issueness, composition, non-restricting modifiers

## 1 Introduction

Look at the comic by Nathan W. Pyle in (1).

(1)



[https://www.facebook.com/nathanwpyle2/photos/a.1377156059035720/  
2745700495514596/](https://www.facebook.com/nathanwpyle2/photos/a.1377156059035720/2745700495514596/)

Why is it funny? In one sentence, the duck interprets (or pretends to interpret) the directionality of the food-tossing motion depicted in the prohibition sign as part of the at-issue content of the sign—contrary to the intent of the sign, which aims to prohibit duck-feeding in general.<sup>1</sup>

Now, the duck could've made its life easier and avoided the need to bring in a ladder by choosing to treat the mereological properties of the food being tossed or the tossing event depicted in the sign as at-issue—say, by demanding that the human toss four rather than three food morsels or that the morsels be tossed in a different spatiotemporal arrangement (e.g., one by one rather than all at once). It could've also demanded that the human toss the food with something other than their hand, that they put it on the ground rather than toss it, etc. In all these cases, the effect would be similar, although not exactly the same, and would be due to a mismatch between the intent of the prohibition sign and the iconic and at-issue interpretation of its aspects that are not meant to be interpreted as iconic or at-issue.

In this paper, I discuss various issues pertaining to (not-)at-issueness in pictures, point out parallels with similar phenomena in natural language, and draw conclusions about how (not-)at-issueness in pictures can be approached from the perspective of formal linguistics. This paper, thus, continues the tradition of applying formal linguistics tools to pictorial content (Greenberg 2011; 2019a; b; Abusch 2012; 2019; Abusch & Rooth 2017; Maier & Bimpikou 2019; Rooth & Abusch 2019, a.o.), but it specifically addresses the question of how the at-issue vs. not-at-issue distinction operates in the pictorial domain, which, to my knowledge, has only been raised by Schlenker (2019) so far.

In section 2, I distinguish between non-iconic and iconic, but not-at-issue aspects of pictorial representations, and show that which aspects of a given pictorial representation are (non-)iconic and (not-)at-issue is determined pragmatically. I also draw some empirical parallels between iconic, but not-

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<sup>1</sup> It is also funny because the duck is purportedly vocalizing, but is, in fact, producing pictorial utterances; the joke wouldn't work as is if we tried to represent the duck's utterances with spoken language only. However, the spirit of the joke could be preserved in the following exchange, for example:

(i)      Duck: Toss me some food!  
           Human: \*points to the prohibition sign\*  
           Duck: OK, then put the food on the ground.

at-issue aspects of pictorial representations and non-restricting modifiers in language, i.e., instances of subsective modifiers that are truth-conditionally vacuous within a given utterance. Finally, I discuss how prototypicality interacts with iconicity and at-issueness in prohibition signs.

In section 3, I argue that not-at-issue aspects of pictorial representations are, in fact, modifiers, i.e., they contribute meaning compositionally rather than sublexically, based on their potential to be ignored when resolving ellipsis and anaphora and when computing alternatives negated by *only*. I, therefore, conclude that the at-issue vs. not-at-issue distinction for these components of pictorial meaning is indeed best captured via the notions of restricting vs. non-restricting modification rather than the more obscure notion of “cosuppositions”, introduced in Schlenker 2018a for co-speech gestures and facial expressions and extended to other types of meaning-bearing expressions in Schlenker 2018b and to meaningful subcomponents of pictures in Schlenker 2019. This is in line with the similar treatment of various “secondary modality” expressions in spoken language utterances that behave like subsective modifiers in Esipova 2019a; c; 2020.

Section 4 summarizes the main empirical, theoretical, and methodological points of the paper.

## 2 (Non-)iconicity and (not-)at-issueness in prohibition signs

### 2.1 Not-at-issue or non-iconic?

The goal of a prohibition sign is to prohibit, and at the compositional level, they ostensibly involve embedding under negation or a negative modal,<sup>2</sup> often represented by the circle-backslash symbol, resulting in an interpretation similar to *No X!*. So, while the prohibition message intended by the sign in (1) could be paraphrased as *No duck feeding!* (or something more general like *No waterfowl/wildlife feeding!*), the duck chooses to interpret it along the lines of *No duck feeding from above!*.<sup>3</sup> Prohibition signs are, thus,

<sup>2</sup> Said modal would be akin, for instance, to Russian *nel’zja* ‘not-allowed’/‘not-possible’. It is not clear to me whether the modal is part of the lexical meaning of the circle-backslash symbol, or it is external to it, similarly to how it is external to *no* in *No X!*. This issue is orthogonal to the goals of this paper, however.

<sup>3</sup> **Bold** indicates prosodic contrastive focus marking, which helps enforce the at-issue interpretation of the modifier.

a convenient test ground for which parts of pictorial representations are interpreted as at-issue.

In order for a given aspect of a pictorial representation in a prohibition sign to be understood as an essential part of what's prohibited, it has to be interpreted both iconically (at least to some level of precision) and as at-issue, the former being a prerequisite for the latter. However, when a given aspect of a pictorial representation is not interpreted as an essential part of what's prohibited, it can be either because it is iconic, but not-at-issue or because it is not meant to be interpreted iconically in the first place.

For instance, in (1), the directionality of the food-tossing motion is not meant to be at-issue (all duck-feeding events are prohibited, including non-prototypical ones), but it is arguably still interpreted iconically, along with some other properties of the picture, since a prototypical duck-feeding event involves tossing a few morsels of food from a higher position in space to a lower one. However, the number of food morsels in the picture is arguably not interpreted hyper-iconically: while a plurality of food morsels is usually involved, there doesn't have to be exactly three. Three, however, seems to often be the default number to represent a plurality of individuated atoms (see, e.g., Schlenker & Lamberton 2019 on how three repetitions can indicate any cardinality higher than two in sign language). Some other aspects of pictorial representations, especially in signs, can be due to stylization conventions (discussed, e.g., in Greenberg 2019a) and will also be less iconic.

## 2.2 *The role of pragmatics*

How do we know that manner (tossing) and directionality (downwards) in (1) are still interpreted iconically, even if they are not-at-issue? The prohibition sign in (1) does seem to come with inferences along the lines of 'a duck feeding event usually involves tossing' and 'the tossing in a duck feeding event is usually directed downwards'<sup>4</sup>, while it does not give rise to inferences of the form 'food tossing in a duck feeding event usually involves exactly three morsels of food'.

In other words, certain aspects of the depicted event are interpreted similarly to *non-restricting modifiers* (hf. NRMs) in language, i.e., instances of subsective modifiers that are truth-conditionally vacuous in the context of a given utterance, as defined in Esipova 2019a (who builds on the defini-

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<sup>4</sup> Relatedly, multiple commentators on the original Facebook post with the comic noted that the last panel evokes regurgitation rather than feeding, even though that clearly wasn't the intended interpretation.

tion in Leffel 2014), where *modifiers* are expressions that combine with an expression  $\alpha$  of type  $\tau$  yielding an expression  $\beta$  of type  $\tau$ , and *subsective modifiers* are such that  $\beta$  entails  $\alpha$  via generalized entailment (see Esipova 2019a for more technical details). The non-restricting vs. restricting distinction for spoken language modifiers is illustrated in (2). In (2a), the adjective *deadly* is likely to be non-restricting, but in (2b), it is restricting, as it picks out a (potentially) smaller subpart of the denotation of the expression it combines with and is, thus, truth-conditionally non-vacuous.

- (2)     a. *Context: The speaker believes that processed meat causes cancer.*  
 I shouldn't be eating so many deadly hot-dogs.  
 $=$  I shouldn't be eating so many hot-dogs. (truth-conditional  
 vacuity)  
 $\rightarrow$  All hot-dogs are deadly. (NRM inference)
- b. *Context: The speaker runs a chemistry lab and is talking to her  
 assistant.*  
 All deadly substances are stored in this cabinet.  
 $\neq$  All substances are stored in this cabinet. (truth-conditional  
 non-vacuity)  
 $\not\rightarrow$  All substances are deadly. (no NRM inference)

Note that NRMs come with inferences that assure that said vacuity holds, whose specific form is determined pragmatically. The reader is referred to Esipova 2019a; b for a more in-depth discussion of the nature and behavior of NRM inferences.

While some modifiers might have a higher propensity for being non-restricting due to their lexical semantics (e.g., subsective modifiers with an evaluative component) or surface properties (e.g., gestural subsective modifiers co-occurring with spoken expressions they modify), whether a given instance of a modifier is intended as non-restricting is ultimately determined by pragmatic factors, such as world knowledge and extralinguistic context. The same turns out to be true for directionality in signs: if interpreted iconically, it can be either non-restricting or restricting, depending on the pragmatics of the sign. For instance, in (3), the directionality of the arrows is obviously restricting.

- (3)     a. 
- [https://commons.wikimedia.org/wiki/File:New\\_Zealand\\_road\\_sign\\_R3-1.svg](https://commons.wikimedia.org/wiki/File:New_Zealand_road_sign_R3-1.svg)

$\neq$  No turn!  
 $\not\rightarrow$  All turns are leftward.

b.



$\neq$  No way out!<sup>5</sup>  
 $\not\rightarrow$  All ways out are {leftward, rightward}.

In a pictorially very similar ‘No U-turn!’ sign, however, whether the arrow bends leftward or rightward is not-at-issue and is determined by whether the sign is from an area with right-hand (e.g., the Norwegian version in (4a)) or left-hand (e.g., the New Zealand version in (4b)) traffic.<sup>6</sup>

(4) a.



<https://commons.wikimedia.org/wiki/File:Norwegian-road-sign-332.0.svg>  
= No U-turn!  
 $\rightarrow$  All U-turns are leftward.

b.



[https://commons.wikimedia.org/wiki/File>New\\_Zealand\\_road\\_sign\\_R3-3.svg](https://commons.wikimedia.org/wiki/File>New_Zealand_road_sign_R3-3.svg)  
= No U-turn!  
 $\rightarrow$  All U-turns are rightward.

But to know whether a given piece of iconically interpreted pictorial content is at-issue or not, one needs to have very specific world knowledge, for instance, that feeding wildlife in general is likely to be prohibited, but not specifically feeding wildlife from above. Even more obviously, correctly interpreting road traffic signs requires knowing traffic rules and a great deal

<sup>5</sup> Alicia Parrish (p.c.) pointed out to me that these signs are likely to be making an existential rather than prohibitory statement, saying that there is no exit in a certain direction, not that there is one, but one is not allowed to use it (e.g., it's an emergency exit only). This is compatible with the backslash circle being a negative root modal, with the modal flavor ambiguous between deontic and ability, similarly to the Russian modal *nel'zja* mentioned before in footnote 2.

<sup>6</sup> Thanks to Patrick Grosz (p.c.) for pointing out this example to me.

of conventions. For instance, one could easily imagine a hypothetical rule that would prohibit U-turns leftward, but not rightward—but this is not a practical rule to have given how traffic works.

The same applies to distinguishing between content that is iconic, but not-at-issue and content that is not meant to be interpreted iconically in the first place (which also involves knowledge of the relevant stylization conventions). For instance, in the sign prohibiting crowding in (5), the mereological properties of the depicted plurality are meant to be interpreted much more iconically than in (1): while the exact number of the atoms depicted still isn't meant to be interpreted precisely, their higher-than-the-default number and closer-than-the-default arrangement are both meaningful (and, furthermore, at-issue). In contrast, while the plurality in the sign in (6) also contains five atoms that are quite densely arranged, the sign doesn't prohibit overfeeding birds, nor does it necessarily indicate a prototypical amount or arrangement of food morsels fed to birds. Once again, this difference in interpretation arises due to world knowledge, namely, that crowding is something that is routinely prohibited, but over- or underfeeding wildlife is not, as well as that there are many ways in which one can feed a bird.

(5)



(6)



<https://www.shutterstock.com/image-vector/stop-dont-feed-animals-sign-vector-418712962>

### 2.3 *The role of explicit alternatives*

Apart from world knowledge, contrast with explicit permitted alternatives also helps disambiguating between at-issue and not-at-issue readings of pic-

torial content in prohibition signs—similarly to how this happens in language (see, e.g., [Esipova 2018](#) for discussion).<sup>7</sup>

A case in point are public bathroom signs depicting acceptable and unacceptable ways of relieving oneself, such as the set of signs in (7) from a Sochi bathroom, which made the news during the 2014 Winter Olympics.

(7)



<https://twitter.com/SebToots/status/429546115604938752>

First, the top right sign and the one below it in (7) don't prohibit passing waste in general, but doing so in a specific position, which is in clear contrast to the sign in (8) that bans all public urination, but comes with an inference that people urinating in public typically do so in a standing position.<sup>8</sup>

(8)



<https://www.mysecuritysign.com/persons-prosecuted-for-urinating-sign/sku-k2-0650>

Second, the arrangement of pee droplets in the top right sign in (7) is meant to be interpreted iconically (more so, at least, than the arrangement of the

<sup>7</sup> In language, an important phenomenon associated with contrastive alternatives is contrastive focus. It remains to be seen if there are any ways of marking contrastive focus in pictures.

<sup>8</sup> I thank Patrick Grosz (p.c.) for bringing out signs banning public urination to my attention.

food morsels in the sign in (1)), but in a non-restricting fashion, with an inference that peeing while standing results in droplets of pee spraying all over the place. Of course, to interpret these signs correctly, one needs a great deal of world knowledge, but also, the presence of the explicit permitted alternative in the top left corner (assuming that (7) provides the exhaustive list of the permitted alternatives) helps rule out the—hypothetically possible—restricting interpretation of the pee droplet arrangement in the top right sign, whereby peeing while standing is OK as long as one avoids pee spraying.

The German bathroom signs in (9) make similar points explicitly, by contrasting acceptable and unacceptable alternatives and by providing spoken language instructions; once again, the liquid mereology in these signs is meant to be iconic, but not-at-issue.



## 2.4 Optionality and licensing of non-restricting modifiers

Note that the spraying arrangement of droplets in the prohibition signs in (7) and (9) is optional. Thus, the sign in (10) makes the same at-issue point, i.e., it prohibits peeing while standing, but without showing all the mereological consequences of doing so.



However, while the more complex depictions of the pluralities in (7) and (9) aren't necessary, they are justified, as they explain the rationale behind the rules. This is similar to how NRM<sub>s</sub> in language often need to be licensed by relevance considerations (see, e.g., the discussion in Leffel 2014).

That said, not all NRMs obey this relevance constraint. For instance, in language, modifiers that are morphosyntactically obligatory, such as *phi*-features on pronouns, which are argued to be obligatorily non-restricting modifiers in [Esipova 2019a](#), don't have to contribute contextually relevant information.<sup>9</sup> It is also possible that some NRMs are non-obligatory, but don't result in extra production effort and can, thus, circumvent the relevance constraint.

Similar considerations seem to apply to pictorial content: in the sign in (1), some relative spatial arrangement between the agent and the goal of the tossing event is inevitable, so one might as well go with the prototypical one, without requiring that the downward direction of the tossing motion be particularly relevant. However, in a bathroom sign like the ones above, the artist can choose whether to go with a schematized, unembellished depiction of a pee stream or with an iconically modified version, in which case the modification has to be relevant in the context of the sign.

## 2.5 *The role of prototypicality*

It is useful to think about how prototypicality, which has been mentioned a few times above, affects pictorial representations in prohibition signs and if/how it plays into establishing which parts of a depiction are meant to be iconic and which of the iconic ones are meant to be at-issue. In this subsection I outline some thoughts on this issue.

When one creates a sign prohibiting *X*, they have to depict a specific instance of *X*. This depiction can be stylized to some extent, but it still has to be recognizable as an instance of *X*. This already encourages one to depict a maximally prototypical *X* (although, of course, there's still place for humor, artistic expression, bad artistry, etc.).

However, for some aspects of a given pictorial representation, one might have to make choices that are more or less arbitrary. In particular, if no obvious prototypical value for a given obligatory aspect of a pictorial representation exists, the artist may choose the value at random. For instance, the number of food morsels in 'Don't feed wildlife!' signs can often be argued to be iconic and arbitrary rather than non-iconic and default or iconic and prototypical. Alex Warstadt (p.c.) pointed out to me that this is similar to how some speakers of English can use non-default gender on bound pronouns in an arbitrary way, without any universal inferences:

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<sup>9</sup> Although, as is pointed out in [Esipova 2019a](#): fn. 90, some speakers of English use gender-neutral *they* when the gender of the referent is not relevant, even if it is known.

- (11) If you make a friend, you should be kind to her.  
 ↗ If you make a friend, that friend will be female.

Next, sometimes a sign will deviate from prototypicality for practical reasons. An example of such deviation is illustrated in the sign in (12), which will resurface in the next section. As pointed out to me by Patrick Grosz (p.c.), this sign arguably does not represent the most prototypical coyote feeding event in terms of manner, since if a person was to feed a coyote, they would probably toss the food to it from a distance. However, the artist might have had to sacrifice prototypicality for practical reasons, since the depictions of the agent and the recipient of the feeding event have to co-exist within a small space while still being large enough to be visible. Note that, given this arguably non-prototypical manner of feeding, the directionality is, in fact, prototypical: if a human was to feed a coyote by handing the food to it, they would most likely do it from above.

(12)



**Do not feed  
the coyotes**

<https://www.flickr.com/photos/adactio/2156791720/>

The nature of the food item in (12) doesn't seem to be an obvious characteristic of a prototypical coyote-feeding event either.<sup>10</sup> However, the food item choice in this case might be random, ironic, or, as pointed out to me by Paloma Jeretić (p.c.), it could be a prototypical food item one might have on them when they encounter a coyote rather than a prototypical food item one might want to feed to a coyote to properly satisfy its nutritional needs.

All these considerations will affect whether a pictorial representation will come with a generic inference about a prototypical *X* or not, but, once again, there doesn't seem to be a general recipe. One has to do their own reasoning in each specific case, based on world knowledge, sign-related conventions adopted within a given community, etc.

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<sup>10</sup> In fact, one of the comments under the picture makes a joke about the nature of the food item in the sign in a way that makes it at-issue, contra to the intent of the sign: 'Sign was cut off – "Do not feed the coyotes chocolate chip biscuits, they like honey snaps."'

Now, figuring out what's at-issue and what's not in a given sign prohibiting  $X$  is not directly about figuring out which aspects of the depicted instance of  $X$  are prototypical—it's about figuring out what  $X$  is, i.e., what the sign intends to prohibit in the first place, abstracting away from all the irrelevant aspects of the specific depiction, whether or not they are properties of a prototypical  $X$ . That said, making sure the at-issue message of the sign gets identified correctly is probably a factor that adds to the pressure of depicting a prototypical  $X$ . If a given depicted instance of  $X$  deviates from a prototypical  $X$  too much and for non-obvious reasons, that might make someone interpreting the sign wonder why that is so and whether the non-prototypical aspects of the depiction aren't, in fact, meant to be at-issue.

The flip side of this is that since people are usually aware of the convention to depict prototypical entities in prohibition signs, they might draw generic inferences in the absence of the relevant world knowledge. For instance, if an outsider were to see the very Magrittean sign in (13a), which is an actual sign from a hiking trail in Croatia and which differs from the more common and highly conventionalized 'No smoking!' sign depicting a cigarette in (13b), they might infer that in that area people tend to smoke pipes rather than cigarettes. Alternatively, they could conclude that only pipe-smoking is prohibited, implausible as it may sound. According to Chris Barker and Helen Koulidobrova (p.c.), however, the sign is intended to mean something like 'No smoking, not even pipes!', in order to counteract the—apparently, common—claims from the locals that the standard cigarette-depicting 'No smoking!' sign does not apply to pipe-smoking (which is, of course, related to the fact that many locals do indeed smoke pipes). Naturally, such intricate pragmatics is lost on people without the relevant world knowledge.

(13) a.



photo courtesy of Chris Barker, cropped

b.



[https://commons.wikimedia.org/wiki/File:No\\_Smoking.svg](https://commons.wikimedia.org/wiki/File:No_Smoking.svg)

Lastly, I would like to point out that this discussion connects to the idea in Ebert 2017 that co-speech gestures sometimes perform the exemplification function. Ebert's claim was about co-nominal pointing, but I think that (i) this idea can apply to depictive gestures, too, and (ii) exemplification gestures do not have to be co-speech. Thus, the idea of an 'instance of  $X \rightarrow$  prototypical instance of  $X \rightarrow$  generic inference about  $X$ ' chain of reasoning as well as the various cases when the first link in the chain is broken are worth exploring for gestures as well.

The upshot of this entire section is that there is no sure way to tell a priori which aspects of a pictorial representation are at-issue and which are not, based solely on the geometric properties of the representation itself. Furthermore, among the not-at-issue aspects, there is no sure way to tell which of them are not meant to depict anything iconically and are instead default or stylized, which depict accidental properties of this specific instance of  $X$ , and which are meant to depict properties of a prototypical  $X$ . Establishing all this requires a great deal of world knowledge and sometimes access to explicit contrastive alternatives, and even then there is often place for ambiguity.

### **3 Evidence for semantic composition in pictures**

#### **3.1 Compositionally independent vs. sublexical not-at-issue content: what's at stake?**

In the previous section, I have drawn some empirical parallels between modifiers in language and various aspects of pictorial representations such as directionality of events and mereological properties of pluralities. In particular, I have likened not-at-issue, but iconic (and prototypical) aspects of pictorial representations to non-restricting modifiers (NRMs) in language. In this section, I will argue that this is, in fact, the best approach to the at-issue vs. not-at-issue distinction in these cases, as such aspects of pictorial representations behave as compositionally independent pieces of meaning rather than sublexical components of holistic pictorial items for the purposes of ellipsis and anaphora resolution as well as alternative generation under *only*.

This is in contrast to a less specific treatment of such aspects of pictorial representations as "cosuppositions", i.e., assertion-dependent presuppositions posited in Schlenker 2018a as inferences contributed by co-speech gestures, such as in (14), and co-speech facial expressions with an evaluative

component, both of which are often not-at-issue,<sup>11</sup> and extended to other types of meaning-bearing expressions in Schlenker 2018b and to meaningful subcomponents of pictures in Schlenker 2019.



- (14) a. Lea shouldn't be bringing her dog<sub>LARGE</sub>.<sup>12</sup>

Likely interpretation:

- = Lea shouldn't be bringing her dog.
- Lea's dog is large.



- b. Zoe shouldn't be shooting at the target<sub>LONGBOW</sub>.

Likely interpretation:

- = Zoe shouldn't be shooting at the target.
- If Zoe shoots at the target, she'll be shooting a longbow.

In the cases discussed by Schlenker, the form of “cosuppositions” is more or less equivalent to the inferences one would obtain if they were to treat the pieces of meaning contributing them as NRMs. However, the notion of “cosuppositions” does not commit one to a stance (i) on the compositional status of the pieces of meaning that contribute them (whether these pieces of meaning are sublexical or compositionally independent, and if the latter, what kind of composition strategy they use), nor (ii) on how these inferences arise. Esipova (2019a; b; c; 2020) argues that, at least in the case of gestures and some evaluative facial expressions, Schlenker’s “cosuppositions” are, in fact, NRM inferences, i.e., that (i) they are contributed by compositionally independent pieces of meaning, namely, subsective modifiers, and (ii) arise just like other NRM inferences (she specifically argues for pragmatic triggering).<sup>13</sup>

<sup>11</sup> But not always; see Esipova 2019a; b; c; 2020 for details.

<sup>12</sup> I write gesture labels in ALL CAPS. Co-speech gestures are written as subscripts, with underlining indicating their approximate temporal alignment without making any syntactic claims. New gestures are accompanied with illustrations, placed at their approximate onset.

<sup>13</sup> She, furthermore, maintains that not all co-speech gestures or facial expressions are subsective modifiers and, thus, not all of them have a potential to give rise to NRM inferences; Schlenker’s notion of “cosuppositions” can’t apply in such cases either. The question of whether any compositionally independent aspects of pictorial representations can be something other than subsective modifiers is beyond the scope of this paper. However, let me note that, just like in the case of gestures, it is unlikely that purely iconic depictions

While the compositional independence of gestures in (14) is self-evident, this is not necessarily so for various aspects of pictorial representation. In what follows I will show that there are reasons to believe that such aspects of pictorial representations as directionality of events and mereological properties of pluralities are, in fact, compositionally independent and, therefore, the at-issue vs. not-at-issue distinction for them should be analyzed in terms of restricting vs. non-restricting modification rather than the more arcane notion of “cosuppositions”. Whether this notion might be needed elsewhere, i.e., whether we can find sublexical assertion-dependent presuppositions (or, alternatively, assertion-dependent presuppositions that arise between two expressions that are independent, but do not compositionally integrate with one another), remains to be seen, but the data presented in this section suggest that there is no need for “cosuppositions” when it comes to explaining the behavior of certain not-at-issue aspects of pictorial representations.

### **3.2 Compositionally independent vs. sublexical content in speech and gesture**

As observed in [Esipova 2019a](#) and expanded upon in [Sailor & Colasanti 2020](#), when recovering ellipsis antecedents and computing alternatives negated by *only*, it is in principle possible to ignore non-restricting—and, therefore, not-at-issue—modifiers.<sup>14</sup> The same holds when recovering antecedents for expressions like *same*. The relevant facts are illustrated in (15), where the non-restricting interpretation of the target modifier is enforced by the extralinguistic context, and the continuation sentences make sure that the modifier is ignored in the target environments.

(15) *Context: Lea has only one dog.*

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can encode meanings that are more complex than those of subsective modifiers (in fact, most, if not all of these, are, furthermore, intersective), i.e., arguably some level of conventionalization is required for more complex meanings. For instance, the backslash circle is clearly not a subsective modifier, but it is highly conventionalized. Other examples of more complex and more conventionalized semantic composition in the pictorial domain include, for instance, speech and thought balloons, whose content is analyzed as quoted in [Maier 2019](#), and tags, discussed in [Greenberg 2019b](#), which, in the first approximation, are good candidates for supplements in the pictorial domain.

<sup>14</sup> This is not to say that it is always easy. A lot of factors seem to affect whether a given NRM is ignorable in a given context, often with gradient results. However, for the purposes of this paper what matters is the categorical distinction between pieces of meaning that are in principle ignorable and those that are not.

- a. A: Lea won't be bringing {her enormous dog, her dog<sub>LARGE</sub>} to the party, as one of the guests is allergic.
  - B: Ah, OK, then I won't [ ] either. Even though mine is a York, and those are sometimes claimed to be hypoallergenic, but better safe than sorry.  
↗ B's dog is large.
- (variation of Sailor & Colasanti 2020: (15a))
- b. Well, if Lea's gonna bring {her enormous dog, her dog<sub>LARGE</sub>} to the party, then I'll do the same. Especially because mine is tiny.  
↗ The speaker's dog is large.
  - c. Only Lea brought {her enormous dog, her dog<sub>LARGE</sub>} to the party. No one else did. Not even Mia, who has a tiny, innocuous chihuahua.  
↗ Every other relevant person's dog is large.

Sailor & Colasanti (2020) furthermore observe that restricting—and, therefore, at-issue—modifiers categorically cannot be ignored under ellipsis. Unsurprisingly, the same is true for the other two environments. This is shown in (16), where the restricting interpretation of the target modifiers is enforced by the extralinguistic context and by evoking the salient alternatives with the help of contrastive focus.<sup>15</sup> In all these cases the continuations that would require ignoring the modifier in the target environments are completely infelicitous. If anything, the utterances before the continuations come with an inference that the speaker/relevant alternatives to Lea have multiple dogs of various sizes as well.

- (16) *Context: Lea has two dogs, a small one and a large one.*
- a. A: Lea won't be bringing {her **enormous** dog, her dog<sub>LARGE</sub>}.
  - B: Ah, OK, then I won't [ ] either. #Even though mine is a York.  
= I won't be bringing my large dog.
  - b. Well, if Lea's gonna bring {her **enormous** dog, her dog<sub>LARGE</sub>} to the party, then I'll do the same. #Especially because mine is tiny.  
= I'll bring my large dog.

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<sup>15</sup> Note that restricting interpretations of co-speech gestures are degraded to a varying extent; see Esipova 2019a; b for details.

- c. Only Lea brought {her **enormous** dog, her **dog<sub>LARGE</sub>**} to the party. No one else did. #Not even Mia, who has a tiny, innocuous chihuahua.  
→ No one else brought their large dog.

As observed in [Esipova 2019a](#), the paradigm in (15) is in contrast to sublexical presuppositions, i.e., presuppositions arising as part of the lexical meaning of certain words, which cannot be ignored in such environments:

- (17)    a. Jackie stopped smoking, {but Daisy didn't, and Daisy did the same}.  
→ Daisy used to smoke.
- b. Out of these three women, only Jackie stopped smoking.  
→ Each of these three women used to smoke.
- c. O-Ren knows that she is in danger, {but Vernita doesn't, and the same is true for Vernita}.  
→ Vernita is in danger. (under the sloppy reading)
- d. Out of these three women only O-Ren knows that she is in danger.  
→ Each of these three women is in danger. (under the sloppy reading)
- e. Kim regrets cheating on the exam, {but Abernathy doesn't, and the same is true for Abernathy}.  
→ Abernathy cheated on the exam.
- f. Out of these three women only Kim regrets cheating on the exam.  
→ Each of these three women cheated on the exam.

[\(Esipova 2019a: \(7.4\), adjusted\)](#)

Note that it might be possible to locally accommodate the presupposition in some of the cases in (17), in which case the relevant inferences won't arise, but then the presupposition still won't be ignored, but will rather be treated as part of the at-issue content (e.g., *Daisy didn't* in (17) will be read as 'It's not the case that (Daisy used to smoke and no longer does)').

Next, [Schlenker & Chemla \(2018\)](#) observed that directional properties of gestures can be ignored under ellipsis and *only*,<sup>16</sup> in a way reminiscent of *phi*-features on pronouns. They furthermore point out a contrast with some sublexical presuppositions, but do not attribute said contrast to the

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<sup>16</sup> When they are not-at-issue; [Schlenker & Chemla \(2018\)](#) seem to assume that they always are. While that's certainly true for *phi*-features on pronouns, that's not necessarily true for directional properties of gestures, as discussed in [Esipova 2019a](#).

distinction between compositionally independent and sublexical meaning. However, both directional properties of gestures and *phi*-features on pronouns are analyzed as modifiers from the point of view of semantic composition<sup>17</sup> in Esipova 2019a and are, thus, expected to pattern with other compositionally independent pieces of meaning when it comes to behavior in ellipsis/anaphora resolution and under *only*. A relevant paradigm is given in (18).<sup>18</sup>

- (18) *Context: Zoe and Skyler are practicing face punches with sparring partners.*



- a.  $Zoe_i$  punched<sub>PUNCH-HIGH</sub> her<sub>i</sub> sparring partner, {but Skyler didn't, and Skyler did the same}.
  - b. Only  $Zoe_i$  punched<sub>PUNCH-HIGH</sub> her<sub>i</sub> sparring partner.
- (a,b):
- Zoe's sparring partner is taller than Zoe.<sup>19</sup>
  - Zoe is female.
  - ↗ Skyler's sparring partner is taller than Skyler.
  - ↗ Skyler is female. (Esipova 2019a: (7.2), adjusted)

### 3.3 Compositional independence of directionality and mereology in pictures

If compositional independence is indeed a prerequisite for being able to be ignored in ellipsis/anaphora resolution and under *only*, we can use the behavior of a given piece of meaning in these environments to test whether it is compositionally independent or sublexical. Note that if a given piece of meaning cannot be ignored in these environments even when it is not-at-issue, we cannot necessarily conclude that it is not compositionally independent, as compositional independence is a necessary, but not sufficient condition for such ignorability.

<sup>17</sup> Once again, for the current purposes, the term *modifier* is defined via semantic types; whether or not *phi*-features are adjuncts or heads in the syntactic sense is irrelevant.

<sup>18</sup> Schlenker & Chemla focus on non-co-speech gestures, but this difference is irrelevant for the issue at hand.

<sup>19</sup> Or more precisely, Zoe's sparring partner's face is higher than Zoe's.

It turns out that directionality in signs patterns with modifiers. (19) and (20) show that when directionality is not-at-issue, it can be ignored in all the target environments (I only use gapping in Russian as my ellipsis environment in (19), because Russian allows more gapping possibilities than English).

- (19) *Context: In a zoo, the coyote enclosure has the following sign:*



<https://www.flickr.com/photos/adactio/2156791720/>

*The speaker nods at this sign and says:*

- a. Žirafov tože nel'zja [ ].  
giraffe.PL.ACC too not-allowed  
'One can't [feed] giraffes either.' (Russian)
- b. A žirafov možno [ ].  
and/but giraffe.PL.ACC allowed  
'But one can [feed] giraffes.' (Russian)
- c. The same applies to giraffes.
- d. This only applies to coyotes.

(a-d): ↗ {Giraffes, all other relevant animals} are typically fed from above.

- (20) *Context: Zoe and Lea are driving from country A, with left-hand traffic, to country B, with right-hand traffic. They are 0.5 km before the border when they see the following sign:*



<https://commons.wikimedia.org/wiki/File:Norwegian-road-sign-332.0.svg>

*Zoe nods at this sign and says:*

- a. Ešë kilometr budet nel'zja [ ].  
more kilometer will-be not-allowed  
'One can't [do a U-turn] for another kilometer.' (Russian)
- b. Čerez kilometr budet možno [ ].  
in kilometer will-be allowed  
'One can [do a U-turn] in a kilometer.' (Russian)

- c. We won't be able to [ ] for another kilometer.
  - d. We'll be able to [ ] in a kilometer.
  - e. The same applies after we cross the border.
  - f. This only applies until we cross the border.
- (a-f):  $\not\rightarrow$  U-turns in country B are rightward.

Conversely, when directionality is at-issue, it cannot be ignored in the target environments:

- (21) *Context: Zoe and Lea are driving down the road and see the following sign:*



[https://commons.wikimedia.org/wiki/File:New\\_Zealand\\_road\\_sign\\_R3-1.svg](https://commons.wikimedia.org/wiki/File:New_Zealand_road_sign_R3-1.svg)

*Zoe nods at this sign and says:*

- a. Na sledujušem perekrestke tože nel'zja [ ].  
on next intersection too not-allowed  
✓ ‘One can't [turn left] at the next intersection either.’  
✗ ‘One can't [turn] at the next intersection either.’ (Russian)
- b. A na sledujušem perekrestke možno [ ].  
and/but on next intersection allowed  
✓ ‘But one can [turn left] at the next intersection.’  
✗ ‘But one can [turn] at the next intersection.’ (Russian)
- c. At the next intersection you can't [ ] either.  
= At the next intersection you can't turn left.  
≠ At the next intersection you can't turn.
- d. But at the next intersection you can [ ].  
= At the next intersection you can turn left.  
≠ At the next intersection you can turn.
- e. The same applies at the next intersection.  
= Turning left is prohibited at the next intersection.  
≠ Turning is prohibited at the next intersection.
- f. This only applies at this intersection.  
→ It's not the case that turning left is prohibited at all other relevant intersections.  
 $\not\rightarrow$  It's not the case that turning is prohibited at all other relevant intersections.

The same holds for mereological properties of pluralities involved in event depictions. For instance, while feeding birds does typically involve giving them multiple small morsels of food, such as bread crumbs, that's not true for all animals. Thus, the mereological properties of food in (22) can be ignored in all the target environments, since they are not-at-issue.

(22) *Context: The speaker nods at the following sign:*



<https://www.shutterstock.com/image-vector/stop-dont-feed-animals-sign-vector-418712962>

- a. Drugix životnyx tože nel'zja [ ].  
other animal.PL.ACC too not-allowed  
'One can't [feed] other animals either.' (Russian)
  - b. A drugix životnyx možno [ ].  
and/but other animal.PL.ACC allowed  
'But one can [feed] other animals.' (Russian)
  - c. The same applies to other animals.
  - d. This only applies to birds.
- (a-d):  $\not\rightarrow$  All other animals are typically fed multiple small morsels of food.

In (23), however, the mereological properties of the depicted plurality are at-issue and, thus, cannot be ignored in any of the target environments.

(23) *Context: The speaker sees the following sign near the exit and nods at it:*



- a. Vnutri tožne stoit [ ].  
inside too not should  
 ✓ '[Standing in a crowd] isn't recommended inside either.'  
 ✗ '[Standing] isn't recommended inside either.' (Russian)
- b. A vnutri možno [ ].  
and/but inside allowed  
 ✓ '[Standing in a crowd] is allowed inside.'  
 ✗ '[Standing] is allowed inside.' (Russian)
- c. The same applies inside.  
 = People can't stand in a crowd inside.  
 ≠ People can't stand inside.
- d. This only applies to the area near the exit.  
 → It's not the case that people can't stand in a crowd at all other relevant areas.  
 ↗ It's not the case that people can't stand at all other relevant areas.

The fact that directionality of events and mereological properties of pluralities in pictures pattern with modifiers rather than sublexical content for the purposes of ellipsis/anaphora resolution and alternative generation under *only* suggests that interpreting pictorial content involves a syntactic level of representation that feeds semantic composition, and, at least in the cases discussed here, these aspects of pictures are compositionally independent at that level of representation. Thus, the at-issue vs. not-at-issue distinction for these components of pictorial meaning is best captured via the notions of restricting vs. non-restricting modification, in line with the treatment of subjective modifier gestures and facial expressions in [Esipova 2019a; c; 2020](#).

Lastly, it is possible that in some of the cases above it is not that a given aspect of a pictorial representation is ignored when recovering the antecedent for ellipsis or anaphora, but rather that it is outside of the targeted constituent. That, of course, would still mean that this piece of meaning is compositionally independent, so the broad conclusion of this section would still hold.

## 4 Conclusion

In this paper, I have shown several things about how we interpret pictorial content:

- (i) Regarding iconicity: some aspects of pictorial representations are not meant to be interpreted (hyper-)iconically. But whether a given as-

pect of a pictorial representation is interpreted iconically is not fixed based on its nature, but instead depends on the pragmatics of said representation. Thus, the mereological properties of the depicted plurality (the number of the food morsels and their arrangement) are not meant to be interpreted iconically in the various ‘Don’t feed wildlife!’ signs (or, if they are, they are more or less arbitrary), but similar properties of pluralities are much more iconic (or, at least, less arbitrary) in the ‘No crowding!’ sign in (5) and in the bathroom signs in (7) and (9).

- (ii) Regarding at-issueness: some aspects of pictorial representations that are meant to be interpreted as iconic (and non-arbitrary) can, nonetheless, be not-at-issue, and, once again, whether this is the case within a given representation depends on its pragmatics. For instance, directionality is meant to be iconic, but not-at-issue in the intended interpretation of the prohibition sign in (1) and in the ‘No U-Turn!’ signs in (4), but it is at-issue in the ‘No left turn!’ and ‘No way out!’ signs in (3). Similarly, mereological properties of pluralities are iconic, but not-at-issue in the bathroom signs in (7) and (9), but they are at-issue in the ‘No crowding!’ sign in (5). Furthermore, in some cases, iconic, but not-at-issue aspects of pictorial representations, such as the droplet arrangement in (7) and (9), seem to be subject to relevance considerations, similarly to non-restricting modifiers in language.
- (iii) Regarding composition: data from ellipsis/anaphora resolution and alternative generation under *only* suggest that such aspects of pictorial representations contribute meaning in a compositional way. That is, processing pictorial content involves a syntactic level of representation whose output is interpreted compositionally, and such components of pictorial content as directionality of events and mereological properties of pluralities are independent at this level of representation and act as subsective modifiers, at least in the examples discussed here. Thus, the at-issue vs. not-at-issue distinction for such components of pictorial content should be analyzed in terms of restricting vs. non-restricting modification, following similar ideas for subsective modifier gestures and facial expressions in Esipova 2019a; c; 2020.

Methodologically speaking, prohibition signs proved useful in getting at the at-issue vs. not-at-issue distinction in pictures, as they, by virtue, involve embedding under negation. Relatedly, the pragmatics of prohibition signs is usually very clear, especially in the presence of explicit permitted

alternatives, which makes judgements about what's at-issue and what's not fairly straight-forward and, furthermore, highlights the role of pragmatics for this distinction in pictures.

Another methodological take-away is that ellipsis/anaphora resolution and alternative generation under *only* have once again yielded empirical distinctions that can be used to test for presence of semantic composition in and beyond language. That said, we need to understand the relationship between these phenomena and composition better before drawing any definitive conclusions.

I would like to finish with a cautionary note about what I mean when I say that pictorial representations are interpreted compositionally. Based on the data discussed in this paper, the potential cognitive claim we could make is pretty weak: as humans, we can abstract away from certain aspects of a given pictorial representation and construe of it as a depiction of, say, a feeding or a peeing event tout court—and we can furthermore use these construals when we integrate pictorial content with speech, as we did in the ellipsis/anaphora/*only* examples in the previous section. However, we don't simply ignore those aspects that we abstracted away from, as we can furthermore reason about whether they qualify the depicted instance of a certain event or individual as a prototypical member of its class and how they contribute to the pragmatic intent of the pictorial representation. That, of course, does not mean that the actual mental representations we have when processing pictorial content compositionally are exactly the same as the representations we have when processing natural language utterances compositionally. That said, we can use the same tools to model both processes formally and see how far we can get.

## Abbreviations

NRM = non-restricting modifier

## References

- Abusch, Dorit. 2012. Applying discourse semantics and pragmatics to co-reference in picture sequences. In Emmanuel Chemla, Vincent Homer & Grégoire Winterstein (eds.), *Proceedings of Sinn und Bedeutung 17*. 9–25.
- Abusch, Dorit. 2019. Possible worlds semantics for pictures. To appear in Matthewson, Lisa, Cécile Meier, Hotze Rullmann, and Thomas Ede Zimmermann (eds.), *The Companion to Semantics*. Oxford: Wi-

- ley. <https://compling.cis.cornell.edu/mr249/papers/abusch-possible-apr-29-2019.pdf>.
- Abusch, Dorit & Mats Rooth. 2017. The formal semantics of free perception in pictorial narratives. In Alexandre Cremers, Thom van Gessel & Floris Roelofsen (eds.), *Proceedings of the 21st Amsterdam Colloquium*. 85–95.
- Ebert, Cornelia. 2017. Co-speech vs. post-speech gestures. Talk given at *Language and cognition workshop in memory of Peter Bosch*, Osnabrück, February.
- Esipova, Maria. 2018. Focus on what's not at issue: Gestures, presuppositions, supplements under contrastive focus. In Uli Sauerland & Stephanie Solt (eds.), *Proceedings of Sinn und Bedeutung 22*. 385–402.
- Esipova, Maria. 2019a. *Composition and projection in speech and gesture*: New York University dissertation. <https://ling.auf.net/lingbuzz/004676>.
- Esipova, Maria. 2019b. Composition and projection of co-speech gestures. In Katherine Blake, Forrest Davis, Kaelyn Lamp & Joseph Rhyne (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) 29*. 111–137. <https://doi.org/10.3765/salt.v29i0.4600>.
- Esipova, Maria. 2019c. Towards a uniform super-linguistic theory of projection. In Julian J. Schlöder, Dean McHugh & Floris Roelofsen (eds.), *Proceedings of the 22nd Amsterdam Colloquium*. 553–562.
- Esipova, Maria. 2020. Composure and composition. Ms., Princeton University. <https://ling.auf.net/lingbuzz/005003>.
- Greenberg, Gabriel. 2011. *The semiotic spectrum*: Rutgers University dissertation. <https://doi.org/10.7282/T3HT2ND1>.
- Greenberg, Gabriel. 2019a. Semantics of pictorial space. Under review. <http://gjgreenberg.bol.ucla.edu/docs/geometry.pdf>.
- Greenberg, Gabriel. 2019b. Tagging: Semantics at the iconic/symbolic interface. In Julian J. Schlöder, Dean McHugh & Floris Roelofsen (eds.), *Proceedings of the 22nd Amsterdam Colloquium*. 11–20.
- Leffel, Timothy. 2014. *The semantics of modification: Adjectives, nouns, and order*: New York University dissertation. <https://ling.auf.net/lingbuzz/002212>.
- Maier, Emar. 2019. Picturing words: the semantics of speech balloons. In Julian J. Schlöder, Dean McHugh & Floris Roelofsen (eds.), *Proceedings of the 22nd Amsterdam Colloquium*. 584–592.
- Maier, Emar & Sofia Bimpikou. 2019. Shifting perspectives in pictorial narratives. In M. Teresa Espinal, Elena Castroviejo, Manuel Leonetti, Louise McNally & Cristina Real-Puigdollers (eds.), *Proceedings of Sinn und Bedeutung 23*. 91–105.

- Rooth, Mats & Dorit Abusch. 2019. Indexing across media. In Julian J. Schlöder, Dean McHugh & Floris Roelofsen (eds.), *Proceedings of the 22nd Amsterdam Colloquium*. 612–624.
- Sailor, Craig & Valentina Colasanti. 2020. Co-speech gestures under ellipsis: a first look. Talk given at *The 94th Annual Meeting of the LSA*, New Orleans.
- Schlenker, Philippe. 2018a. Gesture projection and cosuppositions. *Linguistics and Philosophy* 41(3). 295–365. <https://doi.org/10.1007/s10988-017-9225-8>.
- Schlenker, Philippe. 2018b. Iconic pragmatics. *Natural Language & Linguistic Theory* 36(3). 877–936. <https://doi.org/10.1007/s11049-017-9392-x>.
- Schlenker, Philippe. 2019. Extending the typology of iconic presuppositions. Invited talk at the workshop *Linguistic Investigations Beyond Language: Gestures, Body Movement and Primate Linguistics*, ZAS Berlin.
- Schlenker, Philippe & Emmanuel Chemla. 2018. Gestural agreement. *Natural Language & Linguistic Theory* 36(2). 587–625. <https://doi.org/10.1007/s1104>.
- Schlenker, Philippe & Jonathan Lamberton. 2019. Iconic plurality. *Linguistics and Philosophy* 42(1). 45–108. <https://doi.org/10.1007/s10988-018-9236-0>.